Pacbitun Regional Archaeological Project (PRAP):

Report on the 2011 Field Season

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Diego’s World: Ethnographic Notes on a Contemporary Maya Forest Spirit around San Antonio, Cayo District, Belize

Jon Spenard
(University of California, Riverside)

As is often the case with anthropological work, a mention made in passing by the people that we work with opens up completely unexpected avenues of research. Such an occurrence has resulted in the contents of this brief report. Some equipment was temporarily misplaced while excavating in Actun Lak on an otherwise particularly productive day near the middle of the field season (see Spenard this report and Spenard 2011 for more information about Actun Lak). While I was looking around for the missing gear one of our crew suggested that maybe Diego took it. There were no “Diegos” on the team. Confused, I asked for a bit more clarification. Together, the crew informed me that Diego is a mischievous guardian of the jungle, mountains, and caves (Figure 1). He is also known as Duende, or Alux (Ah-loosh; Aluxob pl.), names that are regularly interchangeable and done so in this report.

I continued to ask about Diego as the season progressed only getting minor tidbits about him and his behavior, though they typically consisted of nothing more than his desire to cause minor mishaps, like the missing gear, and general tomfoolery. Due to these responses he quickly became a comic scapegoat for the team when any of us had any minor mishap, heard a weird noise, etc. Nonetheless, his name-recognition among the local crew, and his role as protector of the wilds led me to believe that there was more to this trickster than simply causing mischief.

My suspicions were proven correct when the focus of my project moved out of the caves and onto reconnaissance. I regularly encountered objects or particular formations on the landscape that would spark a comment about Alux throughout this later component of my field season. I have placed the anecdotes in the captions of the figures below because they are directly tied to the particular landscape objects or features. They do not form a narrative. The pictures rather than a text tell the story of Diego and his world.

A brief background discussion about Diego’s origins and cross-cultural appearances is in order before moving on. He is a common figure in modern Yucatec Maya folklore in Belize (Craig 1998:1). He comes alive when a farmer petitions a community elder to make one to protect his fields. The process takes several days over which a figure is molded from clay mixed with various substances including rain water, corn, and the blood of various animals, decorated with animal parts such as owl’s eyes, and then elaborately costumed (Craig 1998:1-2). The figure is finally placed in a cave, tree hollow, or similar orifice that becomes his home. The Alux then protects the farmer’s land from animals, poor harvests, etc. in exchange for ritual compensation. The farmer’s family will fall ill if they fail to compensate the being properly (Craig 1998:3). Perhaps the most significant aspect of the material form of these spirits for archaeologists is that smashing them or burying them beneath rocks destroys them (Craig 1998:4). This type of behavioral practice may explain partially why figurines recovered in archaeological contexts are found shattered.
Supernatural beings that protect the land and natural resources similar to Alux are common throughout the Maya area and Mexico. The Yucatec Maya of Chan Kom, Yucatan, Mexico, also call the beings Alux. There they are described as tricksters that stand about 1 meter tall and look child-like except that they have beards and wear crowns (Redfield and Villa Rojas 1964:119-120; Figure 2). Further, they inhabit the bodies of ancient figurines and incense burners, and the ancient house mounds that surround the settlement are said to be where they live (Redfield and Villa Rojas 1964:120). This relationship to archaeological sites is also seen in the Alux of San Antonio where they protect ancient artifacts and archaeological sites from looters (Craig 1998:3). The Tzotzil Maya of Zinacantan, Chiapas, Mexico call it, Yahval Balamil, and
describe him as an obese Ladino who lives in a cave where he hoards money and animals, controls rain and lightning, and is the owner of all of the products of the earth (Vogt 1969:302-303). He is a multivocal figure that appears in a range of guises for the Chol Maya around Palenque, Chiapas, Mexico. He is the rain god, Chajk, a lowland river lightning god, Lam Mam, “Our Grandfather,” and the most common form, “Don Juan” (Josserand and Hopkins 2007:102-104). The latter manifestation of this being lives in caves throughout the area, but prefers the one in the mountain that bares his name, Don Juan Mountain (Bassie and Brizuela Casimir 2003). He is the keeper of the land, animals, all natural things, and wealth. Among the Q’eqchi’ Maya of the departments of Alta Verapaz, and Petén, Guatemala, the beings are called “tzuultaq’a,” or “mountain-valley.” They own of all of the resources related to subsistence and health, as well as water, land, trees, crops, and animals (Adams and Brady 2005:305). Further the tzuultaq’a symbolically encompass and define the community (Wilson 1993, 1995). Scholars commonly refer to many of these spirits the earth lord.

The beings are known as “Nu Ñu’un” among the Mixtec speaking people of Santiago Nuyoo, Oaxaca, Mexico. Their names translate as face or place of earth, and they are closely tied to a particular location (Monaghan 1995:99). For example, “ñu’un no’yo” are the “ñu’un of the swamp” (Monaghan 1995:99). These beings simultaneously inhabit their namesakes, and are them. Further, they are considered alive and can grow, display emotion, have council meetings, and go about their days like humans do (Monaghan 1995:98-101). Often they take the form of rocks, though ancient figurines are regularly considered to be manifestations of them. They also offer beneficial acts in exchange for proper recompense, similar to the Alux in Belize and Mexico.

Iconographic evidence suggests that nature-protecting supernaturals existed in the Maya area during the Classic period. Attributes of the Alux resemble those of God L. This prehispanic deity is one of the principle lords of the Underworld and is depicted as a merchant (Taube 1992:81). He is closely associated with agriculture fertility, and riches (Taube 1992:81). God CH, or Zip is a deity that is portrayed as a guardian of wild animals and god of the hunt (Brown 2005:139; Taube 1992:61-63). He appears wearing a deer headdress and with jaguar spots around his mouth, associating him with the Hero Twin, Xbalanque of the Popol Vuh (Taube 1992:61-63). Connections with rain, water, caves, and agricultural abundance (Thompson 1990:253, 256) suggest some associations to Chaac, the rain god. This deity is commonly depicted wielding axes or serpents, which are symbols of lightning throughout prehispanic and contemporary Mesoamerica (Taube 1992:17). A one-to-one correlation between Diego and any of these ancient deities is highly unlikely. Nonetheless, recording patterns about how these types of supernatural beings are understood and interacted with today can give clues to understanding those of the past and how they may appear in the material record.
The few images that appear below represent a small contribution to understanding the Alux around San Antonio. The frequency and diversity of stories about them that began to be told after I was made aware of them suggests that much more to said about them as we continue our work in the area. Overall, what the photos show and the stories told to me about the Alux is that they are playful beings whose actions help shape the landscape around San Antonio.
Figure 3. An Alux house. A deformed gumbo-limbo (*Bursera simaruba*) tree in the Alux group near an ancient spring or reservoir. The being enters his house from the cavity in the picture, but his house is up inside of the tree. He prefers to live there because the bottom floods when the rains come.
Figure 4. A Diego or Alux tree. This type of tree is found throughout the jungle and they are always clear of vegetation beneath. The reason that they are clear is because the Alux go to them at midnight and dance. Presumably this activity prevents any vegetation from growing.

