Pacbitun Preclassic Project: Report on the 2009 Field Season

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Archaeological investigations conducted in 2009 by the Pacbitun Preclassic Project (PPP) focused on two areas at the site: the core and the periphery. In Plaza B of the site core, the fieldwork was centered on large-scale horizontal excavation of one Middle Preclassic (Mai phase 900-300 BC) platform (Sub-Structure B2), which was previously identified during excavations conducted at the site during the mid-1990s and again in 2008 (Healy et al. 2004; Healy et al. 2007; Hohmann and Powis 1996, 1999; Hohmann et al. 1999; Powis 2009). One of the most interesting findings was the presence of several thousand pieces of marine shell ornaments, shell detritus, and lithic tools associated with this platform. Given the nature and extent of the shell remains, the fieldwork during the 2009 field season centered on whether or not this platform was the location of a shell ornament production workshop during the Middle Preclassic period.

The other main focus of investigations during the 2009 field season was centered on the survey of cave sites in the southern periphery of Pacbitun. We identified at least twelve caves located within three kilometers of the core. We were able to map three of them (Actun Merech, Actun Pech, and Tzul’s Cave). A description of each cave follows the discussion of the investigations in Plaza B.

**Background**

Shell artifacts are a ubiquitous artifact class found in Preclassic, Classic, and Postclassic archaeological deposits throughout the Maya Lowlands. Although these artifacts have been of interest to archaeologists since the early days of scientific investigation in the area, most early shell studies at sites like Altar de Sacrificios (Willey 1972), Barton Ramie (Willey et al. 1965), and Uaxactun (Ricketson and Ricketson 1937) have been limited to typological and taxonomic classifications. While these studies have provided significant information on the raw materials
that were used in the production of shell ornaments and the types of items that were produced, it has only been in the last two decades that archaeologists working at sites like Cerros (Garber 1989), Colha (Buttles 1992, 2002; Dreiss 1982, 1994), Cuello (Hammond 1991; McSwain et al. 1991), Dzibilchaltun (Taschek 1994), K’axob (Isaza 1997; Isaza and McAnany 1999), and Tikal (Moholy-Nagy 1987, 1994) have endeavored to move beyond these limited analytical techniques and address larger questions of cultural behavior such as the role of shell in Maya social, political, and economic activities.

**Studies in Shell Ornament Production**

A wide variety of shell artifacts were produced prehistorically, including ornamental and utilitarian items. Shell working areas have traditionally been identified by the quantities of raw materials, artifacts in various stages of the production process, and/or various types of manufacturing technology (e.g. drills, blades, abraders/grinding stones). While the raw materials, artifact type, and tool technology may differ somewhat from region to region, the basic shell working toolkit remains the same in many prehistoric contexts.

While the presence of shell debris has led many archaeologists to argue for the occurrence of shell working activities at individual sites, few have identified areas where shell working actually took place. Feinman and colleagues (1991, 1993) have identified a shell working locale at the Ejutla site in the Ejutla Valley, Oaxaca. During their survey of the Ejutla Valley in 1984-1985, Feinman and Nicholas (1993) identified a dense concentration of surface shell along the eastern edge of the modern town of Ejutla de Crespo. Excavations (1990-1993) in this area exposed a Classic period (A.D. 200-800) residential structure, dense midden deposits, and multiple ash-filled pits. More than 24,000 pieces of marine shell and 169 microdrills were
recovered from sub-surface deposits at the site. The shell assemblage consisted of detritus, slightly modified pieces, and complete and incomplete ornaments. Most of the shell artifacts were found in midden contexts adjacent to the residential structure, although a number of items were found in floor deposits inside the structure. In addition to the few macro-artifactual shell remains recovered inside the Classic period structure, significant quantities of micro-artifactual shell debris were identified in interior floor deposits, leading researchers to argue that shell working activities were being undertaken in this structure.

Shell working locales have also been identified in the Early and Middle Formative villages of San Jose Mogote and Tierras Largas in the Valley of Oaxaca. Evidence from house floors and peripheral deposits indicates that many residents were involved in shell working activities during this early time period. At San Jose Mogote, shell working debris consisted of chert tools, shell detritus and shell ornaments in various stages of production. These deposits were typically concentrated in the corners of structures (Figure 1), but debris was also encountered in general excavations in the household clusters (Flannery and Marcus 1994:316).

