Results of the 2014 Valley of Peace Archaeology Project: Underwater and Surface Explorations at Cara Blanca

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Chapter 1
VOPA 2014 Underwater and Surface Explorations at Cara Blanca

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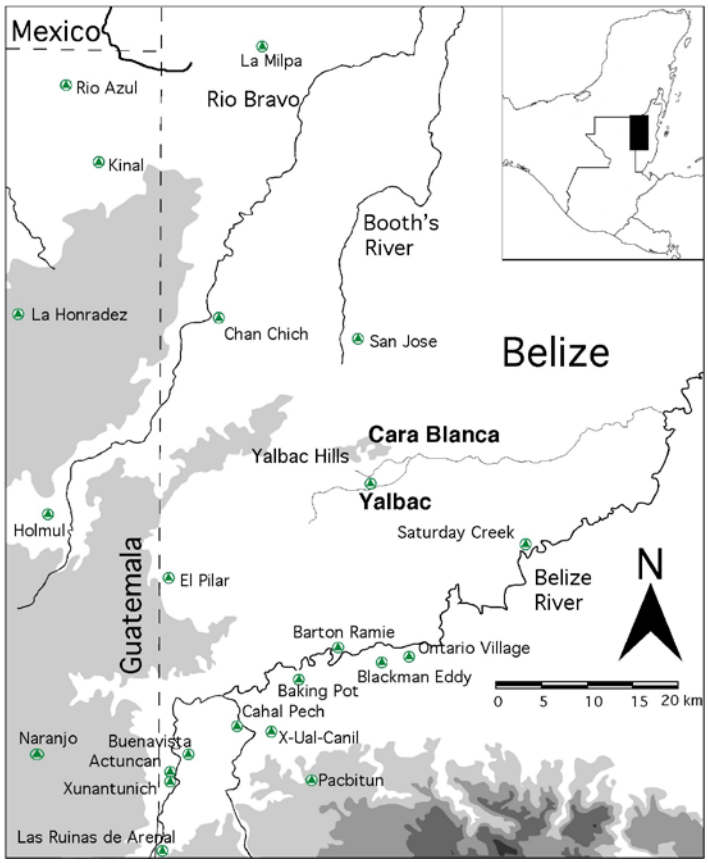

The long-term goals of the Valley of Peace Archaeology (VOPA) project are to examine how settlement articulates with sacred landscape features in addition to examining climate and landscape transformation at Cara Blanca, Belize, an area with 25 pools (lakes and *cenotes*). Underwater explorations and 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-Elizalde et al. 2010) and they needed to appease ancestors and the gods (e.g., Lucero and Kinkella 2015; http://news.nationalgeographic.com/news/2015/01/150127-maya-water-temple-drought-archaeology-science/).

For the 2014 season, we continued underwater exploration at Pools 1, 2, 6, and 20, continued excavations at Str. 1 (the water temple) and began excavating Strs. 3 and 4 at Pool 1. We also began mapping and testing the large platform and mound group, M208, at Pool 20. A National Science Foundation grant ($119,184.00US) funded the 2014 field season. A total of $99,298.30US has been spent on travel, transportation, supplies, lodging and food for five staff, seven divers, labor and social security for up to seven field assistants, IOA fees, insurance, truck maintenance, AMS radiocarbon

dates, a Research Assistant for two semesters and tuition remission, and University of Illinois F&A fees (18.7% applied to all monies spent other than tuition remission). The landowners of Cara Blanca, Yalbac Ranch, provided logistical support in the form of maintaining Rock Cut road to Pools 1 and 2, Muddy Camp road to Pool 20 and Blue Lagoon road to Pool 6, and providing a satellite radio for emergencies.

At the request of Dr. John Morris, we also surveyed, mapped, and ranked three fields recently cleared by the new landowners of a large part of Yalbac properties, the Spanish Lookout Community Trust Corporation Ltd. We labeled the fields MF-1, MF-2, and MF-3 (see Chapter 8).

In this chapter, I focus mostly on the diving program since other chapters cover surface excavations.

Diving Program (May 3-10, 21-22, June 12-13)

The major goals of the diving program were to collect fossils, tree samples, and any visible artifacts; together the evidence should tell us something about landscape and climate change, as well as Classic Maya ritual activities. This year the diving team included four-year Cara Blanca veteran exploration diver Chip Petersen of Belize Diving Services (www.belizedivingservices.net), second year veteran wildlife photographer Tony Rath (www.tonyrath.com), CJ (Christopher John Graham of Belize Diving Services), Bob Slizeski, Martin Spragg, Dr. H. Gregory McDonald (a paleontologist specializing in New World megafauna), and dendro-climatologist and tropical tree specialist Dr. Brendan Buckley. As always, able field assistance was provided by Cleofo Choc, Ernesto Vasquez, Jose Vasquez, Juan Antonio Lopes, Ezequiel Hernandez, and Stanley Choc from the Valley of Peace Village.

The first thing Chip and Brendan did was to snorkel Pools 1, 2, and 20 to assess visibility and viable tree specimens that Brendan would potentially collect. Pool 2 had few trees and low visibility, so it was decided not to spend anymore there. The other two pools have good visibility, trees galore, and fossil beds! Pool 6 also was explored (see Chapter 5).

Pool 1 (c. 100 x 70 m) via Rock Cut road: Within a few minutes of entering the pool the first day, Chip found the yellow plastic tent pegs he placed in the sidewall c. 20 m deep in 2013 on south/southeast side of pool where on the last day of diving in 2013 Marty had found what might be a nearly complete skeleton of some kind of extinct megafauna (see Lucero 2014). At the time, the visibility was too poor to get a good shot, so Chip had marked their location with red flagging tape on the right upper west side, and tent pegs below c. 3.4 m distant. Chip used an empty Clorox bottle with a string tied to it as a buoy for Greg and Brendan could find Chip and the fossils. The fossil bed lies 19.51-21.34 m deep. Greg remarked before his first dive that it would be great if he found a sloth tooth since they are great for assessing sloth diet and climate via isotopic analysis. Well he did—first thing at 22.4 m deep! On another dive he inserted two yellow tent pegs with a meter long string above the tooth for scale before he extracted the tooth (see Chapter 6).

Divers also collected wood specimens using a Silky Katanaboy XL 500 folding saw; Chip collected a slice from what Cleofo identified as a cedar tree at 27.4 m deep, and later from 18.3 m what Cleofo thought was a Pullhome (sp?) (see Chapter 7). He also brought up a 1.5 m long Redwood (also referred to as Brazil) branch from 18.3 m. Cleofo used the saw to cut a slice from the branch; it at first is blood red, but turns white as the sap dries. Brendan came up with two samples, one too rotten to identify, and the other likely allspice. Cleofo, Juan Antonio and I walked along Rock Cut road to collect samples from trees felled by the 2010 hurricane. Juan Antonio used his Stihl chainsaw to cut slices: two Black Poison (one young, one old), Ramón, Santa Maria, Jesemo (sp?), White Malady, Copal, and Cortez or Mayflower (it blooms a yellow flower in May). Later Brendan, with Cleofo and Juan Antonio, also collected samples from Rock Cut road, as well as from Yalbac Sawmill, generously provided by Jeff Roberson.

On the last day of diving at Pool 1 (May 8) Tony used his Remote Operated Vehicle (ROV) or drone to fly over the pool to get some fabulous aerial shots (Figure 1.1); he also used it at Pools 2, 6,

and 20.

Figure 1.1 Drone shot of Str. 1, Pool 1. Photo by Tony Rath.

Interestingly, the divers told me that they have only noted tufa immediately below Str. 1. This fact adds an entirely new dimension to from where the Maya obtained tufa—was it Pool 1 or another one all together?

One of the most common questions people ask is how deep Pool 1 and the others would have been during, for example, the Late and Terminal Classic periods. Evidence indicates that sea levels may have been about one meter lower than present (McKillop et al. 2010), which means the same for Cara Blanca pools since their levels fluctuate with sea levels.

Pool 2 (c. 80 x 80 m) via Rock Cut road: While this pool turned out to be a bust for trees, Tony and Andrew later (during ROV shots) swam to the southeast corner to assess the two substantial streams; the northern one flows into the pool, while the southern one out. They estimated a 2-3 knot current.

Pool 20 (c. 120 x 100 m) via Muddy Camp road: Chip used a closed circuit rebreather with trimix gas (Oxygen, Nitrogen and helium) to determine how deep Pool 20 is (39.6/40 m), and to further explore it since in 2010 divers were only able to survey the south and southwest sides. Unfortunately, this was the last time Chip could use the rebreather due to a non-functional O_2 sensor. He did note that the pool has a conical shape and a flat bottom with lots of trees. Visibility is poor throughout the pool.

In 2010, Trish Beddows and Ed Mallon noted the presence of a fossil bed on their way back up near the dive platform on the pool's south side at c. 5-8 m deep (Lucero 2011). Chip went in with the goal to find them, which he did. He then took Greg to see them; there is lots of bone in an approximately 6 m-thick fossil bed covered with a greenish-black algae, from 10.8 to 16.9 m deep. He collected a vertebra from 16.1 m deep, as well as their soil matrix (see Chapter 6). Greg also collected two fitted fossils of the left femur of either a juvenile giant sloth at 12.8 m, or an adult of another species—or even family based on his analysis of the vertebra he collected! Chip took a GPS reading of the bottle floating above the fossil bed (WGS84 304742 1927586).

Both Chip and Tony brought up some tufa samples with wood still present on the interior—great examples of how limestone precipitates around objects (Figure 1.2). In fact, there was tufa everywhere. The trees themselves go pretty deep; one tree fell in head first—and could go pretty deep; the question is how this and other trees end up near the center of the pools—here and at other pools. Chip also collected a leaf from underneath the silt at bottom about 40 m deep that dates to sometime in the 20th century (see below for radiocarbon dates).

Figure 1.2 Tufa from Pool 20. Left: interior showing wood remnants. Right: exterior view.

Tony also found some beautiful crystal clear calcite lenses 11.9 m deep. Chip noted that the 'fake eye' on cichlid fish has different colors (yellow associated with south/sun) than those in Pool 1 (black/blue, associated with (west/death: center/water).

Pool 6 (c. 350 x 200 m) via Blue Lagoon road: Chip and Tony do not agree with the 2010 divers' assessment that eel burrows resulted in the loose, patterned pool bottom—but that cichlid fish nests do—as evidenced by the tons of fish they saw. In fact, they noted that Pool 6 has lots more fish than the other pools. Most of the pool is relatively shallow: 1.22-1.52 m deep. What is 17-18 m deep is the crater that may have resulted from two merged cenotes; they still need to visit the other crater. There are also three small islands and two outlet streams (see Chapter 5). Both outlet streams, one heading south from Pool 6, seem too linear too be natural, as does the easterly one. For now, Tony knows that the wall is opposite to the limestone cliff (underwater) on the pool's north side.

Tony returned for two more days of diving at Pool 6 (May 21, 22) to further explore the large lake/merged cenotes with two technical divers: CJ, Chip's top diver at Belize Diving Services, and Robert (Bob) Slizeski, a Navy friend of Tony's. Tony came again June 11 and 12 with another photographer, Martin Spragg from Hopkins

Andrew and Cleofo both informed me that they had not surveyed south of Pool 6 in past seasons because it was swampy; there are two outlet streams in the southeast corner, and the wood blocks and other historic artifacts are found nearby.

Excavation Program (May 14-June 21)

The excavation team consisted of myself, two of my PhD students, Jessica Harrison and Jean Larmon, Erin Benson (a Phd student of Tim Pauketat), and undergraduate Zach Nissen. Field assistants from the Valley of Peace included Cleofo Choc, Ernesto Vasquez, Juan Antonio Lopes, Marcial Arteaga, Marcos Choc, Jose Vasquez, and Stanley Choc from the Valley of Peace. After Juan Antonio Lopes became ill the last two weeks, Antonio Barriento joined the crew.

Lab work took place at Banana Bank Lodge. Diagnostic artifacts were washed, labeled, photographed, analyzed and placed in 2 ml labeled Ziploc bags with tags inside, after which we boxed and stored them in the VOPA 20' container situated at Yalbac Sawmill. All non-diagnostic artifacts were washed, labeled, photographed and placed in 2 ml labeled Ziploc bags with tags inside, after which we placed them in the excavation units from which they came, covered them in construction plastic, and backfilled June 23-25.

Excavations focused at Pool 1 (see below and Chapters 2 and 3) and Pool 20 (see Chapter 4).

Pool 1

We continued excavations at Str. 1, and also began testing Strs. 3 and 4 (Figure 1.3). With all the rain, there is a noticeable stream of water from the outlet on the southeast part of the pool. I checked the outlet stream at c. 8-10 m south of Pool 1 and did not see any obvious tufa, even though the water was quite clear. That said, tufa forms in relatively still water, and the stream was moving pretty fast. I stuck my hand in and grabbed the first thing—a chert core! I also pulled out some limestone cobbles and pebbles. Clearly there is plentiful surface limestone, which is interesting given that the Maya used tufa for fill in Str. 1. We used cobbles and boulders from backfill piles to fill in some major ruts on the road c. 50 meters from Pool 1.

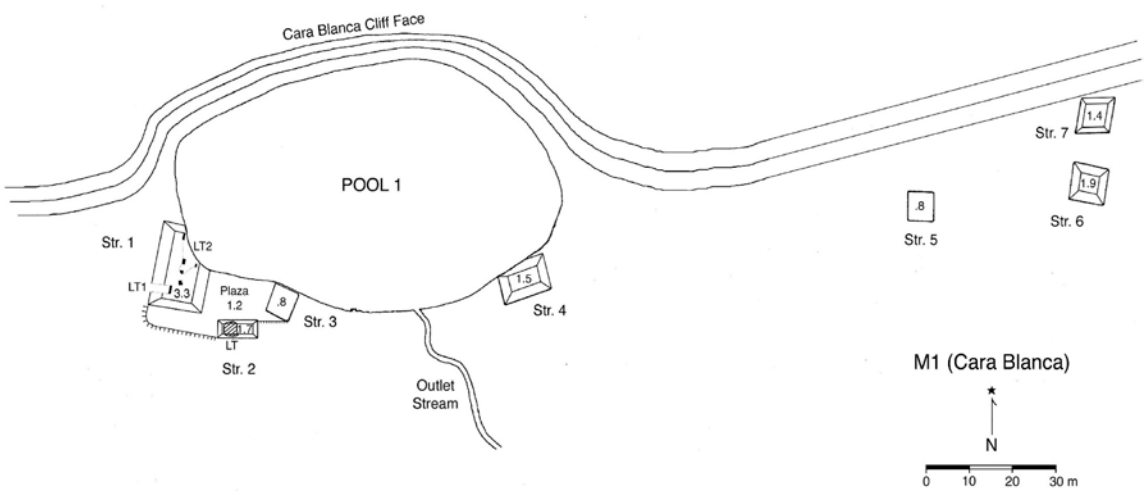

Figure 1.3 Pool 1 settlement

Cleofo and Antonio also surveyed south of Pool 1 about 300 m, going back and forth (using a compass) c. every 40-50 m. Upon their return, Cleofo said it was "lone swamp," with subin, prickle trees, and no sites. This brought to mind our 1997 trek with Mr. Scott when we walked miles along Labouring Creek (also referred to as Blue Nile) south of Pool 1 and did not note any settlement on either side of the creek; visibility was about 40-50 m due to high canopy.

I also asked Cleofo and Juan Antonio to re-locate M186, the sweathouse. It took them much longer than they thought it would; the October 2010 hurricane has completely transformed the landscape; it is now more dense with secondary growth. I went to see it the next day (it took 10 minutes to get there from Str. 1). Its dome roof has collapsed more than when I last visited in 2007 (Figure 1.4). The room immediately to the east of the semi-circular room is completely gutted, either by looting, the hurricane, or both; the room has collapsed (see Kinkella 2009:152-156, 178, 351).

Figure 1.4 Sweathouse (M186) showing roof collapse between 2007 (left) and 2014 (right)

Structure 1

For the first time since we began to focus at Str. 1 in 2010, there has not been any evidence of looting or further damage, though more of the building is collapsing into the pool. As in 2013, the 2014 season at Str. 1 is a salvage project. Our first goal was to map in points and measure in things we could not at the end of last season due to heavy rains that cost us one an a half weeks of field time as a result of the bridge washing out at the Yalbac South Gate that we use to cross Yalbac Creek.

The first thing we did was to remove backdirt from Rooms 1 and 2; to save time, we did not remove the backdirt from the exterior wall that skirts the entire structure. Quite a lot has changed from our 2013 planview of Str. 1 (Figure 1.5a, b), which is further discussed in Chapter 2.

In general, and similar to 2013 results, we found lots of large jars and dishes/plates and relatively little other types of artifacts. Unfortunately, looters likely went through the doorway to the hallway on the southwest side since we did not find it anywhere else. We found more of the Jaguar vessel, including a painted sherd (likely from the other side of the vessel) near the jar cluster in Hallway 4 near the surface of Floor 102 (but not directly on the floor).

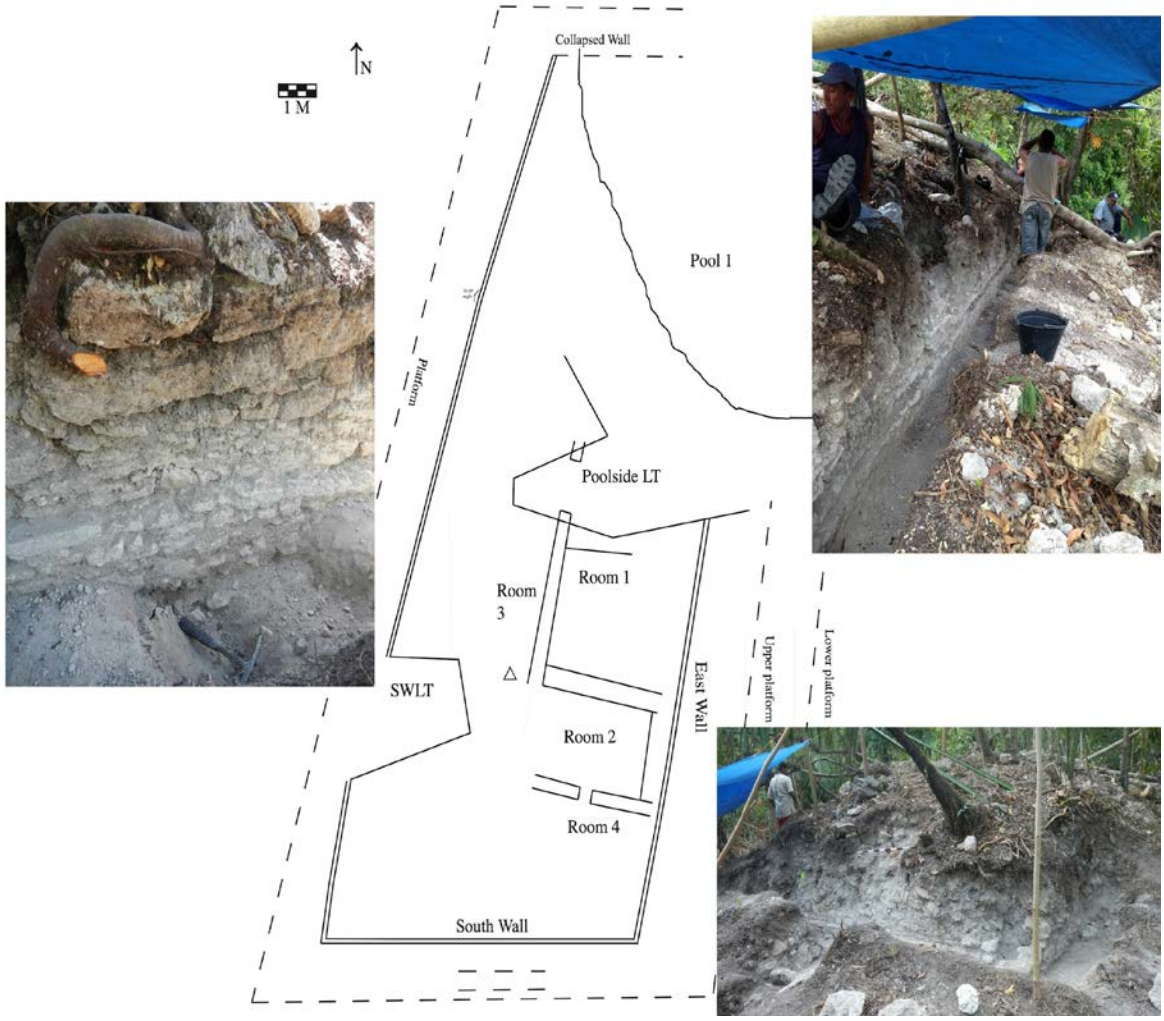

Figure 1.5a Str. 1 planview after 2013 season

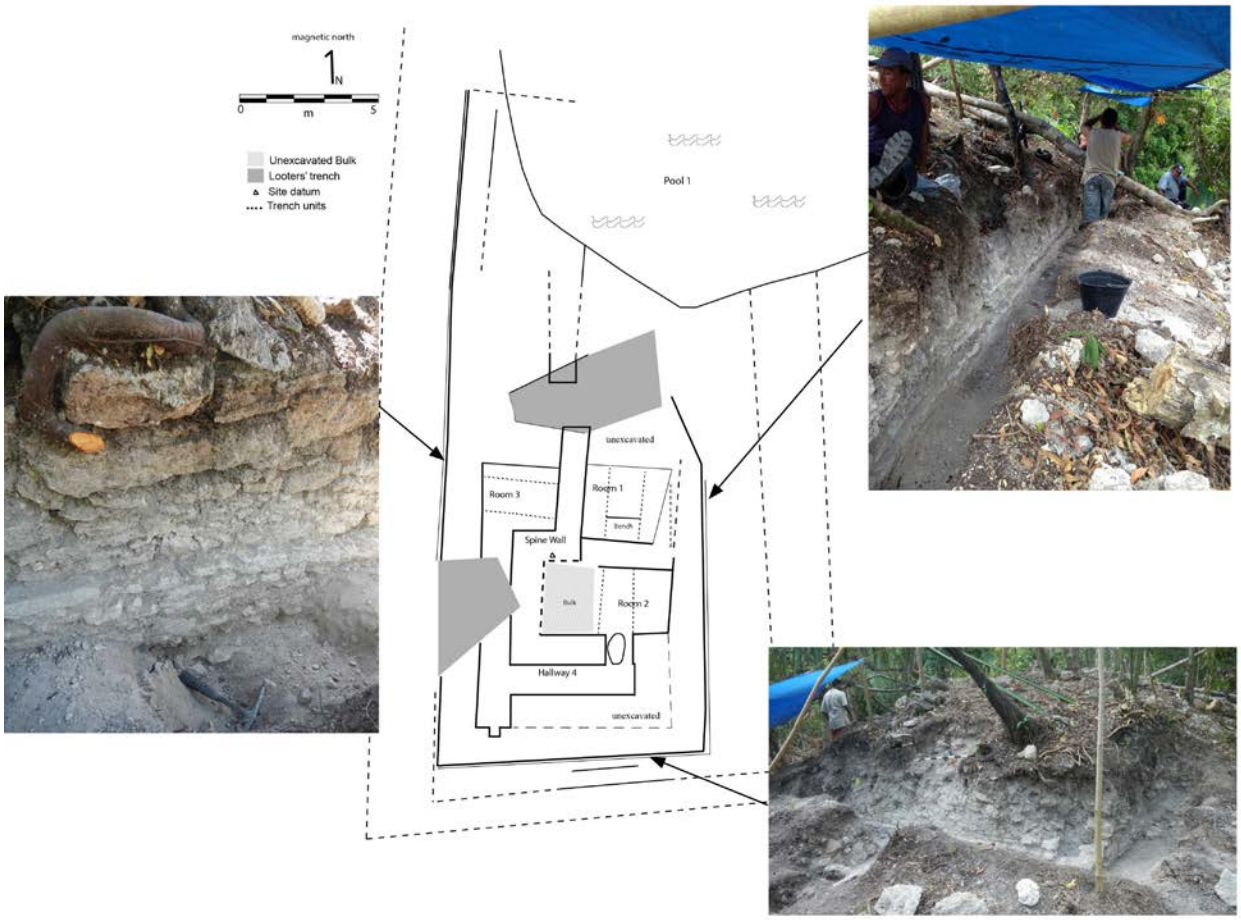

Figure 1.5a Str. 1 planview after 2014 season

Other Pool 1 Excavations

We put in a 1 x 1 m test unit in the plaza between Strs. 1 and 3 oriented 8° that matches Str. 2's orientation that Andrew re-mapped in 2010 (Kinkella 2011:59-60). While there were no obvious plaster surfaces, they did expose apparent surfaces, one consisting of a limestone and clay mix, and another likely a cobble ballast (see Chapter 3). We tested Structure 3 (mapped as c. 3.5 x 3.5, 0.8 m tall) since it comprises part of the raised platform that connects it to Str. 1, and because it is relatively close to the pool edge (it has been re-mapped after exposed to 5.2 x 1.8 m; see Chapter 3).

Stanley and Marcial started a 1.5 x 1 m test unit on top of Str. 4 oriented c. 20° that ranges in depth from c. 1 to 1.75 m. Andrew re-mapped this structure in 2010 (Kinkella 2011:60, Figure 5.9): 11 x 7 m, 1.8 m tall, with a narrow porch at the pool's edge. Similar to Str. 3, no tufa was found; instead the Maya covered the building with large unshaped boulders and cobbles (Figure 1.6). Stratum 101 comprises the topsoil with loose large boulders, while 102 the loosely compacted fill (that also, similar to Str. 3 had roughly build retaining walls). The topsoil yielded lithics including a metate fragment, chert chunks and flakes, and burnt limestone; ceramics include rims, base, body, and neck sherds (Table 1.1). Fill 102 yielded lithics including a chert chunk and ceramics rims, neck, and body sherds.

Figure 1.6 Stanley stands inside the Str. 4 test pit; note the large boulders; on the right is the profile.

Table 1.1 Structure 4 strata and artifacts

Catalog #	Stratum	Description	Artifacts*
2089	101	Topsoil	3 charred, 3 orange paste red slip body sherds
2089	101	Topsoil	3 tan paste red slip, 5 orange paste red slip, 2 orange paste unslipped, 2 tan paste unslipped necks including a Sibun Red Neck
2089	101	Topsoil	1 orange paste unslipped, 1 paste red slip bases
2089	101	Topsoil	5 orange paste red slip dishes, 1 orange paste unslipped jar rims
2089	101	Topsoil	5 burnt limestone, 1 metate frag, 3 chert flakes, 13 chert chunks
2089	101	Topsoil	1 *Nephronaias* shell
2090	102	Fill	1 brown paste maroon slip plate, 1 grey paste jar, 1 orange paste maroon slip, 1 orange paste red slip rims including a Mountain Pine Red
2090	102	Fill	2 orange paste red slip body sherds
2090	102	Fill	1 tan paste unslipped, 1 orange paste maroon slip, 1 orange past red slip necks
2090	102	Fill	chert chunk

*E. Harrison-Buck and A. Runggaldier were kind enough to take a look at the ceramics, and they identified one of the large jar rims as a Sibun Red, and another sherd as Mountain Pine, dating the deposits to Late to Terminal Classic.

While the presence of lithics, the metate fragment, and sherds may suggest a more residential function for Str. 4, the thick-walled vessels with large openings (up to 60 cm rim diameter; see Chapter 2) indicate otherwise. This structure is located c. 50 east of the water

temple (Str. 1), and may have served as a prep or staging area.

AMS Radiocarbon Dates

We collected from several contexts what we thought were 10 charcoal samples and one wood sample, exported them to the US, and sent them to the Arizona Accelerator Mass Spectrometry (AMS) Laboratory for radiocarbon dating (http://www.physics.arizona.edu/ams/). As Table 1.2 shows, not all of the samples turned out to be charcoal. Interestingly, several of the supposed charcoal samples turned out to be some type of mineral.

Table 1.2 Cara Blanca AMS radiocarbon dates

Catalog #	Sample	Description	14C age BP	Calibrated 1 sigma	Calibrated 2 sigma
2019	Turned out to be wood, not charcoal—root, branch?	Pool 1, Str. 1, Rm 2, Trench, Floor 105A	Post-bomb	1963-1973 CE	1963-1974 CE
2020	Mineral; iron-oxide, ~laterite?	Pool 1, Str. 1, Rm 2, Trench, Floor 105B	x	x	x
2021	Turned out to be wood, not charcoal—root, branch?	Pool 1, Str. 1, Rm 2, Trench, Floor 105C	Post-bomb	1957, 2007-2009 CE	1957, 2005-2009 CE
2020	Black specks on plaster—rotting roots?	Pool 1, Str. 1, Rm 2, Trench, Floor 105D	Post-bomb	1957, 2007-2009 CE	1957-1958, 2004-2009 CE
2030	Charcoal	Pool 1, Str. 1, Rm 2, Trench, Ballast 106	1514	475-600 CE	429-617 CE
2031A	~Mineral with micro-sticks	Pool 1, Str. 1, Rm 2 Trench, Fill 107	101	1695-1918 CE	1683-1930 CE
2031B	Charcoal	Pool 1, Str. 1, Rm 2 Trench, Fill 107	1532	433-574 CE	428-597 CE
2086	Black mineral, ~manganese	Pool 1, Str. 1, Rm 3, Trench, Fill 106	x	x	x
2085	Burnt limestone—not charcoal; dioxide; ~copper-oxide	Pool 1, Str. 1, Rm 3, Trench, Fill 103	x	x	x
2024	Leaf	Pool 20, c. 40 m	Post-bomb	1989-1991 CE	1958-1959, 1989-1991 CE
2026	Wood	Pool 6 cut block, Santa Maria wood,	107	1694-1918 CE	1681-1937 CE

The significance of the 5th-7th century dates for Pool 1 Structure 1 (construction fill, ballast) will be further discussed in Chapter 2. It is unfortunate that we did not get more useful dates; clearly intrusions from recent vegetation are problematic. During excavations, we did note roots on top of the floor; clearly some roots broke through the floor in parts.

It is possible that the Maya built this compound in the Late Classic and expanded it in the Terminal Classic. They terminated the entire site—Str. 3 is the best evidence for this, though I suspect that the huge Str. 1 vault stones and tufa are part of the termination deposit (in 2013 we noted that we found less tufa as we excavated Rooms 1 and 2).

Concluding Remarks

As the remaining chapters show, Cara Blanca pools continue to yield interesting data on ancient Maya ritual activities in the face of climate instability, as well as past landscape and climate (fossils and trees). Slowly but surely we are able to piece together the narrative of how and why the Maya built and worshipped at the pools, especially Pool 1. And we will continue our efforts in the next

several seasons. The following chapters detail the 2014 finds.

Acknowledgements
I would like to express my gratitude to the Institute of Archaeology, especially Jaime Awe and John Morris, and Forestland Group for their support and permission over the years. We owe much to Jeff Roberson of Yalbac Ranch, who went above and beyond in clearing and maintaining Rock Cut road. As usual, everyone at Banana Bank Lodge (http://www.bananabank.com/) made us feel at home, which is much appreciated. Miss Louisa (Choc) provided the vital and wonderful breakfasts, lunches, and coffee for the field. None of our fieldwork would have been possible without the expertise and participation of the amazing divers and recorders of magic, Chip Petersen, Tony Rath, Greg McDonald, Brendan Buckley, CJ (Christopher John Graham), and Bob Slizeski. All of these efforts are made tons easier and more fun by the excellent assistance from Cleofo Choc, Ernesto Vasquez, Stanley Choc, Marcos Choc, Jose Vasquez, Juan Antonio Lópes, Marcial Arteaga, and Antonio Barriento (and Ezequiel Hernandez, who helped us during the diving program). I appreciate Liz Graham, David Pendergast, Heather McKillop, and Brett Houk for taking the time to assess the cut stone in Pool 6. Underwater mapping advice was also generously provided by Heather and Andrew Kinkella. We can't thank enough Eleanor Harrison-Buck and Astrid Runggaldier, who both provided great feedback on our myriad questions regarding our ceramic collection. And it was great to have Joanne Baron back with us; she spent a few days helping us in the field, and later drew the additional pieces we found of the jaguar vessel. Thanks also go to volunteers Gio Cenna, Audrey Filson, and Anthony Filson. Funding was generously provided by the National Science Foundation (grant #1249235), which is greatly appreciated.

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Chapter 2
Cara Blanca Pool 1: Structure 1 Excavations and Comparison of Cara Blanca's Ceramics

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In this chapter, I discuss our excavation strategy, construction history, and artifacts recovered from Pool 1 Structure 1 as well as the ceramic assemblage recovered from excavation at Pools 1 and 20. Analysis of the Cara Blanca ceramics suggests that the Pool 1 temple was built and used during the Late Classic II/Terminal Classic (C.E. 800-900), a period of sociopolitical upheaval and severe multiyear droughts (Medina Elizalde et al. 2010). Our methods for analyzing ceramic artifacts this summer included cleaning and photographing sherds, as well as documenting a number of qualitative and quantitative traits including vessel form, paste, slip, orifice diameter of rims and necks, wall thickness, and type-variety when possible.

First, I describe the excavation history and artifacts recovered from Pool 1 Str. 1 in the 2013 and 2014 seasons. Next, I provide an analysis of the other three Pool 1 excavations (Figure 2.1). Finally, I compare the Pool 1 and Pool 20 ceramic assemblages and discuss how Cara Blanca fits into the broader Terminal Classic of central Belize based on ceramics.

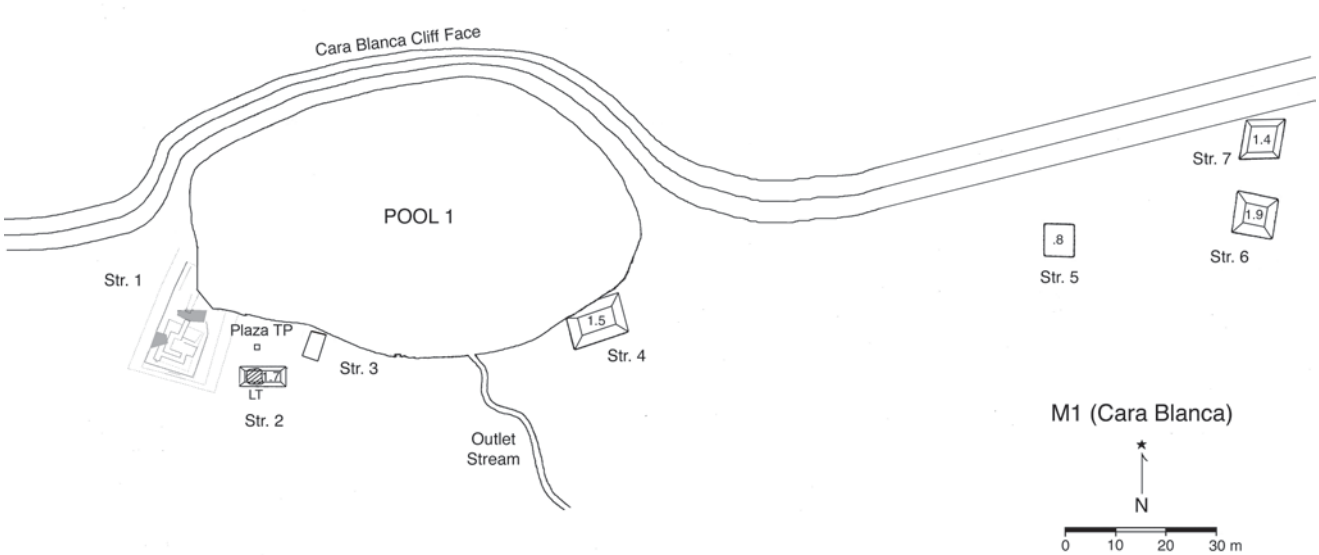

Figure 2.1, adapted from Kinkella 2011. Cara Blanca Pool 1 structures. Strs. 1, 3, and 4, as well as a test pit in the plaza between Str. 1 and 3 were excavated in 2014.

Pool 1 Structure 1

We excavated three rooms and one hallway in Str. 1, and uncovered as many as 11 strata. Our excavations began with Topsoil 101, which consisted of organic topsoil and vault stone collapse from the corbel vaulted roof of the temple. Beneath the collapse, we encountered a unique, asymmetrical temple with three remaining rooms and a hallway linking the rooms along the southern edge of the temple (Figure 2.2). Due to collapse and looting, we were unable to excavate the northern half of the temple, and focused our efforts on the southern half of the structure.

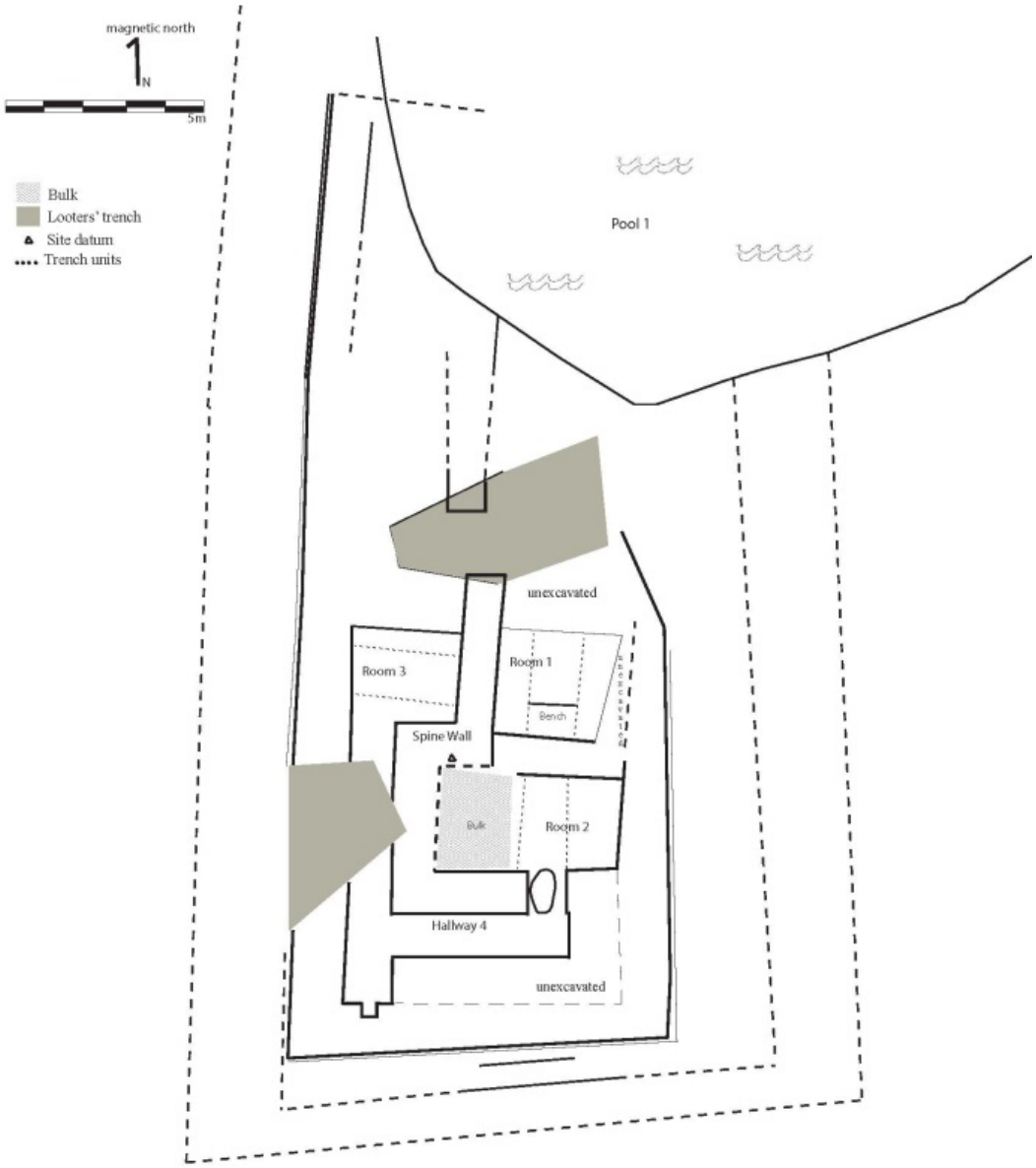

Figure 2.2 Plan view of Pool 1 Str. 1, showing Rooms 1-3 and Hallway 4. Note the trenches we excavated in each room and the looter's trenches. The northeastern section of the structure has fallen into Pool 1.

Room 1

Room 1 excavations began with Erin Benson, Stanley Choc, and myself, and ended with Erin and Marcial Arteaga. Since we had removed topsoil from across Room 1 in 2013, we decided to begin with a trench rather than full horizontal excavations. This strategy had been decided on at the end of the 2013 season, when we thought that the Maya had cut through Floor 102. As I discuss below, we found that rather than cutting through the floor, the Maya had built a bench in the southern

end of Room 2. We used this strategy in Rooms 1, 2, and 3 this season for a variety of reasons: focusing on a 1 m wide trench exposed the maximum number of strata and made the best use of our small crew (see Figure 2.2). Through the trenching program, we were able to understand the construction history of Str. 1 without disturbing architectural integrity and with maximum efficiency. Room 1 had the most complicated stratigraphy of our four excavations (Table 2.1, Figure 2.3).

Table 2.1 Room 1 Stratum Descriptions for 2013 and 2014 seasons

Stratum	**Catalog No.**	**Description**	**Artifacts**	**Ceramics**
Topsoil 101	2014	Dark, organic soil with limestone vault stone collapse. Dark soil is intermixed with greyer flecks of degraded limestone. Munsell 10YR4/2	Ceramic body, neck, and rim sherds. No lithics were recovered from this context. In 2013, a piece of marine shell was recovered	See 2013 report, Chapter 1
Floor 102 (bench top)	2012	Well-preserved, fine-grained plaster floor, 9cm thick. Munsell 5YR 10/1	10 unslipped body sherds, 1 unslipped neck, 2 unslipped rims. Two pieces of bone, likely faunal but too small to identify, were also recovered.	1 Cayo Unslipped jar neck, 1 Cayo Unslipped jar rim.
Fill 103	2027	Dry, fine clay loam with inclusions of limestone slabs from Collapse 104, 0.85m thick. Munsell 5YR 10/1	1 unslipped ring base, 15 unslipped body sherds, 1 black slip body sherd, 1 red slip body sherd, 1 unslipped rim. 1 blue chert chunk.	
Collapse 104	Not assigned, no artifacts	Large, shaped limestone slabs from roof vault, Munsell 7.5YR8/1	No artifacts were recovered	
Wall 105 (bench face)	2096	Wall made of small limestone blocks faced with a thin coating of plaster. Wall forms the face of a bench below Fl 102, and is 0.56m tall. Munsell Not taken	1 red slip base, 23 unslipped body sherds, 7 red slipped body sherds, 2 red slip rim sherds. 2 freshwater shells.	
Fill 106	2028	Dark, dry soil fill within the bench, 0.23 m deep. Fill includes tufa. Munsell 5YR 7/1	1 red slip base, 13 unslipped body sherds, 1 red slipped body sherd, 4 unslipped jar rims, 1 brown slip dish rim, 1 red slip dish rim.	4 Cayo Unslipped jar rims, 1 Dolphin Head Red dish rim.
Fill 107	2029	Slightly darker soil, 1.2 m deep. Fill includes tufa. Munsell 10YR 6/2	20 unslipped body sherds. 7 pieces of tufa.	
Floor 108 and top of Fl. 108	2099 2048 2049 2050 2051 2052 2053 2054 2055 2101	Well-preserved, fine-grained plaster floor 9 cm thick. Munsell 10YR 8/2	74 unslipped body sherds, 4 polychrome body sherds, 4 red slipped body sherds. 5 unslipped jar necks, 2 polychrome rims, 2 unslipped rims, 1 red slipped base. Eight clusters of ceramic sherds were identified and collected separately from other top of Floor 108	2 Palmar Orange bowl rims, 3 Cayo Unslipped necks, 1 Cayo Unslipped jar rim, 1 Vaca Falls base.

			artifacts.	
Floor 109	2098	Well-preserved, fine-grained plaster floor 9 cm thick. Munsell 10YR 8/2	14 unslipped body sherds. Burnt plaster was found in this stratum, and a sample was taken for export.	
Fill 110	2102	Dark soil fill with charcoal flecks. Munsell 10YR 4/2	1 charcoal sample taken. 3 unslipped bases, 11 unslipped body sherds, 2 red slipped body sherds, 2 unslipped necks, 3 unslipped bowl rims, 2unslipped jar rims.	
Fill 111	2097	Dark soil fill with no charcoal inclusions. Munsell 10YR 3/2	22 body sherds, 6 with red slip. 3 polychrome bowl rims, 1 orange paste jar rim, 1 unslipped bowl rim.	1 Dos Arroyos bowl rim, 2 Palmar Orange bowl rims

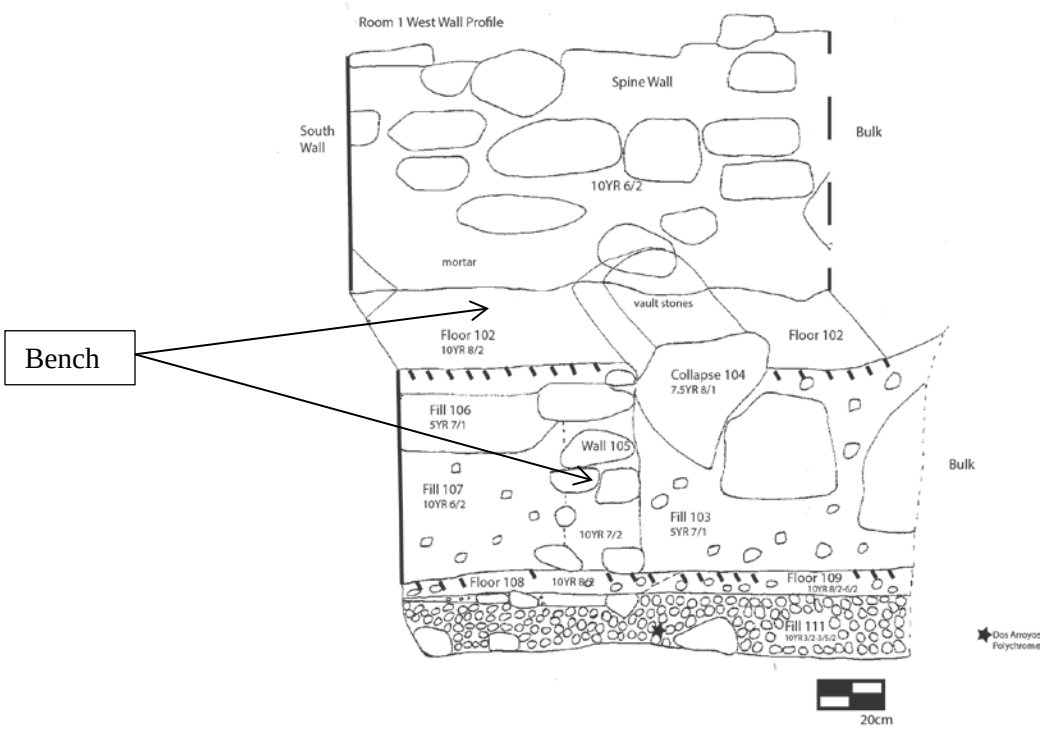

Figure 2.3 Room 1 West wall profile (top) and photo of profile (bottom) showing the bench in the left hand side of both images.