Figure 5. Diego’s playground. This field of boulders, exposed bedrock, and hillocks is a place where the Alux play their games such as hide and seek and chase.
Acknowledgements

My knowledge of Diego presented here would not have been possible without the input of several people from San Antonio. Many people mentioned him to me, but Javier Mai, and Oscar Mai deserve special recognition as they guided me through the countryside and shared the most about Diego. John Mai and Lute Mai also told stories about him. I look forward to learning more about Diego in the coming seasons.
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Vogt, Evon Z.
Wilson, Richard

A Description of the Ceramic Musical Instruments Excavated from the North Group of Pacbitun, Belize

Kong F. Cheong
(Trent University)

Musical instruments occur among Pre-Columbian cultures across Mesoamerica. In the Maya subarea, specifically in the Belize River Valley, they are found at Xunantunich, Baking Pot, Blackman Eddy, Cahal Pech, and Pacbitun. At the latter, in the 1980s, musical instruments were found in three elite graves in the Epicenter and dating from the Late Classic period (Healy 1988:29; Healy et al. 2008:24). During the excavations in 2010 of the North Group at Pacbitun, three more burials were excavated (Cheong 2011; also see Cheong and Snetsinger in this volume). One of these was a Late Classic simple grave of a young adult. EC-Burial-2 is located directly in front (to the west) of Structure 37, below the plastered floors of the restricted access courtyard, which is formed by Structures 34, 35, 36, 37, and 40. This one burial contained 11 ceramic ocarinas and one flute (Table 1) (Figure 1). The individual was buried in a supine position with the head to the south and the legs extended toward the north, which is a practice typical of the Belize Valley (Robertson 2010:168-169; Welsh 1988:52, 55).

The Musical Instruments

The musical instruments found in this burial were mostly complete. All are mold-made and dated to the Tzib phase of the Late Classic Period (AD 700 – 900) (Cheong 2011:117). The flute, painted blue, has two chambers with one stop for each (PAC-10CM-010) (Figures 2, 13-14). It measured 8.2 cm x 5.6 cm. The top part of this flute has a molded image of a male individual with a quetzal feather (or corn stalks?) headdress on his head. The ocarina assemblage consists of eight seated human figures, each with their mouth open, left arms placed on the hip and right arms to the side (PAC-10CM-001-008) (Figures 3-11). The figures are long haired and adorned with large, round ear spools. Another ocarina, found incomplete, represents a male figure standing with a cloth headdress and wearing a robe (PAC-10CM-012) (Figure 18), while two additional ocarinas are of a big, grotesque figure (PAC-10CM-009) (Figure 12), and one jaguar figure with a pronounced snout hovering above a seated male figure wearing a jaguar headdress (PAC-10CM-011) (Figures 15-17).

These eight seated figures are ocarinas (not whistles) since they possess one stop each, and produce two notes, one note while the stop is opened and another when the stop is closed. A whistle is defined as a single note musical instrument with no stops or ventages (Lee 1969:66). These differences are worth noting as the term whistle and ocarina have been used interchangeably in various archaeological literatures, which confuses and masks their differences and importance. These blue painted seated figure ocarinas measure between 3.9 cm x 5.5 cm. Seven of the eight seated ocarinas are complete and unbroken, or are reconstructed, while one other is incomplete (PAC-10CM-008) (Figure 11). At least one the complete ocarinas is still
playable and produces sound in varying degree of loudness depending on how hard air is forced through the mouthpiece (PAC-10CM-004) (Figure 7) (Cheong 2012).

**Table 1.** Ceramic musical instruments EC-Burial-2, Unit 2D, Structure 37.

<table>
<thead>
<tr>
<th>Bag #</th>
<th>Type</th>
<th>Height (mm)</th>
<th>Width (mm)</th>
<th>Length (mm)</th>
<th>Weight (g)</th>
<th>Comments</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAC-10CM-001</td>
<td>Ocarina</td>
<td>54.3</td>
<td>39.1</td>
<td>42.9</td>
<td>33.2</td>
<td>Intact: blue slip present</td>
<td>1</td>
</tr>
<tr>
<td>PAC-10CM-002</td>
<td>Ocarina</td>
<td>53</td>
<td>39</td>
<td>43.1</td>
<td>34.6</td>
<td>Intact: blue slip present</td>
<td>1</td>
</tr>
<tr>
<td>PAC-10CM-003</td>
<td>Ocarina</td>
<td>52</td>
<td>36.1</td>
<td>44.4</td>
<td>30.5</td>
<td>Intact: no slip present</td>
<td>1</td>
</tr>
<tr>
<td>PAC-10CM-004</td>
<td>Ocarina</td>
<td>52.4</td>
<td>36.2</td>
<td>39.1</td>
<td>26.1</td>
<td>Intact: black back from firing, blue slip present</td>
<td>1</td>
</tr>
<tr>
<td>PAC-10CM-005</td>
<td>Ocarina</td>
<td>53.1</td>
<td>37.6</td>
<td>45.1</td>
<td>34.5</td>
<td>Intact: black on mouth piece from firing, no slip present</td>
<td>1</td>
</tr>
<tr>
<td>PAC-10CM-006</td>
<td>Ocarina</td>
<td>55.2</td>
<td>38</td>
<td>40.6</td>
<td>32.3</td>
<td>Intact: black on right arm from firing, blue slip present</td>
<td>1</td>
</tr>
<tr>
<td>PAC-10CM-007</td>
<td>Ocarina</td>
<td>52.3</td>
<td>37.8</td>
<td>43.8</td>
<td>31.5</td>
<td>Partial reconstruction: black on mouth piece from firing, blue slip present</td>
<td>1</td>
</tr>
<tr>
<td>PAC-10CM-008</td>
<td>Ocarina</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>15.1</td>
<td>Head, right shoulder and fluted mouth piece fragments Black from firing</td>
<td>1</td>
</tr>
<tr>
<td>PAC-10CM-009</td>
<td>Ocarina</td>
<td>102.3</td>
<td>55.1</td>
<td>54.9</td>
<td>103.2</td>
<td>Reconstructed zoomorphic: blue slip present</td>
<td>1</td>
</tr>
<tr>
<td>PAC-10CM-010</td>
<td>Flute</td>
<td>82.1</td>
<td>55.8</td>
<td>115</td>
<td>210.6</td>
<td>Reconstructed flute: blue slip on left knee, black present on bottom Reclined figure on top</td>
<td>1</td>
</tr>
<tr>
<td>PAC-10CM-011</td>
<td>Ocarina</td>
<td>103</td>
<td>118</td>
<td>44.2</td>
<td>193.4</td>
<td>Top segment of figurine composed of head, upper torso, and head dress. Hollow, no holes present. Blue slip present.</td>
<td>1</td>
</tr>
<tr>
<td>PAC-10CM-012</td>
<td>Ocarina</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>Foot, mouthpiece, right arm and head fragments. Blue slip present</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total**: 12
Eight of these seated ocarina figures are made from the same mold and are identical in every aspect, except for their progressively diminishing details. In other words, the first figure made from the mold is the most detailed while subsequent ocarinas made from that same mold have residual clay embedded into the features of the mold. Thus, the eight seated figure ocarinas can be lined up from the most detailed to the least detailed; an assembly line sequence can be observed. It is also worth noting that four of these were fired darker than the other four. While this could have been due to a coincidence, it may have been done purposely by placing these four inside an inverted pot during firing.

A slightly larger ocarina (PAC-10CM-009) (Figure 12), measuring 5.5 cm x 10.2 cm, depicts a grotesque figure painted blue. According to Gordon Willey, the features of this ocarina are categorized as “grotesque” because of the fat face, deep set eyes, and bared upper front teeth gave an overall ferocious-appearance (Willey 1972:52). Although grotesque, the figure is well dressed and seems to be wearing a headdress with short, feline or bat ears at the top of the head. Its overall appearance resembles one of the “ewok” characters from the Hollywood movie *Star Wars Episode VI: Return of the Jedi*. This grotesque ocarina has two stops located in the back, where four tones can be produced. Although reconstructed, there were some body pieces missing which leaves gaps in its resonating chamber, and making this ocarina no longer functional.