**Figure 1.** Area C (shown in red) in House 2 at San Jose Mogote showing location of shell bead manufacturing (Flannery and Marcus 1994:316).
Comparative Data from Preclassic Lowland Sites

In the Maya region, shell ornaments have been recovered from Preclassic deposits at a number of lowland sites (Table 1), including Altar de Sacrificios (Willey 1972), Altun Ha (Pendergast 1979), Blue Creek (Haines 1997), Caracol (Cobos 1994), Chan Chich (Robichaux 1998), Colha (Buttles 1992, 2002; Dreiss 1982, 1994), Cerros (Garber 1989), Cuello (Hammond 1991), Dzibilchaltun (Taschek 1994), K’axob (Isaza 1997; Isaza and McAnany 1999), Mayapán (Proskouriakoff 1962:384), Nakbe (Richard Hansen, personal communication, 2009), Seibal (Willey 1978), Tikal (Moholy-Nagy 1987, 1994), and Uaxactún (Kidder 1947; Ricketson and Ricketson 1937). Unfortunately, while shell ornaments were found in a variety of depositional contexts, very few of these sites have good contextual data for comparative purposes; however, exceptions include Blue Creek, Cerros, and K’axob.

Table 1. Worked Shell Artifacts from Preclassic Contexts at Select Lowland Maya Sites.

<table>
<thead>
<tr>
<th>Site</th>
<th>Humus n</th>
<th>Humus %</th>
<th>Fill n</th>
<th>Fill %</th>
<th>Midden n</th>
<th>Midden %</th>
<th>Pit Features n</th>
<th>Pit Features %</th>
<th>Fall n</th>
<th>Fall %</th>
<th>Burial n</th>
<th>Burial %</th>
<th>Cache n</th>
<th>Cache %</th>
<th>Totals n</th>
<th>Totals %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Creek</td>
<td>0</td>
<td>0.0</td>
<td>75</td>
<td>93.8</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>4</td>
<td>5.0</td>
<td>1</td>
<td>1.3</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Cerros</td>
<td>1</td>
<td>0.9</td>
<td>9</td>
<td>7.9</td>
<td>67</td>
<td>58.8</td>
<td>4</td>
<td>3.5</td>
<td>1</td>
<td>0.9</td>
<td>4</td>
<td>3.5</td>
<td>28</td>
<td>24.6</td>
<td>114</td>
<td>100</td>
</tr>
<tr>
<td>Chan Chich</td>
<td>0</td>
<td>0.0</td>
<td>2</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
<td>2</td>
<td>100</td>
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<tr>
<td>Colha</td>
<td>0</td>
<td>0.0</td>
<td>18</td>
<td>1.3</td>
<td>33</td>
<td>25.8</td>
<td>13</td>
<td>1.0</td>
<td>0</td>
<td>0.0</td>
<td>1130</td>
<td>86.2</td>
<td>120</td>
<td>9.0</td>
<td>1334</td>
<td>100</td>
</tr>
<tr>
<td>K’axob</td>
<td>10</td>
<td>0.4</td>
<td>95</td>
<td>3.7</td>
<td>210</td>
<td>8.2</td>
<td>25</td>
<td>1.0</td>
<td>0</td>
<td>0.0</td>
<td>2198</td>
<td>85.9</td>
<td>22</td>
<td>0.9</td>
<td>2560</td>
<td>100</td>
</tr>
<tr>
<td>Totals</td>
<td>11</td>
<td>199</td>
<td>310</td>
<td>42</td>
<td>1</td>
<td>3356</td>
<td>171</td>
<td>4690</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

One of those exceptions is the site of Caracol, located in the Maya Mountains of southern Belize. During excavations at the Mosquito Group, a small plazuela group approximately one kilometer from the site’s center, 19 worked shell artifacts and 1,815 pieces of marine shell detritus were recorded (Cobos 1994). Although a wide variety of chert tools and debitage were
found in association with these materials, it is the chert microdrills that provide the most significant information regarding the production of shell artifacts at Caracol. These drills were made from modified flakes which were further reduced by trimming the lateral edges and distal tip. A preliminary use-wear analysis has revealed that the majority of these drills exhibited distal polish and rounding from repeated drilling of shell.