Once the topsoil was removed, we put in a 1 m wide trench running north-south through the center of the room (see Figure 2.2). Although we did not reach sterile soil in Room 1, we did find what appears to have been an earlier (although still Late Classic II/Terminal Classic) construction phase of the temple. In the southern half of Room 1, we encountered a bench, which is one of the earliest construction phases built by the Maya. The bench, along with Room 3 Wall 105 (which I discuss later), was built either as part of an earlier construction of the temple or to support the construction fill as well as the walls and floors the Maya later built over these earliest features. The bench consists of Wall 105 and was covered with Wall 102 to create a flat upper surface (see Figure 2.3). The Maya covered the bench face with a thin layer of plaster, and created Floor 102 from a 9 cm thick layer of high-quality, fine-grained plaster. We initially thought that the bench was possibly an Early to Late Classic construction phase; however, further excavation revealed that both constructions date to the Late Classic II/Terminal Classic. On top of Fl. 102, we encountered a deposit of Cayo Unslipped and Alexanders Unslipped jars, which may have been placed there by the Maya as a termination offering when the temple was abandoned. Within the bench, we excavated two fills, Fill 106 and Fill 107. Fill 106 was directly below Floor 102. Fill 107, a darker, rockier stratum below Fill 106 and above Floor 108. It is unclear why the Maya chose to use two different construction fills in the bench. The fill within the bench included both Cayo Unslipped jars and Belize Red bowls. These artifacts place the construction of the bench and the collapse above it in the same time frame, and demonstrate the short time span in which the Maya built, used, and abandoned Str. 1. Below the bench, on top of Floor 108, we found a Vaca Falls bowl base. This massive base, which likely came from a bowl some 40-50 cm in diameter, similar in size and shape to the Jaguar Vessel base described later, suggests that the Cara Blanca Pool 1 Structure 1 was home to large gatherings of people, as larger vessels are used in larger social gatherings (LeCount 2001; Mills 2007).

Another significant find was the Early Classic Dos Arroyos plate cache found in Fill 111, below Floor 108 (Figure 2.4). The plate, with its exterior applique button and geometric polychrome design, links the water temple to the temporally and spatially distant Early Classic Petén. While it is tempting to say that the plate was part of an Early Classic construction, we found it in the same

context as Cayo Unslipped jar sherds. The Maya deliberately included this Early Classic vessel in a Late Classic II/Terminal Classic construction.

Figure 2.4 Dos Arroyos cache plate from Room 1 Fill 111, below Floor 108

The plate is most likely an Early Classic dedicatory cache that was reaccessed and reincorporated into a new Late Classic II/Terminal Classic structure (Eleanor Harrison-Buck and Astrid Ringgaldier, personal communication 2014). The plate appeared to have a fresh break, and likely was broken during excavation. In this case, it is possible that the Dos Arroyos plate was interred intact, and that the remainder of the plate was in the unexcavated construction fill.

On the northern half of the trench, we excavated through clayey soil fill (Fill 103) and limestone roof vault collapse (Slab Collapse 104) to the base of the bench. Below the fill was a floor (Floor 109) that extended at the same level as Floor 108. Although we later realized that Floor 108 and 109 are the same floor, we chose to separate the two because their ballasts were different. While Floor 109 has the ballast more typical of our excavations with greyish soil and cobbles, Floor 108 has a ballast with fewer cobbles and was slightly thicker. Below Floor 109 lay Fill 110, a dark construction fill that may have been the same as Fill 111, as the boundary between the two was indiscernible. Throughout our Room 1 excavations, we found a pattern of difference between the northern and southern halves of the room. It remains unclear why the Maya differentiated between the two halves of the room; however, we consistently found that there were different fills and ballasts separating apparently connected architectural features. The most notable difference between the northern and southern halves of Room 1 was the bench that abutted slab collapse to the north. Why does Room 1 show so much segmentation when the other rooms we excavate seem to have been fairly coherent surfaces? Perhaps future excavations at other Pool 1 structures will help us to understand the differentiation we see within Room 1.

Room 2

Jeannie Larmon and Zach Nissen ran the excavation of Room 2, with assistance from Stanley Choc. At the end of our 2013 season, we had begun to expose the east wall, which appeared to have collapsed outward from its original line. Later we discovered that the east wall was in fact a lower wall similar in height to the lower 'veranda' wall that forms the western edge of Room 3 and southern edge of Hallway 4. Once the topsoil was removed, we put in a trench 1 m wide trench running north-

south through the center of the room (see Figure 2.2). This trench was in-line with the Room 1 trench, although the two units were divided by the room diving wall between Rooms 1 and 2. We excavated eight contexts in Room 2, reaching the sterile soil on which the first construction phase of the temple was built, Topsoil 108 (Table 2.2, Figure 2.5).

Table 2.2 Room 2 Stratum Descriptions for 2013 and 2014 seasons

Stratum	Catalog No.	Description	Artifacts	Ceramics
Topsoil 101		Dark, organic soil with limestone vault stone collapse. Dark soil is intermixed with greyer flecks of degraded limestone. Munsell 10YR 2/1	See Lucero 2014; appendix	See Lucero 2014; appendix
Bulk 102		Not taken	Artifacts include ceramic rim, neck, and body sherds. Bulk 102 includes ceramic clusters placed at the base of the room dividing wall on the north side of the room. Lithics include blue chert chunks. See Lucero 2014; appendix	See Lucero 2014; appendix
Bulk 103		Not taken	See Lucero 2014; appendix	See Lucero 2014; appendix
Floor 104	2009	Well-preserved, fine-grained plaster floor 5cm thick. 10YR 6/2	Body sherds: 7 red slip orange paste, 1 unslipped orange paste Lithics: 24 burnt limestone, 2 blue chert, 7 red limestone, 4 red chert	No identifiable ceramic types
North Tunnel	2113	Not taken	253 unslipped body sherds, 13 red slip body sherds, 29 unslipped neck sherds, 14 unslipped rim sherds. 4 freshwater shells.	14 Cayo Unslipped jar rims, 29 Cayo Unslipped jar necks. Unslipped body sherds are from Cayo Unslipped jars.
South Tunnel	2088	Not taken	44 unslipped body sherds, 3 unslipped necks, 3 unslipped rims. 1 freshwater shell.	3 Cayo Unslipped jar rims, 3 Cayo Unslipped jar necks. Body sherds from Cayo Unslipped jar.
Floor 105	2019 2020 2021 2022	Well-preserved, fine-grained plaster floor, Munsell 10YR 6/2	No artifacts were recovered.	
Ballast 106	2007 2030	Soil and cobble ballast, 0.13m thick. Munsell 10YR 7/2	25 unslipped body sherds, 2 red slip body sherds, 3 unslipped necks, 1 red slip rim, 3 unslipped rims. 3 red chert chunks, 5 blue chert chunks, 2 pieces fine-grained limestone.	1 Sibun Red Neck jar rim, 1 possible Humes Bank jar neck, 2 Cayo Unslipped jar rims.
Fill 107	2031	1.7 m thick layer of fill of large cobbles, very little soil and few artifacts. Munsell 10YR 4/2	27 unslipped body sherds, 1 brown slip body sherd, 8 red slip body sherds, 5 red slip rims, 6 unslipped rims. Three pieces of marine shell from the same shell were recovered. A collection of lithics was taken from the fill and includes limestone, red	3 Sibun Red Neck jar rims, 5 Cayo Unslipped jar rims, 1 Tu-tu Camp Striated jar rim, 1 Dolphin Head Red plate rim, 1 Roaring Creek Red bowl rim. 1 possible Minanha dish or plate rim.

			and blue chert, and red and blue geodes.	
Topsoil 108	2100	Sterile clay loam topsoil. Some artifacts fell through from Fill 107. Munsell 10YR 4/2-5/2	1 unslipped neck, 3 unslipped rims.	3 Cayo Unslipped jar rims.

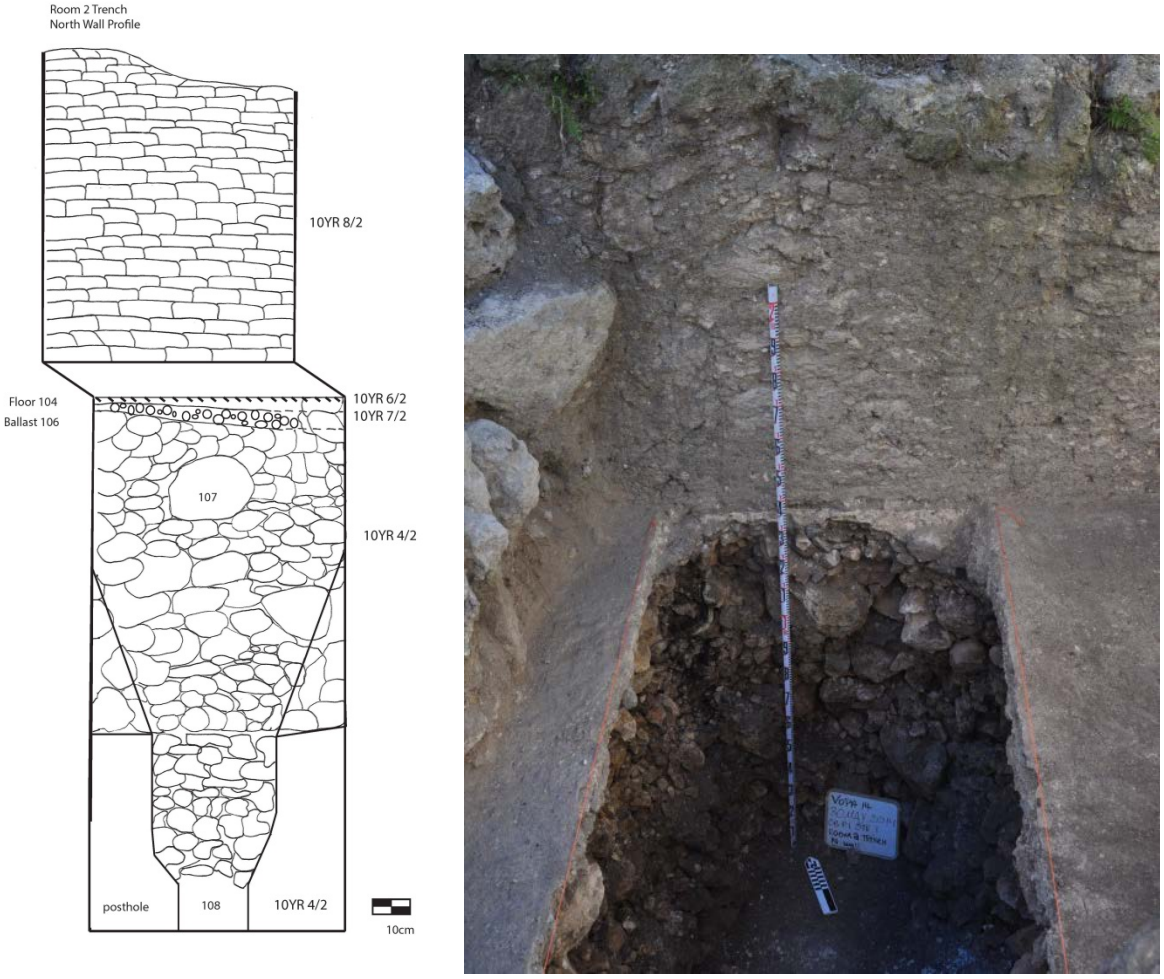

Figure 2.5 Room 2 Trench North Profile. The boulder in Fill 107 is visible in the center of Fill 107, below Fl. 104.

Based on physical comparison, we determined that Topsoil 108 is the original surface that the Maya cleared to build Str. 1. The Maya prepared the surface for building Str. 1 by cleaning the existing topsoil and then built up the foundation of the temple with rocky fill. We placed a posthole in the sterile topsoil, but were unable to get further than .25 m deep as cobbles from Fill 107 fell into the posthole test. On top of the original topsoil, the Maya placed a 1.7 m deep layer of construction fill (Fill 107) consisting of rocky cobbles with a few artifact inclusions. We did not find many artifacts in the uppermost .75 m of Fill 107, suggesting that the Maya used a clean fill for construction. Fill 107, together with Fill 106, appear to have been placed in a single building event. Fill 107 was made of diverse rocks including red and blue chert, limestone, and geodes. Did these different stones come from diverse places? We observed the local stone visible in the ravine that

leads down to Pool 1, and while we found white and yellow limestone, there were no apparent local outcrops of red or blue chert. The fill was strikingly red-the lithic and ceramic components of the fill appear to have been chosen for their color. Construction Fill 107 had very few ceramics, but the pottery we found were almost exclusively red (Figure 2.6). While red-slipped ceramics are an important part of the overall Cara Blanca assemblage, no other stratum drew our attention for its monochromatic quality. I was able to identify Cayo Unslipped jars in every context of Room 2 except for Construction Fill 107, which had very few ceramics. Those sherds we did recover were from Roaring Creek Red and Dolphin Head Red vessels, rather than the usual unslipped jars. Construction Fill 107 was interesting stratum for several reasons. While Cara Blanca is notable for the nearly complete lack of the black slipped wares typical of the Terminal Classic, the artifacts included in Fill 107 seemed to have been intentionally selected for their red color. Additionally, a single marine shell was recovered from Fill 107. The fill, both lithic and ceramic, was dominated by red materials (chert, limestone, and sherds) that must have been deliberately selected. Additionally, we recovered only a few small pieces of tufa, in addition to one large boulder, in the fill. This contrasts strongly with Room 3 fill, which included large slabs of tufa. We found Tu-tu Camp and Cayo Unslipped jars just above the sterile topsoil below Fill 107, again demonstrating that the earliest construction of the temple was in the Late Classic II or Terminal Classic.

Marine shell is an exotic item evocative of the sea and of water, fertility, and life. For the hinterland Maya of central Belize, marine shell would have been a significant item, and not easily acquired or parted with. Two charcoal samples were also recovered from Fill 107 (See Table 1.2 for full description). One sample dated to the end of the Early Classic, 428-597 C.E., and may come from burned material that was reaccessed and incorporated into the construction fill along with Late Classic II and Terminal Classic materials.

Fig 2.6. Room 2 Trench Fill 107 red rims (left) and lithics (right). Types include Dolphin Head Red, Roaring Creek Red, and Sibun Red Neck. Note the similarity in color between ceramics and lithics.

Together with Fill 107, Ballast 106 was built to support Floors 104 and 105. Ballast 105 was dense with artifacts, including Terminal Classic Sibun Red Neck and square-lipped Cayo Unslipped jars. Both red and blue chert chunks were recovered from Ballast 106, reinforcing the color symbolism of water and life. A single charcoal sample was taken from Ballast 106 (see Table 1.2). Like the Fill 107 sample, this charcoal dated to the end of the Early Classic, 429-617 C.E., and may have originated in an Early Classic cache that was incorporated into the fill. Although we are unable to obtain an absolute date on the Dos Arroyos plate cache in Room 1, we can speculate that the Early Classic dates in Room 2 are the result of the Maya incorporating earlier materials along with the Terminal Classic ceramics we excavated.

The Maya built Floor 104/105 on top of the initial construction fills. Floor 104 is a 5 cm thick plaster floor made of fine-grained plaster that covers all but the easternmost edge of the room. Floor 105 was built along the eastern edge of Room 2 and slightly overlaps Floor 104. As the trench was placed in the center of the room, we did not excavate Floor 105; however, we did take four charcoal samples from the floor. Three of the charcoal samples dated to after the nuclear era (post-bomb) and cannot be exactly dated, while the fourth sample was a dark, metallic material rather than charcoal. Chapter 1 Table 1.2 explains these samples in greater detail. Floor 104 abuts Floor 102 in Hallway 4 via a doorway in the southeast corner. In the doorjamb we found a shaped, plastered stone we dubbed the 'stela stone' (see below).

A series of ceramic clusters was placed on top of Floor 104, at the base of the room dividing wall on the northern edge of Room 2. In 2013, we recovered three clusters (Clusters 1, 2, and 3) (see Lucero 2014, Table 1.1, below), and an additional two ceramic clusters (Clusters 4 and 5) were recovered this year. These clusters form a line running East-West along the northern edge of Room 2, with Cluster 5 placed in the southeast corner of the room near the door to Hallway 4 (Figure 2.7). Interestingly, no clusters were recovered from the center of the room. The clusters seem to be marking north and south the way that the Hallway 4 clusters, discussed below, mark the southern edge of the hall.

Table 1.1 (from Lucero 2014) 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	*Pomacea* found at north wall over Cluster 3
	Groundstone	Mano (c. 70% complete), green/gray granite near Cluster 3

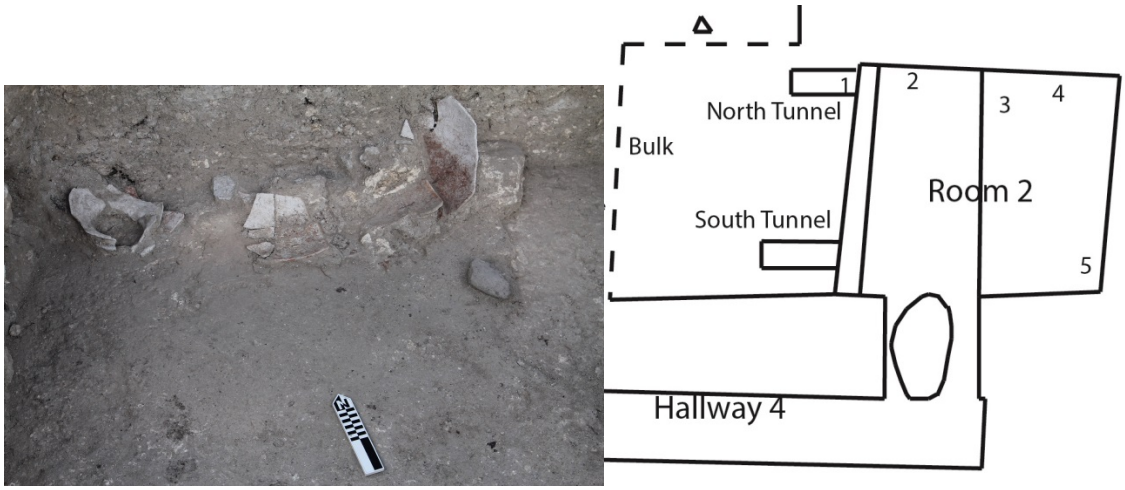

Figure 2.7 Room 2 Clusters. Left: Cluster 1-3 before removal. Right: Str. 1 plan view showing the location of Clusters 1-5 relative to the north and south walls of Room 2, as well as the tunnels into the bulk about Fl. 104.

Cluster 1 included 2 vessels, a Cayo Unslipped jar and a Dolphin Head Red: Silver Creek Impressed dish. Cluster 2 included a large Vaca Falls Red: Vaca Falls variety straight-sided bowl that refit with the Cluster 3 rim. Cluster 3 also included two vessels, a Vaca Falls Red: Vaca Falls variety bowl rim and several body sherds, as well as part of the Jaguar Vessel, a Fat Polychrome bowl that was originally identified as Indian Creek Polychrome. Indian Creek and Fat Polychrome are similar buff paste, orange, red and black slipped Terminal Classic polychromes (Harrison-Buck 2007:243-244). See Harrison (2014) and Lucero and Kinkella (2015) for images and further description of Clusters 1-3. This year, we recovered additional body and base sherds from the Jaguar Vessel in ceramic clusters placed in Hallway 4, which I discuss below. Clusters 4 and 5 were recovered this season, and were placed in-line with Clusters 1-3. Cluster 4 consisted of an unslipped dish rim and body sherds of an unknown type. Cluster 5 consisted of 21 unslipped body sherds that appeared to have come from a large jar, likely Cayo Unslipped (Figure 2.8)

Figure 2.8 Room 2 Clusters. Clockwise from top left: Cluster 4 in situ in NE corner, Cluster 5 in situ in SE corner, Cluster 5 artifacts, Cluster 4 artifacts

The surface of Room 2 was also covered by Topsoil 101, a layer of topsoil and limestone vault stones. Below Topsoil 101 were Bulk 102 and Bulk 103. Bulk 102 covered most of Floor 104 and was adjacent to Bulk 103, which covered the eastern edge of the room above Floor 105. These layers of collapse and bulk were excavated in 2013 and contained a mixture of Terminal Classic and Late Classic II ceramics, primarily Cayo Unslipped jars, and chert chunks (see Harrison 2014; Lucero 2014).

We additionally tested the north east armature of Room 2 in the hopes of finding the east wall. While we did not find the wall we expected, Stanley found a much lower wall that was similar

in height to the veranda wall on the exterior of Hallway 4 and Room 3. He also found a Palmar Orange polychrome bowl in the wall armature (Figure 2.9), which is a Terminal Classic trade ware indicating long-distance interactions with the site since it comes from northern Belize (Harrison-Buck 2007:254).

Figure 2.9. Palmar Orange polychrome from Room 2 NE armature

On the final day of the season, Zach Nissen and Erin Benson put in two small tunnel excavations into the bulk on the western side of Room 2. These tunnels, on the north and south side of the room, were just above Floor 104. In the north tunnel, two Terminal Classic clusters were found at the base of the spine wall, in line with the four clusters we encountered in 2013 (see Figure 2.7 and Figure 2.10). The northern cluster included at least two Cayo Unslipped jar rims, one of which was inverted.

Figure 2.10. Left: Cayo Unslipped jar cluster from North Tunnel. Right: North Tunnel at NW corner of Room 2

This cluster is likely a part of the 2013 Cayo Unslipped jar cluster that was not exposed in our previous excavations (see Harrison 2014). The north tunnel cluster raises an intriguing question: does the line of clusters extend the entire length of the northern wall of Room 2? If so, was Room 2 a focus of ritual activity during the termination of the temple? Are the Room 2 clusters and the Str. 3 sherd blanket (see below) part of the same termination or were Strs. 1 and 3 terminated in separate events? The southern tunnel also included a cluster, this one another Cayo Unslipped jar. Both tunnels yielded small amounts of freshwater snail shells.

Room 3

Excavations in Room 3 began with Jose Vasquez and Juan Antonio Lopes, who located the floor below the collapse (Floor 102). The topsoil was rich with significant artifacts, including one particularly beautiful pink and blue chert biface (Figure 2.11).

Figure 2.11 Chert Biface from Room 3 collapse

A Palmar Orange Polychrome rim found in the collapse and Belize Red rims found on top of Fl. 102 date the collapse to the Late Classic II or Terminal Classic. The vault stones included in the collapse seemed to be almost intentionally placed, further supporting our interpretation of the ritual de-animation of Str. 1. On top of Floor 102, Jose found a single ceramic cluster placed in the northeast corner of the room. This cluster consisted of an incomplete Belize Red plate (Figure 2.12).

Figure 2.12 Belize Red plate rims from the top of Room 3 Floor 102

Floor 102 is the same floor found in Hallway 4 Floor 102 (see below), although the floors are separated by a looters trench. Once we had cleared the floor, which was a fine-grained plaster surface some 9 cm thick, Ernesto Vasquez and I took over the excavations. In total, we excavated eight strata, which are described in Table 2.3.

Table 2.3 Room 3 Stratum Descriptions for 2013 and 2014 seasons

Stratum	Catalog No.	Description	Artifacts	Ceramics
Topsoil 101	2010	Dark, organic soil with limestone vault stone collapse. Dark soil is intermixed with greyer flecks of degraded limestone. Munsell 10YR 4/2	46 unslipped body sherds, 1 brown slip body sherd, 6 red slip body sherds. 1 polychrome rim, 2 red slipped bowl rims. 2 pieces burnt tufa. Three pieces of blue chert were also recovered, as well as a blue and red chert biface and two pieces of burnt tufa.	1 Palmar Orange bowl rim, 2 Belize Red bowl rims.
Floor 102	2057	Well-preserved	22 unslipped body sherds, 29 red	1 Belize Red plate (Cluster

and top of Fl. 102	2058	plaster floor of fine-grained plaster 9 cm thick. Munsell 10YR 8/2	slip body sherds, 2 unslipped rims, 7 red slipped rims, 1 polychrome rim. 2 freshwater shells, 4 chert flakes.	1), 1 Cayo Unslipped jar rim, 1 Palmar Orange bowl rim.
Fill 103	2084 2085	Dry, fine, crumbly clay loam. Large inclusions of cobbles and tufa, some is burnt. Fill 103 is 1.10m thick. Munsell 10YR 6/2	2 ring bases, 1 unslipped and 1 red slip. 8 red slip body sherds, 26 charred body sherds, 90 unslipped body sherds, 21 unslipped necks, 9 unslipped rims. 5 freshwater shells, 3 marine shells, 1 marine shell plug, 1 chert flake.	11 Cayo Unslipped jar necks, one with nail incisions. 2 Sibun Red Neck jar rims. 6 Tu-tu Camp Striated jar rims. 1 Alexanders Unslipped jar rim.
Step 104	Not assigned	Well-preserved, fine-grained plaster 7 cm thick over Wall 105. Munsell 10YR 8/2	No artifacts were recovered.	
Wall 105	2087	Rectangular limestone blocks covered with well-preserved plaster 1.15m tall. Munsell 10YR 8/2	5 unslipped body sherds.	
Fill 106	2086	Dry clay loam with fewer cobble inclusions, 3.33 m thick. Munsell 10YR 4/2	1 red slip ring base, 1 unslipped ring base, 69 charred body sherds, 47 unslipped body sherds, 14 unslipped necks, 1 red slipped neck, 1 charred neck. 6 red slip rims, 28 unslipped rims. 1 freshwater shell. 1 small fragment of human bone. 1 firecracked chert.	1 Sibun Red Neck jar necks, 2 jar rims. 5 Cayo Unslipped jar necks, 19 jar rims. 1 Alexanders Unslipped jar rim, 4 Belize Red dish rims.
Floor 107	Not assigned	Well-preserved, fine-grained plaster floor. Munsell 10YR 8/2	No artifacts were recovered.	
Fill 108	Not assigned	Dark, clayey soil. Munsell 7.5Y 3/2	No artifacts were recovered.	

We put in a 1 m wide trench running east-west through the center of the floor, perpendicular to the spine wall and the Room 1 trench (see Figure 2.2), in order to gain a different perspective on the construction history. This strategy proved to be fruitful, as we quickly discovered an earlier construction beneath the spine wall that would have been missed had we placed a north-south trench in the room (Figure 2.13)

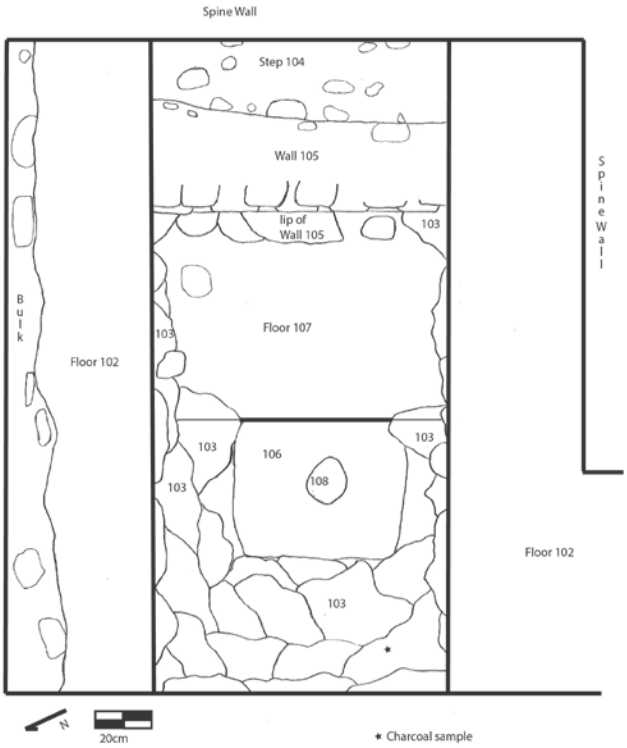

Figure 2.13a Room 3 Plan view, Wall 105 is the earlier construction

Figure 2.13b Left: Room 3 Trench. The earlier construction is visible below the spine wall. Right: Marine shell plug found in Fill 103.

Directly beneath the spine wall, we encountered a 7 cm thick plaster surface (Step 104) that was laid on top of a 1.15 m tall wall, Wall 105. The wall ran north-south and was in-line with the spine wall between Rooms 1 and 3. Wall 105 was made of rectangular limestone blocks faced with a thin layer of plaster. A plaster floor of unknown thickness (Floor 107) extended to the west at the

base of Wall 105, and abutted sterile topsoil (Fill 108). Figure 2.13 shows the wall and floor from the west looking east.

Although the wall was built before the spine wall, it appears to be a late construction (Brett Houk, personal communication, 2014). I excavated the wall for an hour on the final day in the field, but was only able to recover five body sherds, apparently from an unslipped jar. The wall seems to be associated with the bench we found in Room 1, which dates to the Late Classic II/Terminal Classic, but the five body sherds that I removed from the wall are unidentifiable and we cannot be certain about the chronology of Wall 105. We were also unable to determine the relationship between the wall and the Room 1 bench, as the floor below Wall 105 is 1.35 m lower below datum than Room 2 Floor 108, the lowest floor in Room 2.

The remainder of the trench revealed two layers of construction fill below Floor 102. Directly below Floor 102 was Fill 103, a 1.10 m thick layer of cobbles and tufa. Fill 103 was significant for two reasons: one, while tufa is common in the collapse, the Maya do not use it as fill in other contexts (Lucero 2014); and second, there were significant areas of burning in Fill 103. We took one charcoal sample from Fill 103, but lab analyses determined that it was a different material and could not be dated (see Table 2.1). All of the ceramics we recovered from Fill 103 were jars, including Terminal Classic Cayo Unslipped and Sibun Red Neck, and Late Classic II/Terminal Classic Cayo Unslipped, Alexanders Unslipped, and Tu-tu Camp Striated. One of the Cayo Unslipped jar necks had nail incisions, which is unusual although Gifford describes such decoration on a single vessel of Cayo Unslipped: Variety Unspecified (Buff) (Gifford et al. 1976:279). While there were slipped body sherds, we recovered no slipped diagnostics from this fill. A single chert flake was recovered from the fill, as were three pieces of marine shell. The marine shell appears to have been burned, perhaps in the same fire that charred the limestone and tufa. Perhaps the most distinctive artifact in the fill was a marine shell plug, which is the only offering of personal adornment we find at Str. 1 (see Figure 2.13).

Below Fill 103 and above Floor 107 and Fill 108 was a second layer of darker clay loam construction fill. Fill 106 was an additional 3.33 m deep, and contained little tufa, although a few pieces of burnt tufa were recovered near the top of Fill 106. There was some burning in Fill 106, and we recovered a charcoal sample as well as 69 charred sherds. The Fill 106 sample turned out to be some other material, and could not be used for an absolute date (see Table 1.2); however, ceramic chronology places the fill in the Terminal Classic. A single freshwater shell and one firecracked chert chunk were recovered from the fill, along with one small fragment of bone that may have been human. Ceramics from this fill date it to the Terminal Classic with some Late Classic II vessels, including Cayo Unslipped, Alexanders Unslipped and Sibun Red Neck jars, as well as Vaca Falls Red dishes.

Hallway 4

Ernesto and Jose began Hallway 4 excavations, and were later joined by Zach and Jeannie. We only excavated two contexts in Hallway 4-Topsoil 101 and Floor 102 (Table 2.4). They followed Floor 102 across the extent of Hallway 4, looking for doorways and trying to understand the relationship between Rooms 2 and 3 to the north. What we had initially thought was a fourth room to the south of Room 2, and named Room 4 in the 2013 season, proved to be a narrow hallway leading from Room 2 to Room 3 along the southern edge of the temple. The hallway was built to both direct movement and confine sight, as there was only one doorway into the hallway in the southwest corner, and the hallway funneled people to Room 2 or Room 3. People who enter the narrow (~1 m wide) passage may move along the southern edge of the building, passing from Room 2 to Room 3 or vice versa. Within the hall, an individual's ability to see, and hear, would be restricted to glimpses and echoes at either end of the passageway. Near the southwest corner, the wall height drops from 2.36 mbd to 2.42 mbd. The lower wall probably continues the entire length of the western side, and may have served as a veranda or porch.

Table 2.4 Hallway 4 Stratum Descriptions for 2013 and 2014 seasons

Stratum	**Catalog No.**	**Description**	**Artifacts**	**Ceramic Types**
Topsoil 101	2011 2018	Dark, organic soil with limestone vault stone collapse. Dark soil is intermixed with greyer flecks of degraded limestone. Munsell 10YR 4/2	Body sherds: 33 tan paste unslipped, 1 tan paste red slip, 2 polychrome, 21 Tutu camp (5 fire clouded), 3 unslipped orange paste, 3 red slip tan paste, 27 Cayo Unslipped some fireclouding, 1 diagnostic (part of large steep sided bowl) red slip tan paste. Neck sherds: 17 tan paste unslipped. Rim sherds: 11 tan paste unslipped, 1 red slip tan paste, 1 degraded red slip tan paste with raised lip, 1 brown paste unslipped, 2 red slip tan paste, 2 red slip orange paste, 2 polychrome, 1 tan paste fireclouded. 1 piece of tufa, 1 possible speleothem, 3 blue chert chunks, 1 piece burnt chert.	Rims: 1 Vaca Falls bowl, 2 Palmar Orange bowls, 13 Cayo Unslipped jars, 1 Sibun Red Neck jar. Necks: 24 Cayo Unslipped jars
Floor 102 and Top Fl. 102	2059 2060 2061 2062 2063 2064 2103	Well-preserved plaster floor of unknown thickness. Munsell 10YR 8/2	Four ceramic clusters were found on top of Floor 102. No artifacts were recovered from Fl. 102.	Cluster A: 695 Cayo Unslipped body sherds, 1 orange paste unslipped body sherd, 2 grey paste unslipped body sherds 32 Cayo Unslipped necks, 5 Cayo Unslipped rim sherds, 1 Belize Red bowl rim. Cluster B: 2 Fat 20Polychrome 'jaguar vessel' bowl body sherds. Cluster C: 3 Fat Polychrome 'jaguar vessel' bowl base sherds. 2 red slipped body sherds. Cluster D: 5 Cayo Unslipped body sherds, 3 Cayo Unslipped rims. Stela step: 2 unslipped jar necks and 1 Belize Red plate rim.

The collapse covering the temple, the growth of several large trees, and southwest looters trench all combined to obscure the shape of the architecture until we removed all of the topsoil. A vault stone lay on top of several of the jars we found on top of Floor 102, and may have been deliberately placed or fallen during termination. Jeannie collected a soil sample from the sherd cluster. Topsoil 101 was the same as the collapse covering all of Str. 1, while Floor 102 was the same as Room 3 Floor 102. Although we did not excavate through Floor 102 in Hallway 4, we can assume it was the same 9 cm thick surface. Hallway connects Room 2 and Room 3 along the southern edge of the temple, although the juncture between Room 3 and Hallway 4 was destroyed by a looter's trench, which likely destroyed the entrance into the hallway. The doorway between Room 2 and Hallway 4 was marked with an undecorated stela shaped limestone block, dubbed the 'stela step' (Figure 2.14). Tucked between the stela step and the doorframe were several Cayo Unslipped jar necks.

Figure 2.14 Drone shot of Hallway 4, showing the step in the southwest corner of the hallway and connection to Rooms 2 and 3. A large, carved stone 'stela step' marks the doorway between Room 2 and Hallway 4.

The most common artifacts recovered from Hallway 4 were Cayo Unslipped and Vaca Falls Red vessels, mostly large unslipped jars with narrow orifices. Topsoil 101 included several small lithics, such as blue chert chunks and a single piece of burnt chert. We also found what seemed like a possible speleothem but turned out to be a different calcium carbonate formation. Perhaps the Maya, too, were struck by its resemblance to cave formations. In this case, it could have carried many of the same associations as speleothems. Regardless, the formation was surely charged with the same significance as the tufa that was placed on the temples surface (Lucero 2014). Sibun Red Neck jars date the collapse to the Terminal Classic, and a mix of Cayo Unslipped, Tu-tu Camp Striated, and Palmar Orange vessels were also included in the topsoil.

We also came upon four ceramic clusters, named A, B, C, and D (Figures 2.15 and 2.16). Cluster A consists of two nearly complete Cayo Unslipped jars and one Belize Red bowl. One of the jars was inverted.

Figure 2.15 Hallway 4 Clusters A, B, and C, seen from the north (top) and above (bottom). Note the location of the clusters in the southwest corner of Hallway 4, near the possible entry.

Figure 2.16 Clockwise: Hallway 4 Clusters A, B, C, and D. A and D are Cayo Unslipped jars, B and C are the Fat Polychrome jaguar vessel.

Cluster B included Fat Polychrome body sherds from the jaguar vessel we recovered in 2013. In the 2013 season, we recovered the first pieces of the jaguar vessel, a massive bowl some 45 cm in diameter, from Room 2 Cluster 3 (see Lucero 2014 for a discussion of the jaguar and water iconography). Our original find of three rim and five body sherds that refit to show the image of a jaguar and water iconography was originally typed as Indian Creek Polychrome; however, after discussion with Ellie Harrison-Buck we realized that the vessel is Fat Polychrome instead. These sherds come from the opposite side of the vessel, across from the jaguar head and forelimbs we found in 2013, and depict the legs and belly of a second jaguar. Like the first, the second jaguar is crudely drawn. The Fat Polychrome and crude jaguar design reflect a northern influence, whether the vessel was brought by travelers or comes from northern Belize (Harrison-Buck 2007: 244). The jaguar vessel was intentionally distributed between Room 2 and Hallway 4, and placed in the two areas of Str. 1 that have the most ceramic offerings. Cluster C was also Fat Polychrome, this time the base of the jaguar vessel. While the base does not refit to the body sherds we recovered, we know have an idea of what the vessel looked like from rim to base, as well as the design of both sides of the body. Figure 2.17 shows Joanne Baron's line drawing of the jaguar vessel. Finally Cluster D consisted of a partial narrow orifice Cayo Unslipped jar, characteristic of the Cara Blanca assemblage.

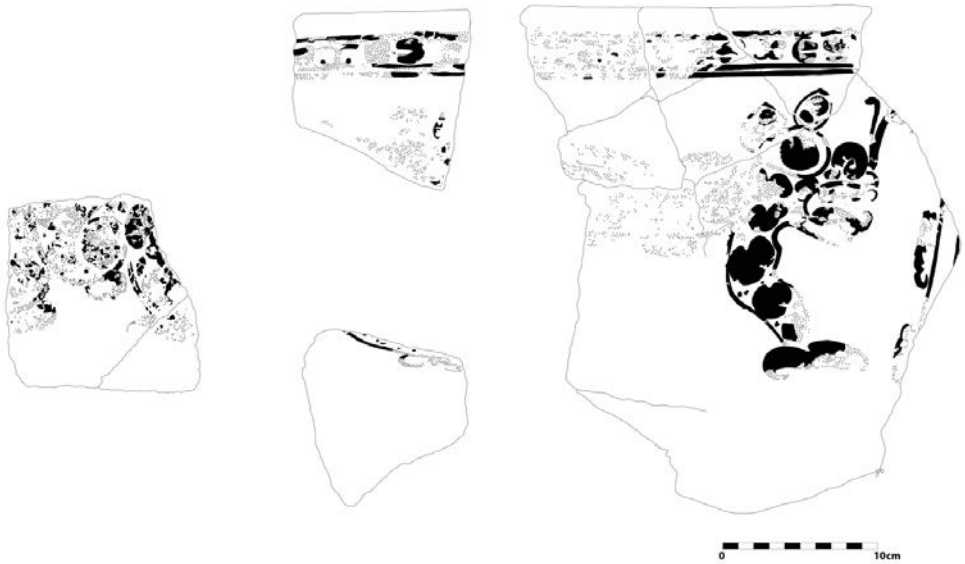

Figure 2.17 Joanne Baron's drawing of the jaguar vessel, showing the head and forelimb of one jaguar and torso of a second jaguar on the opposite side. The rim of the vessel is decorated with water iconography.

The clusters were tucked into what may have been an entry, at the southwestern end of the hallway. Were these clusters marking an exit? They were likely placed as part of the termination of the temple. These clusters, along with the Room 2 clusters, seem to mark important parts of the temple. We can imagine how the Maya placed the vessels as they moved through the temple in the process of ritually abandoning the sacred building. Significantly, we found no lithic artifacts on top of Floor 102-the Maya swept the floor clean before placing the jars and bowls that form the clusters.

Str. 1 Discussion

The Maya built Str. 1 in at least two phases, as revealed by Room 3 Wall 105 and the bench in Room 1. The Maya first built a small structure represented by Room 3 Wall 105, which they used to contain the deep construction fill (up to 1.7 m deep in Room 2). The lower floors of this earliest construction (Room 1 Floors 108 and 109, and Room 3 Floor 107) mirror the structure of the later construction. The spine wall was built directly over Room 3 Wall 105, and the Room 1 bench was covered by Floor 104. Although there are two distinct phases to Str. 1, both constructions date to the Late Classic II/Terminal Classic based on ceramic chronology.

The uppermost floors in each room (Floor 102 in Room 3 and Hallway 4, Floor 104/105 in Room 2 and Floor 102 in Room 1) were built at the same level, 2.2 m below datum. We were surprised by the quality of the building materials used in Str. 1. Most of the floors were 7 to 9 cm thick and made of a high-quality, fine-grained plaster over carefully prepared ballast. The one exception was Room 2 Floor 104, which was only 4 cm thick but was made with the same high quality plaster. Other Late Classic sites in the southern lowlands report average floor thicknesses of 5cm (Hansen 1998:55; Schwake 2008:126). The investment of labor and expensive materials in this remote temple hints at the importance of this site to the Maya who built and patronized the temple.