The most intriguing ceramic instrument from this burial is in the form of a large flat snout jaguar figure with another seated figure of a male individual wearing a jaguar headdress (PAC-10CM-011) (Figure 15 – Figure 17). This wind instrument measures, 12 cm x 19 cm. This is an ocarina too because it has two stops on its side, making it capable of producing four notes. It also was painted blue and was mold made. The roughly semicircular box, on which the seated figure wearing the jaguar headdress is seated, is the only sound producing component in this complex ocarina. The flat snout jaguar figure although also hollow does not have any connecting ducts to the semicircular box where the mouthpiece is attached to.

**Conclusion**

The intention of this report is to provide a brief description of each of the recovered ceramic musical instrument from the 2010 excavation of the North Group at Pacbitun. Many of the complete ocarinas require further dry brushing/cleaning to remove the dirt that still remained inside their resonating chambers. It is possible that these complete ocarinas are still capable of producing sound; the only way of finding out is by cleaning out their resonating chambers. More research is needed to understand the mortuary practices of interning musical instruments in burials and also the musical nature of the ancient Maya.
Acknowledgements

I would like to thank Dr. Terry Powis for allowing me to conduct my Master’s thesis research at the North Group of Pacbitun. I would like to also thank Dr. Paul Healy for sharing knowledge on Maya music and his data from previous excavations. I would like to acknowledge Bryan Reece for the description and cataloging of the musical instruments during my absence in December 2010’s laboratory season. A special thanks to Ms. Agata Wesolowski for creating the tables for this report. Finally, I would like to voice my gratitude for the support in the form of a collaborative grant that we have received from Trent University Archaeological Research Center (TUARC), which made this analysis possible.
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Figure 1. All 12 ceramic musical instruments.

Figure 2. PAC-10CM-009 (ocarina), PAC-10CM-011 (ocarina), and PAC-10CM-010 (flute).
Figure 3. All eight seated human figure ocarina (PAC-10CM-001 – 008).

Figure 4. PAC-10CM-001 (ocarina front view).
Figure 5. PAC-10CM-002 (ocarina front view).

Figure 6. PAC-10CM-003 (ocarina front view).
Figure 7. PAC-10CM-004 (ocarina front view).

Figure 8. PAC-10CM-005 (ocarina front view).
Figure 9. PAC-10CM-006 (ocarina front view).

Figure 10. PAC-10CM-007 (ocarina front view).
**Figure 11.** PAC-10CM-008 (ocarina fragments).

**Figure 12.** PAC-10CM-009 (ocarina front view).
Figure 13. PAC-10CM-010 (flute front view).

Figure 14. PAC-10CM-010 (flute profile).
Figure 15. PAC-10CM-011 (ocarina front view).
Figure 16. PAC-10CM-011 (bottom half front view).

Figure 17. PAC-10CM-011 (bottom half back view).
Figure 18. PAC-10CM-012 (ocarina fragments).
Archaeological Excavations in the Periphery of Pacbitun, Belize

Jennifer Weber
(Georgia Perimeter College and Kennesaw State University)

This report summarizes the excavations conducted at the causeway system, as well as a housemound, in the periphery of Pacbitun. A total of 13 excavations units were placed into the causeway intersection and into the housemound structure. Preliminary analysis of the causeway excavations indicate that the causeway system may have been built during several different construction periods. Excavations at the housemound, designated as Crystal Palace Mound, suggest a special purpose building, most likely in accordance with the culturally used Crystal Palace Cave that is located adjacent to the mound.

Introduction

Pacbitun is an ancient Maya site located in the foothills of the Maya Mountains in the Cayo District of Belize. The site is situated at the juncture of two eco-zones: the lowland tropical rainforest and the Mountain Pine Ridge. The surrounding terrain is hilly with naturally fertile soils trapped in low-lying catchment basins and valley-like depressions (Figure 1). First inhabited about 800 BC (Healy et al. 2007), Pacbitun reached its peak of cultural development during the Late Classic period (AD 600-900). At this time the site likely controlled an area of nine square kilometers. Ceramic analysis indicates that the site was possibly abandoned by the beginning of the tenth century (Healy et al. 2007). Archaeological investigations in Pacbitun’s periphery have revealed a complex pattern of non-settlement cultural constructions, for example a causeway system that is interspersed and associated with landscape features such as caves and springs (Powis 2010; Weber 2011; Weber and Powis 2010; Weber et al. 2012).
Previous and Current Research in the Periphery

Since 2008, the focus of archaeological investigations at Pacbitun has increasingly switched from the site core towards the investigation of cave sites in the southern periphery. To date, over 25 caves have been identified in the Pacbitun periphery. Three of these caves were mapped in 2009 (Actun Merech, Actun Pech, and Tzul’s Cave) (Powis 2010). During the 2010 field season, the goal was to survey the area between the site core and these three previously investigated caves. Based on the previously allocated information that Actun Pech, Actun Merech, and Tzul’s Cave had all been used ritually by the ancient Maya, the paths to these three caves became the primary survey targets, since these regions suggested the highest probabilities to encounter more cultural features. Due to its location close to the other three caves, a fourth cave, designated as Crystal Palace, was added to the area of investigation (Figure 2) (Weber 2011).
The survey revealed various cultural features, including an extended causeway system which connects the site core to one of the previously mentioned ritually used caves, Tzul’s Cave (Figure 3). These causeways in and around Pacbitun became a continuous research focus. The raised roads built by the ancient Maya functioned not only as transport and communication routes, but also reflected different levels of social and political activities and thus can provide insights into these political activities, social organizations, economics structures, and cosmological values on a site and regional level (Normark 2006).

There are three causeways present at Pacbitun and in its periphery: Mai Causeway, Tzul Causeway, and Tzib Causeway. In the Pacbitun site core, Mai Causeway finds its start adjacent to Structure 11 where it meets with Tzul Causeway. From there, it runs east for approximately 273 meters, before terminating in front of Structure 10. Tzul Causeway also starts at Structure 11 in the Pacbitun site core, as does Mai Causeway (Figure 4). Modern construction has destroyed parts of the Tzul Causeway, especially where it crosses a modern road, but it re-emerges clearly visible on the other side. Approximately 900 meters from the site core, it intersects with another ancient Maya road, which was named Tzib Causeway. It then continues into the foothills, running for about 1.2 km until it terminates in front of Tzul’s Cave. In total, Tzul Causeway is approximately 2.6 km long. Tzib Causeway is much shorter, only about 600 m in length, and connects a plazuela group to a minor center (Figure 4) (Weber 2011).
Figure 3. Recorded features in the Pacbitun periphery.

Figure 4. Causeway system in the Pacbitun periphery.
2011 Research Objectives

Considering the presence of several ritually used caves in the Maya periphery, the question arose why the Maya built a causeway to Tzul’s Cave and not any of the others. Causeways in association with caves are less common than causeways connecting architecture or settlements, but they have been found (Shaw 2008). Since caves were an important aspect of the ancient Maya world, one intriguing question regarding the causeway system targeted Tzul Causeway and its actual course. Another intriguing aspect of the causeway system at Pacbitun, aside from the termination of Tzul Causeway in front of Tzul’s Cave, is the intersection between Tzul and Tzib Causeways. Intersections in causeways often served as a way to connect terminal architectural groups with a more well-defined site core (Shaw 2008:73). Of course, the intersection of the Tzul and Tzib Causeways could have been a simple consequence of connecting the minor center and plazuela group on either side of Tzib Causeway to the Pacbitun site core. However, this would still leave us with the question of why the intersection of Tzib and Tzul Causeways is where it is, since, to date, not other significant features have been encountered at this location (Figure 5).