While researchers at Caracol have identified this group as a shell workshop, they have not identified in situ deposits where shell working occurred. The chert and shell materials recovered from the Mosquito Group were found in an open chamber, a collapsed tomb, and sub-plaza deposits. They have noted that the shell working refuse may have been deposited during routine maintenance of the workshop area, but it is also possible that these materials were gathered from refuse dumps and re-deposited as construction fill.

**Comparative Data from Belize Valley Sites**

In the Belize Valley, a number of sites have produced shell ornaments in Middle Preclassic contexts (Table 2), including Barton Ramie (Willey et al. 1965), Blackman Eddy (Cochran 2009), Cahal Pech (Awe 1992; Cheetham 1995, 1996; Healy et al. 2004; Powis 1996), Chan (Keller 2008), Dos Chombitos Cikin (Robin 2000), and Zubin (Ferguson 1995; Iannone 1996; Schwake 1997). They have been identified in a variety of depositional contexts, including burials, caches, construction fill, and middens dating to both the Middle Preclassic (900-300 BC) and Late Preclassic (300 BC-AD 250) periods. Like many of the other sites previously mentioned, few Belize Valley sites have good contextual data for comparison. Other than Pacbitun, excavations at Cahal Pech over the past twenty years have provided strong evidence for shell working throughout the Middle Preclassic period. At Cahal Pech, marine shell
ornaments, marine shell detritus, and chert microdrills have not only been found in the central precinct (specifically in Plaza B), but also in the periphery at two settlements: Tolok and Cas Pek. While shell working materials have been found in these areas of Cahal Pech, there is little direct evidence of where the production activities took place. At Tolok, the evidence is derived from a primary midden where the artifacts were deposited as refuse (Powis 1996), and at Cas Pek the evidence comes entirely from construction fill (Awe 1992; Cheetham 1995, 1996; Lee and Awe 1995; Iannone and Lee 1996; Lee 1996).

**Table 2.** Contextual Data for Modified Shell Artifacts from Belize Valley Sites.

<table>
<thead>
<tr>
<th>Site</th>
<th>Burial n</th>
<th>Burial %</th>
<th>Cache n</th>
<th>Cache %</th>
<th>Midden n</th>
<th>Midden %</th>
<th>Fill n</th>
<th>Fill %</th>
<th>Total n</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barton Ramie</td>
<td>42</td>
<td>93.3</td>
<td>3</td>
<td>6.7</td>
<td>45</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blackman Eddy</td>
<td>2</td>
<td>33.3</td>
<td>4</td>
<td>66.7</td>
<td>6</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cahal Pech</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cas Pek</td>
<td>4</td>
<td>9.3</td>
<td>39</td>
<td>90.7</td>
<td>43</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plaza B</td>
<td>32</td>
<td>43.8</td>
<td>41</td>
<td>56.2</td>
<td>73</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plaza C</td>
<td></td>
<td></td>
<td>52</td>
<td>100</td>
<td></td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tolok</td>
<td>2</td>
<td>16.7</td>
<td>3</td>
<td>25</td>
<td>7</td>
<td>58.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dos Chombitos Cik’in</td>
<td></td>
<td></td>
<td>26</td>
<td>100</td>
<td>26</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zubin</td>
<td>12</td>
<td>57.1</td>
<td>9</td>
<td>42.9</td>
<td>21</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
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</tr>
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</table>

**Pacbitun**

The ancient Maya site of Pacbitun is located approximately 10 kilometers south of the Belize River and three-to-four kilometers north of the Maya Pine Ridge in west central Belize (Figure 2). The central precinct is situated atop a limestone acropolis which provides a commanding view of the hilly, rolling terrain surrounding the site. The location of Pacbitun
likely was chosen by the early Maya to take advantage of local, contrasting micro-environments and resources: limestone lowlands, with broadleaf rainforest around the site and to the north; sandy soils, pine-covered, granitic uplands to the south; and multiple water sources (springs, creeks, ponds) nearby (Healy 1990; Graham 1987).