The inclusion of tufa in the building fill and in the termination (collapse) of Str. 1 is unique to the temple. Tufa was found in quantity in Room 3 Fill 103, comprised 15-20% of the Room 2 fill (Fill 106 and 107), and was present in Room 2 Fill 107. Tufa is a calcium carbonate similar to limestone, except that it forms in still bodies of water by precipitating around submerged objects. Divers have noted tufa present in Pool 1, and it is possible that the Maya took tufa from below the pool's surface to incorporate into the construction and termination of a temple that is otherwise built

of limestone. Lucero (2014) discusses the importance of tufa in great detail. Although tufa was present throughout our Str. 1 excavations, we did not find it at Strs. 2, 3, 4, or the Plaza test pit. Why did the Maya choose not to include tufa in their other constructions? The effort they took in procuring tufa and placing it within the living temple and on top of Str. 1 at its termination speaks to the special nature of the temple.

Although the ceramic assemblage is a mixture of Late Classic and Terminal Classic types, the temple can be roughly dated to the Terminal Classic. In 2013, we proposed that the temple was occupied during the Terminal Classic based primarily on surface artifacts. While the surface artifacts from each room, primarily Cayo Unslipped jars with squared, incised, or beveled everted rims, date to the Terminal Classic, this does not necessarily mean that the entire construction and use of the temple can be firmly placed at the end of the Classic period. The 2014 season revealed that the temple was indeed built, used, and abandoned during the Terminal Classic. Perhaps the strongest line of evidence for this comes from Room 2 Construction Fill 107, the lowest cultural level in the Str. 1 stratigraphy. Construction Fill 107 included a Roaring Creek Red bowl, Sibun Red Neck jar, Cayo Unslipped jars, and a Dolphin Head Red plate.

Although not every stratum we excavated can individually be dated to the Terminal Classic, basic archeological principles guide our interpretation of the structure's chronology. Many types that are part of the Terminal Classic ceramic repertoire, including Cayo Unslipped, Belize Red, Dolphin Head Red, and Mountain Pine Red, appear as early as the beginning of the Spanish Lookout phase. While we are careful to acknowledge the ambiguity of certain ceramic types as chronological markers, the presence of these types in the same contexts as Terminal Classic lip treatments, Sibun Red Neck jars, Roaring Creek Red vessels, Indian Creek and Fat Polychromes lends a level of certainty to our interpretation of Structure 1 as a Terminal Classic temple.

In 2014, we recovered a total of 2,239 sherds, bringing the sherd count for both seasons to 4,753. This total includes all rims, necks, body sherds, handles, feet, and special sherds we recovered. As with the 2013 season, the majority of the ceramics we recovered from our Structure 1 excavations were unslipped jars with large bodies and narrow orifices. Almost every context we excavated included Cayo Unslipped jars. In addition to the ubiquitous water jars, the assemblage included a distinct style of Vaca Falls bowls with a midbreak. These distinct features were shared by the ceramic assemblage of Pool 20, suggesting that the Cara Blanca occupation is defined by certain traits: the predominance of unslipped jars and a preference for a distinctive midbreak bowl shape. We also found that volcanic ash temper is much more common than anticipated, even in Late Classic assemblages. While common types such as Belize Red are manufactured with ash temper throughout Belize, the use of ash temper in Cayo Unslipped is unexpected and suggests that these jars are more important than the unslipped jars found elsewhere (Gifford et al. 1976:278).

2013 and 2014 Pool 1 Ceramics

Now I will present a statistical analysis of the ceramic assemblages of Pool 1 Strs. 1, 3, 4, and the Plaza Test Pit. The analysis examines the orifice diameters of rim and neck sherds, the frequency of vessel forms (jar, dish, bowl, and plate), and the frequency of ceramic types. The comparison of Pool 1 ceramics is followed by a comparison with Pool 20 structure M208. As I will discuss below, Pool 20 is an interesting comparison to Pool 1 for several reasons, primarily its location near (but not adjacent to) a pool, its chronological and spatial relation to Pool1, and its ritual role.

Pool 1 Structure 1

The 2013 report (Harrison 2014) presented summaries of vessel distribution and sizes. Now that we have completed two seasons of excavations and ceramic analysis at Structure 1, these statistics can be updated to better reflect the entire occupation of the temple. The following table (Table 2.5) presents updated ceramic statistics for 2013 and 2014 combined. In the analysis, I use

only diagnostic sherds that can be indicative of individual vessels-unrefittable necks and rims. Refitted rim and neck sherds come from the same vessel and are counted as a single artifact.

Table 2.5 Str.1 Orifice Diameters (2013 and 2014)

Vessel Type	**Average Orifice Diameter (cm)**	**Orifice Diameter Range (cm)**	**Total Count**
Jars	19.05	10-45	131
Necks	25	15-40	119
Dishes	40.3	25-50	13
Plates	35.7	29-55	15
Bowls	29.8	10-50	17

*One Tu-tu Camp Striated and one Alexanders Unslipped jar, 15 and 28 cm orifice diameters respectively, were excluded from the above table.

**2014 necks were measured; we did not measure the 2013 necks.

We were unable to take an orifice diameter measurement on many of the diagnostics we recovered, which accounts for the difference in total sherds measured for the orifice diameter and vessel form distributions (Figure 2.18). The 131 jar rims had an average orifice diameter of 19.3 cm, with a range from 10 – 45 cm. The 17 bowl rims had an average orifice diameter of 29.8 cm, with a range from 10-50 cm. The 15 plates had an average orifice diameter of 35.7 cm and ranged in size from 29-55 cm. Finally, the 13 dishes had the largest orifice diameter of 40.3 cm with a range from 25-50 cm.

The jars are mostly large-bodied, wide-orifice jars, and the serving vessels (dishes, plates, and bowls) are suitable for large numbers of people. LeCount (1996:245) notes that narrow orifice jars have an average rim diameter of 10 cm, while wide orifice jars have an average rim diameter of 23 cm. Although the Cara Blanca jars are relatively wide, most fall below the 23 cm threshold. Of the 73 total Cayo Unslipped jars, only 5 (6.85%) have orifice diameters over 25 cm. When we take the average of the 68 that are 25 cm or smaller, the average orifice diameter is 18.2 cm. For the 60 Cayo Unslipped jars under 25 cm, the average is 17.3 cm. Of the 13 total dishes, only 3 have orifice diameters less than 40 cm. The average orifice diameter for the 10 dishes that are 40 cm or greater is 44.5 cm. When we eliminate the plates that are under 40 cm, the average size is 44 cm. Finally, for bowl over 25 cm, the average orifice diameter is 37.5cm.

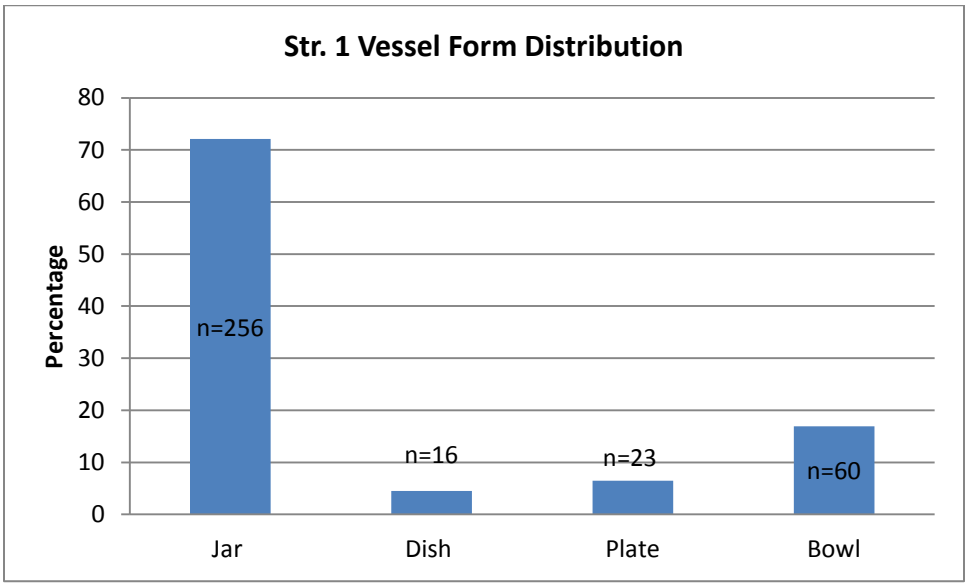

Figure 2.18 Str. 1 Vessel Form Distribution (n=355)

The Str. 1 assemblage is composed predominantly of jars (72.11%), with bowls (16.90%), plates (6.48%), and dishes (4.51%) accounting for the remaining vessels. We were able to determine vessel form for 355 vessels total between the 2013 and 2014 seasons. In the 2013 report, I found that the assemblage consisted of 58.51% jars, 20.21% bowls, 12.77% plates, and 8.51% dishes (Harrison 2014). Our second season of excavations reveals that jars play an even more important role in ritual life at Cara Blanca than we had originally thought.

The Cara Blanca ceramic assemblage is clearly not residential. In fact, the vessel counts and sizes are quite different from what we would expect in a typical central Belizean Classic Period household (Lucero 2001:15). The narrow orifice of the jars suggests that they were used to contain liquids; further, there is no evidence that the vessels were used for cooking. The lack of charring or visible residues suggests that these jars were primarily used to store water, perhaps for use in water-related ceremonies in the temple. Conversely, the large rim diameter of most of the plates, bowls, and dishes indicates that these vessels were used to serve large numbers of people. Food for use in rituals was likely prepared near the temple, however, the lack of evidence for a hearth and relative absence of cooking vessels indicates that cooking was not a common activity at Str. 1. While these conclusions are in keeping with our 2013 findings, the repeated pattern indicates that Str. 1 did not serve different purposes over its life span. Ritual events at Str. 1 likely occurred over a short span of time and for similar purposes.

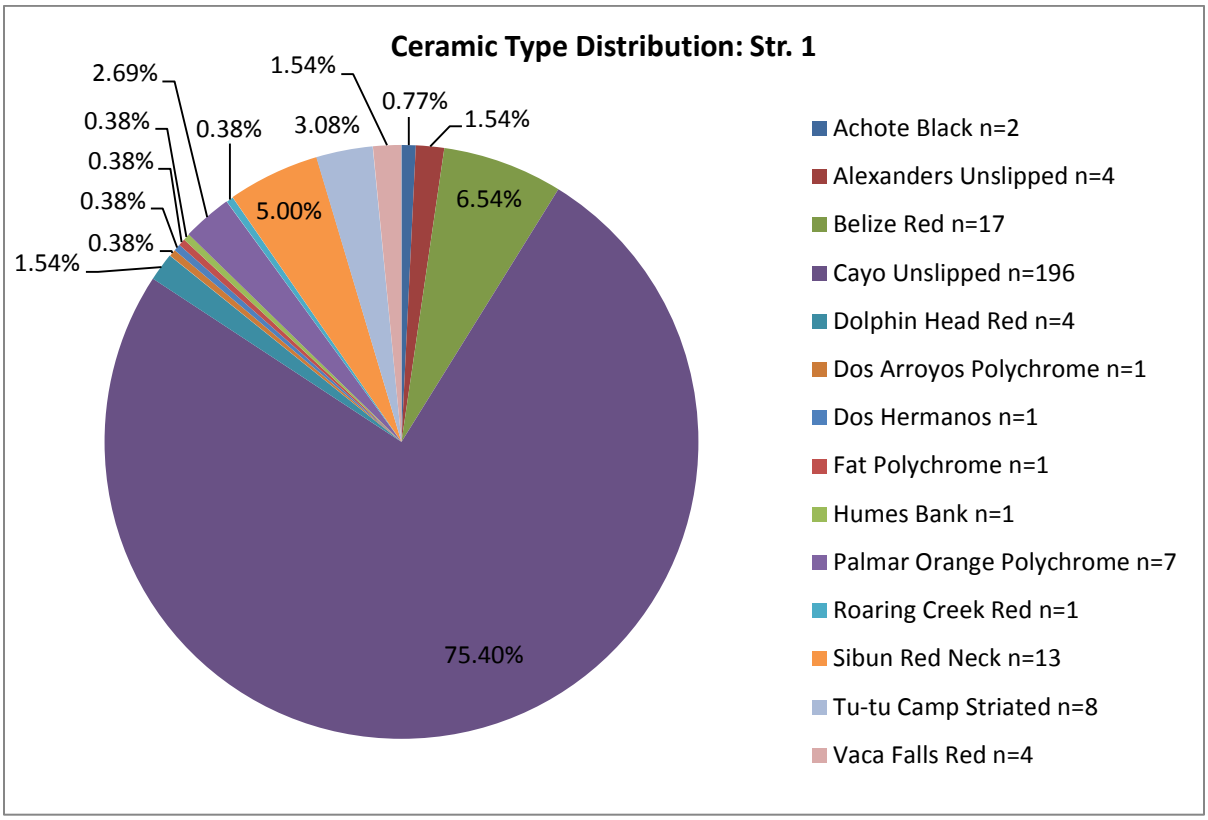

Figure 2.19 Str. 1 Ceramic Type Frequencies (n=260)

Analysis of the ceramic types included rim and neck sherds only. Although Str. 1 had better preservation than Strs. 3, 4, Plaza TP, or Pool 20 M208, many of the diagnostic sherds we recovered could not be typed due to preservation, which accounts for the discrepancy in frequency between ceramic form and ceramic type distributions. We were able to type 260 vessels over the course of two field seasons (Figure 2.19). The vast majority of the Str. 1 vessels were Cayo Unslipped jars, which account for over 75% of the assemblage. Belize Red and Sibun Red Neck vessels each

account for more than 5% of the assemblage, while all other types account for less than 5% of the total typed vessels. Of the slipped vessels, all but two are red-slipped types. Conspicuously absent are the black-slipped types such as Mount Mahoney Black and Achote Black. While we only recovered four Vaca Falls Red bowls at Str. 1, our excavations throughout Cara Blanca are marked by the presence of a distinctive mid-break Vaca Falls Red bowl form (Ellie Harrison-Buck, personal communication, 2014).

Pool 1 Structure 3

Str. 3, a 5.2 x 1.8 m platform, is situated 5 meters south of Pool 1 and 20 meters to the east of Str. 1. The platform surface was entirely covered in sherds (Figure 2.20). We recovered 3,826 sherds in the final afternoon of excavation. The platform was divided into three areas: north, center, and south. While there was burning across the platform, the northern zone was most significantly burnt, even charred. Because of this charring, many of the sherds recovered from the northern part of the platform were unidentifiable.

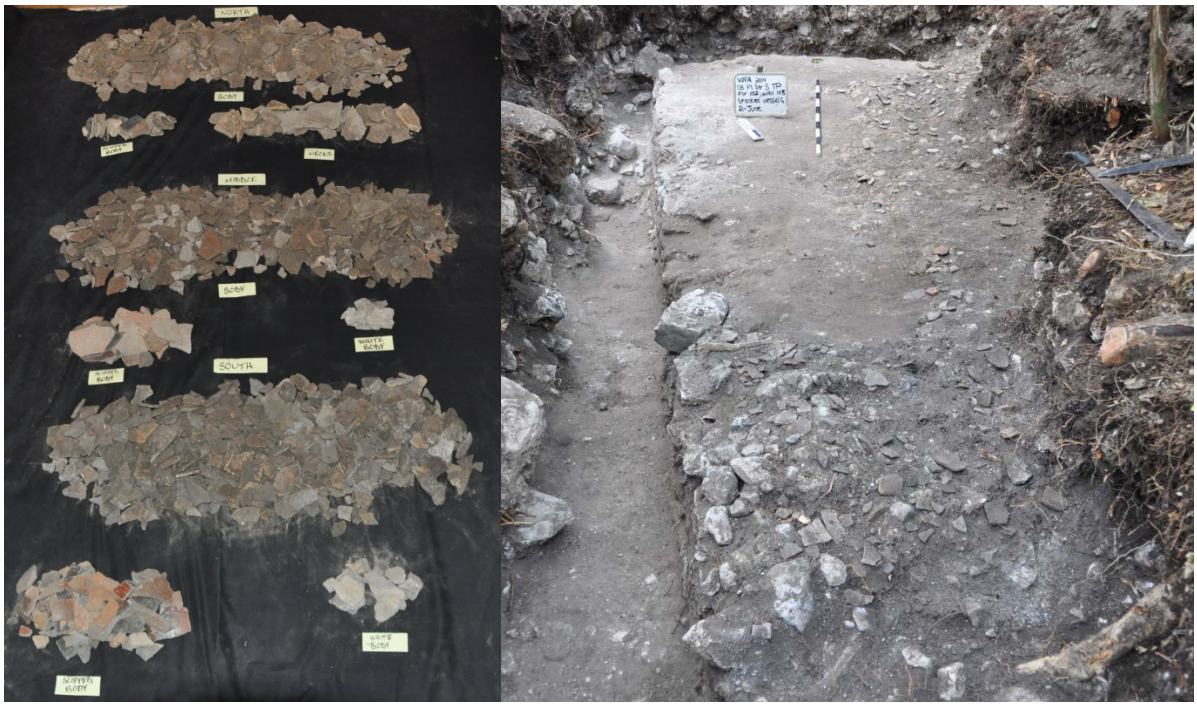

Figure 2.20. Left: Str. 3 sherd blanket ceramics organized according to where they were recovered (North, Center, South). Right: Str. 3 sherd blanket in situ.

Figure 2.21 presents the distribution of vessel forms based on the identifiable rim and neck sherds recovered from Str. 3.

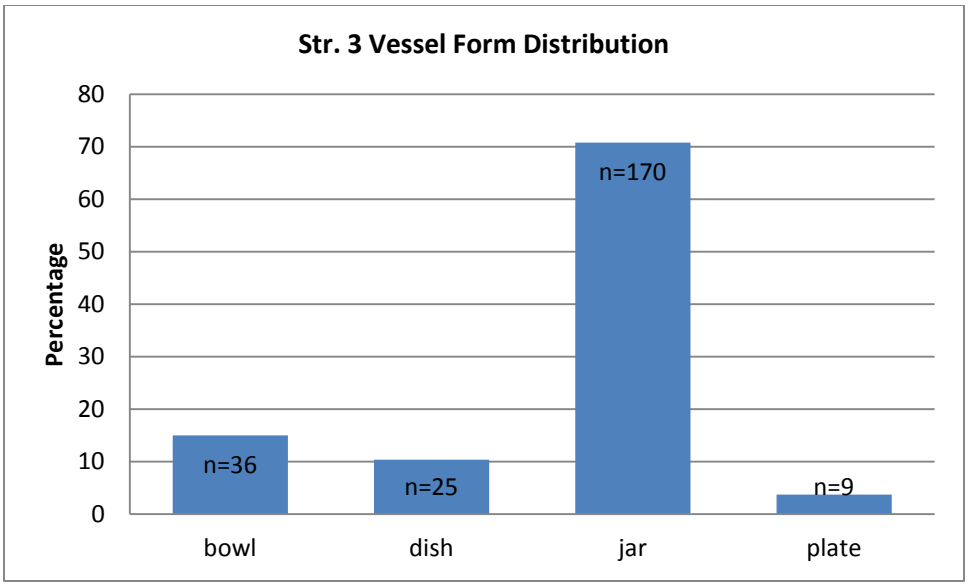

Figure 2.21 Str. 3 Vessel Form Distributions (n=240)

The Str. 3 ceramic assemblage consisted of 287 jar rims and necks (70.83%), 36 bowl rims (15.00%), 25 dish rims (10.42%), and 9 plate rims (3.75%). The vessel form percentages are similar to those of Str. 1, suggesting they served similar and related purposes for the Maya who built and used these ritual structures.

Figure 2.22 shows the average orifice diameter for each vessel form recovered at Str. 3. The analysis was based on all rims and necks that were large enough to be measured.

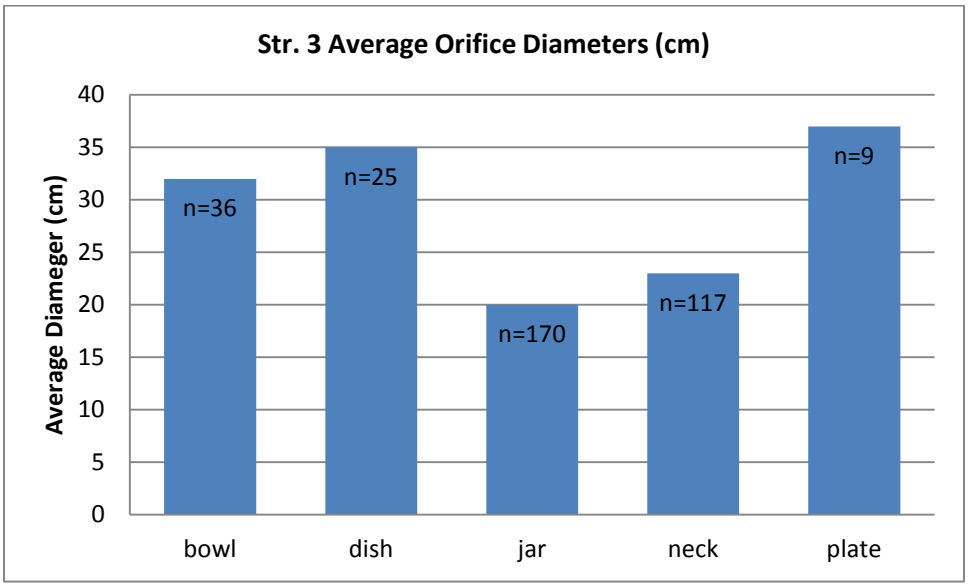

Figure 2.22 Str. 3 Orifice Diameters (n=357)

Plates had the largest average orifice diameter (37 cm), followed by dishes (35 cm), and bowls (32 cm). The jar rims and necks are fairly constricted, 20 and 23 cm respectively. This is comparable to the Str. 1 jar orifices, and suggests that the Str. 3 jars were likely used to contain liquid rather than dry goods. The large orifice diameter of plates, dishes, and bowls also suggests that they were used to serve large groups of people rather than smaller, more intimate groups or individuals.

Although we recovered some 3,826 sherds from Str. 3, the sherds were charred and poorly preserved compared to Str. 1, and we were only able to type 90 of the rim and neck sherds. Figure 2.23 provides a full analysis of the distribution of ceramic types. As with Str. 1, we find that Cayo Unslipped jars dominate the assemblage (68%). Red slipped types compose the majority of the remaining assemblage, particularly Mountain Pine Red (26%). We recovered a single black-slipped sherd and two orange-slipped rims.

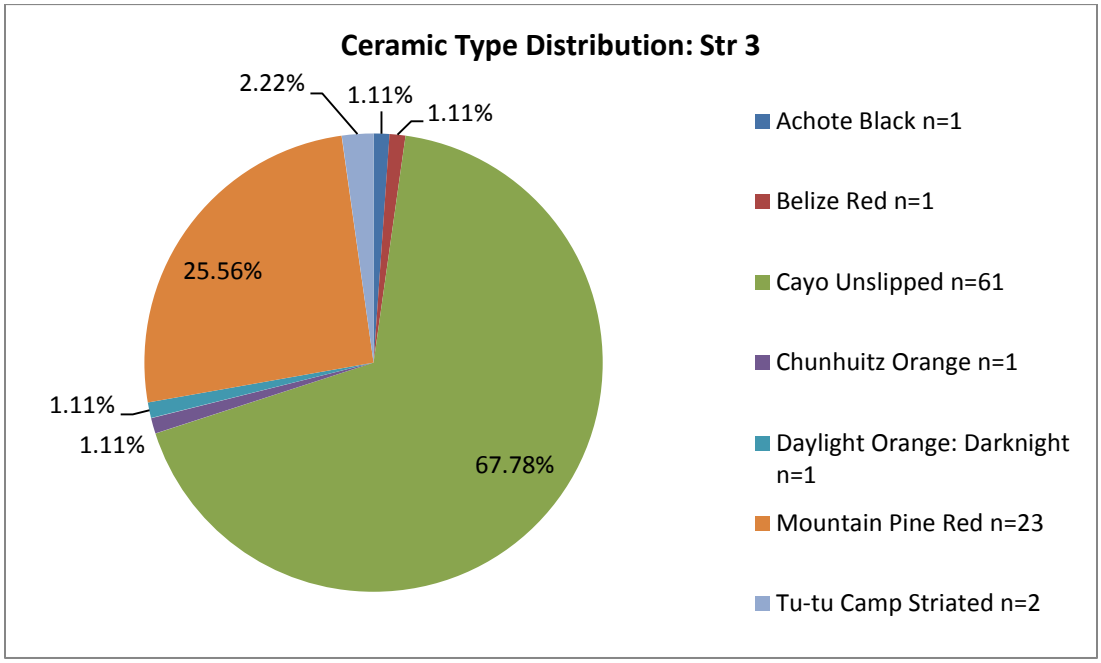

Figure 2.23 Str. 3 Ceramic Type Frequencies (n=90)

While Str. 1 is characterized by well-preserved volcanic ash tempered sherds, the ceramics of Str. 3 are poorly preserved, with more calcite temper. The sherds I was able to identify with the help of Ellie Harrison-Buck and Astrid Ringgaldier dated to Late Classic II/Terminal Classic. The Str. 3 assemblage included Mountain Pine Red, Roaring Creek Red, Cayo Unslipped, Tu-tu Camp, and Chunhuitz Orange sherds. While many of these types span the Late Classic and Terminal Classic, the lip treatments of the Cayo Unslipped are indicative of the Terminal Classic (Gifford et al. 1976:278; Harrison-Buck 2007:232-235). Some of the jars showed a merging of typical Tu-tu Camp and Cayo Unslipped traits, an innovation that we do not see elsewhere at Cara Blanca (Figure 2.24).

Figure 2.24 Cayo Unslipped jar rim with blended traits.

The vessel in Figure 2.24 has a buff paste and vertical striations typical of Tu-tu Camp Striated, but has a long neck and squared lip more indicative of Cayo Unslipped (Gifford et al. 1976:278). Do these blended vessels indicate that people were sharing ideas and interweaving local traditions guiding the proper way to shape and create pottery types? Without chemical provenience studies we can only suggest that people came to Cara Blanca and created a world that was familiar, but new.

Pool 1 Structure 4

We tested Structure 4 with a test pit through the center of the structure, and excavated a total of two strata (see Figure 2.1). In topsoil 101, we recovered a number of lithics, including a metate fragment, chert flakes and chunks, and some burnt limestone (see Chapter 1 Table 1.1). Sibun Red Neck jars date the topsoil to the Terminal Classic. Below the topsoil was Fill 102, a clayey organic stratum of unknown depth. Fill 102 also included chert chunks, as well as the rim of a Mountain Pine Red plate and Sibun Red Neck jar neck. Although we only spent a few days working at Str. 4, the assemblage stands apart from those of Strs. 1 and 3. Str. 4 yielded far more lithic artifacts than the other Cara Blanca contexts, and the vessels were massive and thick-walled compared to our other ceramics. The most striking Str. 4 ceramics are two Sibun Red Neck jars with orifices of 55 and 60 cm, respectively (Figure 2.25).

Fig. 2.25. Str. 4 Sibun Red Neck jar

Compared to the Str. 1 neck orifice average of 25 cm, Str. 4 is quite distinct. Ceramic chronology places Str. 4 in the same time frame as Strs. 1 and 3, as a Mountain Pine Red plate was recovered, along with Sibun Red Neck jars. Figure 2.26 shows the distribution of vessel forms based on identifiable rim and neck sherds recovered from Str. 4.

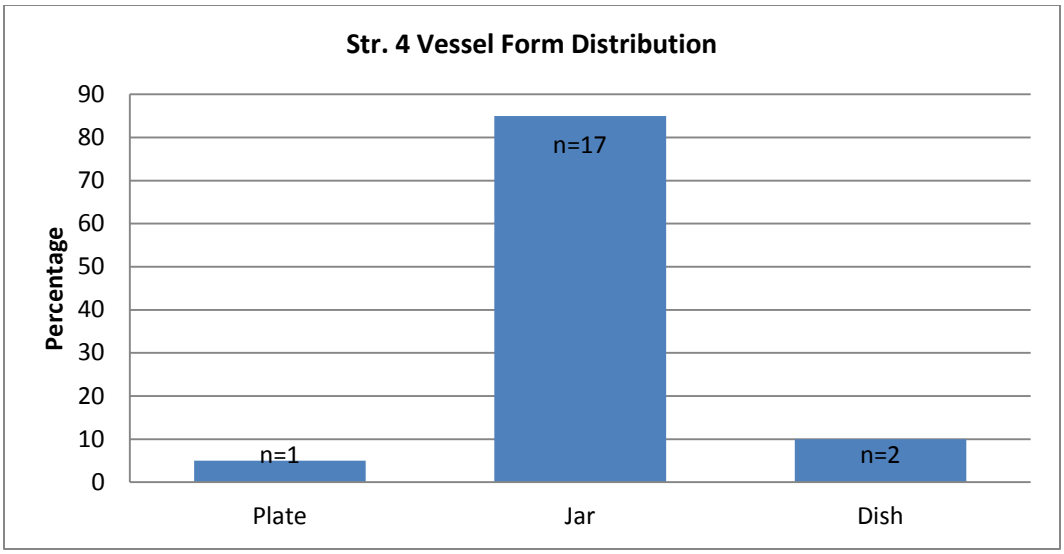

Figure 2.26 Str. 4 Vessel Form Distribution (n=20)

Of the 20 vessels, 17 are jars (85%), two are dishes (10%), and one is a plate (5%). While the data is skewed by the small number of vessels recovered, it is clear that the Str. 4 assemblage is dominated by jars.

The poor preservation of Str. 4 ceramics hinders our ability to fully understand the structure. We were only able to take an orifice diameter measurement on five sherds, which were thicker and more massive than the rest of the Pool 1 assemblage (Figure 2.27). The jar necks, in particular, were 20 cm larger than the average for Strs. 1 and 3, although the dish and plate orifices are in keeping with the rest of our Pool 1 excavations.

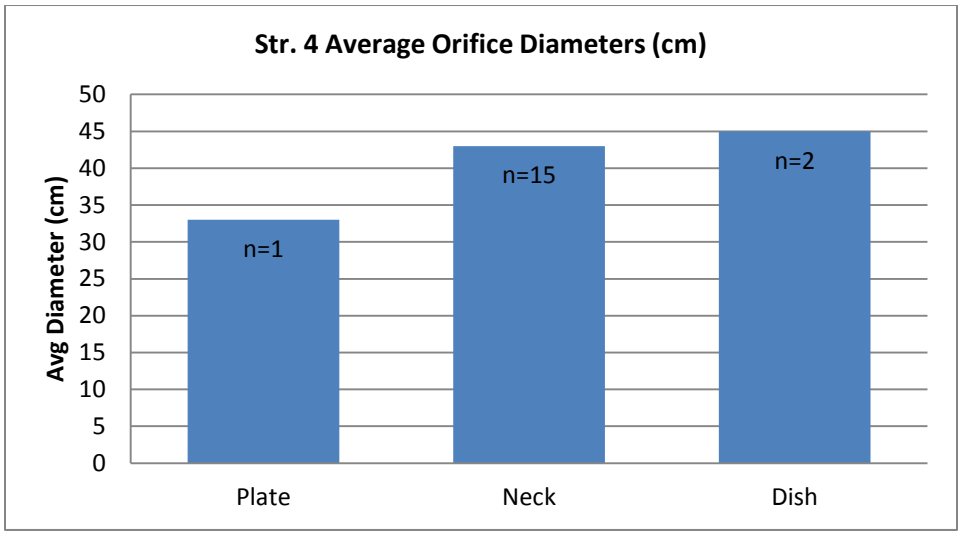

Figure 2.27 Str. 4 Orifice Diameters (n=18)

. Analysis of type frequencies is also limited by the number and preservation of sherds recovered (Figure 2.28). We were only able to type nine rims and necks, all of which were red slipped. Sibun Red Neck jars account for 89% of the assemblage, with Mountain Pine Red making up the remaining 11%.

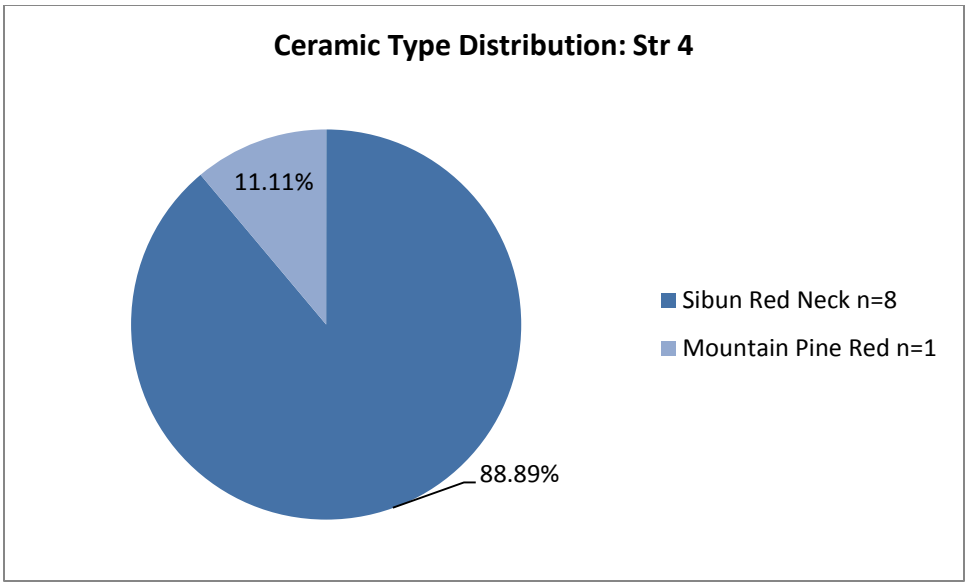

Figure 2.28 Str. 4 Ceramic Type Frequencies (n=9)

We were able to recovered several lithic artifacts as well as 57 ceramic sherds. Chapter 1 Table 1.1 lists the artifacts in detail. The occupation of all Cara Blanca Pool 1 structures is linked temporally. Our limited excavations suggest that Str. 4 may have been residential; however, we can only speculate on the use of Str. 4 based on the abundance of lithics, including a metate.

Pool 1 Plaza Test Pit

Finally, Zach Nissen and Marcos Choc excavated a 1x1 m test pit in the plaza between Structures 1 and 3 (see Chapter 3). The six strata excavated before reaching the water table all included Late Classic II/ Terminal Classic ceramics, indicating that the plaza and associated structures were all built and used in roughly the same time frame. Excavation revealed that the plaza is not an earlier construction to which Structures 1, 3, and 4 were added; rather the plaza was built when the rest of the settlement at Pool 1 was constructed. The topsoil (101) yielded Cayo Unslipped jar sherds, while a Belize Red Bowl was found on top of Floor 102. A final interesting aspect of the Plaza Test Pit ceramic assemblage is the unslipped, under-fired orange plate that was most likely quickly made for use in a ritual. The ritual in which the vessel was used is unclear; however, we can speculate that the plate was part of a dedication ritual marking the renewal of the plaza and its associated structures in between construction events. The overall ceramic assemblage was quite similar to those of Strs. 1 and 3 (Figure 2.29).

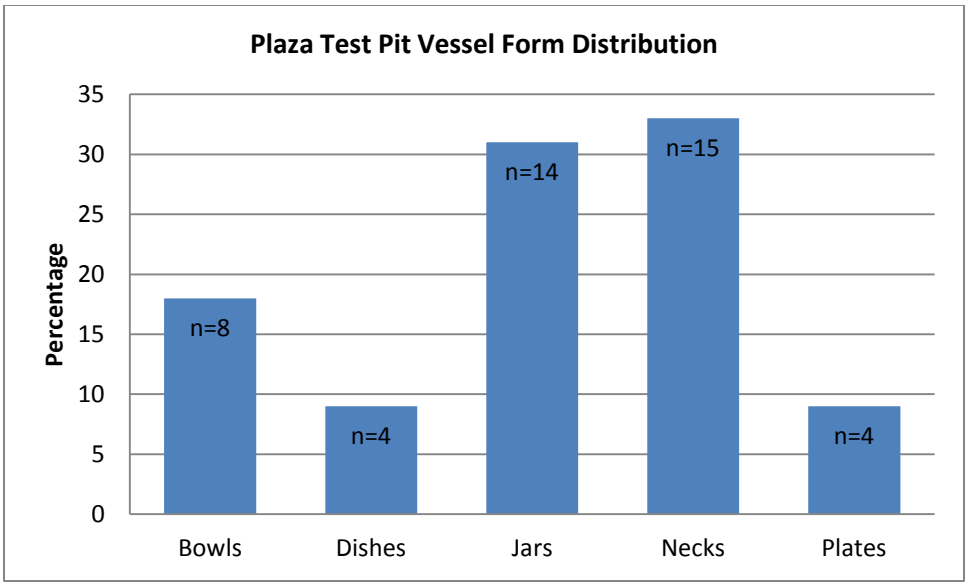

Figure 2.29 Plaza Test Pit Vessel Form Distribution (n=45)

Jars (both rims and necks) are the most common vessel form and account for 64% of the diagnostic sherds (rims and necks) recovered. Eight of the 45 diagnostics were bowl rims (18%), and there were four each of dish and plate rims (9% each). The large orifice diameters for the plaza test pit diagnostics also fit with our expectations for Pool 1 vessels (Figure 2.30). Orifice diameter was taken on 26 rims. Although an additional 19 diagnostics were recovered, the sherds were too small to be measured. The orifice diameters for the test pit are comparable to the average measurements for Strs. 1 and 3, suggesting that the same sizes of vessels were used in the plaza fill and in the construction fill of the two ritual structures. We were able to type 14 diagnostic sherds (Figure 2.31).

Analysis of the types present in the plaza test pit was based on those rim and neck sherds that could be identified. Of the 14 identifiable vessels, 11 were Cayo Unslipped (79%), two were Garbutt Creek Red (14%), and one was Belize Red (7%). In summary, the Plaza Test Pit ceramics suggest that there is a great degree of continuity among the Pool 1 excavations. The average orifice diameters and vessel distribution was quite similar to Strs. 1 and 3 (see above). Although we were unable to type most of the sherds we recovered, the ceramic type analysis reveals that most of the vessels were Cayo Unslipped. The plaza does differ from other Pool 1 excavations in terms of the quantity of artifacts recovered and number of types identified; however, these differences can be attributed to the fact that artifacts found in plaza fill are discarded and that the plaza was not a space for the ritual activities performed at the adjoining structures.

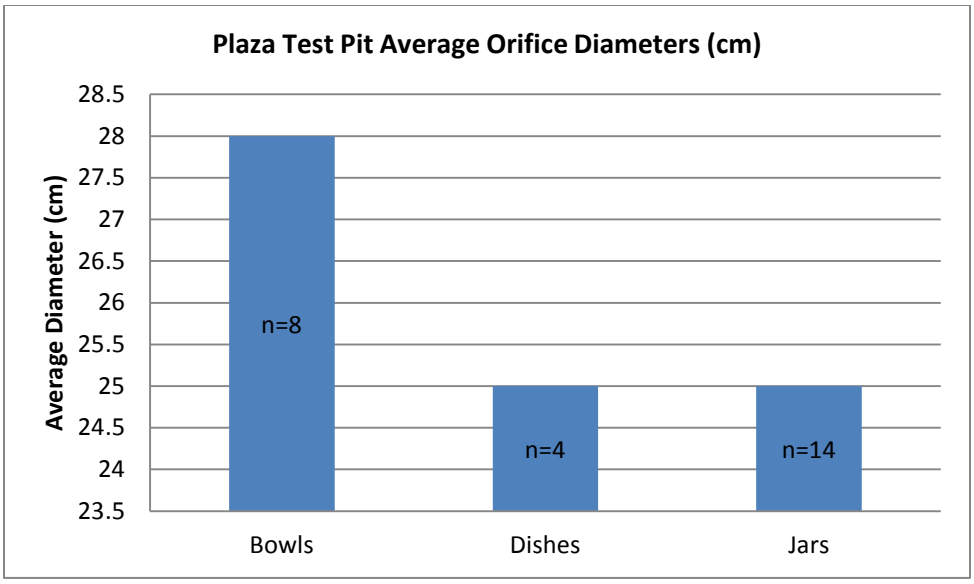

Figure 2.30 Plaza Test Pit Orifice Diameters (n=26)

*4 plate rims and 15 necks were also recovered, but were too fragmented to take an orifice measurement

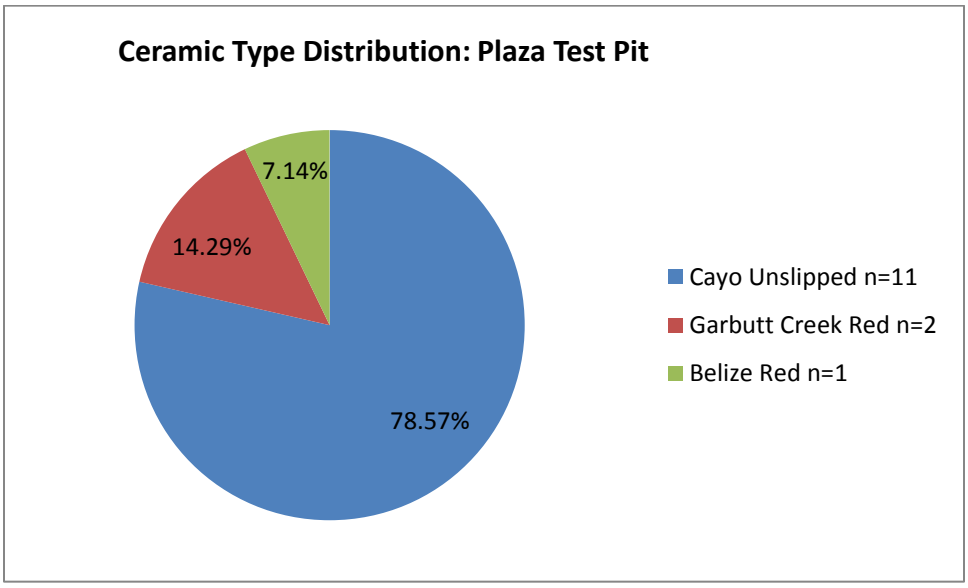

Figure 2.31 Plaza Test Pit Ceramic Type Frequencies (n=14)

Pool 1 and Pool 20 Ceramic Comparisons

In addition to our excavations at Pool 1, we also explored a second ritual structure at Pool 20, M208. Pool 20 is 45 m distant from Pool 1, and is a round, cenote-like pool in contrast with the more lake-like pools that are most common at Cara Blanca. M208 is near, but not adjacent to the pool. M208 is a large (38 x 26 m) 2 m tall platform with two structures on top of the platform, Structures 1 and 2. Like the Pool 1 structures, M208 appears to be ritual rather than residential, as I discuss below. Settlement at Pools 1 and 20 is both similar and yet distinct enough to create an interesting comparison of the two. What we found suggests that, while Pool 20 is less

To conduct this analysis, it is important to place the different assemblages in relation to one another because the superficial similarities between the two may mask important differences. In this discussion, I focus on the ceramic types and forms recovered at Pool 20 in comparison to Pool 1. In order to understand the Cara Blanca ceramic assemblage, I did a statistical comparison of the vessel form distribution of each structure. The results of this analysis are presented in the preceding section, but Table 2.6 summarizes the percentages for all Pool 1 excavations. Strs. 1 and 3 have similar assemblages, while Str. 4 and the Plaza Test Pit are distinct. Strs. 1 and 3 have nearly identical percentages of jars and bowls, but differ in that Str. 1 has more plates than bowls while Str. 3 has more bowls than plates. The plaza test pit assemblage has fewer jars than either Str. 1 or 3, although jars are still the most common vessel form.

Table 2.6 Vessel form distribution (%) across Pool 1 excavations

Form	Str. 1	Str. 3	Plaza TP	Str. 4
Jar	72.11 % n=256	70.83% n=170	64.00% n=29	85.00% n=17
Bowl	16.90% n=60	15.00% n=36	1.00% n=8	0.00% n=0
Plate	6.48% n=23	3.75% n=9	9.00% n=4	5.00% n=1
Dish	4.51% n=16	10.42% n=25	9.00% n=4	10.00% n=2

Further excavation at Str. 4 is needed to understand its purpose, but Str. 4 definitely stands apart from the other Pool 1 excavations both because of vessel size and distribution. This suggests that Strs. 1 and 3 are the focus of similar activities, while Str. 4 is something different- we need to further explore Strs. 3 and 4 to better understand why they were built and how the Maya used these buildings, although both Strs. 1 and 3 appear to have had similar ritual purposes.