Figure 5. Causeway intersection location before excavation.
The 2011 Pacbitun peripheral fieldwork was a study designed to address the previously encountered built environment and the development of the social and environmental landscape surrounding the Pacbitun site center. Some of the continuous primary objectives of the landscape studies around Pacbitun are to: a) ascertain the construction periods of the causeway system and its corresponding constructions; and b) to determine how the caves were being used and who controlled access to them. Thus, the 2011 field excavations focused on: (1) excavations into the causeway intersection, connecting Tzul and Mai Causeways; and (2) excavations into a mound adjacent to one of the caves previously investigated, Crystal Palace Cave (Figure 6).

While there are several research foci for the Pacbitun periphery, these two locations were chosen for the 2011 field season, under consideration of both time and labor constraints. They are two of the easier accessible site locations and therefore also displayed good training locations for the students of the 2011 archaeological fieldschool.

Figure 6. Location of Pacbitun in relation to the causeway inter-section and Crystal Palace Cave.
**2011 Peripheral Excavations**

In this section, I report on the excavations conducted in the causeway intersection and at the mound adjacent to Crystal Palace Cave, designated as Crystal Palace Mound. The main goal of these investigations was to examine the nature and time frame of the causeway construction process and to possibly determine the function of the Crystal Palace Mound. All units were predominantly excavated in 10 cm arbitrary levels by shovel, trowel, and pick ax. Excavation and feature fill was screened using 1/4” mesh wire screen. During excavation, all cultural materials recovered were bagged by level.

**Causeway Intersection**

A total of six excavation units (Units 1-6) and three extensions (Extensions 1-3) were placed into the causeway intersection (Table 1, Figure 7). The intersection of Tzul and Tzib Causeways was chosen as the first causeway excavation location in part because of the ritual significance of crossing causeways and it’s accessible location, with the goal to investigate the construction periods and –style.

**Table 1. Summary of Units 1 to 6 – Causeway Intersection.**

<table>
<thead>
<tr>
<th>Unit No.</th>
<th>Size</th>
<th>Depth Excavated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1m x 1m</td>
<td>90cm</td>
</tr>
<tr>
<td>2</td>
<td>1m x 1m</td>
<td>110cm</td>
</tr>
<tr>
<td>3</td>
<td>1m x 1m</td>
<td>70cm</td>
</tr>
<tr>
<td>4</td>
<td>1m x 1m</td>
<td>70cm, then cultural</td>
</tr>
<tr>
<td>5</td>
<td>1m x 1m</td>
<td>65cm, then cultural</td>
</tr>
<tr>
<td>6</td>
<td>50cm x 2m</td>
<td>60cm, then cultural</td>
</tr>
<tr>
<td>Extension No.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>L-shaped</td>
<td>Off of units 1,2,5</td>
</tr>
<tr>
<td>2</td>
<td>1m x 1m</td>
<td>Off of unit 5</td>
</tr>
<tr>
<td>3</td>
<td>110cm x 90cm</td>
<td>Off of unit 4</td>
</tr>
</tbody>
</table>
Unit 1

Unit 1 was a 1 x 1 meter test unit, placed to catch Tzib causeway running southeast towards northwest while crossing Tzul Causeway. The unit was excavated to a depth of ca. 90 cm to bedrock and was comprised of almost complete rock fill with very little soil. Munsell testing at 50cm to 60cm characterized the soil type as 10 YR 2/10. Excavations in Unit 1 exposed foundation rocks of Tzib Causeway in a northwest-southeast layout (Figure 8). Given the nature of this feature there were no clear strata levels distinguishable. Apart from the large uncut boulders at the bottom, gradually decreasing-sized rocks placed on top (Normark 2006:27; Shaw 2001:26) were be observed. Instead, the construction fill in form of cobbles seemed to remain similar in size and form through the levels (see Figure 8).

Artifacts that were recovered in this unit included ceramic sherds, some lithic pieces, and charcoal. A lot of the ceramics recovered from this unit were not identifiable due to erosion and suggesting a lot of disturbance of the soil due to continuous occupation and modern agricultural usage of the area. Other ceramic sherds could be identified as predominantly Late to Middle Preclassic type sherds, including Savana Orange, Jocote Orange-brown, and Sierra Red.
Figure 8. Layout of unit 1 depicting Tzib Causeway boulders.

Unit 2

Unit 2 was a 1 x 1 meter test unit which was placed to catch Tzul Causeway running east to west, while possibly crossing Tzib Causeway. The unit was excavated to a depth of ca. 110 cm, with bedrock appearing at 90 cm. The unit was also comprised of almost complete rock fill with very little soil.

Artifacts that were recovered in this unit included ceramic sherds, some lithic pieces, and minor natural deposits of charcoal. The ceramic sherds recovered from this unit were identified as Barton Creek and Jenney Creek types, dating to the Late and Middle Preclassic periods, respectively.
Unit 3

Unit 3 was a 1 x 1 meter test unit which was placed to further expose the intersection point of Tzib and Tzul Causeways to the west of Unit 2. The unit was excavated to a depth of ca. 70 cm. As with Units 1 and 2, Unit 3 was comprised of almost complete rock fill with very little soil. Excavations exposed another set of rock alignments, running northeast to southwest, which can possibly be attributed to the Tzul Causeway construction feature (Figure 9).

Artifacts that were recovered in this unit included ceramic sherds and some lithic pieces. Sherds found in the upper levels were predominantly not identifiable due to heavy erosion, however those that could be recognized were typed as Belize Red and Dolphin Head, dating to the Late Classic period. The artifacts recovered in the lower levels were identified as predominantly Jocote Orange-brown and Savana Orange types and assigned to the Jenney Creek ceramic complex, dating to the late Middle Preclassic period (ca. 600-300 BC).

![Figure 9. Layout of unit 3, depicting rock alignment.](image)

Unit 4

Unit 4 was a 1 x 1 meter test unit which was placed east of Unit 1, in order to expose another segment of Tzib Causeway. The unit was excavated to a depth of ca. 70 and was also comprised of almost complete rock fill with very little soil. Excavations here exposed another
rock alignment running in a northwest-southeast motion, most likely to be associated with Tzib Causeway (Figure 10).

Artifacts that were recovered in this unit included predominantly ceramic sherds. Identified types include Sierra Red, Jocote Orange-brown, Savana Orange, Alexanders Unslipped, Belize Red, Cayo Unslipped, Dolphin Head, Garbutt Creek Red, and Roaring Creek Red. These types varied through all levels, dating the unit to the Late Classic period.

Figure 10. Layout of Unit 4.

Unit 5

Unit 5 was a 1 x 1 meter test unit which was placed northeast of unit 1, in order to expose another segment of Tzul Causeway. The unit was excavated to a depth of ca. 70 and was comprised of almost complete rock fill with very little soil, very similar to the other units. Excavations exposed another possible rock alignment running in a northeast-southwest motion, perhaps associated with Tzul Causeway (Figure 11).
Artifacts that were recovered in this unit included ceramic sherds, some lithic pieces, and minor charcoal deposits. Ceramics recovered in the upper levels were identified as Alexanders Unslipped and Belize Red, as well as Roaring Creek Red types. The only type that could be assigned to the lower levels was Savana Orange, thus ranging the artifacts from the Late Classic to the Middle Preclassic periods.

![Image](image.png)

**Figure 11.** Layout of Unit 5.

**Unit 6**

Unit 6 was 1 x 2 meter trench that was placed to expose Tzul Causeway foundations running northeast towards southwest. The unit was excavated in cultural layers to a depth of ca. 59 cm. The unit was also comprised of almost solely rock fill and exposed no clear rock formations or alignments.

Artifacts that were recovered in this unit included ceramic sherds and some lithic pieces. Most of the ceramic sherds from Unit 6 could not be identified. Those who could be typed (e.g., Savana Orange and Belize Red) were assigned to Jenney Creek and Spanish Lookout ceramic periods, again ranging from the Middle Preclassic to Late Classic periods.
Extensions

Three extensions were added to the units. Extension 1 was L-shaped, being placed north of Unit 1 and east of Unit 2, while also bordering Unit 5. Extension 2 was a 1 x 1 meter test unit placed east of Unit 5. Unit 3 was also L-shaped, connecting Extension 2 and Unit 4 towards the east (Figure 12).