![Figure 2. The location of Pacbitun in the Belize Valley.](image)

While the site and its agricultural sustaining area likely covered a territory of at least 9 km², the epicenter covers only about 0.5 km². This “downtown” zone is marked by over 40 masonry constructions, including temple-pyramids, palace-like range structures, a ball court, five plazas, two lengthy causeways, and a number of smaller courtyard groups (Bill 1987; Healy 1992; Healy et al. 2007) (Figure 3). The remains of 20 stelae and altars have also been recovered in the epicenter.
Excavations between 1995 and 1997 produced a large number of Middle Preclassic shell artifacts (Healy et al. 2004; Hohmann 2002; Hohmann and Powis 1996, 1999; Hohmann et al. 1999). The Pacbitun assemblage from these excavations represented the largest Preclassic collection in the valley with 4,663 shell artifacts (Hohmann et al. 1999:25). It consisted of 3,248 worked shell specimens and 1,415 pieces of marine shell detritus. In direct association with the shell artifacts were 125 macroblade spalls and 92 microdrills, which dominated the formal tool assemblage at Pacbitun. These artifacts were recovered from Plaza B of the central precinct (Figures 4 and 5), and all of them date entirely to the Middle Preclassic period.
Figure 4. Topographic map of Plaza B showing excavations in red.
The majority of shell working activities were located in Plaza B where sub-plaza excavations revealed the presence of at least ten platforms (Sub-Structures B1-B3, B5, B6, B8, B10, B11, B13, and B14) (Figure 6). These platforms, some measuring 8 m x 6 m, are separated by a one-meter wide alleyway. The close proximity and common extramural areas suggests that the Middle Preclassic structures below Plaza B were organized as a patio group with several
structures situated around an open plaza or patio area. This is a common residential pattern that has been identified at lowland Maya sites throughout the history of occupation in the area. While each of these buildings may have served a special function (e.g. kitchen, storage, residence), the presence of common domestic refuse both inside and surrounding these structures indicates that they all likely served domestic functions.

Figure 6. Original plan view of Middle Preclassic structural remains in Plaza B. The early Middle Preclassic (900-600 BC) structures highlighted in black (after Hohmann et al. 1999).
Given the substantial quantities of shell artifacts recovered between 1995 and 1997, we went back to Pacbitun in the summer of 2008 to continue exposing these Middle Preclassic platforms. While our earlier investigations indicated the association of marine shell ornaments, marine shell detritus, chert microdrills, and macroblade spalls in sub-plaza deposits, our main goal during the 2008 field season was to find complete ornaments, shell detritus, chert microdrills, and macroblade spalls embedded together in the floor of Sub-Structure B2. Our excavation of this Middle Preclassic platform showed just this association. In the southwest corner of Sub-Structure B2 (Figure 7), our 1.5 m x 1.5 m excavation unit yielded 67 complete shell ornaments, 15 pieces of marine shell detritus, and 9 chert microdrills. All of these artifacts were found embedded within the top 2-3 cm of the floor surface (Powis 2009:19; Powis et al. 2009:174). Unfortunately, due to time constraints, we were not able to completely expose the floor of this platform.

Figure 7. Photo of 2008 excavations in the southwest corner of Sub-Structure B2 in Plaza B (after Powis 2009:16).
In 2009, we succeeded in completely exposing the entire floor surface of Sub-Structure B2 (Figure 8). Ten excavations units, of varying sizes, were placed across the western half of the floor (Figure 9). Their location was designed to find complete ornaments, shell detritus, chert microdrills, and macroblade spalls embedded together in the floor (Figures 10 and 11). Through our excavations we recovered a total of 2168 shell beads, 1512 pieces of shell detritus, and 145 chert microdrills and burin spalls (Figures 12-15).

Figure 8. The excavated floor surface of Sub-Structure B2 in Plaza B at Pacbitun.
Figure 9. Plan view of Sub-Structure B2 showing the location of units in 2009.

Figure 10. A shell bead embedded in the floor of Sub-Structure B2.
Figure 11. Chert microdrill embedded in floor of Sub-Structure B2.

Figure 12. A representative sample of shell detritus.

Figure 13. A representative sample of shell beads.
In addition to these artifacts, we also recovered several other items that were found embedded in the floor of Sub-Structure B2, including hundreds of Mai phase ceramic sherds (primarily Jocote Orange-brown and Savana Orange types) (Figure 16), 69 obsidian blades fragments, 17 pieces of modified slate, 16 greenstone triangulates, seven jade beads, two mano fragments, and one spherical ball made from quartz. Charcoal samples were also collected and
will be run in 2010 to help confirm the late Middle Preclassic date (ca. 650-600 BC) of occupation of Sub-Structure B2 to ca. 600 BC. No burials or caches were found during these investigations of Sub-Structure B2.