Pool 20 M208

In 2014, we also excavated Pool 20 M208, a large platform with two structures on top (see Chapter 4). Our primary focus was Str. 1, on the northern edge of the platform. I will focus on the details of the Pool 20 excavations that are relevant to my discussion of the Pool 20 ceramics. For a full explanation of the artifacts recovered at Pool 20 M208, see Tables 4.1-4.13. Our Str. 1 excavations focused on the southern and eastern edges, as well as a 1 m wide trench running N-S following the stairs carved into the hillside. Str. 1 is a particularly interesting construction because it was built into the hill. While the Maya built retaining walls on the eastern and western edges of Str. 1, they did not build a northern or southern wall. Instead, Str. 1 is built into the natural hillside with little apparent construction fill. Unlike the Pool 1 Str. 1 ceramics, the ceramics of Pool 20 were extremely degraded. Sibun Red Neck jars were found throughout the Pool 20 M208 excavations. In the trench, we found either Saxche or Palmar Orange Polychrome sherds, dating the structure to the Late to Terminal Classic. Several distinctive Terminal Classic ceramic types were recovered, including one Daylight Orange: Daylight vessel and one Indian Creek polychrome vessel. These types place the occupation of Pool 20 M208 in the Terminal Classic, coeval with Pool 1 settlement (Figure 2.32). We additionally recovered a Vaca Falls dish rim that is similar to the distinctive mid-break dishes we found throughout the Pool 1 excavations (see Figure 4.26).

Figure 2.32 Daylight Orange: Daylight and Indian Creek rims from the Pool 20 M208 trench

A single sherd from a Runaway Creek: Red Lipped jar from the trench also places M208 in the Late Classic II/Terminal Classic period.

We encountered a single Early Classic dedicatory cache in the M208 Str. 1 trench that similar in many ways to the Pool 1 Str. 1 Dos Arroyos plate cache. In the Str. 1 trench, we found a Hermitage group basal flange dish that is likely a Minanha Red (Eleanor Harrison-Buck, personal communication, 2014) (Figure 2.33). Unlike the Str. 1 cache, the rim was found on the surface rather than in construction fill. How did and Early Classic vessel come to be on the surface of a Late Classic II/Terminal Classic structure? This vessel was likely an earlier dedicatory cache that was re-accessed and incorporated into a Terminal Classic structure. We see the ceremonial reopening and re-use of Early Classic caches at both Pool 1 and Pool 20, which speaks to the significance of the settlement as these pools.

Figure 2.33 Minanha dish rim from Str. 1 trench topsoil

As with our Pool 1 ceramic analysis, we took orifice measurements of all diagnostic rim and neck sherds that were large enough to be measured (Figure 2.34).

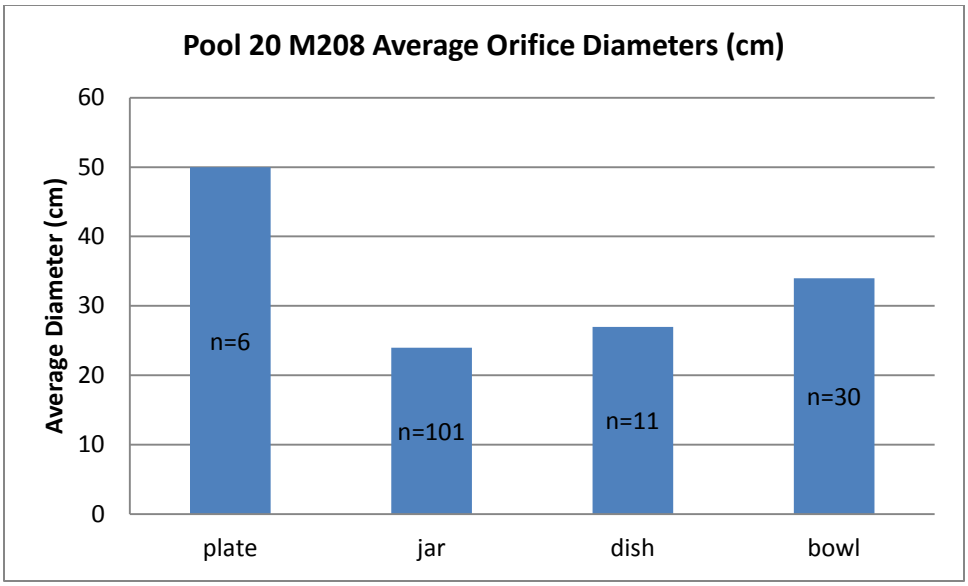

Figure 2.34 Pool 20 M208 Average Orifice Diameters (n=148)
*68 necks were also recovered, but were too fragmentary to be measured

We recovered a total of 203 rim and neck sherds, of which 148 could be measured for orifice diameter. Jars had an average rim diameter of 24 cm, dishes 27 cm, bowls 34 cm, and plates 50 cm. The average orifice diameters for jars are somewhat larger than that of the Pool 1 assemblages, while dishes are somewhat smaller. We also did a ceramic type analysis on the Pool 20 assemblage (Figure 2.35).

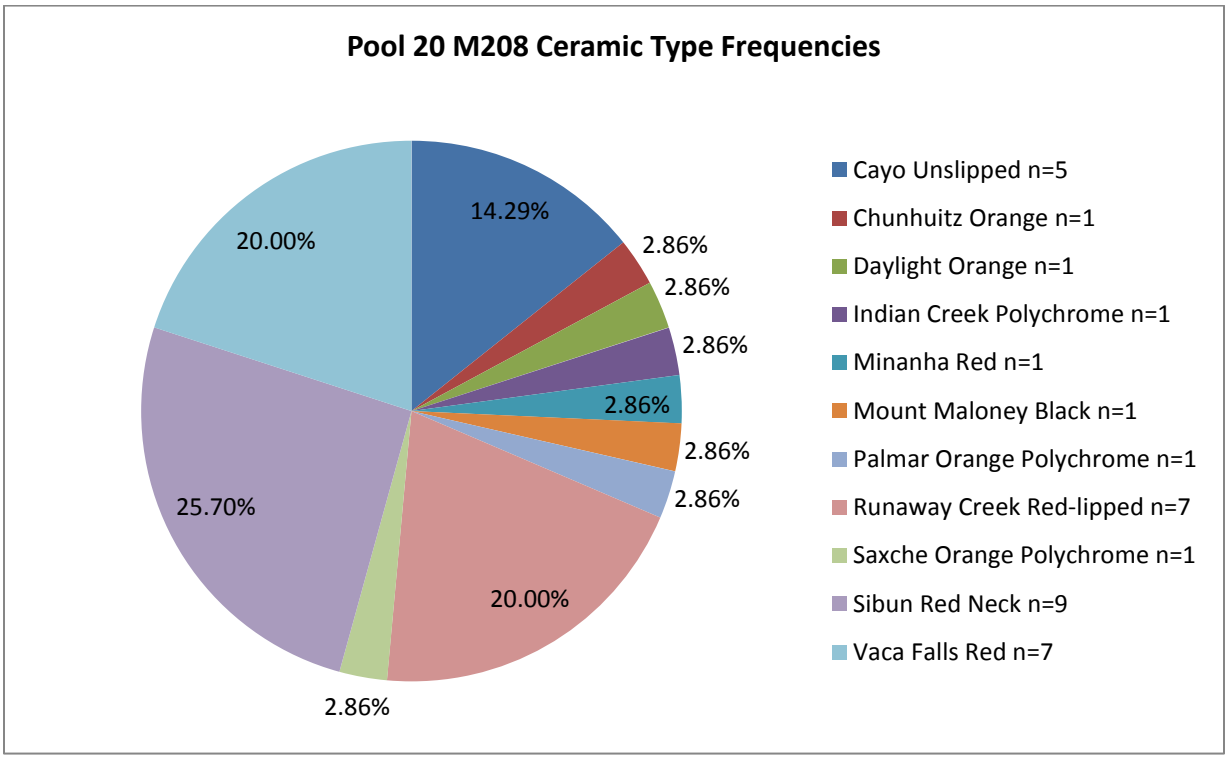

Figure 2.35 Pool 20 M208 Ceramic Type Frequencies (n=35)

This analysis looks at typed rim and neck sherds only to maintain consistency with our Pool 1 analysis. Many of the diagnostics we recovered could not be typed due to poor preservation of the Pool 20 sherds. While jars are the most common vessel form, I found that red-slipped types dominate the Pool 20 assemblage. Of the 35 vessels we were able to type, nine were Sibun Red Neck (25%), seven were Runaway Creek Red-lipped (20%), seven were Vaca Falls Red (20 %), and five were Cayo Unslipped (14.29%). A single vessel each of Chunhuitz Orange, Daylight Orange, Indian Creek, Minanha Red, Mount Maloney Black, Palmar Orange, and Saxche Orange were recovered.

As we see both in Chapter 4 and in the ceramic descriptions above, the settlements at Pool 1 and Pool 20 are strikingly different in vessel type frequencies and in the prevalence of slipped versus unslipped wares. Despite the different construction types at each pool, the settlements are clearly related based on the frequency of vessel forms and orifice diameters. When we compare the overall assemblages from Pool 1 and Pool 20, we can see several similarities and differences. The percentages of each vessel form are nearly identical. The Pool 20 assemblage consisted of 20% bowls, 8% dishes, 4% plates, and 68% jars, while the Pool 1 assemblage was composed of 20% bowls, 9% dishes, 6% plates, and 65% jars (Figures 2.36).

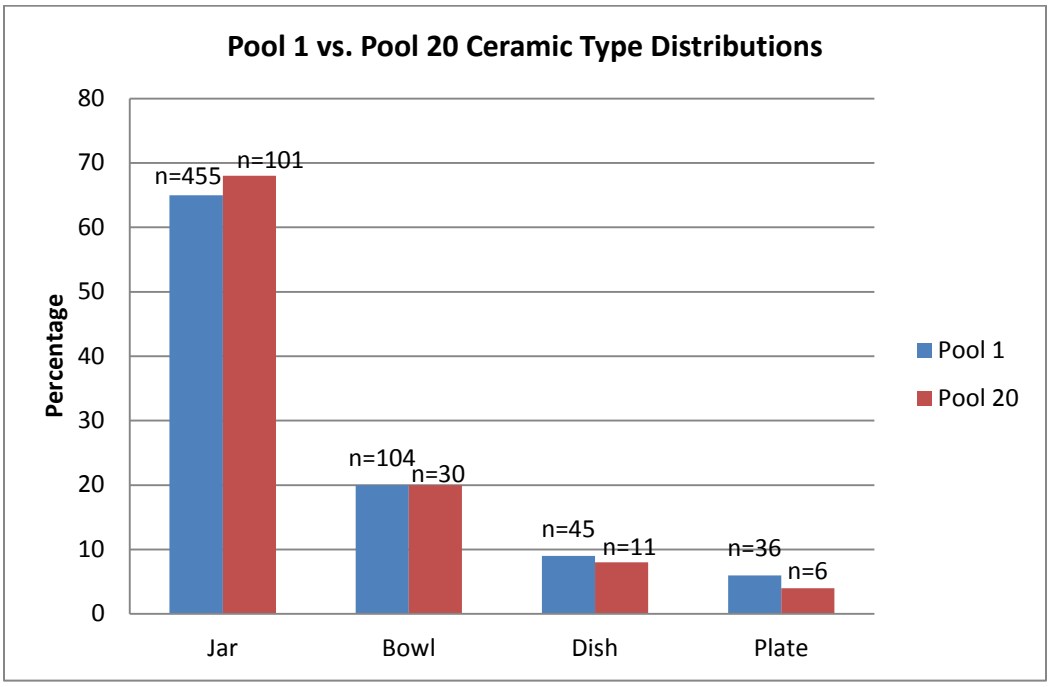

Figure 2.36 Pool 1 vs. Pool 20 Overall Ceramic Assemblage

Superficially, the ceramic assemblages from Pools 1 and 20 appear remarkably similar, with jars accounting for nearly 70% of the total rims recovered. However, when we look further at the assemblages, there are notable differences between the two pools.

While jars dominate both assemblages, jars at Pool 20 have an average rim diameter of 24 cm, ranging in size from 8-55 cm. Pool 1Str. 1 jars are narrower and more standardized, averaging 18 cm, and ranging from 12-28 cm. Most Pool 1 Str. 1 jars have a rim orifice between 15-25 cm, with a few outliers that are larger or smaller. The Str. 1 jars were most likely used to store water, perhaps from the cenote. Vessels used to store liquids have narrower orifices to prevent spilling, while jars used to cook or store dry goods tend to have wider orifices. The jars at Pool 1 and Pool 20 appear to have different purposes, although some Pool 20 jars were likely used to store water.

Moreover, occupation at the two pools emphasizes different types of jars. While Pool 20 has Sibun Red Neck jars throughout the excavation contexts, Cayo Unslipped jars are the hallmark of Pool 1 and are the majority of what we have recovered from Pool 1 Str. 1. What exactly the

preference for Sibun Red Neck or Cayo Unslipped jars means is open to interpretation, but the two pools clearly have distinct yet related roles.

The presence of Sibun Red Neck jars, as well as Indian Creek and Fat Polychrome bowls, at Cara Blanca suggests that the pools may have an affiliation with northern Belize, where such types are present, rather than the upper Belize Valley where Sibun Red Necks are rare (Aimers 2002; Harrison-Buck 2007; Mock 1994).

Finally, I will briefly discuss the ceramics recovered by the dive team during the 2010, 2011, and 2013 field seasons (Table 2.7, adapted from Lucero and Kinkella 2015, Table 1) in order to understand how they compare to the Pool 1 assemblage. The dive ceramics were found directly below Str. 1, resting on a series of natural ledges at the depths listed below. These artifacts likely fell out of the structure as a result of looting (see Figure 2.2 for the Poolside Looter's Trench) and collapse as the cenote walls expanded and the northeastern section of Str. 1 slumped into the pool. The ceramics were identified as either Cayo Unslipped or Tu-tu Camp Striated jars. Cayo Unslipped is the most common type in the Pool 1 assemblage (see Figures 2.19, 2.23, and 2.31), which consists predominantly of jars (see Figure 2.36). Due to the proximity of the ceramics to Str. 1 and the similarities between these large jars and the Str. 1 assemblage, it is safe to associate the dive ceramics with Str. 1.

Table 2.7 Pool 1 underwater artifacts (dapted from Lucero and Kinkella 2015:Table 1)

Depth below Str. 1	Artifacts	Additional Information
1.5 m	1 unslipped jar neck sherd c. 1 cm thick and c. 45 cm diameter, 7 unslipped body sherds, bone fragment, 18 freshwater shells, tufa, 2 chunks, 2 small flakes, 3 biface chips	TuTu Camp or Cayo Unslipped jar sherds, dating to Late Classic II/Terminal Classic (AD 700-900)
4.8 m	1 unslipped jar rim, 1unslipped jar neck, 8 unslipped body sherds, rectangular chunk, chunk, flat limestone piece, multi-layered clay/gravel, tufa, 26 flakes, 9 chunks, 2 cores (1 blue), burnt limestone	TuTu Camp or Cayo Unslipped jar sherds, dating to Late Classic II/Terminal Classic (AD 700-900)
20.4 m	1 unslipped jar rim, 5 unslipped body sherds, 2 biface chips, smooth ovoid limestone, 5 small flakes, 2 haft tips, mid-section of a haft, 12 chunks (5 of which may be eroded, exhausted chert cores), 18 freshwater shells, bone fragment, tufa	TuTu Camp Striated jar sherds, dating to Late Classic II/Terminal Classic (AD 700-900)
21.3 m	Megafauna fossils (humerus, vertebra, limb, etc.)	Giant sloth (*Eremotherium)*
54.3 m	Tufa w/ embedded shell, chert cobbles, 3 fish bone, bone fragment, 1 ~seed, 3 small crystals, crystalline fragment, 23 complete freshwater shells, c. 15 shell fragments, 3 tiny blade fragments, 2 flakes (1 crystalline chert), 4 small chunks, 3 small unworked lithics	Lots of gravel, some silt

Discussion and Concluding Remarks

The assemblages of Pool 1 Strs. 1, 3, and 4, and Pool 20 M208 are generally comparable. Each site has similar vessel form frequencies, with jars composing more than 60% of the assemblage, followed by bowls at roughly 20% of the assemblage, dishes at roughly 10% of the assemblage, and plates less than 10% of the total vessels recovered (see Figure 2.36). At each of the Pool 1 excavations, Cayo Unslipped was the most common ceramic type, while Sibun Red Neck was the most common type at Pool 20. In spite of this difference, both Pools 1 and 20 are ritual sites with ceramic assemblages dominated by jars. Slipped wares are predominantly red, with a few orange-slipped polychromes. Black-slipped vessels are rare at both pools. The orifice diameters are also quite similar, with large orifice jars and serving vessels forming most of the Pool 1 and 20 assemblages. The ritual nature of each site is reinforced by the predominance of jars and large serving vessels (Harrison 2014).

With one or two exceptions, every identifiable ceramic we recovered this season fits within the typical Terminal Classic assemblage as defined by Gifford and redefined by Harrison-Buck (2007). Our excavations this year yielded Cayo Unslipped, Mountain Pine Red, Belize Red, Roaring Creek Red, Vaca Falls, Tu-tu Camp, Sibun Red Neck, Palmar Orange, Indian Creek and Fat polychromes, as well as a few Chunhuitz Orange and Achote Black. But the Cara Blanca assemblage is also distinct- the predominance of unslipped water jars and definite preference for red-slipped bowls and dishes is a characteristic feature of Cara Blanca. We have much less Dolphin Head Red than other Late Classic II/Terminal Classic assemblages, and there are very few black-slipped vessels. While contemporary assemblages elsewhere include large proportions of Mount Maloney Black and Achote Black, the only black slipped vessels we recovered where a few Achote Black sherds. Cara Blanca also lacks cooking vessels, suggesting that any food used and consumed in rituals was prepared somewhere else and brought to the structures.

Not only is Cara Blanca a distinct entity within the region, we find great variation within the ceramic assemblage here. Even the common forms, most notably our Cayo Unslipped water jars, show a great degree of variation. While Gifford notes that Cayo Unslipped are made with different lip treatments (Gifford et al. 1976: 278-279), we find a mix of squared, beveled, rounded, and pointed lips within the same contexts. The paste of the Cayo jars is also non-standard, as our jars are predominantly tan or buff. Tutu Camp Striated jars also differ from the expected darker pastes, as most of ours are buff or tan paste. Perhaps what we are seeing is a merging of different styles, as demonstrated by the mixed trait jar we found at Str. 3 (see Figure 2.24). I think that we are seeing the marks of different communities, each with their own pottery producing traditions and stylistic preferences, coming together at Cara Blanca. The variation in our ceramics is the product of diverse communities bringing together different local materials, or pieces of places, to create a material record that reflects the diversity of the people who came to Cara Blanca.

Several of the ceramic types we recovered suggest that people came to Cara Blanca as pilgrims from Northern Belize, the Yucatan Peninsula, and Guatemala. The polychrome types suggest a northern influence at Cara Blanca. The Fat Polychrome jaguar vessel found at Pool 1 Str. 1 has a decorative style more typical of the Yucatan (Ellie Harrison-Buck, personal communication, 2013) and the Indian Creek Polychrome found at Pool 20 M208 Str. 1 was most likely produced in Northern Belize. The Sibun Red Neck jars, common in the Sibun Valley during the Terminal Classic (Harrison-Buck 2007:241). Finally, the Achote Black tecomate recovered from Str. 1 in 2013 connects Cara Blanca to the Petén district of Guatemala (Harrison 2014). The combination of ceramic types from throughout the Maya lowlands and diverse rim treatments on more locally common types such as Cayo Unslipped suggests that pilgrimage to the sacred pools may be a driving factor in the ceramic assemblage. While other contemporary central Belizean sites such as Xunantunich (LeCount 1996:156) have ceramic assemblages dominated by black slipped wares, we see the preference for red slip, non-local polychromes, and great diversity in rim treatments. Although we are uncertain as to where the ceramics were produced, I suggest that people from different communities and even different regions contributed to the material record of Cara Blanca. Given the sacred and unique qualities of the pools, these people likely came as pilgrims to engage in water ritual at a time of climatic instability.

Terminal Classic Cara Blanca is a unique conjunction of time, space, and people in central Belize. Not only is the site special for its sacred natural features, but the people who engaged with the site as well as the materials they created are part of a special convergence of sacred space, people, and other-than-humans. While the ceramic assemblage of Cara Blanca has certain traits that are distinctive of the Terminal Classic, it is also unique in its inclusion of exotic polychromes, exclusion of black-slipped wares, and the prevalence of ash-tempered water storage jars. Cara Blanca Pool 1 Str. 1 appears to have been built in the Late Classic II/Terminal Classic, but includes earlier materials that tie the water temple to ancestral histories. Cara Blanca's ceramic assemblage builds our understanding of Late Classic II and Terminal Classic ceramics by challenging the assumptions we often make about the material markers of these difficult to distinguish periods of ancient Maya history

and by presenting a particular conjunction of people and things in a sacred place unique in the local environment.

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Appendix: 2013 VOPA Artifacts
(from Lucero 2014:31-39)

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 cluster, collapse	Rims	3	VA red slip plate, VA red slip plate triangular sherd, unslipped dish (but no jars, yet most body and Necks are)	VA plate rim 30 cm, 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,	Rims	4	1 VA red slip orange paste dish (~purposefully	VA dish 45 cm; VA plate 40

2.35 m from SE corner			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	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, groundstone	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,	
	Groundstone, other	21	3 sedimentary rock, 1 dark aggregate, likely from *cenote*, 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 Unslipped; Belize Red plate;	Sibun Red jars 18 cm, 2-20 cm, 15 cm, 25 cm Unslipped bowl 38 cm Orange incurved bowl 30 cm 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	40 cm
	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	*Pomacea* found at north wall over Cluster 3	
Rm 2 floor near Cluster 3	Groundstone	1	Mano (c. 70% complete), green/gray 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 (*Dasypus novemcinctus*)	
	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 ast #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, groundstone	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	
	Groundstone	2	1 pinkish mano fragment, 1 dark metate-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	Rims	7	1 red slip jar, 2 unslipped jar, 1 red slip dish, 1 brown paste dish, 3 VA red slip plates (? Two	Red slip jar 50 cm, thick unslipped jar 50 cm, unslipped

collection treefall #3			rims too small to be certain)	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 3
Exploratory Excavations at Pool 1: Structure 3 and the Plaza Test Pit

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The 2014 field season allowed us to expand our excavations beyond Structure 1 in order to investigate additional features associated with Cara Blanca, Pool 1. In his 2009 dissertation, Andrew Kinkella identifies three structures south of the pool, Structures, 2, 3, and 4,. This chapter focuses on the excavations of Structure 3, as well as a 1 x 1 m test pit between Structures 1 and 3 (Figure 3.1). The exploration of Cara Blanca, Pool 1 beyond the Structure 1 water temple allows us to further contextualize the water temple and reaffirm the sacred essence of Pool 1 and the associated features.

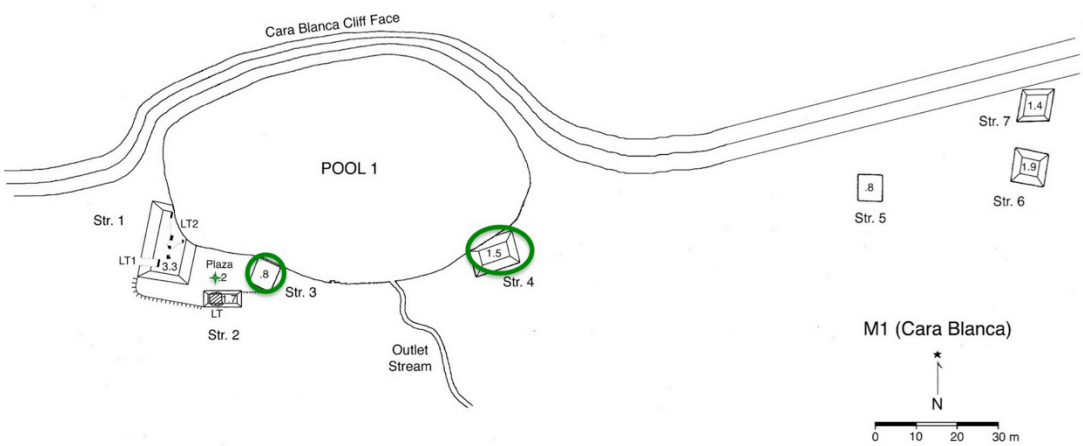

Figure 3.1. Cara Blanca Pool 1 site map

Plaza Test Pit

Figure 3.2. View East from Plaza TP to Str 3

Figure 3.3. View West from Plaza TP to Str 1

Excavation

For the ancient Maya, landscapes served to recreate and renew worldviews (Brady and Ashmore 1999). The ritual landscape present at Cara Blanca consists of built and untouched spaces, and while the primary focus of our excavation has been on the constructed architectural spaces present at Pool 1, we acknowledge the importance of activities and happenings that took place outside of and between ritual structures (Robin and Rothschild 2002). An important aspect of the ritual space at Cara Blanca pool 1 is the plaza between Structures 1, 2 and 3.

Jessica Harrison and field assistant Marcos Choc began preparations for the Plaza test pit (TP) by approximating a midpoint between Structures 1 and 3 and placing a 1 x 1 m test pit oriented north south (Figures 3.2 and 3.3). We decided to place the test pit mid-way between Structures 1 and 3 in order to uncover any possible interaction or even pathway between the two structures. Due to a tree fall obstructing the precise midpoint between Structures 1 and 3, the test pit was placed 15 m east of the Structure 1 datum, and 8 m from the west edge of Structure 3. Excavation of the Plaza TP was conducted by Marcos Choc and Zach Nissen and began on the 16th of June, and ran until June 20th. The intention of this test unit was to collect chronological information using ceramics, and to identify the function of any possible ritual activity that took place in the area between Structures 1, 2, and 3.

Excavation results suggest that there are two distinct construction phases of the plaza. The earliest surface plaza Floor 104, appears to be composed of three distinct layers: a soil and cobble ballast, a plaster and cobble ballast, and then a plaster smoothed over the ballast. Over time, the Maya then added a sequence of the ballast and plaster to create another layer of the plaza, Strata 102 and 103 (Figures 3.4 and 3.5). The two distinct plaza phases are each 15-20 cm in thickness, including the plaster floor and ballast.

Figure 3.4. Plaza Test Pit North Profile

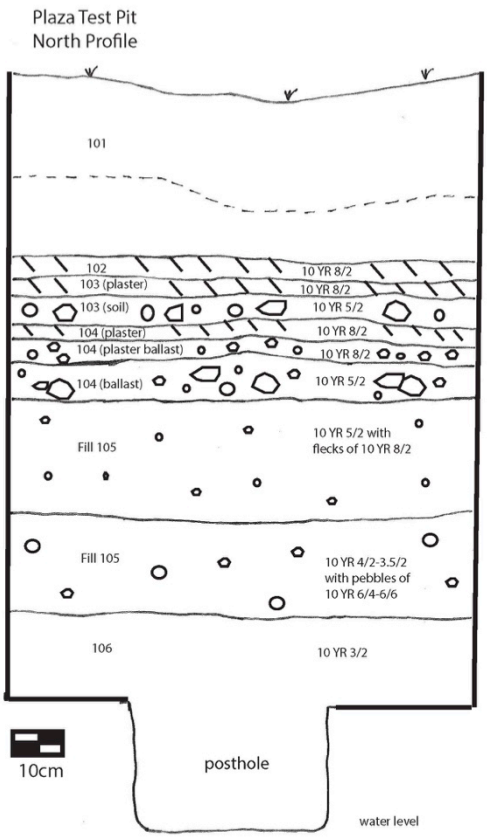

Figure 3.5. Plaza Test Pit North Profile Line Drawing

Artifacts

Excavation of the plaza TP yielded no major artifact clusters. While a cluster is indicated in the Topsoil 101, it became clear through further excavation that the position of the ceramics is likely the result of a natural process and not intentionally placed by the Maya. About half of the diagnostic ceramics found appear to be water jars, this is consistent with the findings at Strs. 1 and 3 (see Chapter 2). The artifacts recovered form the Plaza TP do not indicate any major ceremonies took place in the plaza itself; however, a plethora of smaller sherds and lithic debris indicates that there was interaction between the structures at Pool 1. The high percentage of jar sherds suggests that rituals at Pool 1 likely involved transporting water from one structure to another, from the pool to the stuctures, the structures to the pool, or any combination of such (Figures 3.6, 3.7, and 3.8). The take-away from this analysis is that movement and interaction is important to the ritual activities that took place at Pool 1. The diagnostic ceramics found in the excavation of the plaza date to the latter half of Late Classic II and the Terminal Classic time periods (personal communication, E. Harrison-Buck and A. Runggaldier, 2014; Harrison-Buck 2007). These dates are consistent with those of Structures 1 and 3 (see Chapter 2). Understanding the links between Pool 1 structures is important to the comprehension of the site as a whole. Knowing this, the plaza may have acted as a pathway between the major ritual structures at Pool 1 rather than a center for ritual activities.

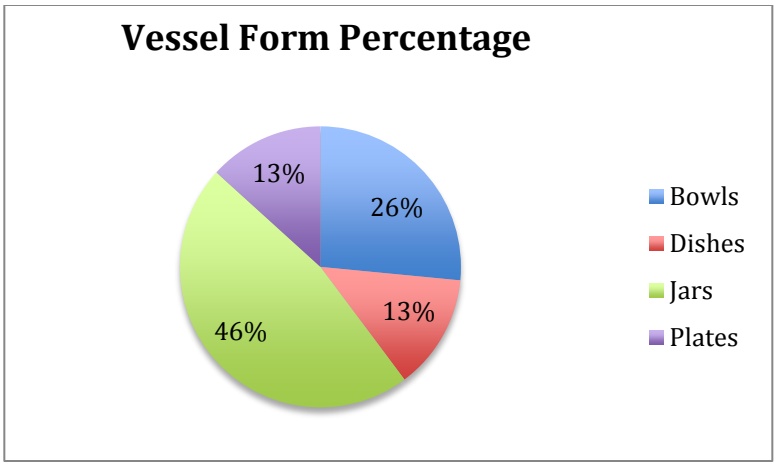

Figure 3.6. Plaza Test Pit Ceramic Form Percentage

Figure 3.7. Plaza Test Pit Ceramics from Floor 104

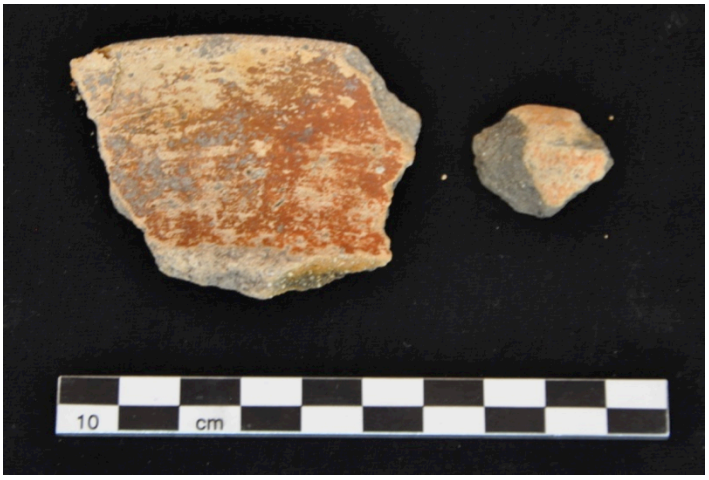

Figure 3.8. Sibun Red Neck Jar from Plaza TP Fill 106

Use of Space

Employing a more holistic approach to Cara Blanca's sacred landscape, we are able to further understand that spaces are culturally defined and recognize that the lack of architecture does not indicate a lack of activity (Robin and Rothschild 2002:163). The labor invested in the maintenance and construction of the plaza indicate that it was an important aspect of the ritual activities that took place in this sacred space. When considered by itself, the data provided by the test pit excavations offers little to describe the sacred nature of Cara Blanca, Pool 1. However, when situated into the larger site context with the ceremonial structures, it allows us to consider the possible activities that took place in-between and involved more than one of the structures. The material recovered from the Plaza test pit allows us to recognize and appreciate the relationships between the major ritual structures, painting a more holistic image of the experiences of the Maya at Pool 1.

Structure 3

Excavation

Embedded in a sacred landscape rich with cultural, ritual and symbolic significance, the shape and intensely ritualized nature of Structure 3 make it stand out against an already intriguing built landscape (Figure 3.9). Our goal with the 2014 excavations at Structure 3 was to illuminate the possible function and qualities of the structure. It is located 22 m southeast of Structure 1 and just 5 m south of Pool 1, in direct confrontation with the watery portal into the underworld (see Figure 3.1). Our exploration of this structure began in the afternoon of Friday, June 13th and ended on June 21st, the final day of the 2014 field season.

Figure 3.9. Sturcture 3 and proximity to Pool 1

Excavations began with field assistants Cleofo Choc and Juan Antonia Lopes setting up and excavating a 1 x 1 m test pit (TP) directly atop of the small mound, originally mapped as c. 3.5 x 3.5, 0.8 m tall (Kinkella 2011:59-60). Immediately, it was noted that Fill 101 of the TP was a layer of

medium and large boulders; a typical boulder measures 58 x 35 x 20 cm. Commonly, Strata 101 is topsoil. These boulders, however, were at the immediate surface and, therefore, comprised the first strata, 101. The fill matrix produced a Munsell reading of 10YR32 (Brown) and transitioned to 10YR52 (grayish brown) as it got deeper. In order to establish the origin of the boulders, Zach Nissen, Jessica Harrison, Erin Benson, and Jean Larmon explored the outcrops that line Rock Cut road. We noted that much of the material found in Fill 101 differs from the surrounding area. While the outcrops along the ravine road are very fine-grained limestone, these boulders were much larger-grained (Figure 3.10). It is possible that these boulders may have been transported from some distance. After removing the boulders, Juan Antonio noted a very compact plaster surface (Floor 102), which we did not excavate. In order to expose as much of the structure as possible, Juan Antonio and Cleofo expanded the TP to the north and west. The north and west edges of the platform were exposed, as well as a wall lining the west edge of the platform (Wall 103). Though some ceramics were noted with the initial excavation of Fill 101, we did not recognize the extent of the ceramic concentration until the TP was expanded.

Figure 3.10. Top: boulders, on top of Structure 3. Bottom: example of material from nearby ravines

We first came upon Cluster 1 comprised of 2 rims and 3 necks that appear to be part of two orange paste, unslipped jars (orifice diameters of 15 cm and 20 cm) with some volcanic ash paste. We then exposed Cluster 2 comprised of (8 rims and 44 body sherds, including a larger Cayo or Alexander jar rim. Finally, we exposed Cluster 3, a collection of 3 rims, 76 body sherds, 1 neck and 2 bases that were unslipped and non-diagnostic except for one black slipped body sherd. Though we originally recorded these clusters independently, we ended up collecting 3826 ceramic sherds from on top of and surrounding the platform; in fact, the latter was covered in a sheet of 3016 sherds (Figure 3.11). These three clusters were likely a part of the larger ceramic deposit. While some of the ceramic sherds were completely burned (Figure 3.12), others were covered in white marl (Figure 3.13)—the distribution of the condition of ceramic sherds can be found in Table 3.1.

Figure 3.11. Showing location of clusters and obsidian core

Figure 3.12. Example of charred sherds

Figure 3.13. Example of white sherds

Table 3.1. Sherd attributes from the north, middle, and south of the Structure 3 surface

Sherd Condition	North	Middle	South
Burned	72 (8.14%)	27 (2.38%)	59 (5.72%)
White	5 (.05%)	0 (0%)	10 (.97%)
Slipped	19 (2.25%)	61 (5.40%)	94 (9.10%)
Total	844	1130	1032

Beneath the ceramic layer, we noted that the entire platform was burned. Our goal was to expose as much of the structure as possible following out both the burning and the ceramic sheet. Though the burning is heavier towards the edges and on the northern portion of the platform, it is present on the entire plaster floor. We exposed most of the structure, but were unable to fully remove unexcavated bulk from the southern and eastern portions due to time constraints. On June 21, the final day of excavation, the entire field crew worked until the final hour to clean the structure and collect all of the exposed ceramics. We divided the platform into the north, middle, and south portions in order to collect ceramic in a more organized manner. See Appendix A for complete table of artifacts.

Though there is structural collapse affecting the northern most section of floor and the southwest corner of the platform/wall, we were able to collect measurements from the exposed portions of the structure. The platform measures 5.2 m north to south and 1.8 m east to west and is oriented at 12° east of north. We were unable to locate the east wall of the platform, but further excavation is needed to confirm the absence of walls on the north and south edges of the platform. If there is only a wall on the west edge, it is likely that the platform was constructed facing the water temple, emphasizing its relationship to Structure 1 and any ritual practices at the water temple (Lucero and Kinkella 2015).

Artifacts

The ceramics recovered from Structure 3 were, in general, poorly preserved due to erosional ware and burning. While Structure 1 ceramics are typically well-preserved with a volcanic ash temper (see Chapter 2), a calcite temper is more common in the Structure 3 ceramics. It is important to highlight that only 6% of the total assemblage consisted of rims, a much lower concentration than would be expected from such a large collection of ceramics. The assemblage at Structure 3 also differs from other structures in the Cara Blanca region in its high percentage of jars (Figure 3.18). While the Structure 1 assemblage is also comprised of a high percent of jars, at 57.75% (see Chapter 2), the Structure 3 assemblage is comprised of 70% jars (Figure 3.19). This assemblage could reinforce the important role that Structure 3 played the ritual function of Pool 1, particularly if the rituals were associated with the lack of rain. Noteworthy ceramics include: a Mountain Pine Group rim (cat# 2067) (Figure 3.14), a Roaring Creek bowl rim (cat#2067) (Figure 3.15), numerous other Vaca Falls type vessels (Roaring Creek and possibly Kaway Impressed), Cayo Unslipped jars, and an Achote Black portion of a decorated vessel (cat#2081) (Figure 3.16) (personal communication, E. Harrison-Buck and A. Runggaldier, 2014). This assemblage includes ceramics from the Ik'hubil, Spanish Lookout, and Rancho ceramic spheres, all of which are associated with the Terminal Classic period (Harrison-Buck 2007: 225, 227, 241). These complexes cover a large portion of Belize, suggesting that people may have been traveling from some distance to visit Pool 1. Of course, it is possible that the ceramic migration is the product of trade rather than the movement of people. We must consider, however, that people were bringing these vessels to the Cara Blanca location from their homes and meeting at Pool 1 to provide offerings, leaving a piece of their home through the deposition of ceramic. This is further supported by the blended styles discussed below.

Finally, in the field and lab, a preliminary assessment appeared to show that slipped sherds found on the northern portion of the structure were black and the middle and south one red. A closer look at the data, however, makes this pattern less obvious. Due to time constraints, we were unable to wash the 3000+ sherds. We will need to take a closer look in the future, as well as excavated Str. 3.

Though the assemblage is comprised of ceramic dating to both the Late Classic II and Terminal Classic phase, the majority of the ceramic dates to the late facet Spanish Lookout complex, typically considered as relating to the Terminal Classic period (personal communication Harrison-Buck and Astrid Runggaldier, 2014; Harrison-Buck 2007:215). Also interesting to note is the presence of a "blended" style of ceramic. For instance, a Cayo Unslipped jar rim with the striations of Tutu Camp (cat#2067) (Figure 3.17). The blended style and collection of various ceramic styles suggest that vessels may have been brought to the structure from multiple locations. Further, it could indicate the formation of a unique and inclusive identity or community, expressed through the sharing of ceramic styles. Though it is unclear if it is significant, there is also a differential distribution of slipped ceramics: there is much more associated with the southern portion of the pit (94 sherds) than the north portion of the pit (19 sherds), and the middle falls somewhere in between (61 sherds). Further excavation and analysis will elaborate on this pattern.

Other than the large ceramic concentration, there was a single obsidian core located on top of the platform (see Figure 3.11). The core was nearly exhausted and represents the only obsidian recovered from the Structure 3 context. Obsidian is significant because it is obtained through long-distance trade and is considered a prestige item to the Maya (Lucero 2003). We also recovered a Jute shell, 4 pieces of burned bone, 7 flakes, and a single chert biface from the burned floor of Structure 3.

Figure 3.14. Mountain Pine vessel from Structure 3

Figure 3.16. Achote black vessel from Structure 3

Figure 3.15. Roaring Creek vessel from Structure 3

Figure 3.17. Cayo Unslipped and Tutu Camp blended vessel from Structure 3

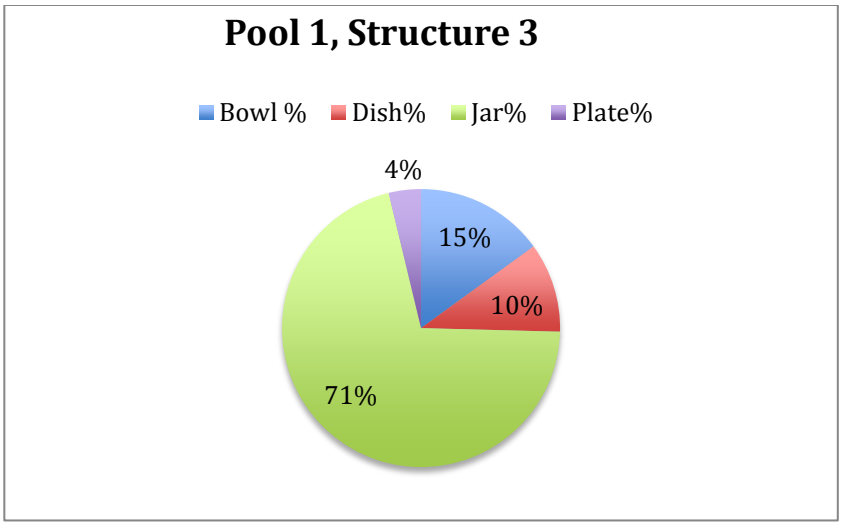

Figure 3.18. Showing percentage of vessel types at Structure 3

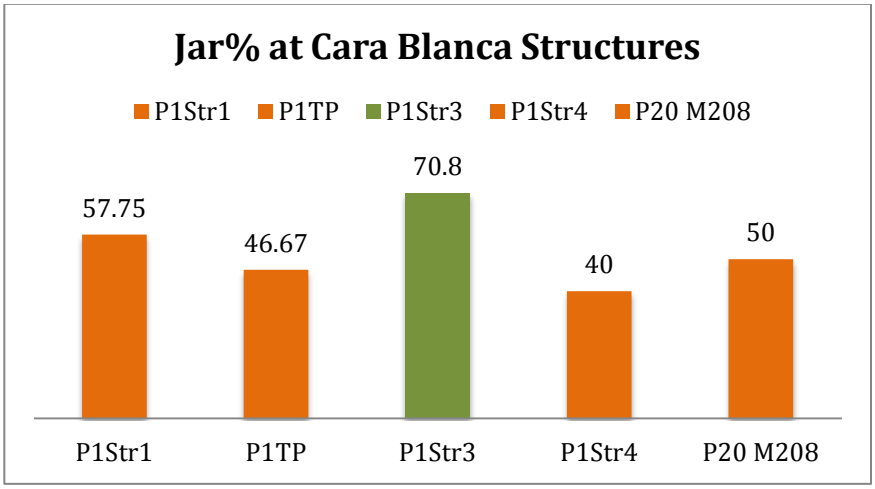

Figure 3.19. Showing distribution of jars at Cara Blanca structures. P1=Pool 1; P20=Pool 20

Termination Rituals

Termination rituals were performed by the ancient Maya in order to deanimate, or desanctify a space or object (Stross 1998:37; Kunen et al. 2002:198). Termination often included the destruction, partial or complete, of animated spaces and objects through burning, breaking, puncturing, or destroying them (Pagliaro et al. 2001:76-80; Lucero 2006:62). Three separate ancient Maya ritual deposits were noted at Structure 3. The first act performed was the burning of the entire platform. Early in our excavation of Structure 3, we noted that the entire platform was burned, though it was burned most heavily on the northern portion of the platform. The second act was the breaking of ceramic vessels or scattering of broken vessels on top of the burned platform. Though some of the ceramics on the platform were completely burned, the majority was not, indicating that the burning of the platform occurred before the breaking of the ceramics. We noted no complete vessels in the laboratory analysis of the ceramics, and only 254 of the 3826 sherds were rims (6%) (Table 3.2). At 6% of the total assemblage, this is lower than would be expected in such a large deposit. The deposition of vessels with their rims broken off has also been cited as characteristic of termination deposits (Lucero 2010:145). The final act was the placement of large boulders on the

platform. The placement of boulders directly atop of the structure acted to release the soul of the structure and aided in the transition from life to death.

The permanence of this termination suggests that the space was not to be revisited and the regeneration/dedication/termination cycle was broken. The transportation and careful placement of the boulders likely required great effort. The finality and extent of the structure's termination strengthen the conclusion that it was an important space.