![Figure 12. Layout of Unit 5.](image)

Crystal Palace Mound

A total of four excavation units (Units 1-4) were placed on the southern side of Crystal Palace Mound (Table 2, Figure 13). This was done in hopes to expose possible stairs leading up to the mound, as well as to investigate stratigraphy. In addition to the units, it was also decided to clean the southern portion of the mound to expose parts of the collapsed structure.
Table 2. Summary of Units – Crystal Palace Mound.

<table>
<thead>
<tr>
<th>Unit No.</th>
<th>Size</th>
<th>Depth Excavated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1m x 1m</td>
<td>82cm</td>
</tr>
<tr>
<td>2</td>
<td>1m x 1m</td>
<td>71cm</td>
</tr>
<tr>
<td>3</td>
<td>1m x 1m</td>
<td>71cm</td>
</tr>
<tr>
<td>4</td>
<td>1m x 1m</td>
<td>90cm</td>
</tr>
</tbody>
</table>

Figure 13. Layout of unit excavations at the Crystal Palace Mound.

Unit 1

Unit 1 was a 1 x 1 meter test unit which was placed on the south side of the mound in order to expose a possible stair system. The unit was excavated to a depth of ca. 80 cm to sterile soil (Figure 14). Unit 1 is comprised three stratigraphic layers: (1) 5YR 3/2; (2) 2.5 YR 3/4; and (3) 7.5 YR 3/3. The soil remained very dense and saturated throughout these layers. Artifacts recovered in this unit included ceramic sherds, some lithic pieces, and two obsidian blades, both found between 30 and 40 cm of depth (Figure 16). The majority of the ceramics could be assigned to the Late Classic period.
Unit 2

Unit 2 was a 1 x 1 meter test placed north of Unit 1, to further expose a possible stair system. The unit was excavated to a depth of ca. 70 cm and exposed a large foundation rock which outlined the south side of the structure (Figure 15). The material culture recovered in this unit included ceramic sherds, lithics, and slate. The majority of the ceramics also dated to Late Classic period.

Unit 3

Unit 3 was a 1 x 1 meter unit placed to the west of Unit 2 in order to further expose a line of foundation boulders found in unit 2 (Figure 15). The unit was excavated to a depth of ca. 70 cm. Unit 3 unit exposed a third foundation boulder lining the south side of the structure. Artifacts that were recovered in this unit included ceramic sherds, some lithic pieces, and slate, predominantly dating to Late Classic period.

Unit 4

Unit 4 was a 1 x 1 meter test unit which was placed to the west of Unit 1 in order to determine any other structural deposits lower than those found in Unit 3 (Figure 15). The unit was excavated to a depth of ca. 90 cm. The unit revealed large quantities of ceramic sherds in the top layer. The majority of the ceramics date to Late Classic period.
Cleaning of the Southern Side

As mentioned, it was also decided to clean the parts of the structure to expose collapsed features. While doing so, a number of ceramic sherds were excavated, as well as another obsidian blade, making this the third one found while excavating at Crystal Palace Mound (Figure 16). In addition, one ceremonial blade was recovered (Figures 17 and 18).
Figure 16. Obsidian blades recovered at Crystal Palace Mound.

Figure 17. Ceremonial blade as encountered *in situ*.
The excavation results, at the causeway intersection and the housemound at Crystal Palace Cave, present some interesting methodological issues. While the excavation units at the causeway intersection successfully identified the architectural and archaeological assemblages of Tzib Causeway, consistent associations between construction styles and visible features between Tzul and Tzib Causeways were sometimes lacking. The absence of a visible directional boulder alignment for Tzul Causeway in most units contrasted with the clear rock alignment found for Tzib Causeway. In the absence of such well developed architectural deposits, excavation of off-interval units were intended to define sensitive archaeological areas in the intersection. However, in terms of simply locating the boulder layouts of the different causeways, the intersection provided an acid test of the effectiveness of the well-intended systematic excavation approach.

Research has shown that the construction methods of causeways were similar to those of house foundations (Normark 2006:27; Shaw 2001:26). Predominantly large stones lined the edges to be then filled with construction fill in form of cobbles which gradually changed to fine gravel near the surface of the road (Normark 2006:27; Shaw 2001:26). In general, large uncut boulders were placed at the bottom, in order to level the road bed, with gradually decreasing sized rocks placed on top (Normark 2006:27). The rock foundation found in Unit 1 and Extension 1 is an example of such a construction method, though no gradual decreasing rock deposit could be observed. The boulder alignment stops where Tzib Causeway, running from or to

Figure 18. Ceremonial blade recovered at Crystal Palace Mound.

Discussion

Causeway Intersection

The excavation results, at the causeway intersection and the housemound at Crystal Palace Cave, present some interesting methodological issues. While the excavation units at the causeway intersection successfully identified the architectural and archaeological assemblages of Tzib Causeway, consistent associations between construction styles and visible features between Tzul and Tzib Causeways were sometimes lacking. The absence of a visible directional boulder alignment for Tzul Causeway in most units contrasted with the clear rock alignment found for Tzib Causeway. In the absence of such well developed architectural deposits, excavation of off-interval units were intended to define sensitive archaeological areas in the intersection. However, in terms of simply locating the boulder layouts of the different causeways, the intersection provided an acid test of the effectiveness of the well-intended systematic excavation approach.

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a plazuela group located southeast of the intersection, meets Tzul Causeway. One boulder points into the direction of Tzul Causeway running towards Pacbitun (Figure 19). From there, a directional alignment can be observed but not in the form of large boulders. It has been noted that causeways occur in all kinds of lengths, heights and widths, displaying a great variety in the construction style and form, even within individual causeways (Shaw 2001:26; 2008:5). In general, causeways are classified into: (1) intrasite sacbeob for short distances within a single site; and (2) intersite sacbeob for distances between different sites (Shaw 2008:81). Such typologies however concentrate on form and length. According to Shaw (2008:83), the problems with identifying causeways based on form are that construction materials and methods might differ according to the terrain and materials available in the environment. For longer causeways that would mean that throughout its course, it could change form and display different building materials, making a typology seem dubious. In addition, most archaeologists have recorded length but not construction types, so there is not a lot of information at hand (Shaw 2008).

![Figure 19. Tzib Causeway and Tzul Causeway boulders.](Image)

It seems like we have encountered an example of how causeway construction methods can differ at the intersection of Pacbitun. Preliminary analysis of the 2011 excavations at the causeway intersection at Pacbitun hint towards different construction periods of Tzul and Tzib Causeways. This is based on the different construction styles whereas Tzib Causeway clearly displays foundation alignments in form of large rock boulders while we don’t see a similar base in Tzul causeway. In addition, the way the boulders of Tzib Causeway end at the intersection and “point” towards Pacbitun, it can be suggested that this “causeway arm” was added to the intersection at a later date since otherwise the boulder alignment might have continued all the way to the site core. Ceramic analysis in regards to this hypothesis cannot be conclusive, due to the nature of the general causeway construction style, filling in the causeway with old ceramic deposits. About half of the ceramic sherds that were analyzed dated to the Middle-to-Late Preclassic periods (Figure 20). Though this can probably be accounted to using older ceramic deposits as construction fill, some patterns can be observed. Almost all ceramic sherds recovered
beyond level 5 could be assigned to Middle or Late Preclassic periods, whereas upper level deposits showed a wider range, dating all the way to the Late Classic period.