Figure 16. A representative sample of Savana and Jocote Group pottery from Sub-Structure B2 in Plaza B. Top: Savana Orange: Savana Variety; Middle: Savana Orange: Savana Variety; Bottom: Jocote Orange Brown: Varieties Unspecified.

When the assemblage is combined from all of the excavations (1995-1997, 2008, and 2009), we have a total of 8,722 pieces of shell, including 5,657 freshwater and marine artifacts showing evidence of intentional modification and 3,065 pieces of fragmented marine shell detritus (Table 3). A total of 378 microdrills and macroblade spalls were also recovered alongside the shell deposits.
The shell artifacts from Pacbitun were derived from both primary and secondary deposits. In terms of primary contexts, shell ornaments were recovered from ritual deposits (one burial and one cache), floor deposits, and perimeter deposits. As for secondary contexts, shell ornaments were found in construction fill, structural fill, and middens. Overall, the majority of the shell ornaments came from primary contexts (i.e. floor deposits).
Archaeological Indicators of Shell Working

Production locales are notoriously difficult to identify in archaeological contexts, particularly when cultural processes promote the removal of production debris from their primary use-related contexts. The case studies presented earlier provide examples of the different criteria archaeologists traditionally use to identify shell working areas, including the presence of formalized production facilities, microscopic and macroscopic shell debris, and/or production tools. While these are often found in direct association with each other, archaeologists have not always relied on their co-occurrence to determine the presence of production activities. For example, in the studies presented from the Maya Lowlands, scholars frequently address the scale and intensity of shell ornament production even when they have only identified shell debris in secondary deposits – Caracol provides a good example of this (Cobos 1994).

To avoid the problems noted in the lowland studies multiple criteria were used to identify shell-working activities at Pacbitun. For the present study shell working is recognized archaeologically by the co-occurrence of: (1) broken and incomplete shell ornaments; (2) shell detritus; (3) chert microdrills; and (4) macroblade spalls in a single context. There are numerous reasons why this definition was adopted. First, isotopic and archaeological evidence have indicated that some Preclassic Belize Valley residents were regularly consuming marine fish and shellfish (Powis et al. 1999). Given this knowledge it is impossible to determine if the fragmented marine shell found in archaeological deposits resulted from breakage for consumption or ornament production.

Second, although chert microdrills have been found in direct association with other shell working materials at Preclassic sites in the Maya Lowlands (e.g. Colha), they also occur
independently of these specialized deposits. They may have been part of a specialized lapidary toolkit or they may have simply been generalized multifunction tools that were used in a variety of drilling and/or cutting tasks. These tools were widely distributed at Preclassic sites in the Belize Valley and northern Belize, including those with and without shell debris. Pope (1994) has identified use-wear indicative of shell working on flake drills associated with shell detritus at Caracol. Although these drilling tools are occasionally found in association with shell working debris, the mere presence of these tools cannot be interpreted as direct evidence of shell working activities.

Summary and Conclusions

Ethnoarchaeological and archaeological studies have shown that artifacts often become embedded in floor surfaces where activities are conducted, including those undertaken inside and outside of structures. The abundance of shell working materials in floor deposits in Sub-Structure B-2 at Pacbitun suggests that shell working activities may have been undertaken in this location, specifically the production of ornaments from marine and freshwater shell. Perimeter deposits found around the outside of the Middle Preclassic structures provide additional evidence that production activities occurred in this location. Ethnoarchaeological and archaeological research have shown that refuse from household activities are frequently deposited in the areas immediately surrounding the residence. The one-meter alleyway between the Middle Preclassic structures was probably swept free of debris on a regular basis, a process that would explain the clustering of shell debris and highly fragmented household debris next to the retaining walls.

While modified shell ornaments are relatively common in Preclassic deposits, evidence of shell ornament production is less evident. In this study, multiple criteria were used to identify
evidence of Preclassic shell working in the Belize Valley. Based on the data available at the present time, direct evidence of shell working occurs at only two Preclassic sites in the Belize Valley: Cahal Pech and Pacbitun. Of interest, the association of shell working materials with Middle Preclassic domestic architecture at Pacbitun indicates that at least some of the production activities were undertaken at the household level; however, at present, we do not know whether the shell workshop identified in Sub-Structure B-2 was located inside the house itself, as a separate activity area (similar to House 2 at San Jose Mogote), or whether the entire platform, measuring 8 meters by 6 meters, served exclusively as production locale for making shell ornaments.