Table 3.2. Sherd type frequencies the north, middle, and south of the Structure 3 surface

Sherd Type	North	Middle	South
Neck	0 (0%)	34 (3.01%)	32 (3.10%)
Body	741 (87.80%)	1028 (90.97%)	928 (89.92)
Rim	92 (10.90%)	52 (4.60%)	52 (5.03)
Base	11 (1.30%)	16 (1.42%)	20 (1.94%)
Totals	844	1,130	1032

Discussion and Concluding Remarks

The Cara Blanca Pool 1 story is enriched by the data collected from both the Plaza TP and Structure 3. All three of these contexts (Structure 1, Structure 3, and the Plaza TP) have a ceramic chronology placing their use in the Late Classic II and Terminal Classic periods, indicating that Pool 1 was visited during particular sociopolitical and environmental stress (e.g., Haug et al. 2003; Lucero 2002). The Plaza TP displays two distinct building phases, each represented by 15-20 cm of floor and ballast. Similar to Structure 1's multiple building phases, considerable care was given to maintaining the plaza's condition. The maintenance of this plaza space highlights the significance of the space "between," underscoring the necessity of considering Maya movement within and experience of both built and unbuilt spaces (Robin and Rothschild 2002). Further excavations at Structure 3 will determine if a similar pattern is represented at the small platform.

As Harrison (Chapter 2) discussed, there is little evidence of food preparation at Structure 1. The importance of this resides within the transport of ritual foods to the site—if they were not prepared on site than they were brought from a separate location. The extensive burning on Structure 3, considered in concert with the ceramic assemblage and boulder placement, suggests termination rituals. It is important not to rule out, however, that the platform was burned before its termination. The placement of Structure 3 in relation to both the pool and Structure 1 indicates that it had some prolonged and important function before its termination. It is possible that the Structure 3 platform acted as a food preparation space. The ancient Maya may have prepared food at the platform and journeyed across the plaza to Structure 1 where they completed their rituals. All three excavated spaces at Pool 1 would have been active and interacting in the Pool 1 ritual context.

The intensely ritualized nature of Pool 1 emphasizes its importance and further contextualizes the Cara Blanca Pool 1 as a sacred space. The ritual occurring at Pool 1 should be considered action, rather than just belief (Lucero 2006:56-57). The performance of these rituals would have encouraged social solidarity among the performers—reaffirming a common identity (Kertzer 1988:69). The ritual experiences of both Structure 1 and Structure 3 acted to promote social solidarity during a period of social disintegration in much of the Maya region. A unique community may have formed around the performance of Pool 1 rituals, perhaps rain rituals, and provided ideological refuge to those abandoning their centers and normal loci of ritual.

Future research is needed in order to fully understand the significance of Cara Blanca's sacred landscape within the Pool 1 context. Exposing the remainder of Structure 3, taking care to note the position of particular ceramic styles, might help to elucidate upon the structures role prior to its termination. We will need to remove a portion of the plaster floor in order to determine if there are caches beneath or if there was an earlier occupation. Further excavation will allow us to confirm or challenge the conclusion that Structure 3 is a ritualized space visited in concert with Structure 1.

Continued interpretation of the data from the Plaza TP, in relation to sacred architecture, will provide further understanding of the activities that took place outside of and the connections between the structures at Cara Blanca Pool, perhaps elucidating the relationship between the structures. Excavating the remaining structures has allowed us to approach the Pool 1 context holistically, not only through the individual activities that took place at each location but also through the larger experience of Pool 1 as a sacred space.

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Appendix A

Artifact Provenience for Plaza Test Pit

Catalog #	Strat. # and Description	Artifact Type	Quantity and Notes
2104	Topsoil 101	Body Sherds	3 Orange Paste Unslipped, 3 Tan Paste Red Slipped, 3 Brown Paste Burnt, 1Grey Paste Unslipped, 20 Tan Paste Unslipped
		Rims	1 Brown Paste Unslipped Jar, 1 Tan Paste Unslipped Bowl (30cm), 1 Tan Paste Red Slipped Bowl (35cm)
		Necks	1 Tan Paste Unslipped
		Bases	2 Tan Paste Unslipped Ring Base
		Lithics	2 Chert Flakes
2105	Topsoil 101 Cluster A	Body Sherds	1 Tan Paste Unslipped, 1 Brown Paste Unslipped, 1 Orange Paste Unslipped 7 Not Fully Fired
		Rim	4 orange paste unslipped plate, 1 tan paste red slip bowl (18 dia). Bowl is Belize Red
2106	Directly Above FL102 Cluster A	Body Sherds	3 Burnt, 2 Grey Paste Unslipped, 4 Tan Paste Unslipped, 2 Orange Paste Unslipped, 1 Tan Paste Red Slip
		Rims	1 Orange Paste Red Slipped Bowl (35cm)
2108	Ballast 103	Body Sherds	1 Tan Paste Unslipped, 2 Tan Paste Red Slip, 1 Orange Paste Red Slip
		Rims	1 Tan Paste Red Slip
		Necks	2 Tan Paste Unslipped
		Lithics	1 Red Chert, 3 Blue Chert
2109	Floor and Ballast 104	Body Sherds	3 Tan Paste Unslipped, 4 Orange Paste Unslipped, 2 Tan Paste Red Slip, 1 Orange Paste Red Slip
		Rims	3 Tan/Orange Paste Unslipped Jar (25cm), 1 Orange Paste Unslipped, 1 Tan Paste Red Slip Bowl (20cm)
		Necks	2 Tan Paste Unslipped, 6 Orange Paste Unslipped
2110	Fill 105	Body Sherds	8 orange paste Unslipped, 3 Tan Paste Unslipped, 5 Orange Paste Red Slip, 6 Tan Paste Red Slip, 1 Tan Paste Orange Slip, 1 Tan Paste Brown Slip
		Rims	2 Orange Paste Red Slip Bowl (40cm), 2 Tan Paste Brown Slip Dish (25cm), 1 Orange Paste Red Slip Dish, 1 Tan Paste Red Slip Dish, 1 Tan Paste Unslipped
		Necks	1 Orange Paste Unslipped, 2 Orange Paste Brown Slip
		Bases	1 Orange Paste Red Slip Flange, 1 Tan Paste Red Slip Ring Base
		Special Sherd	1 Tan Paste Unslipped
2111	Topsoil 106	Body Sherds	2 Orange Paste Red Slip, 1 Tan Paste Red Slip, 2 Charred Sherds, 10

			Orange Paste Unslipped, 17 Tan Paste Unslipped
		Rims	1 Tan Paste Red Slip Jar (20cm), 1 Tan Paste Brown Slip. Sibun Redneck Jar or Garbutt Creek
		Bases	1 Tan Paste Unslipped Ring Base, 1 Orange Paste Unslipped Ring Base

Artifact Provenience for Structure 3

Catalog #	Strat. #	Description	Context	Artifacts		Comments
2078	101	Fill	Cluster 2	Body sherds	44 unslipped	
				Rims	1 tan paste, unslipped bowl 2 tan paste unslipped dishes 5 tan paste, unlsipped jars	
				Lithics	1 charred limestone	
2079	101	Fill	Southern Half of Unit	Body sherds	180 unslipped 1 tan paste, brown slip 3 orange paste, red slip 2 tan pate, red slip 2 tan paste, maroon slip 34 charred	Roaring Creek Red Rim, Mountain Pine Red Rim, Tu Tu Camp Rim, Cayo Unslipped Rim, Blended Tutu Camp and Cayo Unslipped Rim
				Necks	12 tan paste, unslipped 4 orange paste, red slip 2 tan paste, red slip 2 tan paste maroon slip 6 charred	
				Bases	4 tan paste, unslipped	
				Rims	1 orange paste, unslipped jar with fingernail impressions 1 plate 1 bowl 3 charred jar 7 jar 1 unidentified	
2081	101	Fill	Original 1X1 m TP	Body sherds	55 unslipped 3 tan paste, red slip 1 decorated 6 charred	
				Necks	2 tan paste, unslipped	
				Foot	1 unslipped	
				Bases	1 tan paste, unslipped 1 orange paste, unslipped	
				Lithics	1 chert flake	
2082	101	Fill	Northern Half of Unit	Body Sherds	34 unslipped	Cayo Unslipped Rim, Alexander Rim
				Necks	3 tan paste, unslipped	
				Rims	3 tan paste, unslipped jars 1 orange paste, unslipped jar	
2080	102	Floor		Lithics	1 nearly exhausted obsidian core	
2069	102	Floor	Cluster 1	Necks	1 orange paste, unslipped	
				Rims	3 orange paste, unslipped jars	
2076	102	Floor	East of Unit Cleaning	Body sherds	83 unslipped 5 orange paste, red slip 1 polychrome, orange paste, orange slip	

					1 tan paste, black slip 3 tan paste, red slip	
				Necks	11 tan paste, unslipped	
				Rims	3 bowl s 6 plates 1 dish 11 jar s	
				Shell	1 freshwater	
2077	102	Floor	East of Bulk	Body Sherds	111 unslipped 6 orange paste, red slip 1 tan paste, maroon slip 1 tan paste brown slip 2 tan paste, red slip	Mountain Pine Red Base, Mountain Pine Red Rim
				Bases	2 tan paste, maroon slip 1 grey paste, black slip	
				Necks	1 tan paste, unslipped 5 orange paste, unslipped 4 tan paste, unslipped charred	
				Rims	5 bowls 2 dishes 1 charred jar 4 jars	
2083	102	Floor	Cluster 3	Body Sherds	76 unslipped 1 tan paste, black slip	
				Necks	1 tan paste, unslipped	
				Rims	3 tan paste, unslipped jar	
2066	102	Floor	South Stacked Vessel Layer	Body Sherds	802 unslipped 16 maroon slip and paste 32 tan paste, red slip 7 orange paste, red slip 60 charred	Achote Black Sherd
				Necks	32 unslipped	
				Rims	36 jars 5 bowls 16 dishes 1 nail incised 3 unidentified	
				Bases	8 orange paste, red slip 1 tan paste, red slip 2 orange paste, unslipped 7 tan paste, unslipped 2 tan paste, maroon slip	
				Bone	4 charred	
2067	102	Floor	Middle Stacked Vessel Layer	Body Sherds	961 unslipped 10 white 19 charred 21 orange paste, red slip 8 tan paste, red slip 1 orange paste, unslipped 2 tan paste, unslipped 4 tan paste, maroon slip 2 tan paste, black slip	Mountain Pine Red Base, Tutu Camp and Blended Cayo Unslipped Rim, Mountain Pine Red Rim, Cayo Unslipped Rim
				Bases	2 orange paste, maroon slip 1 tan paste, red slip 2 orange paste, unslipped 7 tan paste, unslipped 4 tan paste, orange slip	
				Rims	8 charred jars 12 bowls	

					8 dishes 2 plates 21 jars	
				Necks	34 unslipped	
				Lithics	1 chert biface 1 chert angular shatter 1 chert flake 2 firecracked chert 2 charred limestone	
2068	102	Floor	North Stacked Vessel Layer	Body Sherds	712 unslipped 21 charred 5 white 3 orange paste, black slip	
				Necks	40 unslipped	
				Jars	7 charred jars 6 dishes 1 charred tecomate 3 bowls 8 jars	
				Bases	4 orange paste, red slip 5 tan paste, unslipped 2 orange paste, unslipped	

Chapter 4
Geomancy at Cara Blanca Pool 20:
Mapping and Excavation

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Figure 4.1 Drone Shot of Cara Blanca Pool 20 courtesy of Tony Rath

At approximately 100 m in diameter, Cara Blanca Pool 20 is circular and more "*cenote*-like" than many of the other 24 pools of Cara Blanca (Figure 4.1; Kinkella 2011). Pool 20 is one of the deepest of Cara Blanca's pools, at 40 meters in depth. In the 2010 season, Andrew Kinkella surveyed Pool 20, noting settlement to the north and northeast of the pool (Figure 4.3; Kinkella 2011:54). The settlement consists of two structures approximately 40 meters to the north, and a small group of 7-8 structures approximately 450 meters to the northeast. The ultimate goal for the 2014 field season was to remap and excavate M208. Located 45 meters north of Pool 20, M208 is a natural limestone hill with a structure (Str. 1) built into the limestone bedrock, and a raised platform extending from the south edge of the hill towards the pool (Figure 4.4). A second structure (Str. 2) is located directly southwest of M208, on the northwest corner of the raised platform. These built features utilize the natural landscape and are directly built into the limestone bedrock. What was the purpose of these structures? What is their relationship, if any, to the other Cara Blanca pools? Did the structures associated with Pool 20 function as domestic structures, as ritual structures, or some combination of the two?

Did the Maya experience Pool 20 as a sacred space? Is there any similarity in that experience to that of Pool 1? The VOPA 2014 field crew attempted to answer these questions by successfully remapping M208 Structure 1, the raised platform, Structure 2, as well as excavating a 1m wide trench through M208 Structure 1, five strategically placed test areas on M208 Structure 1, a 1 x 2 m test pit in the center of the raised platform, and a 1 x 1 m test pit in Structure 2.

Figure 4.2 northeast view of Pool 20 camp

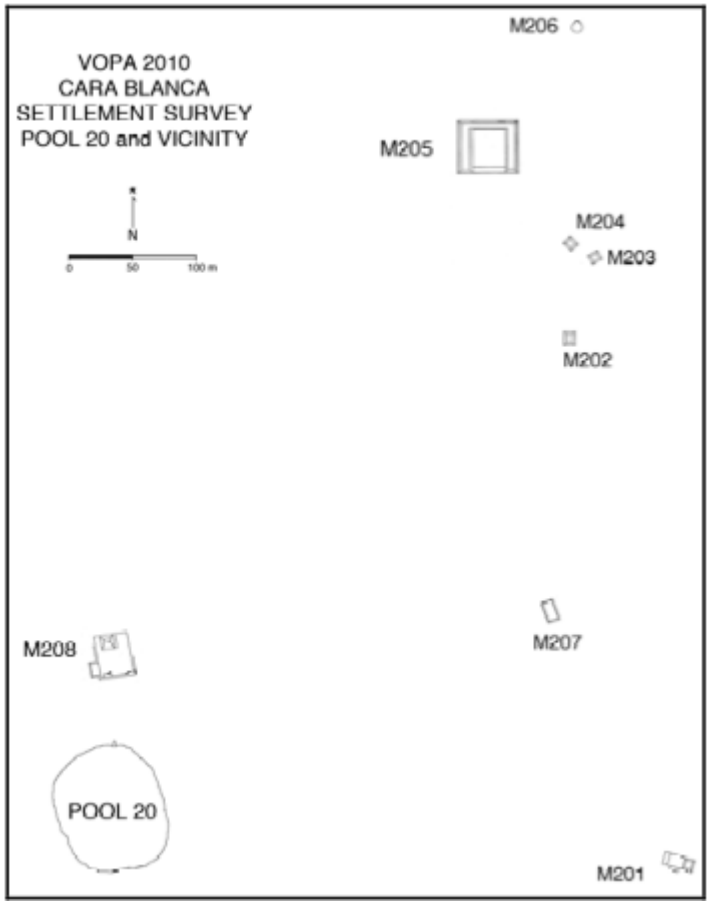

Figure 4.3 Kinkella 2010 map of Pool 20 (Kinkella 2011:56)

Pool 20: 2014 Season

We began work at Pool 20 on May 22; we began by clearing the brush and setting up a palapa to store our field equipment (Figure 4.2). On May 23, Jessica Harrison and I began reviewing Kinkella's survey notes and maps from the 2010 season. Joined by Jean Larmon, we began surveying the surface of M208 and its associated features for any significant artifact collections, as well as any exposed architecture. We noted two separate tree falls that removed the upper layer of top soil and exposed the plaster or limestone platform underneath. We took initial measurements and began a surface collection of exposed artifacts (see Appendix for Treefall 1 and Treefall 2 Surface Collections). The high number of artifacts collected from the Treefalls was our first indication that M208 was more than just a ritual structure. The artifacts collected indicated that the entire structure was used in utilized and not just the distinct ritual spaces like Structures 1 and 2. After a general survey of M208 and surface artifact collection we began mapping M208 Structure 1.

In 2010, Andrew Kinkella surveyed Pool 20 and its associated structures M201-208 (see Figure 4.3; Kinkella 2011:54-56). Kinkella measured M208 as roughly 40 meters from pool 20, along with its two separate structures and the raised platform. As stated above, one of the primary goals of the VOPA 2014 field crew was to create a detailed map of M208 and its associated structures.

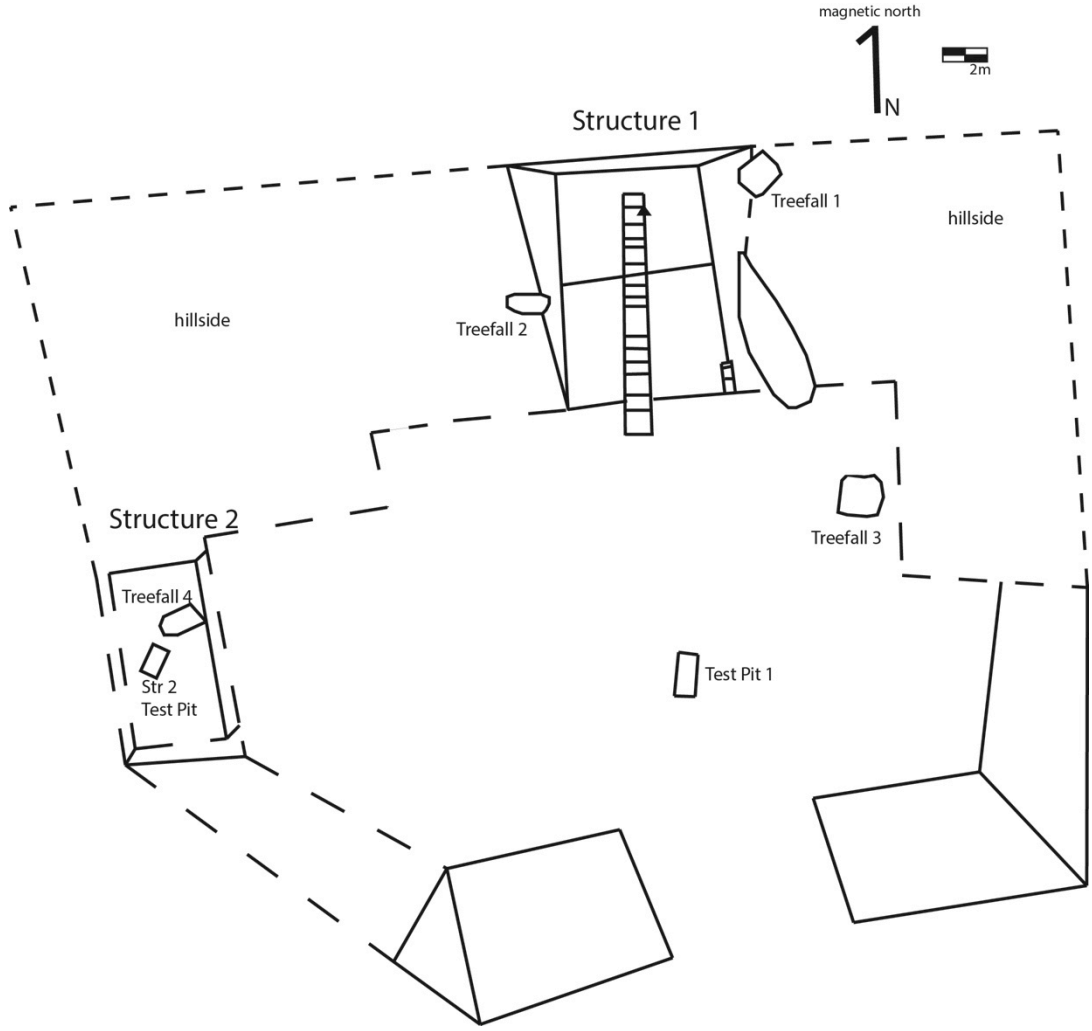

Figure 4.4 VOPA 2014 map of Pool 20 M208

Beginning Tuesday, May 26th we started taking measurements of M208 Structure 1 with a sighting compass. We placed a datum in a tree stump on top of M208 (GPS Coordinates: Elev. 75m 16Q0302763 1926989). In the process of taking these points we noticed that the two northern corners are slightly higher, at about 1.5 m above the southern corners at about of Structure 1, indicating Structure 1 was built into the natural hill, tying the structure into the natural landscape. This method of construction resulted in Structure 1 retaining the natural shape of the existing limestone hill.

While the field assistants began test excavating Structure 1 and the Platform, we continued mapping the rest of M208. Since the structures at M208 were constructed into limestone bedrock, taking measurements proved extremely difficult because natural erosion of the bedrock and the topsoil on top of the bedrock greatly skewed our measurements. Through several failed experiments with different mapping techniques field supervisor Cleofo Choc used a palm frond to construct a 6+ meter stadia rod to measure the height of Structure 1 (Figure 4.5). This tool proved invaluable through out the mapping of the rest of M208. Through our measurements, we concluded that M208 Structure 1 is 70 m from Pool 20, rises 3.5 m above the M208 Platform, and is approximately 12 x 22 m at the base of the structure. At the top of the structure, a flat surface that may be an altar, is 10 x 7 m. The South edge of the platform is 45 m from Pool 20. At 38 x 26 m the platform is massive and raises 2+ m from ground level. As the field assistants cleared away portions of the Structure 1 architecture, we mapped in walls, the excavation units, and the dimensions of the raised platform, as well as Structure 2.

As mentioned, M208 presented a unique challenge to the VOPA 2014 field crew. Our idealized image of what we were experiencing while mapping the structure was difficult to translate onto graph paper. However, through endless on foot survey of the site, multiple drafts of the M208 map, and retaking measurements countless times, we achieved a final product that fully represents the remaining architecture of M208.

Figure 4.5 Graduate Student Jean Larmon and I using 6m+ Stadia Rod to Map Platform

Excavation of M208 Structure 1

Excavations of Structure 1 began on Tuesday, May 27th. The primary goals for the excavation of Structure 1 were to determine the exact dimensions of the architecture and the function of the structure in relation to Pool 20. A preliminary investigation into the ceramics found in the surface collection and the initial excavation of the topsoil indicated that the artifact assemblage was different to that of Pool 1 (see Chapter 2).

We excavated six different sections of M208 structure 1. The first area we excavated was the southeast corner. We identified the edge of a wall in this corner and moved north and west to find the other corners. In the process of finding the other wall corners, PI Lisa Lucero decided to place a 1 x 10 m trench, running north/south transecting the center of Structure 1. The goal of this trench was to identify any possible activity that was taking place on M208 and to collect ceramics and other artifacts to construct a chronology of M208. While excavating the trench, we placed four other test areas to get a clearer picture of the exact dimensions of the architecture of M208. These test areas were place in the northwest, northeast, and southwest corners, as well as the top center of M208.

M208 Structure 1 Trench

The trench became the primary focus in our excavations at Structure 1. The trench is 10 x 1 m and runs north-south, beginning 2 meters in front of the very center of the south wall and runs to the top of Structure 1. The trench was divided into three arbitrary sections. Labeled as the Lower, Middle and Upper sections of the trench, these sections were excavation in isolation to one another and given their own provenience data and catalog numbers (Tables 4.1-4.3). We uncovered several groundstone tools in the process of excavating the trench (see Table 4.1 and Figure 4.8). This was our first indication that this site was nothing like that of Pool 1. Through the process of excavating the trench we noticed that there was a peculiar limestone surface carved into M208, later to be identified as an eroded staircase. After the identification of the limestone staircase, we decided to extend the trench but an additional 3.5 meters to the north in order to cut through the entire length of Structure 1. The additional 3.5 m extension of the trench was labeled the Trench Summit and was also given its own provenience description (Table 4.4-4.5). Upon further investigation of the limestone staircase, we concluded that the staircase was completely natural and was carved into the natural limestone bedrock of the hill, suggesting that the architects identified this hill as a sacred space and carved a natural limestone staircase that ran the entire length of the structure. Excavation of the lower portion of the trench indicated that there was no wall on the south side of M208 structure 1, but and was framed by three walls on the east, west, and north sides another example of the builders using the natural shape of the limestone bedrock.

Due to time constraints, starting June 4th we began preliminarily sorting the artifacts collected at the end of each day in the field. Any non-diagnostic artifacts were counted and noted in the field journal, bagged and left at the site. We collected diagnostic artifacts, like rim sherds and obsidian blades and brought them to the field lab, at Banana Bank, for further analysis. The ceramics types found in the trench which include; Saxche, Daylight Orange, Indian Creek, Runaway Creek, Vaca Falls and Sibun Red, indicate that Structure 1 dates somewhere from the Late Classic II to Terminal Classic Time Periods (see Tables 4.1-4.5 and Figure 4.14; Harrison-Buck 2007:366, 273, 241, 257, 366, 362). Project Epigrapher, Joanne Baron, identified the presence of a red slipped glyph sherd in the assemblage; however, the sherd is too small and eroded to decipher what the glyph depicts (Figure 4.7; personal communication, Joanne Baron, 2014). Due to poor weather conditions, the VOPA field crew had to shift back and forth between Pools 1 and 20. The time required to shift between sites pushed back our excavations at Pool 20 resulting in spending less time than anticipated at M208. Mapping the site and the excavation of Structure 1 took priority. However, we were able to put in two Test Pits, one for the raised platform and one for Structure 2.

Table 4.1 M208 Trench Lower

Stratum	Catalog #	Artifact Class	Artifact Description and Comments	Total Count
Topsoil 101	2033	Body Sherds	2 orange paste red slip, 1 tan paste red slip, 19 tan paste unslipped, 5 orange paste unslipped, 10 grey paste unslipped, 1 buff unslipped	38
		Neck Sherds	1 orange paste unslipped, 1 tan paste red slip, 1 grey paste unslipped, 4 tan paste unslipped, 3 brown paste unslipped	10
		Bases	2 tan unslipped ring bases, 1 orange paste unslipped ring base, 1 orange paste unslipped, 1 tan paste unslipped ring base, 2 orange paste red slip	7
		Rim Sherds	1 tan paste unslipped jar, 2 orange paste red slipped jar, 2 tan paste red slipped jar, 1 orange paste unslipped jar, 1 orange paste red slip jar, 3 orange paste red slip bowls, 1 orange paste red slip, 1 orange paste unslipped jar, 1 tan paste red slip jar, 2 tan paste unslipped jars, 1 brown paste red slip bowl, 1 orange red slip jar, 2 grey paste black slip bowls, 1 grey paste unslipped, 2 tan paste unslipped bowl, 3 tan paste unslipped jars	25
		Shaped Plaster	1 piece	1
		Special Sherd	1 tan paste red slip glyph sherd, 1 body sherd with coffee bean shape	2
		Groundstone	1 Mano Fragment	1
		Lithics	1 Circular Red Stone	1

Figure 4.6 M208 Str. 1 Trench Lower rims

Figure 4.7 M208 Str. 1 Trench Lower glyph sherd

Figure 4.8 M208 Str. 1 Trench Lower groundstone

Table 4.2 Trench Middle

Stratum	Catalog #	Artifact Class	Artifact Description and Comments	Total Count
Topsoil 101	2034	Body Sherds	1 tan paste unslipped	1
		Bases	2 tan paste red slip, 1 is ring base, 1 orange paste unslipped, 1 tan paste unslipped, 1 orange paste red slip	6
		Rim Sherds	1 orange paste unslipped bowl with base, 2 orange paste unslipped jars, 1 orange paste red slip plate with base, 2 orange paste unslipped jar	6
		Figurine	1 orange paste	1
On top of Stairway	2039	Body Sherds	12 orange paste unslipped fire-clouded	12: Same Vessel
	2045	Body Sherds	2 orange paste uslipped	2

Figure 4.9 M208 Str. 1 Trench Middle rims

Table 4.3 Trench Upper

Stratum	Catalog #	Artifact Class	Artifact Description and Comments	Total Count
Topsoil 101	2035	Body Sherds	2 orange paste red slip, 1 brown paste black slip, 7 tan paste unslipped, 1 orange paste unslipped, 6 tan paste unslipped, 4 grey paste unslipped	21
		Bases	3 tan paste orange slip, 3 tan paste red slip, 1 tan paste orange and red slip, 1 grey paste red slip	8
		Rim Sherds	2 tan paste unslipped jar, 2 orange paste unslipped jar, 1 tan p red slip dish, 1 brown paste brown slip jar, 1 orange paste unslipped bowl, 3 brown paste unslipped jar, 1 tan paste brown slip, 1 tan paste red slip polychrome, 3 orange paste red slip, 1 orange paste red slip bowl, 1 tan paste red slip bowl	17
		Lithics	1 red chert flake	1
		Obsidian	1 blade	1
Platform Fill	2038	Body Sherds	3 brown paste unslipped, 2 orange paste unslipped, 2 tan paste unslipped, 1 grey paste red slip, 2 orange paste red slip	10
		Neck Sherds	1 grey paste unslipped	1
		Rim Sherds	2 orange paste brown slip bowl refits, 1 orange paste unslipped bowl, 1 orange paste red slipped jar	4

Figure 4.10 M208 Str. 1 Trench Upper rims

Figure 4.11 M208 Str. 1 Trench Upper rims

Figure 4.12 M208 Str. 1 Trench Upper obsidian blade

Table 4.4 Trench Summit North

Stratum	**Catalog #**	**Artifact Class**	**Artifact Description and Comments**	**Total Count**
Topsoil 101	2040	Body Sherds	2 orange paste unslipped	2
		Neck Sherds	1 orange paste red/brown slip, 1 brown paste unslipped	2
		Bases	2 orange paste unslipped, 1 orange paste orange slip, 1 orange paste red slip ring base, 3 brown paste unslipped (1 burned)	7
		Rim Sherds	1 orange paste red slip bowl, 1 orange paste unslipped jar, 1 orange paste unslipped	3
		Groundstone	2 metate fragments	2
Topsoil 101 Concentration of Ceramics	2042	Body Sherds	5 orange paste unslipped	5
		Rim Sherds with Base	3 orange paste unslipped	3

Figure 4.13 M208 Str. 1
Trench Summit North same vessel

Figure 4.14 M208 Str. 1
Trench Summit North Mananha Red rim

Figure 4.15 M208 Str. 1 Trench Summit North metates

Table 4.5 Trench Summit South

Stratum	Catalog #	Artifact Class	Artifact Description and Comments	Total Count
Topsoil 101	2046	Body Sherds	2 grey paste unslipped, 1 brown paste brown slip	3
		Neck Sherds	1 orange paste red slip	1
		Bases	1 orange paste red slip	1
		Rim Sherds	1 orange paste unslipped	1

Figure 4.16 M208 Str. 1 Trench Summit South rims

Figure 4.17 In progress close-up of limestone staircase in M208 Str. 1 Trench

Figure 4.18 M208 Str. 1 Trench looking north, showing staircase carved into up-sloping bedrock

M208 Structure 1 Center Test Area

The goal of the center test area was to identify any possible indication of what occurred on top of M208 Structure 1. Was this a ritual structure in which an audience on the platform would view elaborate religious practices? Was it a domestic structure in which everyday ritual practices would establish and ensure Maya worldviews? Excavation of the Center Test area indicated no major ritual deposits. This indicates that there may have been more smaller scale ritual practices that took place on top of this structure. Sibun Red ceramics found in Center Test area date to the Terminal Classic period (Table 4.6; Harrison-Buck 2007:362).

Table 4.6 M208 Center Test Area

Stratum	**Catalog #**	**Artifact Class**	**Artifact Description and Comments**	**Total Count**
Topsoil 101	2072	Body Sherds	4 orange past red slip, 16 orange paste unslipped, 1 tan paste red slip, 1 grey paste unslipped	22
		Neck Sherds	5 orange paste unslipped, 1 burnt, 2 tan paste red slip, 6 brown paste unslipped	15
		Bases	3 brown paste red slip, 2 tan paste unslipped, 1 tan paste red slip, 1 orange paste unslipped, 1 orange paste red slip	8
		Rim Sherds	3 bowls, 6 dishes, 9 jars	18
		Lithics	1 chert flake, 1 shiny chunk, 1 obsidian blade	3
		Groundstone	1 metate fragment	1

Figure 4.19 Overview of M208 Str. 1 looking west at Center Test Area and Northwest Test Area

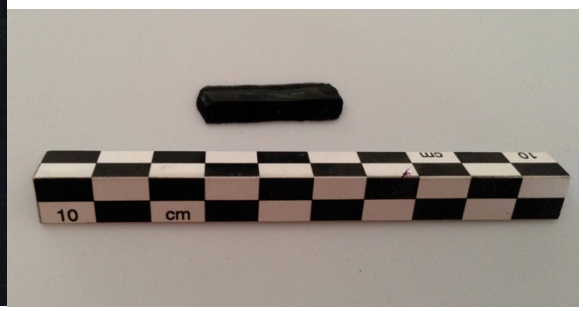

Figure 4.20 M208 Str. 1 Center Test Area rims Figure 4.21 Center Test Area obsidian blade

Figure 4.22 Center Test Area lithics

M208 Structure 1 Southeast Test Area

The Southeast Test area was one of the first sections of M208 that we excavated. The initial goal of this test area was to locate any remaining architecture at M208 Structure 1. Continuing our excavations we uncovered the east wall and noticed that it appears to be stepped (Figure 4.23). This may be to emphasize the limestone steps at the front of Structure 1. We also located the limestone steps to the east of the trench. This indicates that the limestone steps spanned the entire front of Structure 1. Indian Creek, Daylight Orange and Tutu ceramics found in the southeast test area date from the Late Classic II to Terminal Classic periods (Table 4.7-4.8 and Figure 4.24-4.27; Harrison Buck 2007:241, 273, 235).

Table 4.7 M208 Structure 1 Southeast Corner

Stratum	**Catalog #**	**Artifact Class**	**Artifact Description and Comments**	**Total Count**
Surface Collection	2032	Body Sherds	1 orange paste red exterior black interior, 4 tan paste brown slip, 2 tan paste black slip, 6 orange paste red slip, 14 tan paste red slip, 15 buff paste unslipped, 36 orange paste unslipped, 101 tan paste unslipped, 50 grey paste unslipped	229
		Neck Sherds	3 tan paste red slip, 1 tan paste brown slip, 5 tan paste unslipped, 5 grey paste unslipped	14

		Bases	1 orange paste red slip ring base plate, 1 tan paste red slip ring base, 1 tan paste dark red slip ring base, 3 tan paste unslipped VA ring base, 5 tan paste unslipped, 4 orange paste unslipped, 1 tan paste black slip ring base, 1 tan paste unslipped VA ring base, 1 grey paste unslipped	18
		Rim Sherds	2 orange paste red slip jar, 1 orange paste red slip bowl, 3 tan paste brown slip jars, 1 tan paste brown slip bowl, 4 tan paste brown slip jars, 7 tan paste red slip jars, 3 tan paste red slip plates, 7 tan paste red slip bowls, 40 tan paste unslipped jars, 2 tan paste unslipped dishes, 6 tan paste unslipped bowls	76
		Foot	1tan paste unslipped VA	1
		Shaped Plaster	1 piece with red paint	1
		Special Sherd	1 brown paste unslipped impressed body sherd, 1 tan paste unslipped possible foot, 2 lace holes	4
		Flanges	1 tan paste orange slip	1
		Groundstone	2 metate fragments, 3 mano fragments	5
		Lithics	18 chunks: blue chert, red chert, and limestone	18
		Red Pigmented Stone	3 chunks	3

Table 4.8 East Wall Southeast Corner

Stratum	**Catalog #**	**Artifact Class**	**Artifact Description and Comments**	**Total Count**
Topsoil 101	2075	Body Sherds	4 tan paste red slip, 3 tan paste brown slop, 6 orange paste red slip, 30 tan paste unslipped, 18 orange paste unslipped	61
		Neck Sherds	3 brown paste unslipped	3
		Rim Sherds	3 orange paste red slip (2 bowls, 1 jar), 1 brown paste unslipped jar, 3 orange paste unslipped (1 dish, 2 jars), 11 tan paste unslipped (6 jars, 5 dishes)	18
		Bases	2 tan paste red slip, 3 brown paste unslipped, 4 orange paste unslipped	9
		Handle	1 tan paste unslipped	1

Figure 4.23 M208 Structure 1 looking northwest showing Southeast Test Area, east wall, and limestone steps

Figure 4.24 M208 Str. 1 Southeast Test Area
Daylight Orange, Rim

Figure 4.25 Str. 1 Southeast Test Area
Indian Creek, Rim

Figure 4.26 Str. 1 Southeast Test Area
Vaca Falls, Rim

Figure 4.27 Str. 1 Southeast Test Area
Run Away Creek, Rim

M208 Structure 1 Northeast Test Area

The primary goal of the Northeast Test area was to locate and document the northeast corner of Structure 1. In our investigations we identified the north corner of the east wall but we did not find any standing wall for the north wall. We did find several large stones that indicate that the north wall has collapsed and only remains as a pile of large stones (Figure 4.28).

Table 4.9 Northeast Corner Clean Up

Stratum	**Catalog #**	**Artifact Class**	**Artifact Description and Comments**	**Total Count**
Topsoil 101	2092	Body Sherds	1 orange paste red slip, 1 orange paste unslipped, 7 tan paste unslipped, 14 brown paste unslipped	23
		Neck Sherds	2 grey paste unslipped, 2 brown paste unslipped, 4 tan paste unslipped, 2 orange paste unslipped	10
		Rim Sherds	2 tan paste unslipped (1 jar, 1 bowl), 2 orange paste unslipped jars, 1 tan paste unslipped dish	5

Figure 4.28 Structure 1 M208 looking east showing Northeast Test Area

Figure 4.29 M208 Str. 1 Northeast Test Area rims

M208 Structure 1 Northwest Test Area

Field supervisor Ernesto Vasquez conducted excavation of the Northwest Test area. The goal of this test area was to locate and document the northwest corner of M208 Structure 1. While we did not find a standing wall, as we did in the southeast corner of the structure, we found several large shaped stones that are likely part of a collapsed wall (Figure 4.30). Again, due to time constraints, we could not excavate further to prove that these stones were indeed part of the wall but as of now there are no other likely possibilities.

Table 4.10 Northwest Test Area

Stratum	Catalog #	Artifact Class	Artifact Description and Comments	Total Count
Topsoil 101	2073	Body Sherds	5 tan paste unslipped, 5 orange paste unslipped	10
		Neck Sherds	1 orange paste unslipped	1
		Rim Sherds	1 orange paste unslipped jar, 1 orange paste unslipped bowl	2

Figure 4.30 Structure 1 M208 looking east showing Northwest Test Area

Figure 4.31 M208 Str. 1 Northwest Test Area necks and rims

M208 Structure 1 Southwest Test Area

The goal of the Southwest Test area was to locate and document the southwest corner of M208 Structure 1. Again, we did not locate any standing walls, but rather a group of several larger shaped stones that could possibly be the remnants of a collapsed west wall. We did expand the Southwest Test area more to the east and revealed the limestone steps, identified in the trench, indicating that the limestone staircase spanned the entire front of Structure 1 (Figure 4.32).

Table 4.11 Southwest Test Area

Stratum	Catalog #	Artifact Class	Artifact Description and Comments	Total Count
Topsoil 101	2074	Body Sherds	17 orange paste unslipped, 3 tan paste red slip, 4 orange paste red slip, 3 grey paste unslipped, 17 tan	45

			paste unslipped, 1 brown paste unslipped	
		Bases	1 Orange Paste Red Slip	1
		Rim Sherds	2 tan paste unslipped bowls, 4 brown paste unslipped (3 bowls, 1 jar)	6
		Lithics	1 Blue Chert Chunk	1

Figure 4.32 M208 Str. 1 looking northwest showing Southwest Test Area

Figure 4.33 M208 Str. 1 Southwest Test Area rims

M208 Platform Test Pit

Cleofo Choc and I conducted the excavation of the Platform Test Pit (Figure 4.34). We placed the 2 x 1 m test unit using estimated measurements from the edges of the platform and the southern edge of Structure 1 (see Figure 4.3). The Platform Test Pit (PTP) was placed 11 m south of M208 Structure 1, 18 m from the east edge of Structure 2, and 20 m from the east edge of the platform. The goal of the test pit was to learn how the Maya constructed the platform, and collect any possible artifacts to help date the platform. We decided that a 2 x 1 m test unit would be the most time effective way of both dating the platform and understanding how it was constructed. Ceramics found belonging to the Sibun Red group date to the Terminal Classic period (Table 4.12; Harrison-Buck 2007:362). Few lithics were uncovered in the test pit, indicating that activities requiring the use of stone tools would have been executed, primarily at Structure 1 (see table 4.12). Excavating through the topsoil we encountered several large cobbles. Underneath the cobbles we uncovered the limestone bedrock. The bedrock was a relatively smooth surface that did not match the incline of the hill surrounding M208. This indicates that the natural limestone bedrock was modified for the platform as well as M208 Structure 1. To construct the platform, the Maya would have had to even out the surface of the preexisting limestone hill. This would have required a tremendous amount of work, but would have further tied the built environment into the natural sacred space. The Maya could have used the limestone removed from Structure 1 to even out the bedrock used for the platform. Further excavation will be required to completely understand the construction of the platform. However, it is clear that a large amount of labor was put into the maintenance and construction of this Platform.

Figure 4.34 Field Supervisor Cleofo Choc Setting up a Palapa over the Platform Test Pit

Table 4.12 Platform Test Pit 1

Stratum	Catalog #	Artifact Class	Artifact Description and Comments	Total Count
Topsoil 101	2044	Neck Sherds	1 tan paste brown slip, 2 tan paste unslipped	3
		Bases	1 tan paste red slip, 1 orange paste unslipped, 1 tan paste	4

			orange slip, 1 orange paste unslipped	
		Rim Sherds	1 tan paste unslipped jar, 1 orange paste unslipped jar, 1 burned jar grey paste unslipped, 1 tan paste unslipped, 1 tan paste brown slip jar	5
	2070	Body Sherds	6 orange paste red slip, 9 orange paste unslipped, 1 tan paste red slip, 15 tan paste unslipped	31
		Lithics	2 cut limestone pieces	2
		Shell	1 Jute	1
	2071	Body Sherds	4 tan paste unslipped, 1 tan paste unslipped, 3 orange paste unslipped, 8 orange paste red slip	16
Fill 102	2047	Neck Sherds	1 orange paste red slip	1
		Bases	6 orange paste unslipped, 1 red and black slip grey paste ring base	7
		Rim Sherds	2 orange paste red slip (refit) bowl, 1 orange paste red slip, 2 tan paste red slip bowl, 1 orange paste unslipped bowl	5
Fill 103	2041	Body Sherds	1 orange paste red slip, 3 tan paste unslipped, 2 grey paste unslipped	6
		Rim Sherds	1 orange paste unslipped, 1 orange paste red slip	2
		Pinched Handle	1 orange paste unslipped	1
Fill 104	2043	Body Sherds	5 tan paste unslipped, 6 orange paste unslipped, 2 tan paste orange slip, 3 orange paste red slip	16
		Neck Sherds	1 Tan paste unslipped	1
		Rim Sherds	1 red slip tan paste bowl, 1 tan paste unslipped bowl, 1 tan paste orange slip bowl, 1 tan paste unslipped bowl, 1 tan paste red slip jar	5
		Special Sherd	1 tan paste maroon slip	1
Surface 105	2093	Body Sherds	2 tan paste red slip, 2 tan paste unslipped, 2 red paste, 5 grey paste, 1 tan paste maroon slip	12
		Rim Sherds	1 tan paste red slip bowl	1

Figure 4.35 M208 PTP Limestone bedrock and west profile wall

Firgure 4.36 sample of M208 Platform Test Pit Rims

M208 Structure 2

Field assistant Stanley Choc and graduate student Jean Larmon undertook excavation of the Structure 2 test pit (Str. 2 TP). Structure 2 is 9 x 5 m and approximately 10 m southwest of structure 1. Due to a large tree fall in the middle of the structure, the Structure 2 test pit was placed on the northeast corner of the structure (Figure 4.37). The test pit has no clearly defined dimensions, but is roughly 1 x 1 m. Jean and Stanley excavated through the topsoil, collecting any artifacts that were sorted and cataloged (Table 4.13). Ceramics belonging to the Sibun Red group date to the Terminal Classic period (Harrison-Buck 2007:362). Jean and Stanley uncovered a plaster floor or possible limestone surface. This could mean that the builders of Structure 2 also modified the natural limestone bedrock. However, due to time constraints, we were unable to excavate the Structure 2 Test Pit further. This leaves us with an unclear understanding of what exactly Structure 2 was used for. Perhaps it was used as a space to prepare ritual activities or even acted as temporary housing for pilgrimage. Further investigation into the activities and functions of M208 will require a more in-depth excavation of M208 Structure 2.