![Figure 20](image)

**Figure 20.** Main ceramic complexes identified at the Causeway Intersection.

**Crystal Palace Mound**

Excavations at Crystal Palace Mound revealed an array of ceramic sherds and various other prehistoric artifacts. The presence of a ceremonial blade, as well as obsidian blades suggests that this mound was not a typical commoner’s house but rather a location where ritual functions took place. Considering the close location to Crystal Palace Cave this location could have served as a contact point for people entering or exiting the cave. However, a final conclusion about the nature of this structure is not yet possible, as it requires further investigation.

**Tzul Causeway**

Due to recent natural burning of some of the fields surrounding Tzul Causeway, prior to the 2011 field season, parts of the sacbe were exposed that could not be observed visually before. A reconnaissance survey of the causeway portion revealed several mano and metate fragments, as well as what could be a mound situated on the side of the ancient road, however future excavations here are necessary to reveal any further information.
Conclusions and Recommendations

Pacbitun displays a unique connection between the site center, various structures in the periphery, and caves. This connection is displayed in form of the causeway system in some parts of the periphery, but also in form of an absence of a road system in others. An investigation of all these interconnected features is necessary to understand the connecting links and, consequently, the whole story of the ancient people of Pacbitun and its hinterlands. Therefore, further archaeological investigations are necessary, not only in and around the causeways and the constructions associated with them but also in the architecture located near the caves that are located in close proximity to the ancient road system.

Overall, the degree of preservation of the causeways in and around Pacbitun varies greatly. This is in part due to erosion, as well as continuous modern human occupation on and around the causeways. While in some locations clear rock alignments were encountered even above ground, in others, especially around the causeway intersection, the ground has been extremely disturbed through modern occupation. For example, while Tzib causeway clearly starts or ends at the intersection, its directional course running northwest is hardly traceable above ground for approximately 100 meters because it runs through a modern farm area and crosses a modern road. Behind the modern road the causeway becomes more and more visible again before terminating in front of a minor center. All four causeways emerging out of the intersection vary in terms of their visibility above ground, due to the reasons just described.

In order to find and display all four causeway alignments running together, and exposing their various construction types fill, a large scale excavation would be necessary. However, due to the causeway intersection being located right behind an occupied modern house, extensive excavations in that specific location are problematic. Instead, shovel tests and occasional excavation units should be placed into each of the causeways systematically along their routes. Doing so will allow for dating the construction periods of each of the sections in the causeway system and partially investigate their construction style.

The excavations at Crystal Palace Mound revealed quite a few intriguing artifacts. However, excavations concentrated solely on the south side of the structure and additional archaeological excavations will be needed to determine the full function of these intriguing architectural remains.

By conducting a thorough analysis of the function(s) and date(s) of the causeways, caves, and the associated architectures we might be able to display increased ideological motivation, displayed in the archaeological remains in the site center and the periphery, towards the decline of Pacbitun as an elite site center.
Acknowledgements

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A View from the Clouds:  
Excavations from the 2011 Field Season at Sak Pol Pak

R. Bryan Reece  
(Kennesaw State University)

The ancient Maya minor center of Sak Pol Pak is located approximately three km southwest of Pacbitun (Figure 1), a medium-sized ancient Maya ceremonial center situated in the foothills of the Maya mountains in west-central Belize (Healy 1990:247). The investigation during the 2011 field season was one of many studies that focused on the peripheral development of Pacbitun by the Pacbitun Regional Archaeological Project (PRAP). Understanding the role of a center such as this is just one of the projects many goals to better understand Pacbitun not only as a ceremonial center, but its hinterland development as well. With this in mind goals of the 2011 investigations were to establish a chronology for the site, its occupational history, and evidence directly linking the site’s association to Pacbitun.

Previous Investigations

The only previous archaeological investigation of this site was completed by Jim Conlon (1999) in the mid-1990s as a member of the Belize Valley Preclassic Maya Project. His initial two-day reconnaissance produced a tape-and-compass map of the site (Figure 2), elevations of the mounds, and the identification of three plazas (A, B, and C). Conlon identified 14 structures, two of which were non-residential (Str. A-1 and A-4), two of which were considered shared mounds (Str. A-3 and B-3 as well as Str. B-2 and C-2), one chultun, and he estimated the site to carry a population of as many as 50 people (Conlon 1999:32-33). Conlon also recorded the site as “Pol Sak Pak” in his report which is now being argued in favor of “Sak Pol PaK” by the members of PRAP as the latter phrase is more properly arranged in Yukatek Maya. The only excavations performed by Conlon (1999) were the cleaning of multiple looters trenches that yielded no useful results.

Plaza A Excavations

The excavation goals in Plaza A were to establish a chronology for the site, and gain a better understanding of its constructional history (Spenard et al. 2011). Unit 1’s placement was determined by identifying the central access of Str. A-1 by using Conlon’s (1999) tape-and-compass map. At the southern base of Str. A-1 a poorly preserved terminal outset stair was still visible and was measured to determine the temples central axis. This measurement was combined by the line-of-sight intersection with the structures traverse axis at the top of the temple. Based on these calculations a 2 m x 2 m unit, Unit 1 was placed in front of the structure’s central axis.
Figure 1. Map of Maya subarea indicating the location of Pacbitun.
Figure 2. Map indicating the location of Sak Pol Pak and its relation to Pacbitun.
Figure 3. Map of Sak Pol Pac site core with 2011 excavation units (map by Jon Spenard updated from Conlon 1999: Figure 1).

Unit 1 was excavated through two cultural levels before reaching bedrock at 58 cm in the center of the unit. Level 1 of the unit consisted mainly of terminal collapse debris mixed with the humus layer of dark brown soil (7.5 YR 3/2). The level ended revealing a mix of soft and calcific limestone as well as slate. Ceramics, lithics, slate, and one shell bead (Figure 6) were collected in this level. Level 2 began with the removal of the terminal construction to expose a level of dry-stone core that had been stacked directly on top of the bedrock. No evidence of a plastered plaza floor remained in this unit and suggests that floor of Plaza A only had one constructional phase. The peak of the bedrock in Unit 1 measured 58 cm at its shallowest point and 128 cm in the northwest corner at its deepest point as the bedrock sloped down and away from the middle apex of the bedrock. Recovered from this level were many highly eroded pot sherds and slate. Also, during the final profiling of Units 1, 2, and 7 (Figure 4) what appears to be a crudely rounded limestone boulder was identified. The boulder appears to be uniform in
thickness which suggests it may be a stela or altar, and warrants further investigation in coming field seasons.

Because bedrock was reached so quickly and no discernible features could be made out the decision was made to extend the unit south adding a 1.5 m x 2 m unit, Unit 2, in an attempt to locate the central staircase. This unit was excavated through three cultural levels with the third level consisting of hard-packed dark brown clay (7.5 YR 3/4). This hard-packed clay was determined to be caused by leaching after the once-present plaza floor eroded away. Artifacts from this unit included half of a slate pendant found in Level 1 as well as highly eroded pottery and other slate fragments.

Since no stair or feature of any kind had been identified thus far the decision to go south one more meter was made and Unit 7, a 1 m x 2 m unit, was added to the south. Four levels were excavated. Still, no signs of a plaster floor were observed but the unit did reveal a two-course basal stair and one well preserved facing stone from the structure’s terminal construction phase. In addition two more shell beads were recovered from Level 2 (Figure 6), and two separate charcoal samples were recovered at 106 cm from ground level in the northwest and southwest quadrants of Level 4. Finally, also in Level 4, five ceramic sherd were recovered and are believed to be the only artifacts, other than the charcoal, to be recovered in a sealed context because of their location relative to the temple, and the hard-packed brown clay they were recovered from. Two of the sherds were identified as Fowler Orange-red: Spring Camp Variety (Gifford 1976:155). These ceramics are a part of the Hermitage ceramic sequence (AD 280 – 590) and imply that construction at Sak Pol PaK may have begun in the Early Classic (Spenard et al. 2011).