**Cave Survey in the Periphery of Pacbitun**

Over the past decade, a number of caves have been investigated in western Belize, primarily by the Western Belize Regional Cave Project (Awe et al. 2005; Griffith 1998; Helmke 1999; Ishihara 2000; Lohse 2008; Lohse et al. 2006; Moyes 2002; Moyes et al. 2009). The project, led by Dr. Jaime Awe, has systematically explored, mapped, and intensively excavated a number of caves in this region, including Actun Tunichil Muknal (ATM), a cave well-known for its whole pottery vessels, burials, and carved slate stelae. With the exception of this single project, few caves in western Belize have been thoroughly explored. Western Belize has an abundance of caves, but relatively few archaeological investigations have taken place. Reasons for this may be the financial cost, accessibility, and/or the physicality needed to work in such an environment.

Situated between the site of Pacbitun and the modern Maya village of San Antonio, there are several caves that have never been archaeologically investigated. In 2009, we investigated three of the 12 known caves located in the southern periphery of the site. While all of the caves
are located on private property, many have already been entered by collectors, looters, and tourists (Alfonso Tzul, personal communication, 2009).

One of the main goals of the Pacbitun Preclassic Project is to investigate caves located in the periphery of the site. This research program is designed to complement the settlement studies conducted by Dr. Paul Healy in the mid-1980s (Healy 1990: Healy et al. 2007). In his settlement survey, Healy identified a “downtown” Epicenter (0.5 sq km) at the heart of the site, surrounded by a Core Zone (1 sq km) which, in turn, is surrounded by the Periphery Zone (an additional 8 sq km)” (Healy et al. 2007:17). They recorded 330 mounds within the periphery of the site. While Healy was aware of a number of caves in the area his research was centered on the excavation of the mounds recorded during the settlement survey, not on the investigation of caves (Paul Healy, personal communication, 2009). However, this does not provide a complete picture of occupation in the southern periphery of the site. The investigation of the cave sites must be considered if we want to correctly interpret the nature and extent of settlement in and around Pacbitun.

In the summer of 2009, the Pacbitun Preclassic Project initiated a program focused on investigating the cave sites located in the periphery of Pacbitun. All of them are located more than three kilometers from the Core Zone, but each of them is still situated within the eight kilometer Periphery Zone identified by Healy and colleagues (Healy et al. 2007). The primary objectives of the 2009 field season were to: 1) ascertain the types of activities that may have occurred within the caves; 2) enhance our knowledge of the role of caves at the regional level (i.e., the Belize Valley); and 3) determine whether there were temporal, social, and regional differences in the use of caves in the Maya Lowlands. These investigations are to be compared with data from other caves in the area in an effort to determine whether there are any inter-
In 2008, the author was approached by Mr. Alfonso Tzul of San Antonio Village. Mr. Tzul owns the land that Pacbitun and the caves are located on. At the time, he expressed concern over the looting of the caves on his property, some of which contained human remains and whole pottery vessels. Mr. Tzul encouraged the author to fully explore, map, and intensively investigate each of these caves. In the summer of 2009, preliminary investigations began at three caves: Actun Merech, Actun Petz, and Tzul’s Cave (Figures 17 and 18). The field work included detailed mapping (floor plans) of activity areas and chambers with cultural remains in order to examine the contextual distribution of particular artifacts, monuments, art, and human and animal remains. The caves and their contents were photographed and illustrations were made of all cave art, including carvings, paintings, and footprints. Artifactual materials and human and animal remains were also analyzed.
**Figure 17.** View of the foothills of the Mountain Pine Ridge showing the locations of Actun Merech, Actun Pech, and Tzul’s Cave.