Table 4.13 Structure 2 Test Pit

Stratum	**Catalog #**	**Artifact Class**	**Artifact Description and Comments**	**Total Count**
Topsoil 101	2036	Body Sherds	6 orange paste unslipped, 9 tan paste unslipped	15
		Bases	2 orange paste unslipped, 1 tan paste unslipped	2
		Rim Sherds	1 tan paste unslipped plate, 1 tan paste unslipped, 1 tan paste black slip jar, 2 grey paste unslipped, 1 orange paste unslipped bowl, 1 orange paste slipped bowl	7
Topsoil 102	2037	Body Sherds	19 tan paste unslipped, 4 tan paste brown slip, 13 orange paste unslipped, 21 orange paste red slip, 9 tan paste red slip, 2 orange paste brown slip, 2 tan paste black slip	10
		Neck Sherds	2 orange paste red slip, 1 orange paste unslipped, 1 orange paste brown slip	4
		Bases	1 tan paste unslipped, 1 orange paste red slip	2

		Rim Sherds	2 orange paste red slip, 3 orange paste red slip, 2 orange paste unslipped, 1 orange paste red slip bowl	8

Figure 4.37 M208 Str. 2 TP showing plaster floor or limestone surface

Figure 4.38 Str. 2 TP rims

Discussion and Concluding Remarks

As noted above, the artifact assemblage is not identical to that of Pool 1 (see Chapter 2). While the vessel form percentages for both Pool 1 and Pool 20 are similar there are some distinct variations in the artifact assemblages (Figures 4.39 and 4.40). With the assistance of Ellie Harrison-Buck and Astrid Runggaldier, the VOPA 2014 lab crew noted that the ceramic assemblage from M208 appears more residential in nature when compared the ceramic assemblage of Pool 1 (personal communication, Harrison-Buck and Astrid Runggaldier, 2014). The high percentage of jars at M208 indicates that there is still a relatively high percentage of ritual taking place, as is the case for Pool 1 Structure 1. The jars found at Pool 1 appear to be more standardized, ranging from 15-25 cm in diameter, likely being used in more specialized rituals (see Chapter 2). While Pool 20 jars vary in size, ranging from 8-55 cm in diameter, and could be a result of the numerous ritual practices or residential behaviors that could have taken place (Figure 4.41). This size range, with the combination of finding several groundstone and obsidian artifacts indicates that Structure 1 was not built with the sole intention of ritual practices. High variation in ceramic vessel size and diverse artifact assemblage at Pool 20 may come from the very nature of the site itself, possibly both residential and religious in nature the space would have required rituals that maintain the space (Brady and Ashmore 1999; Robin 2013). The non-ceramic artifacts also distinguish Pool 20 M208 from Pool 1. At Pool 20 we identified several metate and mano fragments as well as two obsidian blades (see Tables 4.1, 4.3, 4.4 and 4.6; Figures 4.8, 4.12, 4.15 and 4.21). At Pool 1 only one whole mano was found at Str. 1, one metate fragment from Str. 4 and an exhausted obsidian core from Str. 3 (see Chapter 2 and Chapter 3). The higher number of lithic tools at Pool 20 lends itself to its blurred lines between residential and ritual in function.

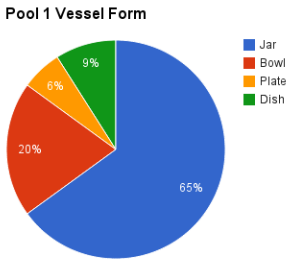

Figure 4.39

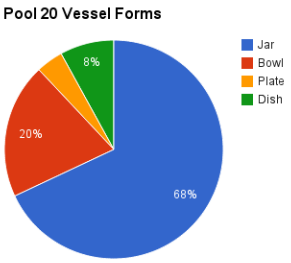

Figure 4.40

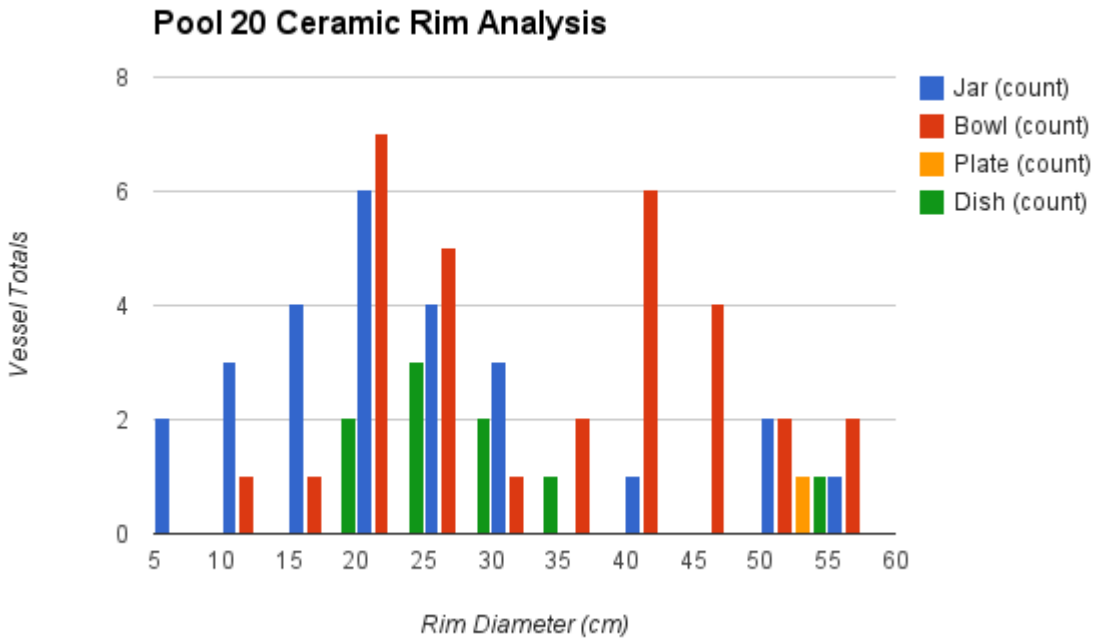

Figure 4. 41

Table 4.14 Pool 20 Ceramic Analysis

Vessel Type	**Average Rim Diameter (cm)**	**Rim Diameter Range (cm)**	**Total Count of Rims Measured**
Jars	24.2	8-55	27
Dishes	25	15-50	10
Plates	50	50	1
Bowls	33.2	10-55	32

To quote Brady and Ashmore, "Moreover, built and unbuilt-constructed and conceptualized – Maya landscapes are far from passive arenas or stage sets; then as now, they have played tangibly active roles in constant creation and shaping of Maya life" (1999:126). Excavations at Cara Blanca Pool 20 have show just how active landscapes are in shaping one's experience of space. The landscape at Cara Blanca Pool 20 is unlike any of the other pools in this region. Besides being one of the deepest and more circular than the other 25 pools in Cara Blanca's territory, it is one of the few that has any associated architecture. And when compared with pools that do have architecture, Pool 20 still stands out. What is it about this space that inspired such unique expressions of Maya cosmology?

Hills, caves, and cenotes were seen as the entrance to the various levels of the cosmos, but were also seen as the physical manifestations of supernatural beings themselves (Woodfill et al. 2015:4). The Cara Blanca pools would have each served as a bridge between the supernatural realms of the cosmos and the surface world, creating a conceptual marker of sacred space. However, Pool 20 M208 acted as something more. The combination of the natural limestone hill and the cenote would have served as an axis mundi, connecting all three worlds together in one space (Brady and Ashmore 1999:127). The ancient Maya capitalized on this connection and built architecture that was directly tied into the landscape itself. A practice referred to as geomancy, involving the creation of an "architecturally enhanced landscape" that incorporates man-made features into the natural landscape (Woodfill et al. 2015:8; Dowd 2015:212). Geomancy is frequently used in the context of Elites displaying their connections to the supernatural realms (Woodfill et al. 2015:8). Yet M208 does not

appear to have any direct connection to Maya elite, on the contrary, M208 appears to have more connection to pilgrims and local farmers. By establishing an extreme connection to the supernatural realms could the Maya have created an experiential landscape that was designed to connect with the gods on a deeper level in a desperate attempt to overcome periods of drought?

The 2014 Field Season at Cara Blanca Pool 20 has left me with more questions than can be answered by the short time we spent at M208. What appears to be a unique combination of residency and ritual, more in-depth investigation into the structures is needed to better understand the happenings at Pool 20. However, it is clear that that space was intended to reflect, recreate, and inspire Maya worldviews. Concretely establishing ties to the land and tangibly recreating an atmosphere inspired by Maya cosmology.

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Appendix

Cara Blanca Pool 20 M208 Stratum Descriptions

Location	Excavation Unit	Stratum	Munsell	Description
Structure 1	Trench Lower	Topsoil 101	10 YR 2/2	Topsoil 101 is a dark, organic soil with cobbles throughout. Artifacts recovered include ceramic rims, necks, bases, and body sherds, as well as a sherd with a partial glyph. A red circular lithic artifact was recovered, as was a piece of shaped plaster and one groundstone mano.
	Trench Middle	Topsoil 101	10 YR 2/2	Topsoil 101 is a dark, organic soil with cobbles throughout. This stratum includes a modified earthen stairway carved into the hill. Artifacts include rim, body, and base sherds, as well as a foot. On the earthen stairway itself, there were two deposits of body sherds, the uppermost of which come from the same vessel. No lithics were recovered.
	Trench Upper	Topsoil 101	10 YR 2/2	Topsoil 101 is a dark, organic soil with cobbles throughout. Artifacts include ceramic rim, base, and body sherds. Lithics include 1 red chert flake and 1 obsidian blade.
		Platform Fill	10 YR 5/2	Platform fill is a greyer soil below Topsoil 101. Artifacts include ceramic rim, neck, and body sherds. No lithics were recovered.
	Trench Summit North	Topsoil 101	10 YR 2/2	Artifacts include rim, neck, body, and base sherds. A concentration of ceramics consisting of body sherds and a rim and base was found on the surface of Topsoil 101. Two metate fragments were also recovered.
	Trench Summit South	Topsoil 101	10 YR 2/2	Topsoil 101 is a dark, organic soil with cobbles throughout. Artifacts include rim, neck, body, and base sherds. No lithics were recovered.
	Center Test Pit	Topsoil 101	10 YR 2/2	Topsoil 101 is a dark, organic soil with cobbles throughout. Artifacts include ceramic rim, neck, body, and base sherds. Lithics include one obsidian blade, one metate fragment, one shiny chunk, and one chert flake.
M208 Platform	Test Pit 1	Topsoil 101	10YR 2/1	Topsoil 101 is a dark organic soil that lies on top of Fill 102. There are several large limestone blocks in the test pit. Lithics including red quartz and one jute shell were recovered. Artifacts include ceramic rim and body sherds.
		Fill 102	10 YR 5/2	Fill 102 is a light grey soil and includes large boulders. Fill 102 is below Topsoil 101 and above Fill 103 in the southern half of the test pit and Fill 104 in the northern half of the test pit. Artifacts include ceramic rim, neck, and body sherds. No lithics were recovered.
		Fill 103	10 YR 6/2	Fill 103 is a light brownish gray soil in the southern half of the test pit. Fill 103 is below Fill 102 and adjacent to Fill 104. Artifacts include ceramic rim and body sherds. No lithics were

				recovered.
		Fill 104	10 YR 5/2	Fill 104, in the northern half of the test pit, is similar to Fill 102 but does not include large boulders. Fill 104 is below Fill 102 , adjacent to Fill 103, and above Surface 105. Artifacts include a few ceramic body sherds. No lithics were recovered.
		Surface 105	10 YR 8/2	Surface 105 is limestone bedrock. The limestone is very soft. Surface 105 lies below Fill 103 and Fill 104. The surface was not excavated and is a sterile layer (bedrock).
M208 Platform	Structure 2	Topsoil 101	10 YR 8/2	Topsoil 101 is the uppermost layer of organic clayey soil covering Str. 2. The topsoil includes some limestone cobbles. Topsoil 101 lies on top of Fill 102. Artifacts include ceramic rim, neck, and body sherds. No lithics were recovered.
		Fill 102	10 YR 3/2	Fill 102 lies below Topsoil 101 and is distinguished from the upper stratum by a change in soil color and silty texture. Fill 102 lies on top of Floor 103. One freshwater shell (jute) was recovered. Artifacts include ceramic body sherds. No lithics were recovered.

Pool 20 Treefall 1 Artifact Provenience

Stratum	**Catalog #**	**Artifact Class**	**Artifact Description and Comments and Comments**	**Total Count**
Surface Collection	2015	Body Sherds	8 orange paste red slip, 15 orange paste unslipped, 9 burnt orange paste unslipped, 8 burnt tan paste unslipped	40
		Neck Sherds	1 burnt orange paste unslipped, 9 burnt orange paste unslipped, 9 burnt tan paste unslipped	19
		Bases	1 orange paste unslipped ring base, 1 orange paste unslipped base	2
		Rims	1 Cayo Unslipped, 2 orange paste red slip, 2 orange paste unslipped	5

Pool 20 Treefall 2 Artifact Provenience

Stratum	**Catalog #**	**Artifact Class**	**Artifact Description and Comments**	**Total Count**
Surface Cleaning	2017	Body Sherds	1 red slip tan paste, 1 burnt Cayo Unslipped	2
		Rim Sherds	1 burnt Cayo Unslipped, 1 orange paste red slip	2
		Bone	1 Piece	1

Offsite Collection

Stratum	**Catalog #**	**Artifact Class**	**Artifact Description and Comments**	**Total Count**
	2124	Sediment Sample	Exported	1

Chapter 5
Pool 6: The Mystic Pool

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This chapter will focus on the 2014 field season underwater explorations of Pool 6, the mystic pool (Figure 5.1). Pool 6, the largest of the 25 pools in the Cara Blanca project area, boasts a diverse ecological habitat with an occupation and use history spanning both historic and prehistoric periods. Divers Tony Rath, Martin Spragg, CJ Graham and Bob Slizeski, and field assistants Jose Vasquez and Stanley Choc provided invaluable skill and knowledge. The primarily goal of this season's work at Pool 6 was to identify the prehistoric and historic significance of the mystic pool. Though the prehistoric occupation of the Cara Blanca has often been the focus of VOPA exploration, this season's explorations at Pool 6 highlighted the historic use of the pool and reintroduced the historic significance of the project area (see Kinkella 2003).

Figure 5.1 Cara Blanca region with Pool 6 circled in red. Adapted from Lucero and Kinkella 2015:32.

Logging in the Cara Blanca Region

The land on which Pool 6 lies is currently owned by Yalbac Ranch, a company committed to sustainable logging. It has long been accessed for its abundant arboreal resources (Kinkella 2003). Recent agricultural development in the ranch land area has threatened the historic integrity of the pool context (see Chapter 8). The effects of 2010's Hurricane Richard and subsequent wildfires made sustainable logging impossible and Yalbac Ranch sold c. 55,000 acres of land to the Spanish Lookout Community Corporation Ltd. (SPLC). SPLC has developed much of the land, and continues to pursue agricultural productivity in the area. Though a 61 m buffer zone is required around all of the Cara Blanca pools, it is possible that run-off from agricultural activities could negatively impact Pool 6 (Department of the Environment, Ministry of Forestry, Fisheries, and Sustainable Development 2014:6-23). Our goal here is to record the significance of the pool before it may be impacted by further development. The prehistoric and historic occupation of the Cara Blanca region runs deep (Kinkella 2003; Lucero 2011). Though the historic context is the subject of this report and of the 2014 field season at Pool 6, it is important to note the region's deeper history.

Prehistoric Background

The background for this chapter has been previously outlined in a recently submitted chapter to the 2014 Research Report in Belizean Archaeology (RRBA) symposium proceedings (Larmon and Lucero n.d.). It is important to again highlight the prehistoric and historic background of the Cara Blanca region and, more specifically, the mystic pool. Maya settlements in the surrounding Yalbac Ranch land are numerous and have been discussed in previous reports and publications (Kinkella 2003, 2009; Lucero and Kinkella 2015). The size and accessibility of Pool 6 indicate that it was likely a daily source of water for Late and Terminal Classic populations inhabiting these sites. Maya living in the surrounding settlements likely accessed the mystic pool for drinking, cooking, and washing needs (Kinkella 2009:166-167), as well as for food resources, including fish. Pool 16, which lies approximately 300 m to the west of Pool 6, is much smaller, at 23 m in diameter and only 13.5 m at its deepest point (Kinkella 2009:160-161). Its small size and steep sloping sides make it a true *cenote* (Kinkella 2009:161). The small pool is removed from any easy access point and therefore would likely not have acted as a daily water source but rather a ritual space accessed only for its sacred qualities (Kinkella 2009:167). Though the prehistory of the mystic pool is significant, no prehistoric artifacts or features were noted during this field season and the historic properties remain the focus of this chapter.

Historic Background

The Yalbac and Cara Blanca area has a long history of logging activity. From the late 1700's to the early 1800's, logging was primarily a product of slave labor (Kinkella 2003). In 1838, however, slaves were emancipated in Belize and individual slave owners joined forces to form logging companies. These companies, the largest of which was the Belize Estate & Produce Company (B.E.C.), controlled access to logging land. The B.E.C was the most powerful logging corporation, owning one-fifth of the country, and had control of the Yalbac Ranch land from 1875-1970 (Kinkella 2003:51). Gallon Jug, just 24 km to the northwest of the Cara Blanca pools, was the primary location of B.E.C logging operations. In the early 1800's, the B.E.C transported materials by train from Gallon Jug to Hillbank and the New River Lagoon, 28 miles to the northeast of the Cara Blanca pools. At the New River Lagoon, logs were nailed together to form rafts and floated to Belize City (Smith 2013:13).

Logging was Belize's first major business enterprise (Smith 2013:1). Early in logging history, logwood (*Haematoxylon spp*.) was the primary resource accessed; it was valued in particular because it was used in the creation of a distinct red dye. Logwood grows in the coastal lowlands, as well as inland near rivers and lagoons, making Cara Blanca an ideal location for logwood camps. This suggests that the Pool 6 area may have been accessed by loggers as early as the late 17th century for its arboreal resources. It is also important to note that loggers often used prehistoric Maya settlements as temporary camps (Kinkella 2003:51). In the 1770's, mahogany (*Swietenia macrophylla*), became the focus of loggers. The logging and transportation of mahogany required logs to be cut into manageable sizes, moved to the banks of rivers, floated to the mouth of the river, squared-off (flitched), and loaded onto a ship for transport (Smith:2013:3). Logs were sometimes flitched before they were sent down the waterway to the coast (Jeff Roberson, personal communication, 2014). As resources near the coast were depleted, loggers were forced to settle and work inland on rivers, as opposed to by the sea with easy access to transport (Smith 2013:2).

Though logwood and mahogany were the primary resources, many secondary resources were also accessed, including: cedar (*Cedrela spp*.), sapodilla (*Achras sapota*), pine (*Pinus caribaea*), salmwood (*Cordia alliodora*), cypress (*Podocarpus guatemalensis*), mamey (*Pouteria sapota*), rosewood (*Dalbergia stevensonii*), banak (*Myristica panamensis*), Santa Maria (*Calophyllum calaba*), yemeri (*Vochysia hondurensis*), and others. Santa Maria and mahogany, among other resources, were logged from the Cara Blanca project area in historic times (Kinkella 2003:52; Jose Vasquez, personal communication, 2014).

Pool 6

Pool 6 is the largest of the 25 pools in the Cara Blanca project area, measuring approximately 375 x 158 m. We were able to access the pool with the Blue Water Lagoon road, which extends c. 720 m south from the main road to Pool 6. The road was generally in fair condition but this did sometimes decline to poor condition throughout the season. When the road was dry, it was easy to drive down to the pool. However, with any rain on the day before or the day of exploration, we had to stop approximately half way down the road, so as not to get stuck in the mud. On May 21st, Jose's truck and Tony's truck became stuck in the mud; we had to radio to Jeff Roberson at Yalbac Ranch for help getting the trucks back to the main road.

Though multiple days were spent in the pool and visibility varied with the precipitation, Tony Rath noted that there was 15-18 m of visibility in the clearest conditions. The divers visited the pool on four occasions (May 10, May 21, June 12, June 13) but Jose, Stanley, and I visited the pool and multiple occasions between these dates in order to explore what we could. The visibility in the pool, and therefore the ability to accurately identify and record features within the pool, depended on the weather that particular day and during the days previous to visiting the pool. On two occasions (May 21st and May 23rd), heavy rain hindered our ability to proceed with exploration by disturbing the sediment in the pool. On May 22nd, the rain was too heavy to access the pool. The remainder of the days, however, were sunny and provided ample opportunity for recording features of the pool.

While it is now more lake-like than *cenote*, Pool 6's formation likely involved the collapse and merging of two *cenotes*. Upon entering the pool, Tony noted two depressions on the pool floor. The first is located approximately 15 m to the south of the Dive Platform (16Q0302797, 1927189) and has a maximum depth of 12.19 m. The second is in the northwest corner of the pool and is 18.30 m deep. It is possible that these two depressions were *cenotes* that collapsed, and as the water table rose, filled with water and formed the larger, lake-like water body.

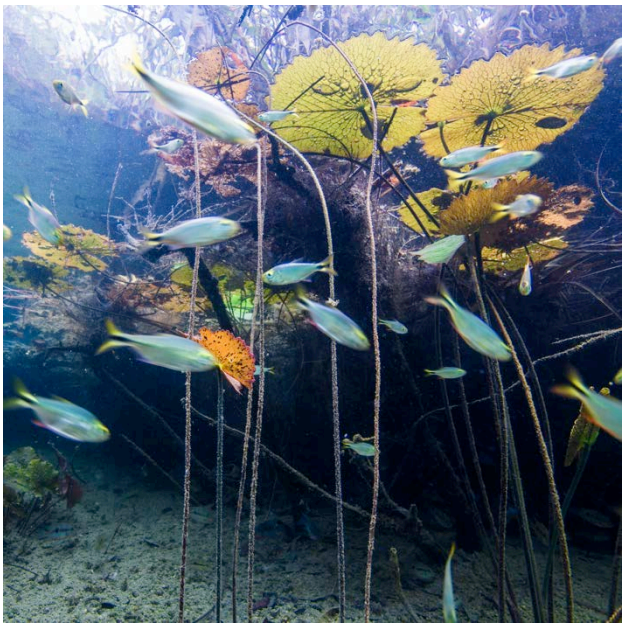

Figure 5.2 Water lilies in Pool 6. Photograph by Tony Rath.

The pool itself is lush with water lilies (*Nymphaea ampla*) (Figure 5.2), an indicator of potable water. Water lilies are incredibly sensitive plants and can only survive in particular conditions and their presence suggests that water is clean enough for drinking (Lucero 1999). For this reason, water lilies were important plants to the ancient Maya and are often depicted in the

iconography typically associated with Maya kings and water temples (Ishihara et al. 2006; McDonald and Stross 2012). The high quality of the water in Pool 6 supports the interpretation that it acted as an important source of water to both prehistoric and historic visitors. The divers also noted thousands of fish (Figure 5.3), consisting primarily of species of cichlids (*Cichlasomatinae spp.*): Tuba (*Cichlasomatinae synspiluma*), and Snook. The cichlids noted in Pool 6 differed in color than those located in Pool 1, suggesting that the pools are not connected underground and possibly representing a microevolutionary event.

The divers also noted an underwater cave on the eastern boundary of the pool (16Q0302873, 1927114). Tony Rath noted that there was a .5-knot outflow of cold water emanating from the cave. Because caves acted as a sacred place for the ancient Maya, portals to the underworld, ritual artifacts have often been recovered from cave contexts (e.g., Ishihara 2008; Moyes et al. 2009; Taube 2004). Further exploration of the cave could illuminate how prehistoric populations utilized Pool 6. The cave was impenetrable with the equipment that the divers had available and, therefore, will have to be explored in future field seasons. Three islands were also noted during survey. The largest island, 10 m north of a north-south running outlet, measures 5 x 7 m. They are natural and they present land that it is possible to survey but was not investigated further due to time constraints.

Figure 5.3 Fish swirl in Pool 6. Photograph by Tony Rath.

Finally, Jose, Stanley, and I conducted a brief vegetation survey of the area and noted multiple common species: Wild Plum (*Spondias radlkoferi*), Ramón (*Brosimium alicastrum*), Bayleaf Palm (*Sabal mauritiiformis*), Trumpet Tree (*Cecropia peltata*), W'eh-te (*Costus guanaiensis*), Santa Maria (*Calophyllum brasiliense rekoi*), Sapodilla (*Manikara zapota*), and Red Mangrove (*Rhizophora*

mangle). Most of this vegetation, though only a small percentage of the diversity present in the Yalbec area and surrounding Pool 6, can be used as food sources or for lumber. This brief survey highlights the economic significance of vegetation surrounding Pool 6, as well as emphasizing why loggers may have targeted the pool in historic and modern times.

Historic Properties

This year's exploration of Pool 6 yielded historic artifacts and features. The goal for Pool 6 survey was to elucidate the presence of what appeared to be a cut-stone wall on the southern edge of the pool. This wall, located early in the season by Tony Rath and his dive team, turned out to be made of wood (Figure 5.4). The wall (16Q0302769, 1926981) was located south of the Dive Platform at the edge of the mangrove vegetation cover. It measures .5 x .48 x .17 m and extends to an unknown extent into the vegetation cover at 30° west of north. The top of the wall is .5 m below the surface of the water/vegetation.

Figure 5.4 Showing the location of the wood wall in Pool 6. Photographs by Tony Rath.

Multiple additional shaped wood blocks were located to the east of the wall, including a wooden post (Figure 5.5) and cut blocks (Figure 5.6). A squared off segment of wood was located 9 m east of the wood block (Figure 5.7). This wood, identified as Santa Maria by Cleofo Choc, was removed from the pool for identification and sampling; it is a species often logged for use in construction projects (Smith 2013:20; Jose Vasquez, personal communication, 2014). Its square shape with possible saw cuts is reminiscent of the squared off logs exported from Belize. The block measures .54 x .47 m, and is .17 m at its widest point and .08 m at its thinnest. The block was photographed at Banana Bank and then returned to the exact location in the pool from which it was removed. A carbon sample from the Santa Maria block returned 2-sigma radiocarbon date ranges of 1681-1937 C.E. The large range of dates returned could be due to the sample being immersed in carbonate-rich water, a

Figure 5.5 Wooden post located in southern portion of Pool 6. Photograph by Tony Rath.

Figure 5.6 Wooden blocks located in southern portion of Pool 6. Photograph by Tony Rath.

Figure 5.7 Block of Santa Maria removed for identification and dating.

phenomena that has been previously noted in freshwater samples (Philippsen 2013). Though this presents us with a large range of possible historic occupation, it does allow us to place the anthropogenic activities occurring within the period of colonial logging.

Figure 5.8 Oxen yoke located in Pool 6.

Perhaps most significant, and most chronologically telling, was an oxen yoke recovered on June 13 (Figure 5.8). The yoke, which is was photographed and placed back into the pool in order to preserve it, measured .2 x .8 x .4 m and the length of the inner yoke, where the animals neck would fit, was .25 m. Oxen were introduced to Belize in 1805, the use of oxen increased the distance from which logger could collect trees to 8 miles (Smith 2013:5). Oxen were no longer used after 1909, when tractors were introduced for hauling (Smith 2013:5). In addition, we recovered and collected a

link of the iron chain used to hold together logs as they were floated towards the coast (Camille 2000:105; Smith 2013:3) (Figure 5.9). The link was identified by Jeff Roberson of Yalbec Ranch and is being kept in the storage facilities on Yalbec Ranch land. This portion of iron boom was removed from 8.5 m E of the original wood block.

Outlets

Two outlets were noted and recorded at the southwestern boundary of the pool. The first is runs north-south, the entrance of which (16Q0302788, 1926988) is 11 m east of the wood wall. At the entrance, this outlet is 8 m wide, though it narrows to < 1 m further down (south) the canal. Tony noted that this outlet had a flow of approximately 1.5-knots and extends to Labouring Creek. The outlet itself runs remarkably straight and appears to be artificial or at minimum straightened. There are instances of artificial canals being built throughout Belize, and their presence could indicate longer or more involved occupation (Finamore 1994:101). The canal would have been used in order to transport logs from inland to the coast in order to increase the area within which logging could occur. There continued to be shaped wood in the entrance of the canal. As we continued south down the canal, however, we only noted a wooden post (16Q0302764, 1926809). It is 100 m south of the entrance.

Figure 5.9 Chain-link recovered from Pool 6.

Just beyond the entrance to the canal, the vegetation on either side clears and it opens into a swamp-like area. Tony, Martin, Jose, Stanley and I attempted to survey this area, which is directly south of the original wood structure. The swampy conditions, including water too shallow for diver or snorkel equipment and sand in which we quickly sank up to our knees, however, made survey impossible. The canal quickly became impassable and we were unable to explore further. The entrance to the second outlet (16Q0302802, 1926997) is 15 m to the west of the first outlet entrance. This outlet is runs east-west and is much more stagnant than the first outlet.

On June 13, Tony Rath, with the help of Martin Spragg, Stanley Choc and Jose Vasquez, used his drone to take aerial photographs of Pool 6. They clearly show the outlets and their trajectory, the position of the islands within the pool, and the position of the original wood block (see Figure 5.4). The images also show the swampy conditions of the land to the south and east of the pool (Figure 5.10). Though these areas were difficult to survey, drier conditions might make the land passable. It is possible that this area was used as a temporary work site for loggers accessing the canals.

It is important to note that all of the shaped wood was located in the immediate proximity of the entrance of these outlets (see Figure 5.10). This supports the hypothesis that these outlets were important in historic logging operations. The north-south running outlet appears to provide greater opportunity for the transport of logs. Historic occupants would have floated logs down the artificial outlet to Labouring Creek, which is just c. 500 m south of Pool 6, eventually merging with the Belize River. Once on the coast, logs were stored in a storehouse at the mouth of the Belize River before being sold to ships from England, the Dutch colonies, and some North American cities (Smith 2013:1). Many resources sought by loggers could be found inland near rivers and lagoons, making Pool 6 an important location for logging operations immediately surrounding the pools, as well as on the ridges to the north.

Figure 5.10 Showing north/south trending outlet, swampy conditions to the south, and location of wood blocks in Pool 6. Looking South. Photographs by Tony Rath.

Concluding Remarks

Further research at Cara Blanca Pool 6 will illuminate both the prehistoric and historic significance of the pool and the land by which it is immediately surrounded. Future field seasons provide the opportunity to further explore the land to the south of the pool—access to the outlets and main pools would have provided ample opportunity for habitation or frequent use that could have left a material record. Future efforts will focus on further contextualizing the historic artifacts located during this field season (Figure 5.11). This includes exploring both the south trending and east trending outlets. The ecological context and diversity of the pool also warrants further investigation. The fully submerged cave identified by divers provides an opportunity for further underwater exploration.

This season's exploration of Pool 6 emphasized the historical significance of the Cara Blanca pools, highlighting the role they played in the logging trade. We recorded multiple fragments and blocks of shaped wood that aided in the transport of logs (likely mahogany and Santa Maria) from inland to the coast. The artificial outlets recorded offer insight into the manipulation of the landscape for the purposes of logging. Though much of the research regarding the Cara Blanca project area has focused upon the prehistoric significance, this season's surveys highlight the breadth of information that can be gleaned from a close examination of the Cara Blanca pools.

Figure 5.11 Pool 6 with location of key features and artifacts mentioned in the text.

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Chapter 6
Pleistocene Faunal Remains from Cara Blanca, Belize

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Preliminary dive surveys were made in Cara Blanca Pools 1 and 20 for fossil vertebrate material to supplement information provided by the recovery of the first fossil vertebrate remains in 2010 (McDonald 2011) and to document the context of the bones. We were able to recover material that confirmed the presence of the giant sloth, *Eremotherium laurillardi*, in Pool 1 and remains of sloth in Pool 20 (Muddy Camp), which is tentatively also considered to be *Eremotherium*.

Pool 1

Bone is quite common in Pool 1. The bone is preserved in a clay layer that has an approximate thickness of 5.1 meters and extends from a 2 meter high limestone ledge near the margin of the cenote. The top of the clay layer is at a depth of 17.3 m and extends towards the center of the cenote to the drop-off at a depth of 22.4 meters. The sediments appear to be composed primarily of residues from decomposed limestone and fragments of limestone. During preliminary excavations, no organic debris was encountered within the clays. The ledge on which the clay deposit containing bone is found appears to extend along the entire west side of the cenote.

Among the first bones encountered was a complete left femur of *Eremotherium* with the posterior side facing up (Figure 6.1). Next to the distal end of the femur was a molariform of *Eremotherium*. The molariform or molar-like tooth (Figure 6.2) was excavated and removed exported for stable isotope analysis at the University of Illinois at Urbana-Champaign. During excavation of the molariform, the distal end of the femur was exposed. Because the shaft of the femur was fractured, it was not advisable to attempt to remove it until we have more time for a proper excavation and the appropriate materials to remove it intact. Like the femur, the tooth was fractured but all of the pieces were recovered. During the visual survey of the clay deposit, numerous other bones were observed on the surface including vertebrae, limb bones, and what appears to be a complete pelvis. Like the femur, many of the limb bones appear fractured, a fact that will complicate their removal. The fractures are post-mortem and tend to form at right angles and are typical of breakage in bone with little or no organic material.

Overall there is a very high density of bone exposed on the surface of the clay deposits and it is very likely more will be encountered during excavations. All bones appeared to occur as isolated specimens and to date no articulated material was encountered, although in some areas there are high concentrations of bones which may be from a single individual. Given the 5 meter thickness of the bone-bearing clay, it is possible that bone is present throughout the deposit, although during the preliminary survey it appeared that most of the bone is concentrated at the lower part of the deposit. The highest bone observed was at a depth of 21.7 m. However, since most of the surface of the bone-bearing clay is covered by algae and other organic debris, many bones may be covered and not immediately visible. There will be a need to carefully remove this organic layer prior to either a more comprehensive survey or any excavations in order to both locate addional bones as well as limit it being kicked into suspension and lowering visibility.

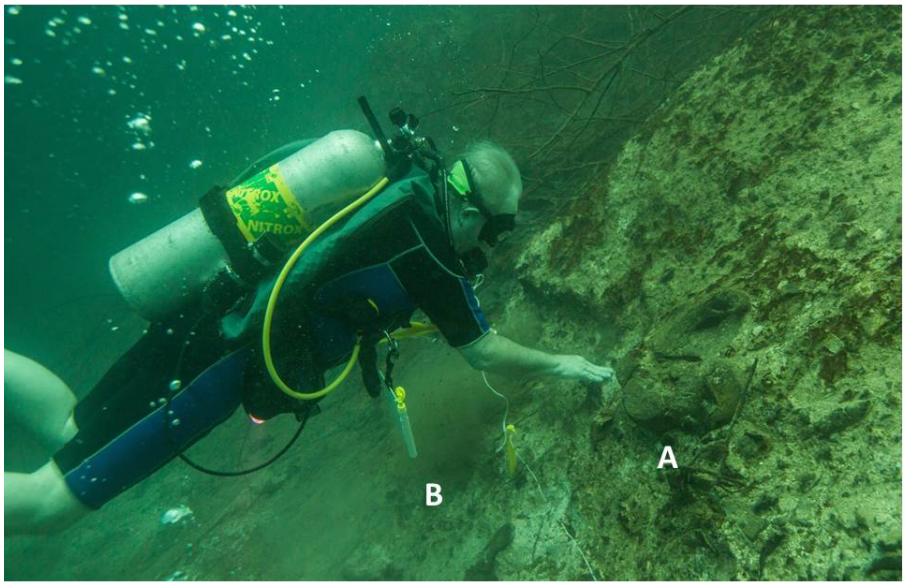

Figure 6.1. Femur of the ground sloth, *Eremotherium laurillardi in situ* in Pool 1. A indicates the proximal end of the femur and B indicates location of isolated molariform. Photo by Tony Rath.

Figure 6.2. Isolated molariform of the giant ground sloth, *Eremotherium laurillardi* from Pool 1, Cara Blanca. Photo by L. J. Lucero.

Pool 20 (Muddy Creek)

The bone-bearing clay deposit in the northwest area of Pool 20 closely resembles that present in Pool 1, though while the amount of bone observed was not as great as in Pool 1. The bone-bearing clay deposit is covered by a thicker and more widespread layer of algae and organic debris which

makes it more difficult to see bone and often required fanning the surface of the sediments to remove the algae in order to conduct the survey, so it is possible that while more bone was present, it simply was not as visible as at Pool 1. The thickness of the bone-bearing clay deposit is greater than that of Pool 1 and the minimum thickness of the deposit is 6.1 m. The top of the deposit is at 10.8 m and as in Pool 1 it abuts against a limestone ledge. It was not possible to determine the total thickness of the sediments or identify the base of the deposit as it extended deeper than the planned dive. However, the sediments retain integrity and next to the drop-off into the center of the cenote they form a vertical wall. The top of this vertical profile is at a depth of 12.2 m. The highest bone observed *in situ* was at a depth of 15.9 m. A centrum of a sloth thoracic vertebra (Figure 6.3) was recovered at 16.1 m. Exposed in the wall of the sediment was a diaphysis of a left femur of a juvenile sloth (Figure 6.4) at a depth of 14.9 m and this was collected as well. Both the femur and vertebrae were exported and are currently at the National Park Service for analysis.

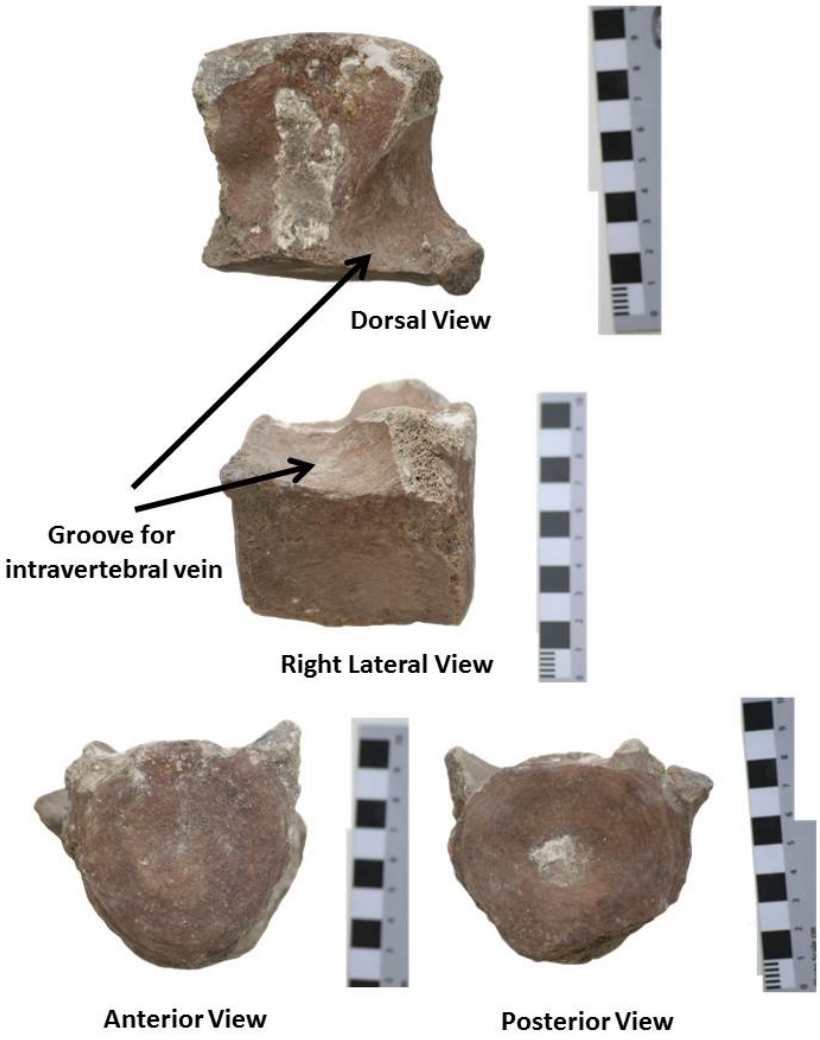

Figure 6.3. Centrum of sloth thoracic vertebrae from Pool 20.

Figure 6.4. Comparison of the diaphysis of the sloth femur from Pool 20, Cara Blanca with other sloth femora.

During the removal of carbonate matrix from the shaft of the juvenile sloth femur, an isolated tooth of a crocodile was found embedded in the matrix (Figure 6.5). Today there are two species of crocodile in Belize, *Crocodylus acutus*, the North American crocodile, and Morelet's crocodile, *Crocodylus moreletti* (Platt and Thorbjarnarson 2000a, 2000b). Other than indicating the presence of crocodile in the Pleistocene fauna, at this time it is not possible to identify what species is present, since a single isolated tooth is not taxonomically diagnostic. And since crocodiles are always replacing their teeth and shedding them, it is not possible to come up with a size estimate based on an isolated tooth. Today the North American Crocodile in Belize is found only along the coast, while Morelet's crocodile ranges farther inland along river systems. While it is most likely that the fossil is

from Morelet's crocodile, additional diagnostic material will need to be recovered to confirm that this is the species present.

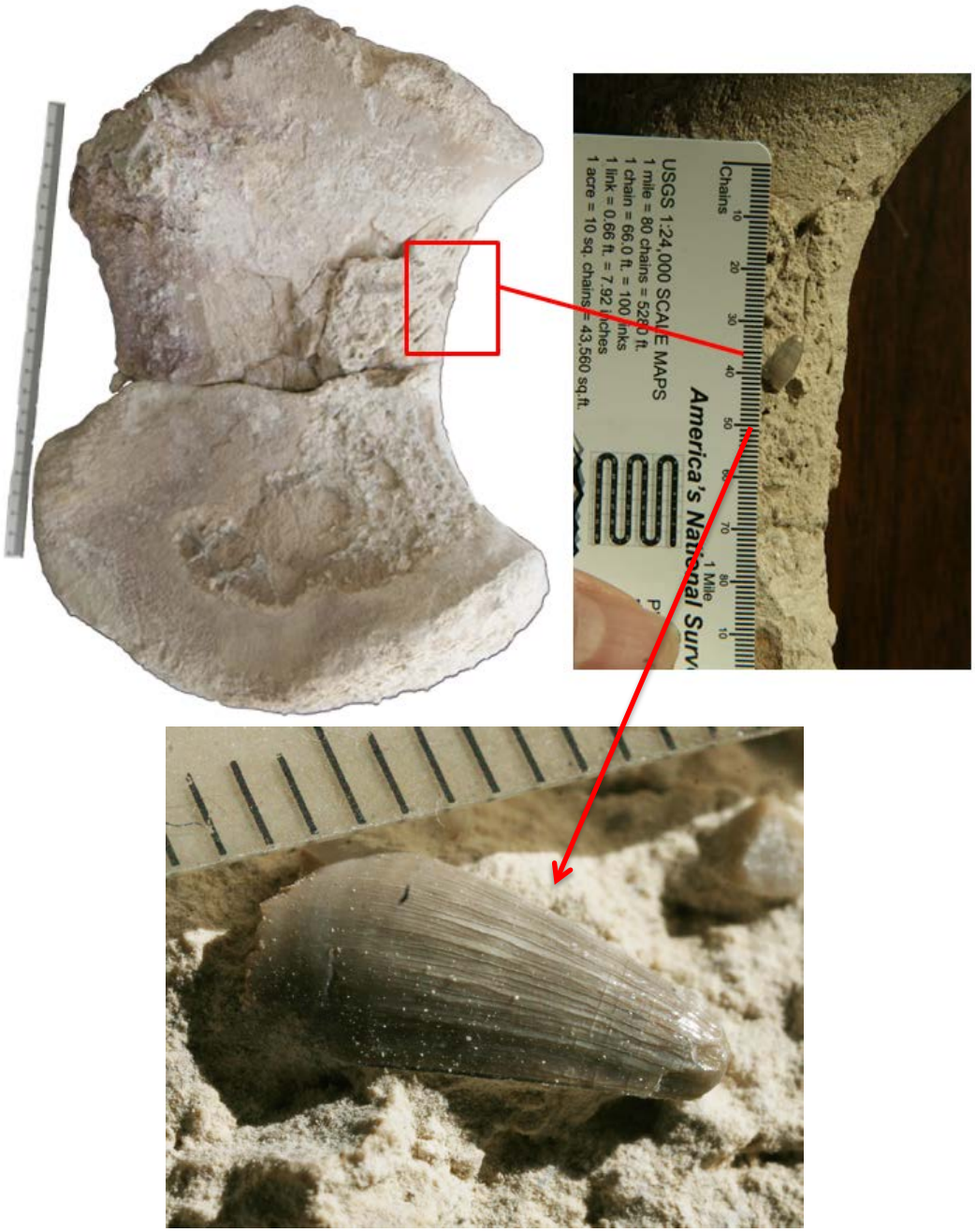

Figure 6.5 Crocodile tooth embedded in the matrix of femur, Pool 20

There are only two previous reports of fossil *Crocodylus moreletii*. The first is from the Pleistocene of Treasure Island, Peten, Guatemala, based on a maxilla. It was described by Mook (1959) as a new subspecies, *C. m. barnumbrowni*. There has been no further studies of this specimen and it not possible to determine whether or not this specimen is the recent species. The anatomical evidence suggests a close relationship with the modern form, but the specimen is so fragmentary that a definitive statement is not possible. The second specimen, based on a pair of partial lower jaws

from the Pliocene (Blancan) Las Tunas fauna from Baja California, that was referred to *Crocodylus cf. C. moreletii* by Miller (1980). The locality is well outside the range of *C. moreletii*, which is not present along the Pacific coast while *C. acutus* does live on the Pacific coast, ranging as far north as the mainland opposite the tip of Baja California and has been recently been reported by Mead et al. (2006) from Terapa, Sonoroa, Mexico.