The artifact assemblage for Units 1, 2, and 7 were fairly homogenous. The bulk of artifacts collected consisted of highly eroded ceramics and slate. Very few lithics or *jute* (*Pachychilus indiorum*) were recovered from any of the units, and no signs of plaster were observed or recovered.
Figure 4. East profile of Units 1, 2, and 7 in Plaza A in front of Str. A - 1.

Figure 5. South profile Unit 7, Levels 1 – 4 at the base of Str. A - 1. Notice the two-course basal stair suspended to the left with a well preserved facing stone to their right.
Units 6 and 8 were the other two units excavated in Plaza A and yielded little to no useable data. Unit 6 was placed inside the eastern half of Str. A - 4, a round structure that may have served as an altar (Conlon 1999:36). The structure had been looted but to what extent was unknown. The unit was excavated to bedrock and produced a few pot sherds before discovering pieces of plastic mixed in close to bedrock. This unit was therefore deemed fully looted. Unit 8 was added to the northwest corner of Str. A-1 to try and recover more data on the temple’s constructional sequence but was halted after running into huge boulders of dry-stone core.

Residential Zones

The site’s residential zones as identified by Conlon (1999) were located east of Plaza A and contained one unrestricted zone, Plaza B, and one restricted zone, Plaza C (Figure 3). To gather evidence of the occupational history of these zones and the day to day activities of the ancient Maya inhabiting the site three units (units 3, 4, and 5) were placed along the eastern edge of Plazas A and B. The goals of these three units were to locate residential midden deposits, the contents of which could help inform about the practices of the residents living at this site (Spenard et al. 2011).

Unit 3 was a 1 m x 1 m unit that was placed behind Str. B-2 and was excavated through four cultural levels. Level 1 yielded very few artifacts and contained mostly fallen debris. Most of this debris is believed to be from a looters trench that was dug approximately ten meters to the
southwest of the unit. Level 2 contained high amounts of slate with some ceramics and ended as a homogenous layer of cobble sized soft and calcific limestone appeared. Level 3 began by removing the layer of limestone cobbles to reveal a very large piece of slate that was protruding from the west wall. Level 4 began by removing the slate slab to reveal a half complete mano fragment inside the wall of the unit below the slate. The slab measured to be 61 cm from ground level and was unmodified measuring 70 x 31 x 13 cm. This slab was not collected and was placed back in unit with the back fill. Artifacts recovered from this unit were more poorly preserved ceramics, slate, half of a mono, and one obsidian blade that was recovered from Level 4. The slab measured to be 61 cm from ground level and was unmodified measuring 70 x 31 x 13 cm.

Unit 4 was another 1 m x 1 m unit that was placed east of Str. C-3 and was excavated through two cultural levels. The unit produced highly eroded pottery in great abundance, two mano fragments, and what appeared to be the spiral end of a pear whelk (*Busycon spiratum*) shell (Spenard et al. 2011). While profiling the north wall of the unit two cut limestone blocks were recorded and appeared due to their configuration that they may have been part of a stairway. This however could not be confirmed due to the limited size of the unit and its orientation to the presumed rear axis of the structure.

Unit 5 was also a 1 m x 1 m unit that was placed just outside of the southeast corner of Str. C-4. The unit was excavated through one level to bedrock lying only 10 cm from the surface. Almost directly on the surface laid the remnants of a 90 percent complete granite metate that had been broken in half. Few highly eroded ceramics and slate were recovered as well but in very low frequency.
Discussion and Conclusions

Since Conlon’s (1999) reconnaissance in the mid-1990s the only excavation of Sak Pol PaK to date has been the recent work by PRAP during the 2011 field season. Since 2009 research into the periphery of Pacbitun has uncovered a wealth of knowledge into the size, settlement pattern, and influence of an ancient Maya that not only lived in the site core of this ceremonial center, but the people who made up the community that supported the political influence it shared throughout the region. Although the degree of artifact preservation at Sak Pol PaK has not been high thus far, the size and elevation alone merit this site worthy of future research. The 11 m tall temple (Str. A-1) that sits atop the mountain the site is located on is a feat of engineering itself and speaks volumes about the site’s importance. As projects across the Maya area begin to focus on research into the periphery of their respective sites the importance of minor centers, and data about them, will become more abundant. As for now not a lot is known about these sites, especially a site like this that sits so high in the clouds. There are a plethora reasons the ancient Maya of this area would settle a site such as this (see Lawrence, this volume). Evidence from this field season of the presence of mano fragments and a nearly complete metate suggest that food was being processed on site. Also, a few olla rims and body sherds were collected suggesting that they had access to storage vessels at the site as well. Spenard et al. (2011) have suggested that site may have served as a boundary marker for Pacbitun or as a ceremonial center for special calendric dates. Recent research I believe shows us that the site was more than that. The view from the top of Str. A-1 allows you to see many kilometers in every direction, even a direct view of Pacbitun. This positioning and view alone could have made it a vital defensive outpost or possible communication hub with surrounding

Figure 7. Metate fragments recovered from Unit 5, Level 1.
sites. Ceramic evidence thus far suggests the site to have begun development during the Early Classic (AD 250 – 600). As endemic warfare began to sweep through the southern Maya Lowlands I believe it served, at least for a time, as an early warning outpost during high threats of invasion, and communication hub between neighboring sites. Future field seasons will answer more of these inquires, but as for now the site appears to have been useful in many different ways for the ancient Maya of Pacbitun, and its surrounding political sphere.
Acknowledgements

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Life at the Top: An Overview of Sak Pol Pak and Middle Level Settlements in the Belize River Valley

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The Pacbitun Regional Archaeological Project (PRAP) encompasses an area of approximately nine square kilometers along the southern rim of the upper Belize River Valley. Situated at the junction of two ecozones, the tropical lowland forest and the Mountain Pine Ridge (Healy 1990, 247), this area is unique in its variety of natural landforms, vegetation zones and physical and cultural variety. The research permit held by Dr. Terry Powis of Kennesaw State University delimits an area that encompasses a variety of distinct geographic landforms and occupation sites that includes the main site core, called Pacbitun, which is situated at the crest of a small rise in a landscape of rolling hills. The permit area includes a peripheral area or hinterland that includes karst landforms in which caves have formed, gently sloped terrain which allows modern agricultural activity and would be capable of serving a similar function in Preclassic to Late Classic times, flatlands, and the foothills and outcroppings associated with the edge of the Mountain Pine Ridge. Situated at the crest of one of these outcroppings is the site of Sak Pol Pak (White Head’s Cliff - translated from the local Yucatec Mayan dialect).

In June of 2011, a team of researchers and students from across the United States and Canada, along with local Belizean students and workers conducted archaeological excavations at Sak Pol Pak (hereafter SPP). The key research questions that were being asked regarding the SPP site surrounded the temporal establishment and possible functional use(s) of the site, along with attempts to potentially and hopefully definitively link SPP to Pacbitun with artifactual evidence. Eight excavation units were opened at the site and excavated to sterile soil or bedrock in an effort to achieve this goal. This paper aims to briefly outline some of the findings at the site and to lay some of the background for the theoretical basis of defining this site and its place in the hierarchy of hinterland occupation sites associated within the Pacbitun region. To do so, some brief attention must be paid to historical analyses and the differing approaches towards determining settlement patterns, site classifications, site size rankings, and to the disparate opinions on peripheral studies within the lowland Maya area and more specifically within the upper Belize River Valley.