**Figure 18.** The location of Actun Pech to the south of Paebitun (after Healy et al. 1996:Figure 1). Actun Merech and Tzul’s Cave are both situated on adjacent hilltops to the west of Actun Pech.
Actun Merech

Preliminary survey of Actun Merech (Lizard Cave) was made in June 2009 by the author, accompanied and assisted by staff, students, and Tzul Family members. The cave is located about three kilometers to the southwest of Pacbitun. Actun Merech is a dry cave with nine identifiable rooms or chambers (Rooms A-I). The cave measures approximately 50 meters long and is L-shaped. The entrance to the cave is situated near the summit of a steep hill (west face), which is part of the foothill formation of the Mountain Pine Ridge, with the cave facing west toward Tutu Creek. It is located 370 meters above sea level (masl). At the base of the hill is a natural spring, which has been modified by the ancient Maya. There is clear evidence of a stone wall made of roughly-hewn slate blocks encircling the edge of the spring.

The mouth of the cave is relatively large, measuring approximately three meters in diameter (Figure 19). Upon walking into the entrance (Room A), which is similar looking to a large modern-day foyer, the next three rooms (Rooms B-D) become very restrictive, only large enough to accommodate one person to enter at a time (Figures 20 and 21). From Room D to Room E, one must descend steeply about two meters. In contrast to the Rooms B-D, Room E is relatively large and spacious, with a domed ceiling with a height of about six meters. There appeared to be evidence of burning on the ceiling, but further inspection is needed to verify this statement. The room itself can accommodate a number of people at any one time. There are numerous horizontal formations along the walls of this room. These small ledges protrude out approximately 30 cm from the walls and extend down from the ceiling to the floor. Only a few Late Classic pottery sherds (mostly Cayo Unslipped rim sherds) were found on the ledges.

Moving southwest in the cave, one passes through three more small, restrictive rooms (Rooms F-H). Room G is unique within the cave in that there are two small openings at either end of the
room. In cross-section, these openings look like a pair of binoculars (see Figure 20), becoming slightly larger (and circular) as one descends deeper into each one. The opening on the north side has a vertical depth of about 15 meters. At the bottom of this hole, we encountered a few pottery sherds and animals bones. No human remain were found. The bottom of the south opening was never reached as we ran out of rope at 25 meters. We intend to return in the summer of 2010 to determine the depth of this opening, as well as to recover any cultural items that may have been thrown or placed into it.

Room I, at the back of the cave, represents another large and open chamber. Like Room G, there are a series of horizontal formations in this room. A few Late Classic rim sherds (from ollas) were encountered on one of these ledges. While no other pottery was encountered in this room, we were told by one of the residents of San Antonio Village that this back room once contained three intact Late Classic period vessels, including one red slipped cylindrical jar, one red slipped deep bowl, and one polychrome dish. They were removed sometime in the late 1960s.
Figure 19. View of the entrance to Actun Merech, Cayo District, Belize. The author is shown on the left and Phillip Valdez, whose family owns this cave, is shown on the right.
Figure 20. Plan view of Actun Merech, Cayo District, Belize.

Figure 21. Northeast-Southwest profile of Actun Merech, Cayo District, Belize.
Actun Pech

In 1995, Actun Pech (Tick Cave), formerly known as Actun Petz, was preliminarily surveyed by Paul Healy, Jim Conlon, and Rhan-Ju Song (Healy et al. 1996). It is the only cave that Healy and his colleagues investigated in the Periphery Zone (Figure 22). The cave was revisited in the summer of 2009 in order to determine whether any looting had occurred since the original survey was conducted nearly fifteen years ago. Given the revisit, only a brief overview of the cave is provided here (see Healy et al. 1996 for a full description). This overview is followed by recent observations made inside Actun Pech.

Actun Pech is a small, dry cave situated on top of a steep hill directly next to (or east of) the hill on which Actun Merech is located. This cave is at an elevation of 345 masl. It is about 25 meters long, oriented east-west, and is divided into four chambers (Rooms A-D) (Healy et al. 1996:139). Twenty-three whole and partial pottery vessels (including 16 ollas) were found throughout the cave, dating in age from the Late Preclassic (ca. 100 BC) to the Terminal Classic (ca. AD 900) (Healy et al. 1996:143-146). Human remains (four adults, one sub-adult, and one child) were found on the floor of Room D, the deepest and easternmost chamber of the cave. The bones were well-preserved and found largely in correct anatomical position (Healy et al. 1996:146). The human remains were located adjacent to a number of whole and broken pottery vessels (e.g., Alexanders Unslipped, Garbutt Creek Red, Mount Maloney Black, Roaring Creek Red, Zubin Red), dating to the Late-to-Terminal Classic periods.