Discussion

All bone recovered from both pools is heavily permineralized, probably due to secondary deposition of calcium carbonate, and in the case of the diaphysis of the femur from Pool 20 the shaft is coated in some places with well-cemented clay. The encasing sediments will need to be removed using an air scribe. Attempts to obtain a radiocarbon date from the first samples of bone recovered from Cara Blanca indicated that no organic material was present in the bone because the entire bone had been silicified (Lucero 2011). Any possible absolute dates for the site will depend on the recovery of plant material in the clay sediments, so during future excavations, extra care will be needed to watch for this material. During excavations in both pools, the removed sediments were checked for small vertebrate or invertebrate remains, but none were observed. Given the very limited amount of excavation done, they may be present elsewhere in the deposit and simply were not in the area being excavated.

While it would be expected that other taxa should be present in the cenote, to date the only confirmed identification is of the giant sloth, *Eremotherium laurillardi* (Figure 6.6). This species of sloth has a distribution that extends from southern Brazil northward through South and Central America into North America as far as along the Gulf and Atlantic coasts of the United States and has been referred to as the Panamerican sloth by Cartelle and De Iuliis (1995). Given its wide distribution it has been documented throughout Central America (Figure 6.7, Table 6.1), although this is the first time it has been reported from Belize. This oversight is not surprising since paleontological investigations in Central America in general have been limited and this is especially true in Belize, although the situation is changing (e.g., DeIuliis et al. in press) with the recovery of Pleistocene vertebrates from non-submerged cave sites. For example, the gomphothere, *Cuvierionius*, which is known from other localities in Central America is often found in association with *Eremotherium* (McDonald and Lundelius 2009), so its presence in the cenotes at Cara Blanca would not be unexpected. Given how little is known of the Pleistocene fauna of Belize, there is a strong possibility that the first records of multiple taxa for the country will be made with further work at Cara Blanca. The recovery of Pleistocene vertebrates from the two cenotes at Cara Blanca broadens the range of potential sites in Belize that preserves Pleistocene faunal remains. Based on a review of the literature, these appear to be the first cenotes in Central America from which Pleistocene faunal remains have been recovered, although cenotes with associated cave systems containing Pleistocene vertebrate remains are known from the nearby Yucatan Peninsula (Chatters et al. 2014).

While the vertebrate remains from Pool 1 that have been identified so far are clearly from *Eremotherium laurillardi*, the identification of the remains from Pool 20, while clearly sloth, are only tentatively referred to this species. A vertebral centrum by itself is not taxonomically diagnostic, other than indicating it is from a sloth. The fusion of the epiphyseal plates to the body of the centrum and absence of the epiphyseal lines indicates it is an adult. What makes this particular specimen interesting is that it does have the diagnostic feature of some sloth vertebrae in having the distinctive asymmetry of the pedicles and the groove on the right side for a branch of the intravertebral artery, a feature very characteristic of sloths (Gazin 1957; Hoffstetter 1959) (see Figure 6.3). This feature is present in only a few of the anterior thoracic vertebrae, so limits the location of the vertebrae within the vertebral column to between thoracics 4 to 8. Comparative measurements of the centrum from Pool 20 with other sloths known from North and Central America (Figure 6.7) indicates it is larger than the other sloths known from the late Pleistocene; *Paramylodon*, *Megalonyx*, and *Nothrotheriops*, and is at the lower end of the size range of *Eremotherium*, so possibly is from that taxon.

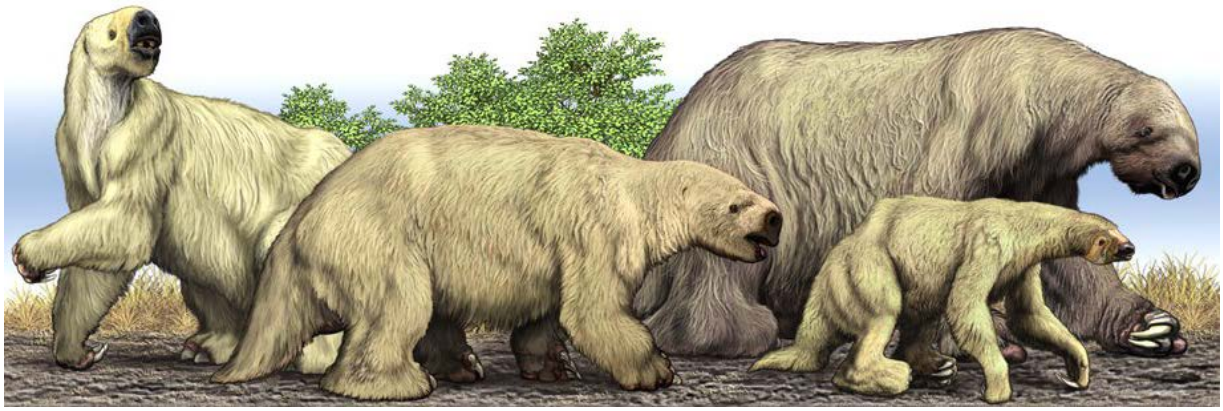

Figure 6.6 The four extinct late Pleistocene sloths in North America. Left to right: *Megalonyx jeffersonii*, *Paramylodon harlani*, *Eremotherium laurillardi* (large one in back) and *Nothrotheriops shastensis*. Illustration by Carl Buell.

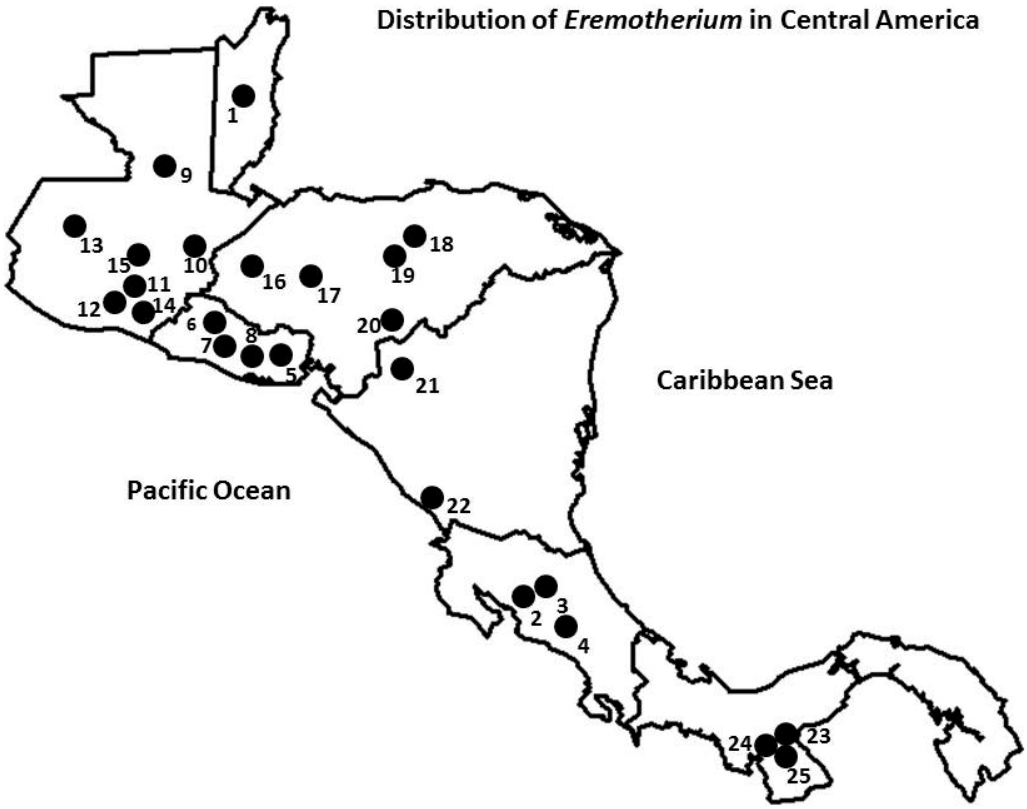

Figure 6.7. Distribution map of *Eremotherium* in Central America. Numbers refer to localities listed in Table 6.1.

The diaphysis of the femur lacks all of its epiphyses and none were found in the vicinity of the specimen when it was excavated. Unfortunately, as is often the case for many fossil vertebrates, usually only adult material is described, so there are few comparative measurements or even illustrations of the bones of juveniles or immature specimens. Morphologically the specimen does not closely match the diaphysis of other known Pleistocene sloths with which it was compared (see Figure 6.4), but this may simply reflect the small available sample of juveniles of fossil sloths for comparison. Additional study is required to make a definite taxonomic assignment.

During the Last Glacial Maximum it appears that the modern summer precipitation regime in the Yucatan had collapsed (Metcalfe et al. 2000). Leyden (1984) and Leyden et al. (1993) documented that the Central American lowlands were cooler and more arid during Interstadial Stage 3 (~ 36 to 24 ka) and continued to cool with increasing aridity during State 2 (~24-13 ka), with the lowest lake levels at this time and the presence of savanna and juniper scrub habitat. Given the essential absence of a rainforest environment in the region during this time, the presence of *Eremotherium*, which is considered to be a forest browser, is of interest. The stable isotope study of the molariform recovered from Pool 1 will provide a basis for comparison with other similar studies of the genus (Rossetti de Fátima et al. 2004), and aid in documenting the type of vegetation available to the animal as forage and the inferred climatic conditions under which *Eremotherium* lived at Cara Blanca. During the Late Glacial Maximum when there was the maximum lowering of sea level, the drop in sea level would have effectively lowered the water table throughout the Yucatan Peninsula and surrounding limestone areas such as at Cara Blanca where the surface of the pools is around 56 m above sea level. The reduced the amount of surface water available would have impacted the local vegetation as well as the fauna (Metcalfe et al. 2000).

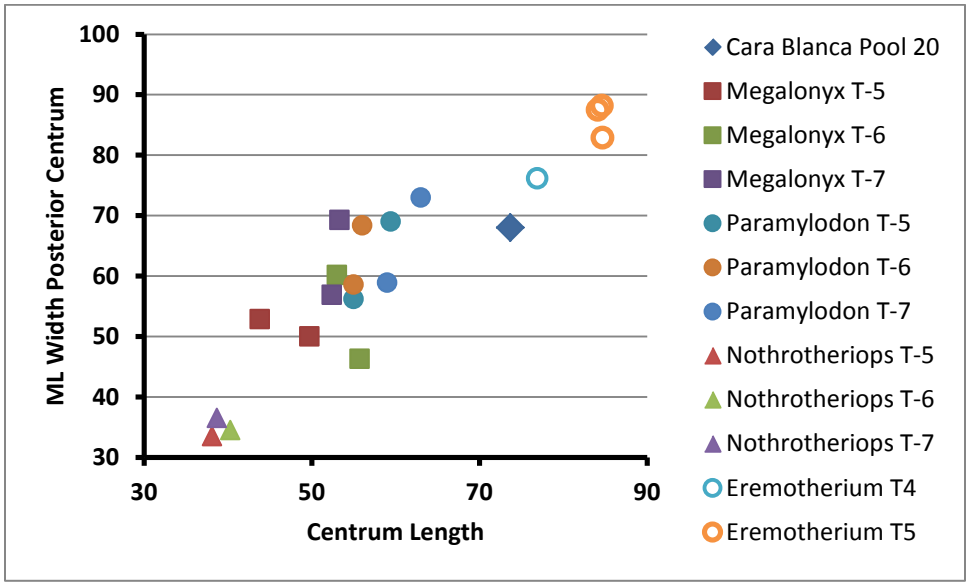

Figure 6.7. Comparison of the size of the thoracic centrum of the sloth from Cara Blanca Pool 20 with other sloths known from North and Central America. Number after the T indicates position.

The cenotes may have served as important water sources for the fauna, and resulted in the high concentration of vertebrate remains preserved. Today the water level in the cenotes is very close in elevation to the surrounding ground surface along most of its margins and access to the water is easy. During the Pleistocene with the drop in the local water table related to lower sea level, the steeper sides of the cenotes would have been exposed making access to the water more difficult. If these cenotes were the primary source of surface water in the region and was attracting the local fauna, the increased steepness of their sides may have prevented some individual animals from being able to exit. Juveniles, for example, may not have been as readily able to climb out of the steep-sided

cenote. With a lower water level each cenote may have acted perhaps as a selective trap in which juveniles or older individuals were not able to escape after climbing down to drink. As more material is recovered and ages of the individuals determined, we will be able to test this hypothesis.

While it is likely that the two beds formed under similar climatic conditions, one would expect differences since they did form under slightly different conditions in different depositional "basins." This would make sense given that we recovered a different genus from Pool 20 than those found in Pool 1. To explain the large number of sloths, it is possible that individual sloths or family groups got stuck over a long time period. This would make sense given that some fossils are encased in a limestone cement, while others are in a loose soil matrix. Until we can get radiocarbon dates, we cannot establish how they are related chronologically; the different pools could have been attracting local fauna at different times. While it is likely that the water levels in all the pools rose and fell essentially in sync as the local water table shifted in relation to the rise and lowering of sea level, given differences in overall morphology of each pool, each one would have had a slightly different history in terms of how accessible the water was to the local fauna and the potential for entrapment.

Summary

Based on the preliminary survey of two cenotes at Cara Blanca (Pools 1 and 20), a large number of complete and diagnostic bones of Pleistocene mammals were observed. To date, research to document and study the Pleistocene fauna of Belize has been virtually non-existent. Currently the Pleistocene vertebrate remains recovered are from caves and the recovery of vertebrate remains from the cenotes at Cara Blanca is the first in Central America. Based on what was observed in the cenotes of Cara Blanca during this preliminary study although to date only the extinct giant sloth, *Eremotherium laurillardi*, has been identified, it is very likely that additional taxa will be found with continued survey work and excavation. That two of the 25 pools at Cara Blanca contain Pleistocene faunal remains indicates a strong possibility that similar faunal remains will be present in other pools as well, although the logistics of conducting dives in these other pools may be more challenging given that they are not as easily accessed as Pools 1 and 20. However, the sites are well worth the challenge and have the potential to document late Pleistocene climate change in the Central American lowlands and its impact on the fauna.

Table 6.1. Records of *Eremotherium laurillardi* in Central America. AMNH – American Museum of Natural History, New York, United States; IAH - Instituto de Antropologìa e Historia, Guatemala City, Guatemala; MHNUSAC - Museo de Historia Natural Universidad de San Carlos de Guatemala, Guatemala City, Guatemala; MPA – Museo de Paleontología y Arqueología "Ingeniero Roberto Woolfolk Saravia" Estanzuela, Zacapa, Guatemala; UCMP – Museum of Paleontology, University of California, Berkeley, California, United States.

	Country	**State/Province /Department**	**Locality**	**Latitude**	**Longitude**	**Elev (m)**	**Reference**
1	Belize	Cayo	Cara Blanca, Pool 1	17.42° N	88.87° W	56	This paper
2	Costa Rica	Alajuela	Bajo de los Barrantes de San Ramón de Alajuela, Río Piedras, San Miguel	8.86° N	82.87° W	1060	Valerio and Laurita 2004 Segura 1942 Laurito 1993
3		Alajuela	Pital de San Carlos, Aguas Zarcas	10.38 ° N	84.35 W	150	Gómez 1986 Specimen lost
4		Puntarenas	El Indio	8.86° N	83.07º W	680	Mead et al. 2006b
5	El Salvador	Morazan	Hormiguero, Hacienda San Juan del Sur	13º 34' N	88º 04' W	181	Stirton and Gealey 1949 Webb and Perrigo

							1984
6		San Salvador	Río Tomayate, Apopa Munic.	13.78° N	89.17° W	404	Cisnernos 2005
7		San Vicente	Barranca del Sisimico	13° 38' N	88° 43' W	281	Webb and Perrigo 1985
8		Usulutan	Nuevo Granada	13.6º N	88.45º W	356	UCMP
9	Guatemala	Peten	Río de la Passion, Santa Amelia	16.25° N	90.03° W	136	AMNH
10		Zacapa	Estanzuela	14.32° N	90.29° W	967	MPA
11		Guatemala	San Antonio El Frutal, zona 12 Guatemala City	14.63° N	90.55° W	1500	MPA
11		Guatemala	Barranco de Ciudad Real zona 12, Guatemala City	14° 33’	90° 33’ W	1459	MHNUSAC
12		Chiquimula	El Rosario Ipala	14.6° N	89.56° W	424	MHNUSAC
13		Huehuetenango	Barillas de Huehuetenango	15.8º N	91.32° W	1473	IAH
13		Huehuetenango	Villatorro	15.31° N	91.53º W	1872	IAH
14		Santa Rosa	San Rafaelito	14.45º N	90.17° W	1376	
15		Baja Verapaz	Cabecera municipal de Salama,	15.1° N	90.32º W	1157	IAH
16	Honduras	Copan	Yeroconte, near Dolores de Copan	14.87º N	88.83° W	1167	McGrew 1942 Webb and Perrigo 1984
17		Comayagua	Orillas del Humuya	14º 24’ N	87º 39’ W	600	Webb and Perrigo 1984
18		Olancho	Gualaco	15.02 ° N	86.07º W	800	McDonald et al. 2008
19		Olancho	Manto	14.92º N	86.38° W	692	
20		El Paraiso	La Majadita	13.8° N	86.66º W	805	Jackson and Fernandez, 2005
21	Nicaragua	Estelí	El Bosque	13.32 º N	86.55 ° W	803	Gruhn 1978
22		Managua	Masachapa	11.79 ° N	86.52 º W	0	Lucas et al. 2008
23	Panamá	Herrera	El Hatillo Azuero Península	7.91º N	80.63º W	85	Gazin 1957
24		Herrera	La Trinidaíta, Azuero Península	7.92 º N	80.72º W	98	Pearson 2005
25		Herrera	Llano Hato Azuero Península	7.97 º N	80.68 º W	105	Pearson 2005

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Chapter 7
Report on Belize Dendrochronology Project: May 2014 Expedition

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In May 2014, I joined Prof. Lucero's expedition to the *cenotes* of Cara Blanca, Belize. My task was to evaluate the dendrochronological potential of the wood of the region, to see if we could produce the same sorts of paleoclimate comparison to societal activities that my colleagues and I developed for the region surrounding the Angkor Kingdom in Cambodia. In those studies (Buckley et al. 2010, 2014; Lieberman and Buckley 2012) long records of the hydroclimate of the region were developed from tree rings of Vietnamese cypress and we were able to make comparisons against the historical and/or instrumental records. This led to the discovery of protracted droughts (so-called mega-droughts) that occurred during key periods of societal upheaval, such as the demise of the Khmer kingdom in the late 14th to early 15th century CE. Our intent was to evaluate if this approach would be possible for Belize based on modern tree species (from trees currently alive and recently killed by a hurricane), and to recover logs from the depths of the *cenotes* that might be used to extend the records from live trees far into the past, assuming constant rates of trees falling into the *cenotes*.

We managed to obtain cross-sectional samples from trees in three settings as shown in Table 7.1: 1.) logs that had fallen into the *cenotes* at unknown dates in the past; 2.) hurricane-killed (October 2010) trees salvaged from the region surrounding Cara Blanca; and 3.) freshly-cut (2014, by Yalbac Ranch) trees from logging plots near the Guatemala border in northwest Belize. Due to lack of funding and time constraints, we have yet to properly analyze the samples from living or recently killed trees, however we did get 14C dates from the *cenote* logs (Figure 7.1). We do note, however, that all of the major tree species we focused on for this study appear to have clear annual rings that may allow for proper cross-dating (i.e., assignation of exact calendar dates to each ring in sequence). However, at least for the trees we sampled, it is unlikely that our records would extend more than 150 to 200 years into the past.

Table 7.1 Details of the wood samples collected from Belize in May 2014

Location	**Sample ID**	**Label ID**	**Species**	**Date**
Pool 1 Log	P1L01	none	cedar	Modern (14C)
Pool 1 Log	P1L02	none	nargusta	Modern (14C)
Pool 1 Log	P1L03	none	redwood	Modern (14C)
Pool 1 Log	P1L04	none	unknown	Modern (14C)
Pool 1 Log	P1L05	none	allspice	
Road to Pool 1	P1RL01	none	purple heart	2010 killed
Road to Pool 1	P1RL02	none	black mylady	2010 killed
Road to Pool 1	P1RL03	none	black poisonwood	2010 killed
Road to Pool 1	P1RL04	none	nargusta	2010 killed
Road to Pool 1	P1RL05	none	mahogany	2010 killed
Road to Pool 1	P1RL06	none	jessema	2010 killed
Road to Pool 1	P1RL07	none	sapodilla	2010 killed
Road to Pool 1	P1RL08	none	bitterwood	2010 killed
Road to Pool 1	P1RL09	none	black poisonwood	2010 killed
Road to Pool 1	P1RL10	none	santa maria	2010 killed
Road to Pool 1	P1RL11	none	ramon	2010 killed
Road to Pool 1	P1RL12	none	copal	2010 killed
Road to Pool 1	P1RL13	none	white mylady	2010 killed
Road to Pool 1	P1RL14	none	mayflower	2010 killed
Forest Log	FT01	40D-3-65-38	santa maria	2014 cut

Forest Log	FT02	40D-2-7A-18	red myalady	2014 cut
Forest Log	FT03	40D-7-41-399	nargusta	2014 cut
Forest Log	FT04	40D-2-2-389	bastard rosewood	2014 cut
Forest Log	FT05	40D-8-20-391	mahogany	2014 cut
Forest Log	FT06	40D-1-40A-301	black cabbage bark	2014 cut
Yalbac Sawmill	YSM01	SJ-29-64-18		2010 killed
Yalbac Sawmill	YSM02	SJ45-51A-49		2010 killed
Yalbac Sawmill	YSM03	SJ59-8-49		2010 killed
Yalbac Sawmill	YSM04	SJ11-37-301		2010 killed
Yalbac Sawmill	YSM05	CC20-14-18		2010 killed
Yalbac Sawmill	YSM06	SJ14-83-315		2010 killed
Yalbac Sawmill	YSM07	CC11-6A-49		2010 killed
Yalbac Sawmill	YSM08	CC46-42-391		2010 killed
Yalbac Sawmill	YSM09	SJ14-73-38		2010 killed
Yalbac Sawmill	YSM10	SJ43-17-399		2010 killed
Yalbac Sawmill	YSM11	SJ56-36-399		2010 killed
Yalbac Sawmill	YSM12	CC19-33-399		2010 killed
Yalbac Sawmill	YSM13	CC28-29-312		2010 killed
Yalbac Sawmill	YSM14	SJ61-30-391		2010 killed
Yalbac Sawmill	YSM15	SJ61-114-391		2010 killed
Yalbac Sawmill	YSM16	SJ28-54-18		2010 killed
Yalbac Sawmill	YSM17	CC15-10-312		2010 killed
Yalbac Sawmill	YSM18	SJ43-42-101		2010 killed
Yalbac Sawmill	YSM19	CC22-59-312		2010 killed
Yalbac Sawmill	YSM20	BR80-49-315		2010 killed
Yalbac Sawmill	YSM21	SJ90-26-315		2010 killed
Yalbac Sawmill	YSM22	SJ75-19-389		2010 killed
Yalbac Sawmill	YSM23	BR80-10-389		2010 killed
Yalbac Sawmill	YSM24	CC5-18-389		2010 killed
Yalbac Sawmill	YSM25	BR71-73-301		2010 killed
Yalbac Sawmill	YSM26	BR13-8-17		2010 killed
Yalbac Sawmill	YSM27	BR47-113-17		2010 killed
Yalbac Sawmill	YSM28	CC29-3-301		2010 killed
Yalbac Sawmill	YSM29	SJ104-60-38		2010 killed
Yalbac Sawmill	YSM30	SJ13-19-38		2010 killed

Lab.-Nr.	sample name	$\delta^{13}C^{1,2)}$ [‰]	^{14}C content[1)] pMC	calibrated age[3)]
VERA-6064	BP1-1: Belize Cenote Project BP1-1 90' depth Cedrela?	-27.6 ± 1.1	117.20 ± 0.54	1958AD (8.0%) 1959AD 1988AD (87.4%) 1991AD
VERA-6065	BPI-2: Belize Cenote Project BP1-2 60' depth redwood	-26.0 ± 1.1	104.32 ± 0.47	1956 AD (61.2%) 1957AD 2008 AD (8.8%) 2009AD 2009AD (25.4%) 2010AD*)
VERA-6066	BPI-3: Belize Cenote Project BP1-3 60' depth Combretaceae (Nargusta)	-28.5 ± 1.4	114.02 ± 0.53	1958AD (5.0%) 1959AD 1991AD (90.4%) 1994AD

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Vienna Environmental Research Accelerator
VERA-Laboratorium, Währinger Straße 17, Kavalierstrakt, A-1090 Wien, Austria

VERA-6067	BPI-4: Belize Cenote Project BP1-4 60' depth spp.??	-28.7 ± 1.3	106.63 ± 0.49	1957AD (8.1%) 1958AD 2003AD (1.5%) 2003AD 2004AD (84.3%)2009AD 2010AD (1.5%) ... *)

1) 1σ –uncertainty
2) determined with the AMS system
3) calculated with OxCal4.2 and the Bomb13NH2 calibration curve, data correspond to the 2σ-confidence level, probability of the individual time periods in brackets. *) indicates the warning of OxCal4.2 "Date may extend out of range".

Enclosed you also find an invoice for the age determination and we kindly ask to remit the requested amount to our bank account.

With best regards

Eva Maria Wild

Ao. Univ. Prof. Mag. Dr. Eva Maria Wild

Peter Steier

Mag. Dr. Peter Steier

Figure 7.1 Radiocarbon results for the logs obtained from Pool 1 from SCUBA.

***Cenote* samples**

Over the course of several days we used SCUBA to access submerged logs in Pool 1 and cut wedge sections from them using hand held saws (Figure 7.2). This work was most arduous and slow, hence we only managed 5 samples in the few days we had (see Table 7.1). Upon returning to the US, I sent four samples out for 14C dating and they all came back with modern dates (see Figure 7.1). It is almost certain that logs dating several thousand years are theoretically possible to find in the *cenotes*, provided they do not decompose entirely, but they may be at depths greater than we are able to safely work, and possibly under sediment. This is something worth exploring in upcoming trips, possibly through the use of unmanned submersible drones—technology that is available.

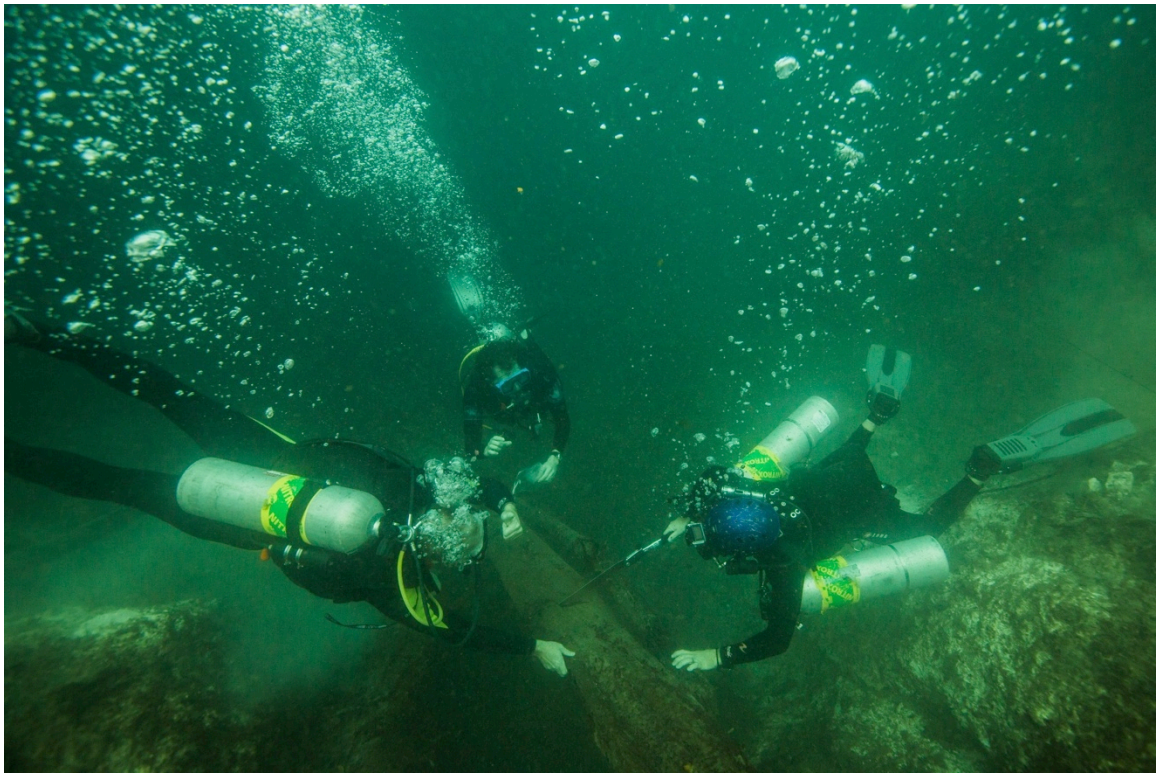

Figure 7.2 Divers cutting a wedge section from a log at 90 feet depth in Pool 1.

Modern forest samples

We obtained cross-sectional samples from a broad array of trees from the area near the *cenotes* and also farther afield, thanks to the cooperation of Jeff Roberson and the Yalbac Sawmill (Figure 7.3). The hurricane of 2010 killed thousands of trees in the region surrounding Cara Blanca and these trees were salvaged and milled. Jeff and his crew graciously cut samples for our study and supplied us with species and location information (see Table 7.1). We also were allowed to cut several logs along the roadside on the way into Pool 1, and to visit an active logging plot near the Guatemala border and take sections from several trees that were freshly logged (2014).

Figure 7.3 Some of the samples from the Yalbac Sawmill organized by species.

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Chapter 8
Settlement in the Spanish Lookout Corporation (SPLC) Fields of Yalbac

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The Valley of Peace Archaeological (VOPA) project works primarily at Cara Blanca, Belize, located on land owned by Yalbac Ranch, a sustainable logging company focused mainly on mahogany and other popular hardwoods. Yalbac Ranch has been an important contributor of logistical support to the VOPA project, providing upkeep of roads as well as other services that make the project archaeologists' lives easier. However, thousands of acres of Yalbac Ranch's property were severely damaged in October 2010 by Hurricane Richard, and in the following April by massive wildfires (Dept. of Environment, 2014). As a result of these natural disasters, the potential for the sustainable logging of hardwoods on Yalbac's property decreased significantly, resulting in Yalbac Ranch selling approximately 55,229 acres of land in three separate blocks to the Spanish Lookout Corporation (SPLC), a Mennonite community corporation. These three blocks of land, the South Block, Green Hills, and the East Block, are slated for agricultural development, ranching, and/or homesteading, some of which has already begun (ibid.) (Figure 8.1). Unfortunately, the major Maya center Yalbac, as well as other archaeological resources, fall within the acreage sold to SPLC, specifically in the South Block, of which 90% is to be cleared for agriculture. Figures 8.2 and 8.3 show the land slated for development in the South Block in relation to Yalbac, as well as the Cara Blanca pools, before and after the recent clearing of jungle by SPLC. Yalbac has already been recognized as significant (Dept. of Environment 2014; Lucero 2003, 2011) and will remain untouched by SPLC development; however, no such exceptions have been made for other archaeological resources within the area. Several other recommendations have been made regarding the archaeology of the South Block development area, including that significant mounds be avoided and that areas of densely concentrated mounds are used only for grazing or that crops are planted around mounds; but these are only recommendations (Dept. of Environment 2014).

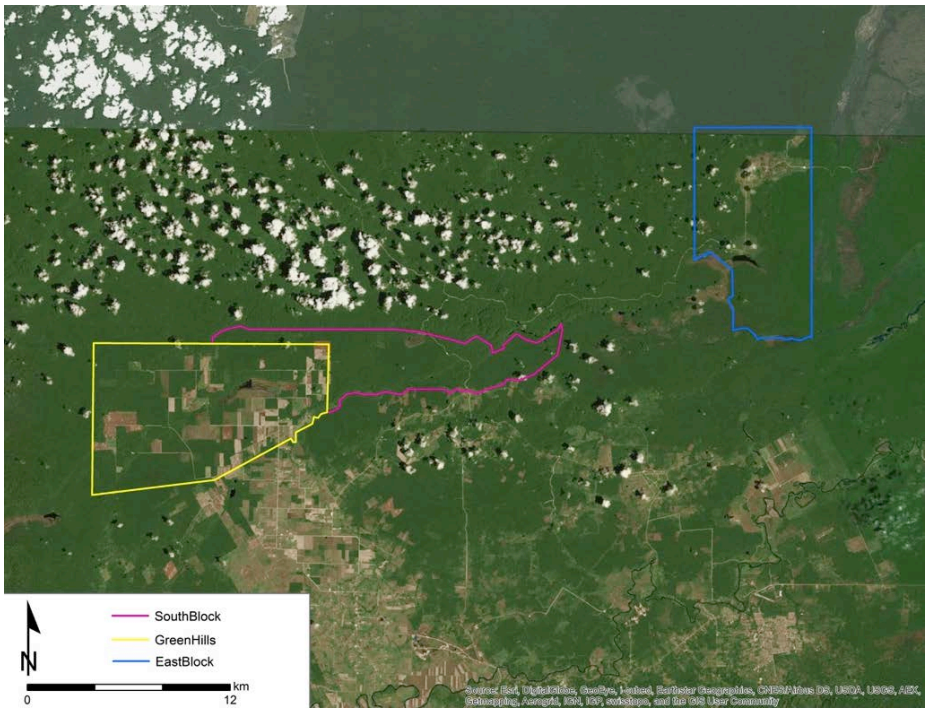

Figure 8.1: The South, East, and Green Hills blocks sold by Yalbac Ranch to SPLC

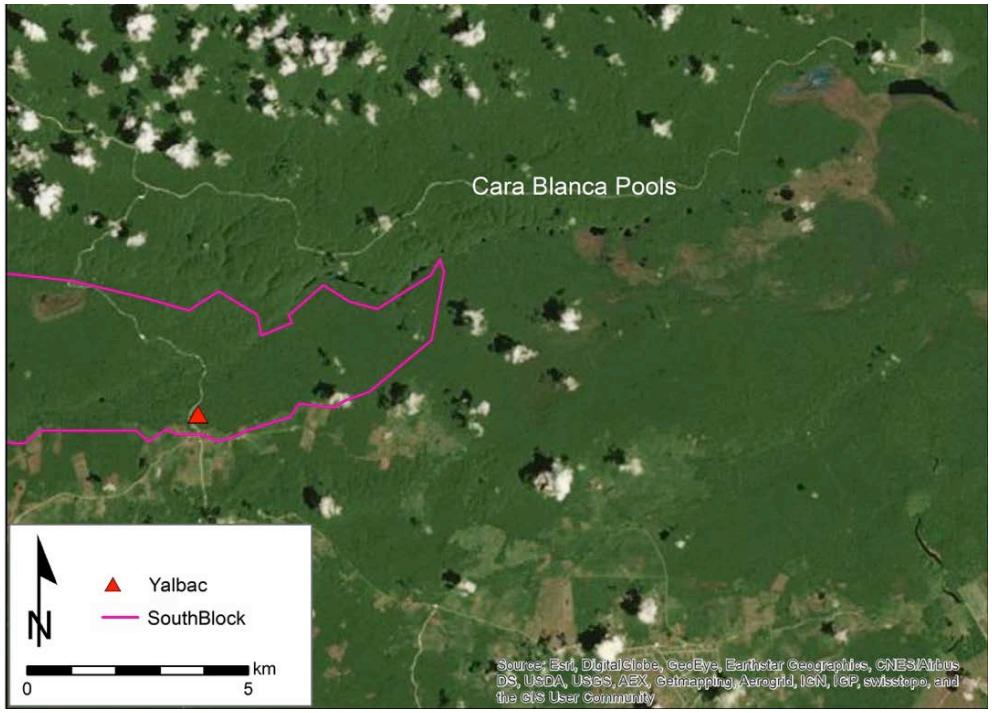

Figure 8.2: Location of the South Block in relation to the Maya center Yalbac and the Cara Blanca pools PRIOR to jungle clearing by SPLC

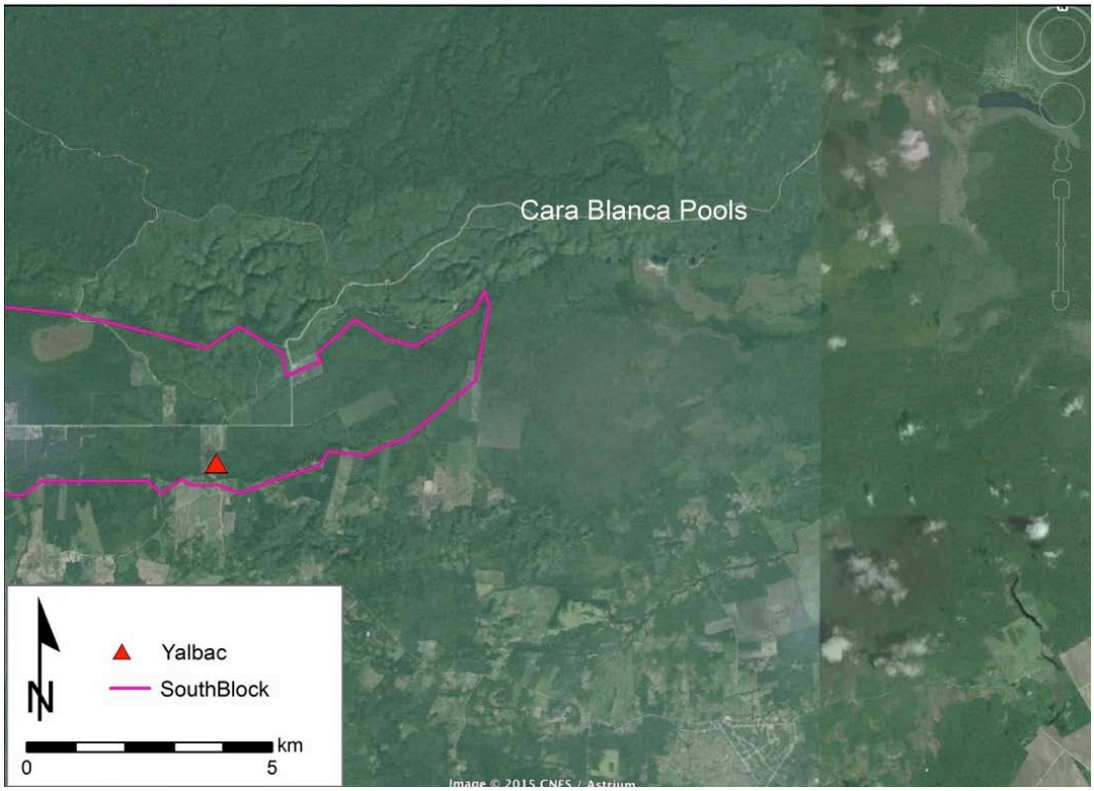

Figure 8.3: Location of the South Block in relation to the Maya center Yalbac and the Cara Blanca pools AFTER recent jungle clearing by SPLC

The Cara Blanca pools, the foci of this archaeological project, lie approximately 1 to 2 km away from the South Block project area, and thus will not be directly affected by agricultural development; however, they are potentially subject to damage from agricultural by-products. In order to protect these important archaeological and natural resources, a buffer zone of 200 feet (60.96 meters) will be left undisturbed around the pools in order to prevent agricultural runoff from affecting the pools (Dept. of Environment 2014), though Drs. Andrew Kinkella and Lisa Lucero have submitted a request to the Institute of Archaeology for a buffer zone of 500 meters.

As a result of the imminent danger to the cultural resources of the region posed by development, the Institute of Archaeology requested that we survey several fields that had already been cleared during the 2014 field season. Of course we were eager to comply, as the destruction to both the natural and cultural resources of the region is already somewhat alarming. A total of three different fields, Fields 1, 2, and 3, were surveyed over the course of three days in (Figures 8.4 and 8.5). As is evident in Figures 8.4 and 8.5, significant destruction due to clearing and road construction has already affected much of the jungle. Field 1 is located at the base of the hills, in view of the Cara Blanca cliffs (Figure 8.6). The field is bordered on north by the hills, on the east by a road, and on the south and west by jungle. Fields 2 and 3 are located approximately 1.5 kilometers to the southwest of Field 1, just north-northwest of Yalbac. Fields 2 and 3 are divided from each other by a road, and are bordered to the north by a road and to the south by jungle. Field 2 is bordered to the west by jungle, and Field 3 to the east by jungle.

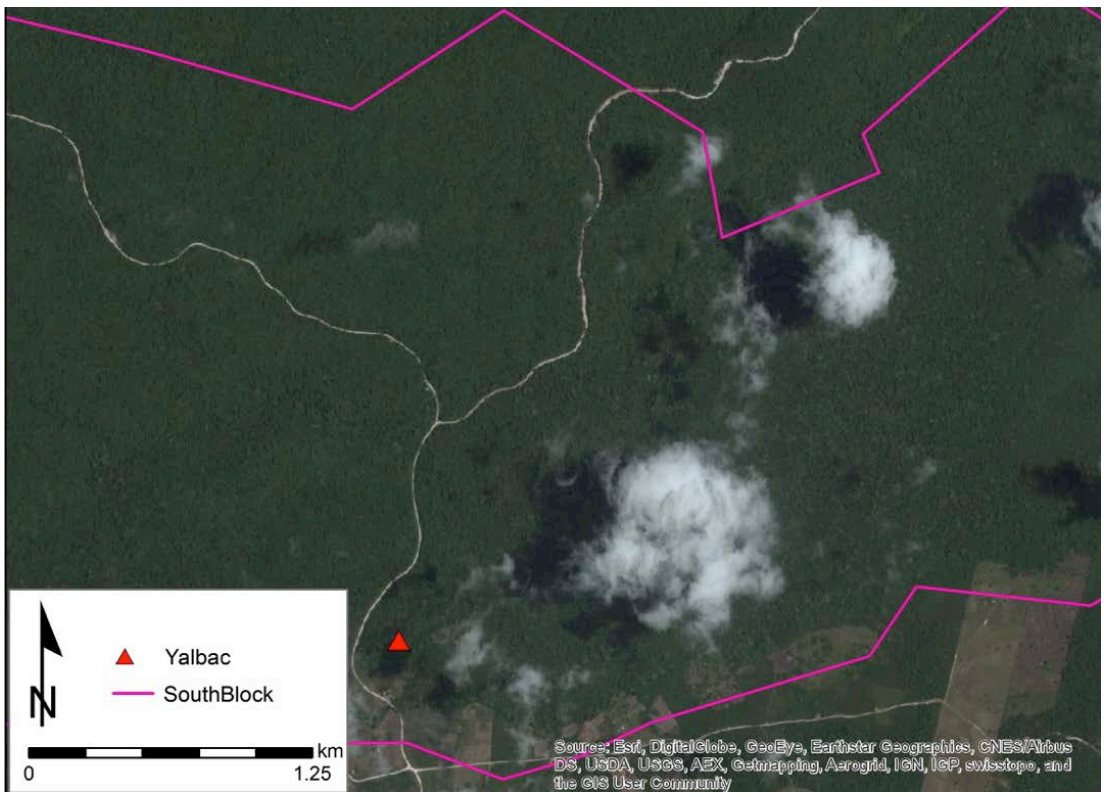

Figure 8.4: The region of the South Block in which we were to survey PRIOR to the recent clearing of the fields

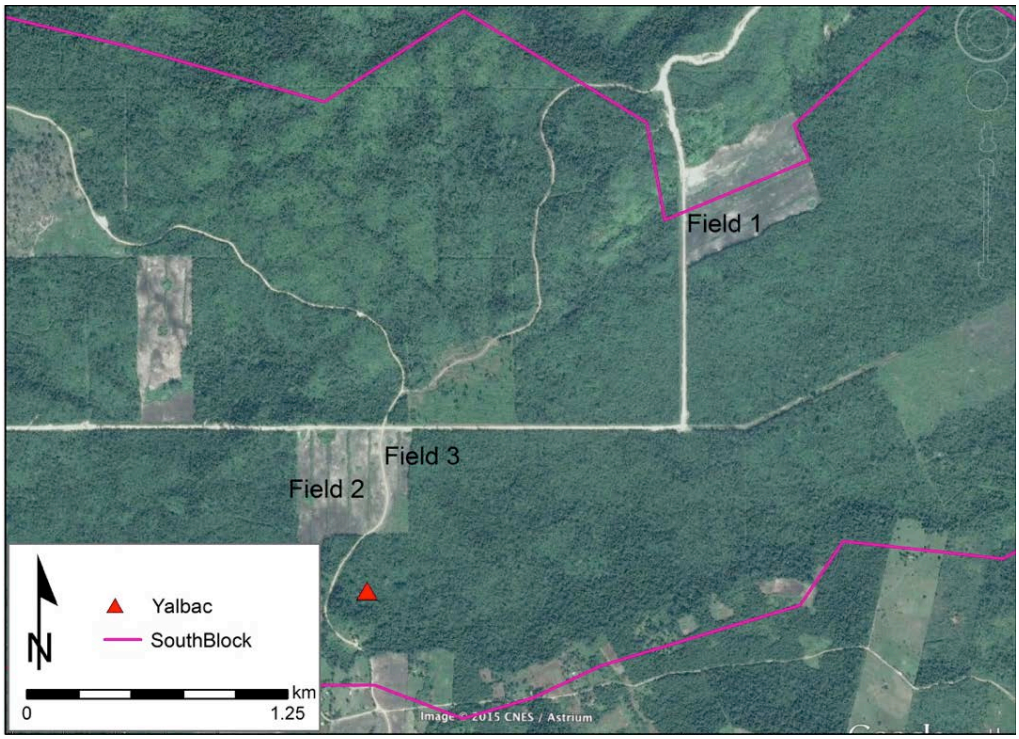

Figure 8.5: The region of the South Block in which we were to survey AFTER the clearing of the fields, with the three fields we surveyed labeled


Figure 8.6: Overview of Field 1 (view to southeast)

Survey Results

Field 1 was the first to be surveyed, and was also the largest and most time consuming. The field had four existing divisions within it, demarcated by rows of dead and burnt vegetation as a result of the land clearing by SPLC. We used these rows of vegetation to create 4 transects running roughly east to west, with the first transect on south end of the field. Field 1 was the only field to have designated transects (Figure 8.7).

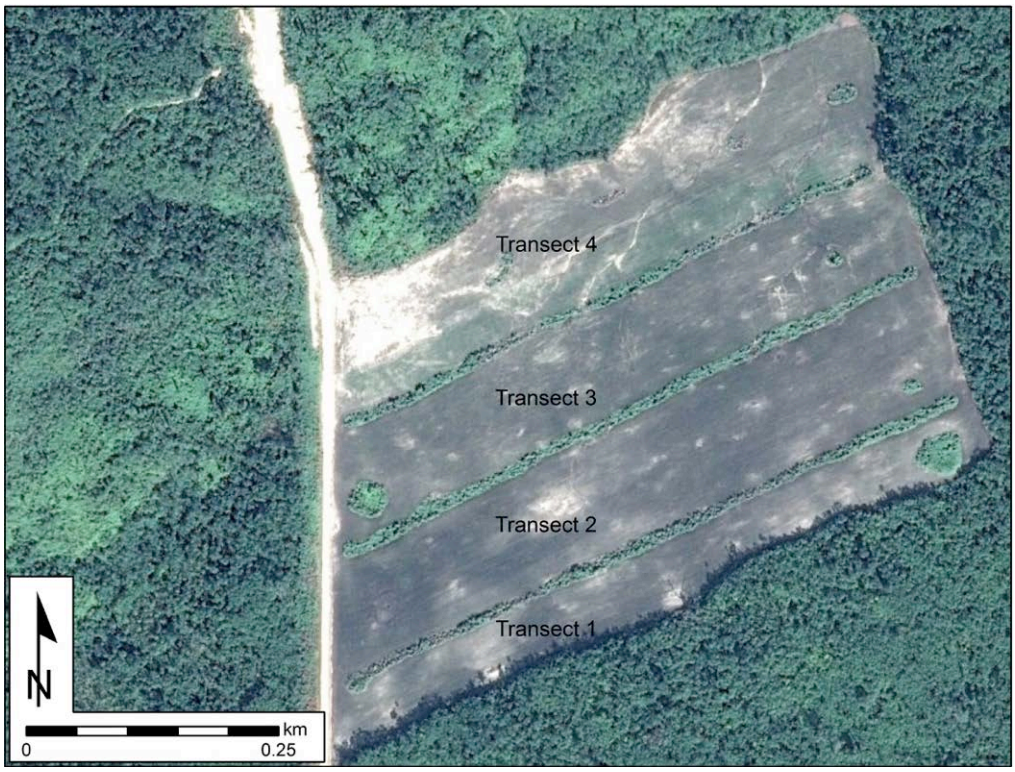

Figure 8.7: Field 1 transects

We began the survey taking extensive data and notes on the mounds that were identified. For each mound we measured and recorded the length, width, and height, as well as an orientation. At least one GPS coordinate was also collected for each site, with multiple points being collected for sites with more than 1 mound, using a Garmin Colorado 300. This GPS unit has an accuracy of within 10 meters, thus some error is to be expected when mapping the collected data points. Supplemental information, such as notes on the materials present or on plow damage, was recorded as necessary. This method of recording proved to be very time consuming, and we were only able to record three to four sites per hour.

In order to expedite the recording process, I devised a type system after the first day of survey based on what we recorded in Field 1 (Figure 8.8, Table 8.1). This system is loosely inspired by a project I worked on in Illinois, ranking sites for development purposes (Benson et al. 2014). This system allowed surveyors to identify sites as falling into a category during survey, rather than recording extensive information for each mound.

Figure 8.8: Examples of each of the mound types

Table 8.1: Types

Type	Height (m)	Cut Stone	Artifacts	Notes
1	< .5	No	Few	Generally smaller that 2m by 2m in area
2	.5 – 1.5	Not Likely	Few	Vary in size
3	> 1.5	Likely	Many	Relatively large, single structure
4	> 1.5	Likely	Many	Multi-structure groups
5	< .5	No	Few	Daub scatters

Sites types:

Type 1: Small, low scatters of cobbles, with few artifacts and no cut stone. Mounds are roughly .5 meters or less in height, and around 2.0 by 2.0 meters in length and width. Type 1 may have no noticeable increase in elevation as compared to the surrounding landscape.

Type 2: Slightly larger than Type 1, with heights ranging from .5 to 1.5 meters. Cobbles are present, but there is no cut stone. Length and width of Type 2 mounds vary.

Type 3: Large mounds, roughly 1.5 meters in height or greater. Artifacts present and cut stone is also likely to be present. Type 3 sites are significant against the surrounding landscape.

Type 4: Large, multi-structure platform and plaza groups (typically 3 to 4 structures). Type 4 sites can be similar to Type 3, but more expansive with a platform or plaza.

Type 5: Areas of densely concentrated daub that were typically found near mounds. These areas of daub had no elevation increase over the surrounding landscape, and may or may not have had other artifacts present. We interpret these areas as likely "kitchens."

Some variation does exist within the categories, for example a low Type 2 mound may have cut stone, or a Type 1 mound may have more than a few artifacts. In these cases, the most accurate mound type was assigned, and additional notes were taken to explain any varying factors.

The type system proved to be a much more efficient method for surveying the fields and recording the remaining mounds. Types were retroactively assigned to the mounds recorded in Field 1 on the first day of survey. The remainder of the Field 1 mounds, and all of the Field 2 and 3 mounds were recorded according to their type. While exact dimensions and orientations were not collected for the remainder of the Field 1 mounds and the Field 2 mounds, estimates for height, length, and width were made for mounds in Field 3. GPS coordinates were collected for all recorded mounds.

A total of 127 different mound/mound groups and 2 wattle and daub concentrations were recorded in the three fields. The first field had significantly more sites, 90, as compared to Fields 2 and 3, which had 29 and 10, respectively. As all three fields are bordered on two sides by jungle, some mounds recorded remained partially enveloped in heavy vegetation. See Table 8.2 and Figure 8.9 for a complete breakdown of mound types distribution across the three fields.

Table 8.2: Types by field

Field	Type 1	Type 2	Type 3	Type 4	Type 5	Total
1	33	34	18	3	2	90
2	1	13	12	3	0	29
3	1	4	4	1	0	10
Total	35 (27%)	51(39.5%)	34(26%)	7(.05%)	2(.02%)	129

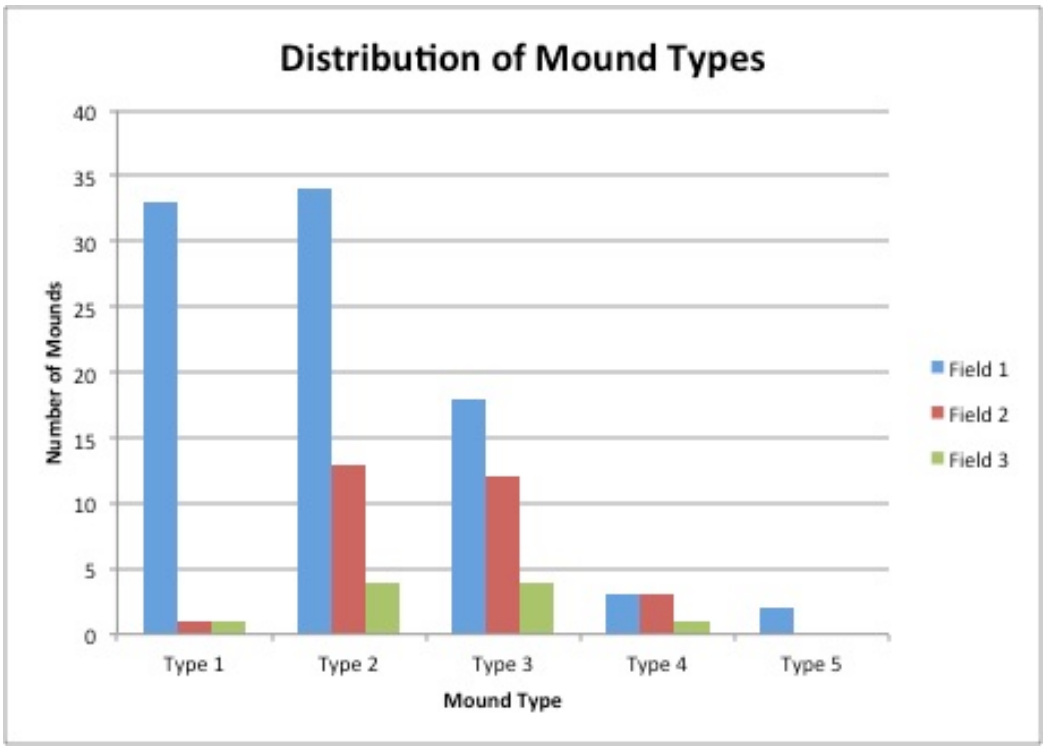

Figure 8.9: Distribution of mound types across the three fields

This variation across fields may be due to several reasons. First, it is very possible that there were just more mounds present in Field 1; however, Field 1 was also the most level and well-plowed field of the three (Figure 8.10). Fields 2 and 3 had been cleared of jungle, however at the time of survey, they had not yet been plowed flat, meaning there were significant variations in surface conditions (Figure 8.11). Vegetation, at times dense, still covered much of the fields, and there were considerable variations in elevations, making it difficult to both identify mounds, particularly the smaller mounds, and to physically move across the fields. Because of these surface factors, it is possible that more small mounds were present, but they were simply not visible to the surveyors. It is also possible that additional mounds were present in transect 4 of Field 1. According to the surveyors, transect 4 was essentially a field of cobbles, and only distinct mounds were recorded. As Type 1 mounds are defined as scatters of cobbles with little to no elevation, it is possible that additional unrecorded Type 1 mounds were present in transect 4 of Field 1.

Type 2 sites were most common across all three fields and within each individual field. This is to be expected, as Type 2 represents a mid-level site size. Type 1 mounds were second most common overall, however only one Type 1 mound was found in Field 2 and Field 3 each, therefore the large number of Type 1 mounds in Field 1 skews the overall picture. Type 3 was third most common overall, Type 4 was fourth, and Type 5 was the least common (Figures 8.12, 8.13, 8.14). Figures 8.13 and 8.14 show via the aerial photography that Fields 2 and 3 have undergone additional clearing since the time of survey, giving them a similar appearance to Field 1. Several sites were built into natural ridges or hills in the landscape. These included two Type 2 and one Type 4 sites in Field 1, one Type 4 in Field 2, and two Type 3 in Field 3. The fact that these mounds were built into natural features complements other information suggesting the Maya were using the natural landscape to their advantage when possible (see Chapter 4). Moreover, building these mounds into the natural landscape may speak to Maya perceptions of and interactions with the landscape as important aspects of daily life.

Figure 8.10: Field 1 overview

Figure 8.11: Field 3 overview (bottom left) and Field 2 (top right), showing Mound 1

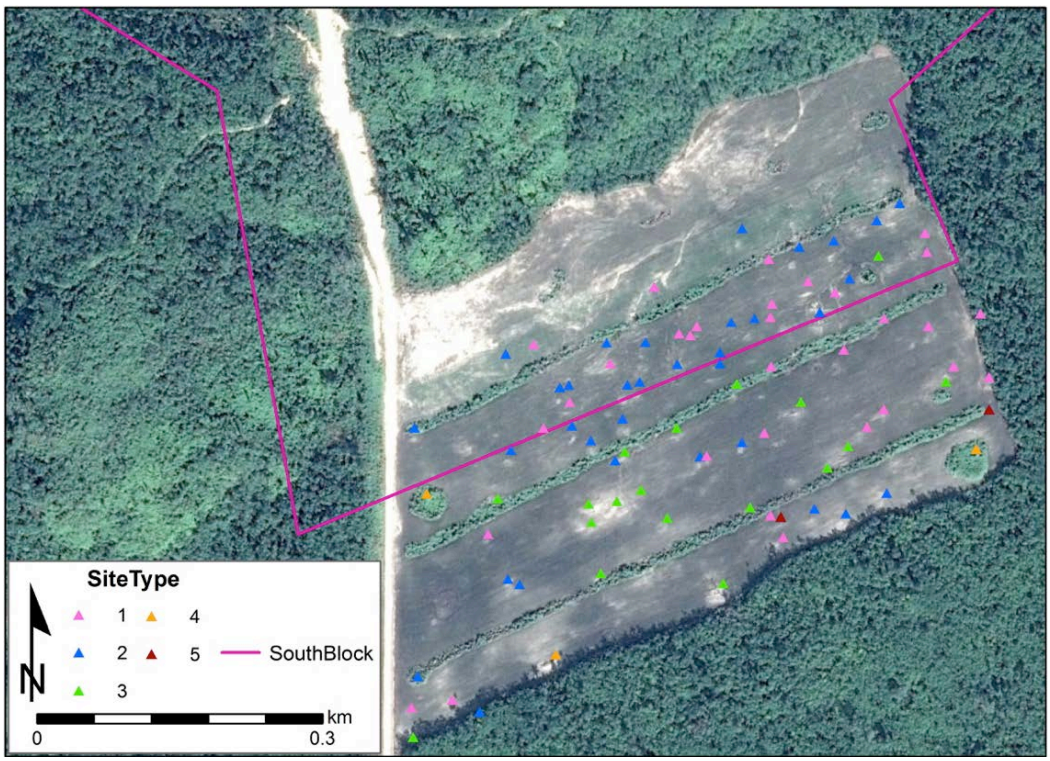

Figure 8.12: Recorded mounds in Field 1

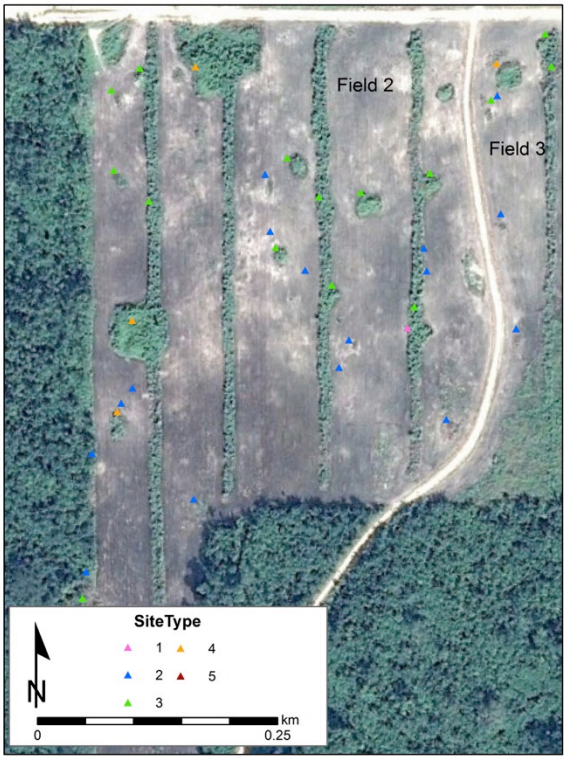

Figure 8.13: Recorded mounds in Field 2

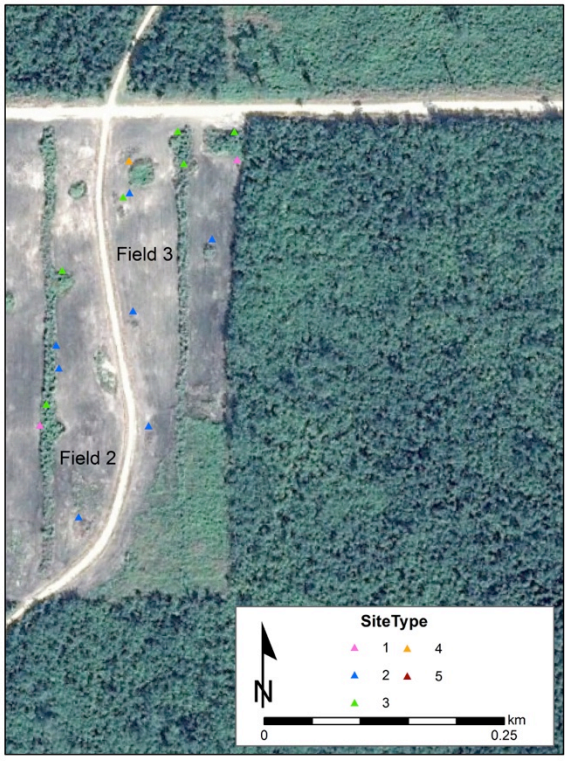

Figure 8.14: Recorded mounds in Field 3

Note regarding Fields 2 and 3: additional clearing occurred between the time we surveyed and the time these aerial photographs were taken

In addition to recording previously unknown mounds, this survey also allowed us to assess the physical damage done to mounds as a result of the clearing and burning of the fields. Many mounds displayed extensive plow damage (Figure 8.15), and at least one mound showed evidence of looting. Furthermore, we were able to record areas of concentrated mounds or significant solitary mounds that had been damaged, despite recommendations made to protect these archaeological sites (Dept. of Environment 2014).

Figure 8.15: Mound 1-14 in Field 1, with arrow pointing to where the mound was plowed through

Spatial Analysis of Recorded Sites

Upon looking at the map of sites in Field 1, a pattern became somewhat apparent that certain sites looked as though they tended to be further separated than others. Because of this, I decided to run a few tests to see if there were any patterns to how the sites were laid out spatially in terms of their type. There are two important notes to keep in mind regarding this analysis. First, Type 5 was not included, as there were only two Type 5 sites and they were both in Field 1. Second, while statistics were used by ArcMap to measure some aspects of this data, the results and interpretations presented here were *not* tested for statistical significance; however, trends can still be recognized.

A combination of a few handy tools in ArcMap provides some insight into the distribution of the sites, primarily a tool that measures the nearest distance between different points on the map. In other words, the tool takes each mound and measures the distance of the closest mound. In this case, the average nearest distance between recorded mounds is 32.672 meters. This number becomes useful when looking at the individual "nearest neighbors" for each mound. For example, for Type 1, 8 mounds' closest neighbors were *farther* than the average of 32.672 meters and 27 mounds' closest neighbors were *less than* 32.672 meters away. The rest of the results can be seen in Table 8.3. It is important to keep in mind when viewing this table that, although results are separated by site type, the mounds are being measured against all other types. In other words, the nearest neighbor of a Type 4 mound in this calculation could be any type of mound, not just another Type 4 mound.

Table 8.3: Distance between sites by Type in relation to the average distance between all mounds

Type	# with nearest neighbors closer than 32.672 meters	# with nearest neighbors farther than 32.672 meters	Total # of mounds	% of mounds with nearest neighbors farther than 32.672 meters
1	27	8	35	22.85%
2	34	17	51	33.33%
3	28	16	34	47.06%
4	1	6	7	85.71%

This analysis is useful because it shows that as mounds become larger and more significant, they tend to be farther away from other mounds on average. Therefore, the larger the site, the higher the probability that it is farther on average from the nearest site. A second way to look at this distribution is by averaging the nearest neighbors for each site type (Table 8.4).

Table 8.4: Average nearest neighbors by Type

Type	Average Nearest Neighbor
1	25.666 meters
2	33.432 meters
3	34.605 meters
4	52.772 meters

The average nearest neighbor further supports that as mounds get larger, they get more isolated. This especially apparent in the jump from Type 3, at 34.605 meters, to Type 4 sites, at 52.772 meters.

Finally, one last visual way to demonstrate this spatial distribution is through a site density analysis (Figures 8.16 and 8.17).

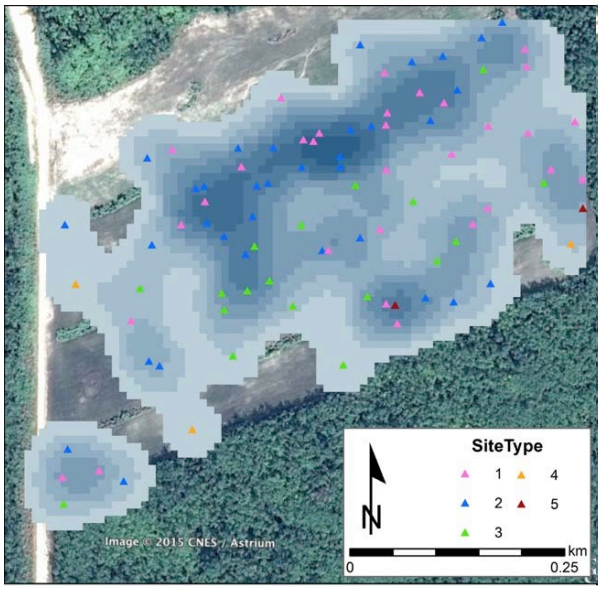

Figure 8.16: Density map of Field 1

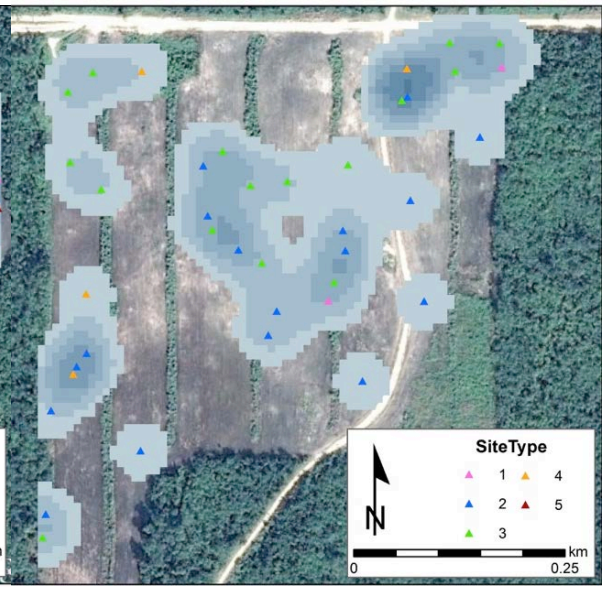

Figure 8.17: Density map of Fields 2 and 3

These density maps provide a visual, showing where sites are denser (darker blue) or less dense (lighter blue). With a few exceptions, Type 3 and 4 sites tend to be in areas of lighter blue, or less dense areas. Types 1 and 2 sites, the smaller sites, tend to be in areas of denser concentration. This density analysis supports the above analysis showing that larger sites tend to be more spatially separated.

Surface Artifacts

Although we did not collect any of the artifacts associated with the recorded sites, we did photograph some on site that we gathered. Ceramics were by far the most common type observed, and overall the assemblages suggested a domestic context for the majority of the mounds. As can be seen in Figures 8.18 and 8.19, a typical ceramic sample included a variety of vessel types, including plates, bowls, and jars, as well as various slips.

Figure 8.18: Ceramics from Field 1, Mound 6

Figure 8.19: Ceramics from Field 2, Mound 4

Other materials observed included red and blue chert flakes, chert bifaces and biface fragments, mano and metate fragments, and chunks of plaster (Figures 8.20, 8.21). Some historic materials were noted as well, such as broken bottles and a chain in Field 3.

Figure 8.20: Metate fragment from Field 3, Mound 7

Figure 8.21: Artifacts from Field 1, Mound 3, including a chipped stone biface, groundstone tools, a mano, and a metate fragment

The most interesting artifact recorded was a piece of drilled alabaster found at a Type 4 platform group in Field 3 (Figure 8.22). Not many artifacts were observed at this mound other than the alabaster, and it appeared that there might have been specialized areas present on this particular platform group.

Figure 8.22: Drilled alabaster found in Field 3, Mound 4

Concluding Remarks

Several important observations can be made based on this analysis of Maya settlement in the cleared SPLC fields. The survey results illustrate the diversity of rural Maya settlements; four of the five site types are directly related to the size of the structures and mounds, which in turn may represent the status, both in terms of wealth and social standing, of the inhabitants of those structures. These settlements were not composed of one homogenous class, but were instead formed of a diverse group of people from different social and economic classes, each perhaps contributing something different to the settlement and the nearby center Yalbac. The Maya living in these fields likely provided subsistence and other goods crucial for survival to those living at Yalbac, but perhaps equally as importantly, they would have provided other, less tangible services. Yalbac was a regional political center, and it was not built solely on the backs of the elites or rulers who lived there, rather the more dispersed Maya farmers would have provided labor to build and maintain Yalbac's structures and temples. Additionally, the Maya would have participated in rituals and social and political events at Yalbac (Lucero 2007). The social, political, and religious backdrop provided by Yalbac would likely have been attractants for both elite and non-elite Maya to settle in the area.

Perhaps more importantly, however, is the close proximity of Yalbac and its dispersed farmers to the Cara Blanca pools. The research conduced over the course of the VOPA project provides ever more compelling evidence of the ritual significance of these natural water sources during the Terminal Classic (see Chapters 2, 3, and 4). The involvement of the Maya living at and around Yalbac in rituals at the Cara Blanca pools was perhaps as crucial to their future survival as was growing maize, beans, and squash. In sum, the Maya living in these cleared fields and surrounding area were not just farmers going about their daily business, but they were people involved in the construction and maintenance of Yalbac as a regional center, the enactment of intense political dramas, and the performance of important rituals at Cara Blanca meant to secure their futures as water became more scarce.

While not all of the varied sites recorded in this survey can be excavated or saved prior to their destruction by modern agriculture and development, mitigating even a sample would provide

significant information about the daily lives of this diverse group of people. The existing damage to the mounds was both widespread and obvious as we walked through the plowed fields during the 2014 field season. Mounds of all types and sizes had been plowed over, or in some cases, plowed through, as a result of the clearing of these fields. Unfortunately, the past is not renewable, and once damage like this is done to archaeological sites, there is no way to recover the information that has been lost. By sorting mounds in the type system, we can more effectively assess the extent of damage from agricultural activities or other forms of development to different archaeological resources. This system of sorting also has the ability to help with mitigation of these sites in the future, allowing us to potentially rank each site by archaeological significance and by how much time and labor they require to be salvaged before they are completely destroyed by farming or other activities. Recording and ranking sites allows archaeologists to make better-informed decisions about what they can excavate with the time and resources allowed. Regardless of what mounds can be salvaged before they are lost to other activities, this type system allows for a comprehensive way to record mounds or sites when time or a deadline is a significant factor, thus giving archaeologists a chance to get a glimpse into the lives of the past peoples who inhabited these landscapes.

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Chapter 9
Chechem At The End of The Road: The 2014 Cara Blanca Settlement Survey (CBSS)

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Moorpark College

The 2014 Cara Blanca Settlement Survey (CBSS) is a continuation of the archaeological study of the Cara Blanca Pools that began in 1997 as part of the Valley of Peace Archaeological Project (VOPA – see Lucero 2006). The first archaeological work at Cara Blanca focused on Pool 1, the results of which became the basis for my master's thesis (see Kinkella 2000). For my dissertation research that followed, I expanded the scope of my inquiry to contain all 25 Cara Blanca Pools by implementing a 400-meter-wide transect which began at the site of Yalbac and progressed northeast for four kilometers to the westernmost Cara Blanca pool (Pool 7). The transect then continued east, following the Cara Blanca escarpment and ending in an impassible swampy area immediately east of Pool 6. Ultimately, 16 of the 25 known pools and their associated settlement were recorded in my dissertation (see Kinkella 2009). In 2010, the settlement survey was expanded eastward, recording Pools 17-21 and 24, and associated settlement (see Kinkella 2011). For this season, the goal of the settlement survey was to continue the transect east from Pool 21 towards Pools 22, 23, and 25, the final pools in the Cara Blanca vicinity (see Figure 9.1).

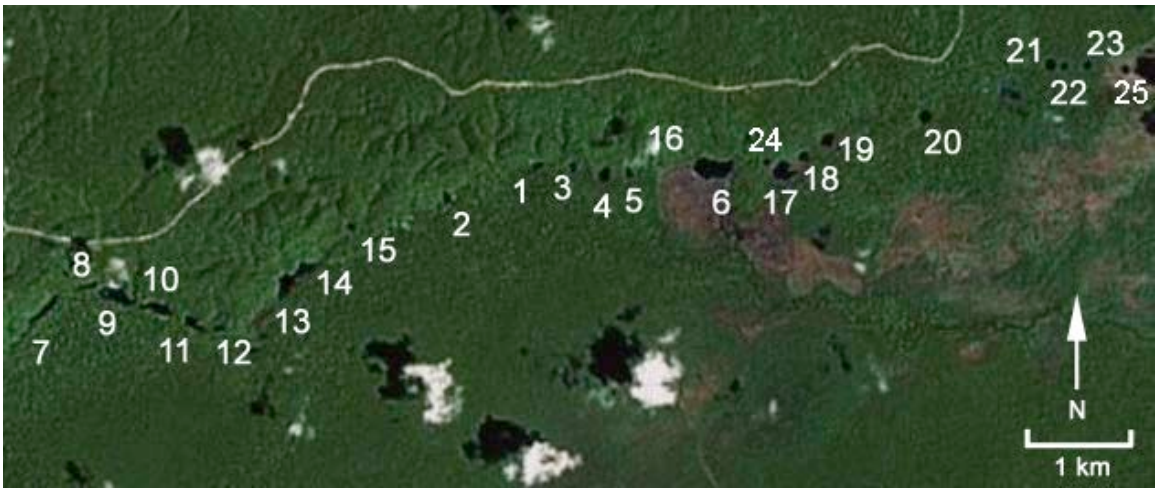

Figure 9.1. The 25 Cara Blanca Pools (Pools 1-16 were the subject of my dissertation). 2014 investigations were concentrated in the northeast corner of this map.

The data obtained from the Cara Blanca Settlement Survey is utilized to learn more about how the ancient Maya interacted with the pools in their daily lives. These pools can be generally placed on a continuum where the westernmost are best defined as scarp-foot springs (shallow with gentle-sloping sides - Pools 7-14), changing to classic cenotes in form as one travels east (deep with sheer sides - Pools 1-5, 16-25 – see Kinkella 2009). Some of these pools have ancient Maya dwellings around them, and some do not. I hope to ultimately be able to differentiate these pools into ritual versus subsistence locations, and define the associated settlement in the same terms.

Research Strategy

The work described here was undertaken over two days, on May 9th and 10th, 2014. The primary objective of these investigations was to visit Pools 22, 23, and 25, the easternmost Cara Blanca Pools which lie in an east/west orientation along the interface between the steep Yalbac Hills

and the flat northern extremities of the Belize Valley (Figure 9.1). Once located, these pools would be assessed in terms of their feasibility for possible diving explorations in the future, and good access points for divers would be recorded using GPS. In addition, any settlement found during the journey would be recorded using a handheld GPS in tandem with the 1:50000 Belize Government maps, and be drawn to scale. All work described below was undertaken by myself and one Belizean field assistant.

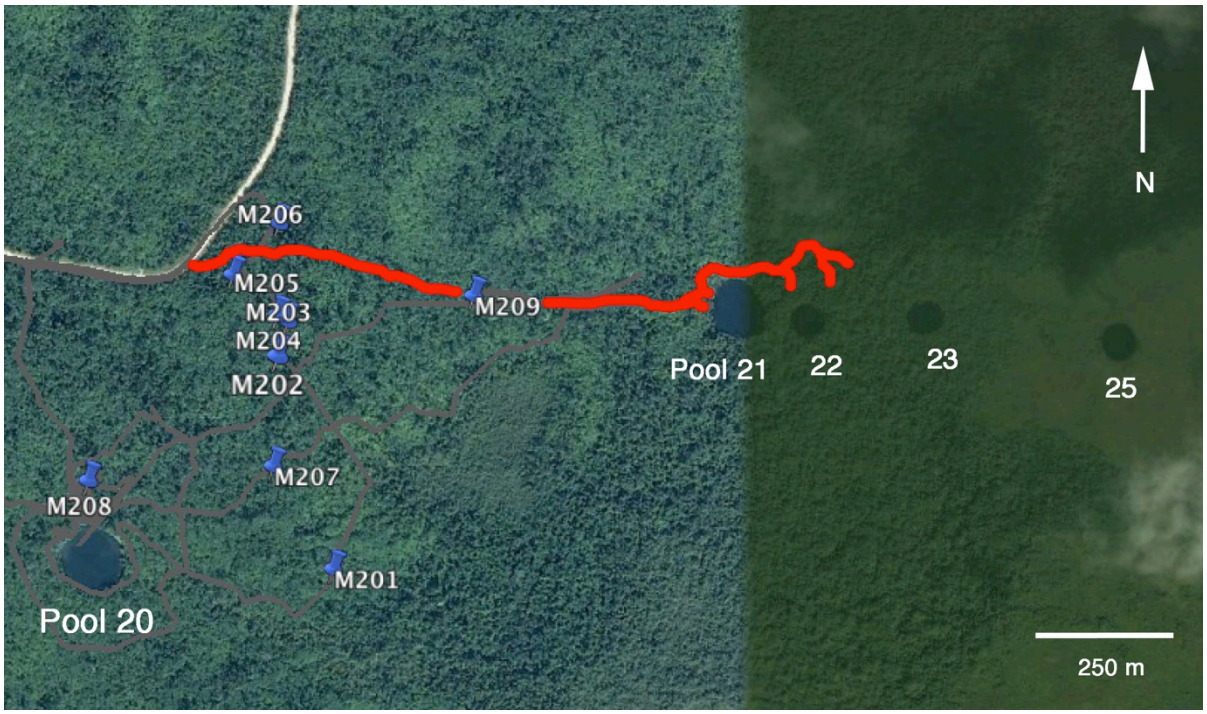

Figure 9.2. The 2014 CBSS survey route (in red), including the location of M209 in relation to the Pool 20 settlement area.

The 2014 Cara Blanca Settlement Survey (CBSS) Results

Both days began at a trailhead we had created in 2010 (see Kinkella 2011), at the side of the main road that runs across the top of the Cara Blanca escarpment (Figure 9.2). At a major bend in the road approximately 500 meters north of Pool 20, we walked into the dense secondary growth and began cutting a trail due east towards Pool 21.

One new structure was located on the first day east the Pool 20 settlement group. The structure was numbered M209 (Figure 9.3). It is small, approximately 1 m in height, and with a footprint of five by seven meters (see appendix). I assume that this small structure dates to the latter part of the Late Classic (AD 750-900), similar to virtually all other structures in the Cara Blanca area (see Kinkella 2000, 2009). The builders of M209 aligned the foundation to the north, and used cut stone in the construction. The mound is located on the top of a minor ridge that is approximately one meter higher than the mildly undulating land to the south. As I continued eastward, I noticed that there are likely more small mounds in the vicinity of M209, but the lightly undulating ground coupled with extremely thick secondary jungle growth made the recording of possible additional mounds unfeasible. Although the dense secondary growth made progress difficult, this area of Cara Blanca is flatter than any other location in the survey area, and the escarpment to the north is not visible, being further away, lower, and less steep than it is at Pool 1.

Figure 9.3. M209.

We were able to reach the western edge of Pool 21 in two hours from our starting point on the road. After stopping for lunch, we continued around the rim of the pool in a northeasterly direction. We stayed as close to the water as was possible, to both search for entry points into the water for later scuba diving expeditions, and to search for any possible structures near the water's edge. No structures were observed on the western and northern edges of Pool 21. The best location for future dive crews to enter the water is on the western side, at either of the two locations where the survey path met the water's edge (Figures 9.4, 9.5). Access is generally poor, but it is possible to get divers in the water at these points. Based on the size of the pool and the color of the water, I assume that Pool 21 is at least 15-20 meters deep, but further investigations are needed to check my assessment. The southern and eastern edges of the pool were not surveyed, and may contain additional options for dive access, and additional settlement (see Figure 9.5).

Figure 9.4. Pool 21, looking southeast from the northwest edge.

It was at the northern edge of Pool 21 where our real difficulties began. As we travelled east towards Pool 22, we were making extremely slow progress. Even though the rainy season had not arrived yet, the ground was extremely wet in this area, becoming swampy and practically inaccessible without a great deal of effort and time (Figure 9.5). We ended our first day of survey at the northeastern edge of Pool 21. During the second and final day of survey (May 10th), progress eastward from Pool 21 was agonizingly slow, as the inundated and flooded ground forced us to balance on logs connecting small bits of semi-dry land in an attempt to stay out of the water. Progress was brutally slow and uncomfortable, and the (inundated) area surveyed was devoid of settlement. A close look at Figure 9.5 shows how we tried several different paths to Pool 22 on the second day, none of which were successful. We did note that the land to the north was moderately higher and drier than that to the south. Moments before we turned around to leave on the second and final day, I noticed that we had accidentally cut several branches from a tree that was oozing black sap. This was a Chechem tree, and several days after leaving the Cara Blanca pools I had an intense allergic reaction on my arm to the poisonous Chechem sap.

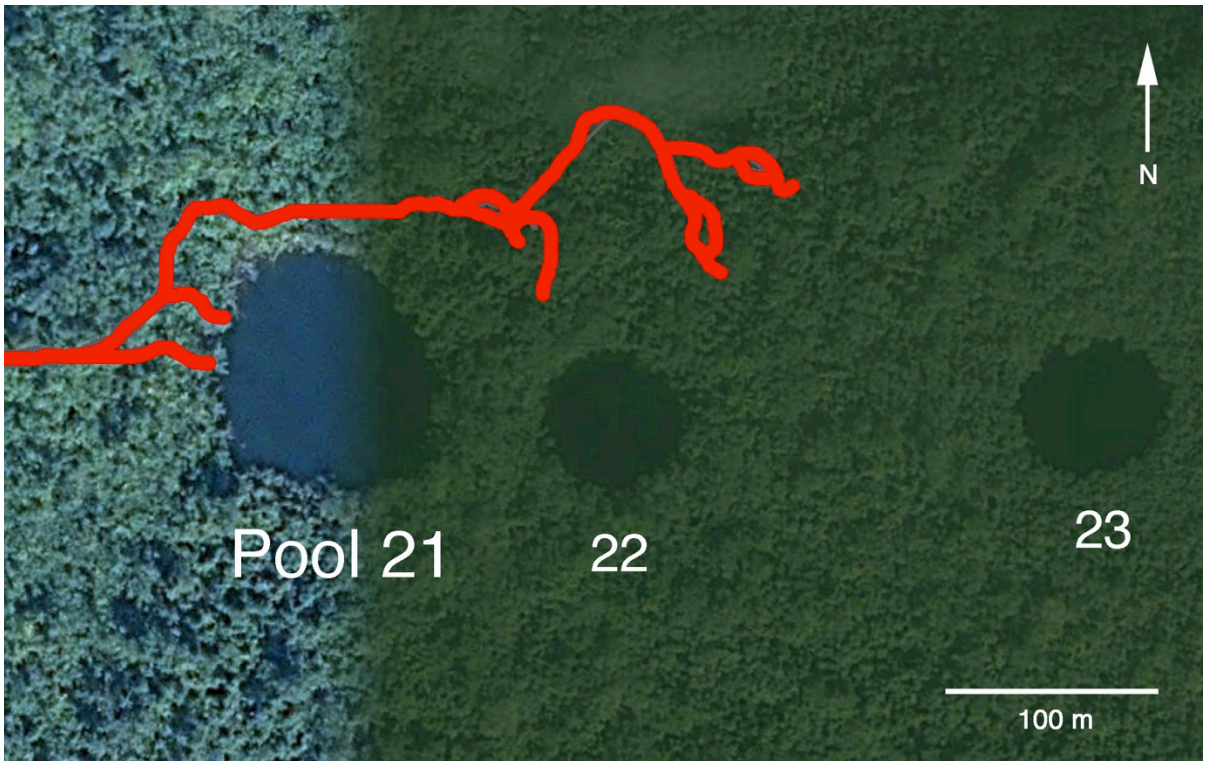

Figure 9.5. Google Earth image including the survey path extension for 2014.

Results

The 2014 Cara Blanca Settlement Survey (CBSS) never achieved its goal of visiting Pools 22, 23, and 25. However, we were able to record one new structure (M209), note two possible locations for dive entry into Pool 21, and record the environmental conditions of the easternmost area of the Cara Blanca Pools. If another attempt is made to reach the remaining pools, the best access is likely from the north, hiking due south from the higher ground of the Yalbac Hills. Access from the west, as we have experienced, is not an economical use of resources. Based on the extremely inundated condition of the ground, I would guess that there are no additional structures to be found near Pools 22, 23, and 25. There may be additional settlement in the general vicinity of the slightly higher ground approximately 500 meters to the north of the pools.

Future Research and Concluding Remarks

Future research in this area may include a continued attempt to expand the settlement survey further east to include the final three pools, and widen the new transect east of Pool 6 to 400 meters in order to match the data collected during my dissertation field work. Larger and more numerous excavations would be a welcome addition to the current data set, especially in structures on the eastern side of the transect, such as the large structure M205 in the Pool 20 vicinity (to ascertain the function of these buildings). Underwater research can be expanded as well in future projects, with more intensive explorations of the underwater environment in these easternmost pools as permitted by the environment, terrain, and weather.

Further study will increase our understanding of the relationship between the pools and the surrounding settlement, and allow us to better differentiate pools that were used primarily for subsistence versus those that acted as pilgrimage destinations of ritual importance.

Acknowledgements
Special thanks go to the employees at Yalbac Ranch and Cattle Corporation (Belize) Limited for allowing us access to their property, to our crew from Valley of Peace Village for their unfailing aid in difficult situations, and to the Carr family at Banana Bank Lodge for their kindness and hospitality.

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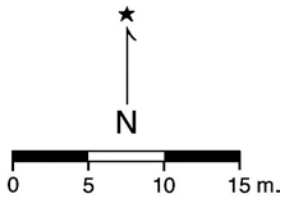
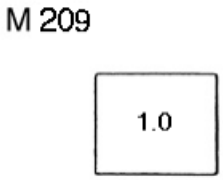
Appendix: 2014 Settlement Data from M209

M209 was the only structure recorded for the 2014 season. It is described below using the same format which all the other settlement in the Cara Blanca area has been recorded, including brief notes on location and overall form, and a scale drawing:





VISIBLE FORM: Small, rectangular mound, 1 m tall.
DATE RECORDED: 9 May 2014
GPS LOCATION: 16 Q 305480 1927826
BASAL ELEVATION: 64 m.
CONSTRUCTION MATERIAL: cobbles and cut stone.
SURFACE COLLECTION/EXCAVATION: None.
CHRONOLOGICAL PLACEMENT: None.
DISCUSSION: Located roughly equidistant between Pool 20 and Pool 21 (although closer to Pool 21), and east of the main structure group at Pool 20. The furthest eastern structure recorded on the CBSS as of 2014.