During the revisit to Actun Pech in the summer of 2009, it was observed that a gate had been erected over the cave entrance (Figure 23). The gate was put up a few years ago when the Tzul Family had noticed that some looting had occurred at the cave site. The gate has been effective in deterring individuals from removing any further cultural material. Upon entering the
cave, Rooms B-C appeared not to be affected by the looting. However, in Room D it was immediately observed that the human remains had been disturbed from their in situ position (Figure 24). No bones were missing, but they did seem to be more jumbled than previously observed. It also appeared that fewer pottery vessels were present in Room D. The list of vessel types from the 1995 survey still needs to be compared to the 2009 assemblage, but from a preliminary examination no ceramic types dating to the Late Preclassic period were identified in this room.

**Figure 22.** Plan and profile of Actun Pech (after Healy et al. 1996:Figure 2).
Figure 23. View of gated entrance to Actun Pech, Cayo District, Belize.

Figure 24. View of human remains during 2009 revisit to Actun Pech, Cayo District, Belize.
Tzul’s Cave

Tzul’s Cave is a long, narrow cave situated on top of a steep hill directly next to (or west of) the hill on which Actun Pech is located. It sits at an elevation of 259 masl. The cave is located about 70 meters from Tutu Creek and it measures approximately 35 meters in length and is shaped like the letter “V”. There are six rooms (Rooms A-F) in this cavern. The entrance to the cave is large enough to walk through (Figure 25), but abruptly descends vertically onto a small terrace.

Room A, oriented north-south, is the longest and narrowest in the cave (Figures 26 and 27). No artifacts were found in this room. The smallest room in the cave, Room B, connects the entrance to Room A. It contained some sizable Late Classic rim sherds. Room C is relatively spacious compared to Rooms A and B. There are a number of sizable niches in this room, which contain rim sherds. Room C was sealed at the west end by a circular piece of slate about 50 cm in diameter (see Figure 26). This slate slab was placed to block entry from Room C into Room D. The actual diameter of the opening from Room C to Room D was much larger than the slate slab. As a consequence, a small wall, one meter high, was built beneath the orifice inside Room D. The construction of the wall narrowed the opening between the two rooms allowing the slate slab to be mortared in place. Similarly, a slate slab was also used to block entry from Room D into Room F; however, no wall construction was evident inside Room F. In Room D, there is a small alcove which contained a few complete serving dishes as well as broken olla sherds. To the north of Room D is Room E. At the back (north end) of the room is a cache of 13 complete pottery vessels, all dating to the Late Classic period. Given the restricted access to these vessels, no ceramic type names have yet to be assigned.
Figure 25. View of entrance to Tzul’s Cave, Cayo District, Belize.
Figure 26. Plan view of Tzul’s Cave, Cayo District, Belize.

Figure 27. Profile view of Tzul’s Cave, Cayo District, Belize.
Summary and Conclusions

In sum, three caves were investigated during the 2009 field season at Pacbitun. Two of the three caves, Actun Merech and Tzul’s Cave, had never been investigated archaeologically. Actun Pech (formerly Actun Petz) was initially surveyed in 1996, but was revisited by the Pacbitun Preclassic Project in order to determine whether any looting had occurred since its original investigation in the mid-1990s. Each cave occupies its own hilltop location in the periphery of the site core. Generally speaking, they are small, dry, subterranean caves with multiple rooms or chambers. Numerous whole and broken pottery vessels were identified in each of the caves, dating primarily to the Late Classic period. Only Actun Pech contained human remains. The bone material was found on the surface of this cave. Architectural modifications were present only in Tzul’s Cave, whereby a wall was constructed to help seal Room D off from the other rooms in the cave. Slate slabs were then placed at each end of this room to block or prevent entry.

In 2010, investigation will continue in each of these three caves. The goal will be to conduct in-depth ceramic analysis of the pottery. To date, only a cursory examination has been conducted in Actun Merech and Tzul’s Cave. While a ceramic study was completed on the pottery found in Actun Pech, a re-examination is needed because some looting has occurred over the past fifteen years. It is unclear which pots remain in the cave and which ones have been removed by looters. A re-examination of the skeletal remains found in Room D is also required.
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