Early Site Classification Schemes

The Belize River Valley, as part of the greater Peten region of the Maya lowlands, has been explored and has had archaeological survey and investigations conducted within it for over a century. Early “explorers” Stephens, Maudslay and later Maler and Tozzer all recognized the expansive and complex “cities” (Maler 1911; Maudslay 1886; Stephens 1843; Tozzer 1911) of the Peten region and used the general moniker: “city” for most if not all of the sites they explored. Beginning in the early decades of the twentieth century and continuing until roughly
mid-century, in a primarily Boasian anthropological tradition, primarily descriptive and qualitative reports were the norm and some early effort was made to classify sites based on their function. Although the idea of the “ceremonial center” developed from earlier explorers, work conducted by Morley (1910) and studies based at the Carnegie Institution of Washington helped to solidify the concept of functional centers (see Adams 1969 for a more complete overview of this early period). Morley published a study of his investigations at Uxmal and laid the groundwork for functional classification scheme for Maya sites. In particular, he identified one building at Uxmal as a “sanctuary” and as having ceremonial importance (1910:1 17). Gann began to identify the social structure of the region and place it in a general Pan-Maya political system (Gann 1918, 1927). Work began to include residential and housemound archaeology in an attempt to help define the social structure of the ancient Maya.

Beginning in the mid-twentieth century explorations conducted by Willey and Bullard, within the Belize River Valley proper, consisted of surveys and excavations at the Barton Ramie site and more limited survey of the sites of Baking Pot and Spanish Lookout (Willey et al. 1965). Willey identified and described these settlement sites and began the process of attempting to classify and categorize site sizes and settlement patterns based on his observations. Bullard followed with his categorization scheme for site size based on a functional assessment of a site (Bullard 1960). His work as well as that of his advisor Gordon Willey, and the classification system they developed became a primary tool for subsequent investigators and has remained a popular classificatory tool. A more concerted attempt to develop a less general classification scheme was the result of efforts by Hammond (1975) and the work he conducted in northern Belize. He had decided that prior classification tools were inadequate and did not accurately reflect the situation in the region. The development of a nine level hierarchical system was the result. The ‘splitters vs. lumpers’ debate became readily apparent around this time with the different systems being used. Following the rise of the “new archaeological theory” came Adams and Jones (1981) and their ideas of rank size typologies as a way of classification of sites based on courtyard counts. The system developed by them was (and still is) used to categorize sites quantitatively and from there, to postulate their possible roles in Pre-Columbian Maya society. An even more recent attempt to describe settlement site hierarchies and their placement in the settlement continuum has been attempted by Iannone and Connell where they place many of the smaller sites and much of the settlement archaeology studies conducted within the Belize Valley in a category they call “middle level settlements” (Iannone and Connell 2003). In my view their “middle level” label accurately describes site size, gives clues to function and social rank and greatly helps to define the differences between the strictly isolated residential housemound sites as found across the region, and the large urban, administrative or regal sites such as Tikal and Naranjo and to a more limited extent, Xunantunich and Cahal Pech. It is within this “middle level” of settlement that Pacbitun itself and its hinterland sites lie.

**Current Classification of Sak Pol Pak**

Pacbitun’s peripheral site, Sak Pol Pak has been referred to as a “minor center” (Willey et al. 1965) in earlier investigations by Conlon (1999). This preliminary categorization was based on pedestrian survey, tape and compass measurements, and test excavations during two days of investigation in 1995 (Conlon 1999). The site falls into “Level IV” in the classification scheme
devised by Adams and Jones (1981), and although it doesn’t match all of the criteria in Hammond’s rank orders classification system, I believe it would most closely match and fall into Hammond’s “Level 6” “minor ceremonial center” categorization (Hammond 1975) as well. It corresponds to Bullard’s “minor ceremonial center” (Bullard 1960). Indeed, it is described nicely by the moniker Iannone and Connell (2003) prefer as a “middle level settlement” while at the same time, I feel, having similar attributes to what Becker (2003) terms a Plaza Plan 4 – Central Altar Plan, which he described and labeled in a categorization based on his and others’ extensive settlement survey work on the classification of building groupings at Tikal, Guatemala (Becker 2003:262 -264).

Current Research

The goal of the investigations in the 2011 field season was to attempt to identify the nature and function of the site and temporally place Sak Pol Pak within the general chronology of the occupational history of the Pacbitun region (see Reece, this volume). The 2011 PRAP field season saw eight excavation units opened at the site. The artifactual evidence collected from these units, primarily Late Classic ceramics along with a few Early Classic sherds, as well as non-specific domestic debris, reported here by Reece in this volume, has led to a preliminary designation of the site as most probably a Late Classic period “average minor center” by the primary investigators on the project (Spenard et al. 2011). The 2011 excavations revealed that the site was constructed in a single phase (Spenard et al. 2011) and thus, I suggest, although some ceramics appear to show earlier period occupation or, at the very least, involvement at this location, cannot conclusively be viewed as being established earlier than the Late Classic period. Further investigations may well refute this claim.

Comparison with other Belize Valley Sites

Classifying the site as Late Classic in this way places it within the same general temporal period as the later occupations of the sites of Zubin, Nohoch Ek, and Chaa Creek, all of which are situated approximately 8.25 km roughly to the north-northwest of Sak Pol Pak, but still within the upper Belize River Valley (Coe and Coe 1956, Connell 2003, Iannone 1996; 2003, Iannone and Connell 2003). Each of these sites has been referred to as “minor center” (Bullard 1960) or could be referred to under many of the other mid-level settlement size monikers (see Adams and Jones 1981; Bullard 1960; Hammond 1975; Iannone 1996; Iannone and Connell 2003; Puleston 1983; Willey et. al. 1965; Willey 1981 for full descriptions of many other classifications). The three above mentioned sites are somewhat similar in size, yet none compare exactly to, nor do they possess the complete set of features found at Sak Pol Pak. With this in mind, I suggest that even a cursory comparison of these three well studied sites may yield some insight into what may be expected to be revealed in further excavations at Sak Pol Pak.

Gyles Iannone’s investigations at Zubin (1996, 2003) reveal that the site is situated at the crest of a small rise about two kilometers south of Cahal Pech. Zubin was constructed in multiple phases ranging from the Middle Preclassic “shrine” C9 to the Late Classic residential structures associated with Plaza A. The site’s main architectural features consist of two small
courtyards with a third flatter area extending to the south on which the “shrine” Structure C9 sits. The A1, A2, A3 and A4 structures surround and comprise the main courtyard. This plan only loosely follows the general pattern of placement of the structures at SPP. The plan at Zubin is skewed approximately ninety degrees from that of SPP placing the largest structure (A1 Zubin) on the eastern edge of the main courtyard versus the placement of the largest structure (A1 SPP) on the southern edge of Plaza A. Iannone postulated that the initial construction of Zubin A1 occurred during the Late Preclassic (Iannone 2003:14), predating SPP’s single construction phase by approximately four to five hundred years. Later construction and remodeling of A1 occurred during a period of Plaza A residential construction in the Late Classic which would place it temporally similar to SPP’s apparent solitary construction phase. The artifacts recovered at Zubin are plentiful and varied and although comparison of the assemblages at Zubin with those of SPP is problematic, due primarily to context (i.e., grave goods vs. non grave goods respectively) some similarities do exist. Where these do occur appears to be mainly in the ceramic evidence; non-elite wares including Dolphin Head Red, Belize Red and Mount Maloney and sub-elite Orange Walk Incised, Saxche Orange Polychrome and Montego Polychrome were found at Zubin, (Iannone 2003), while the handful of ceramics from SPP are tantalizingly referred to simply as “highly eroded pot sherds” (Reece, this volume) and most likely originating from Ollas or other storage vessels (Reece, this volume). Ceramics found at SPP have been provisionally identified as Fowler Red, Mount Maloney Black and Belize Red as reported by Reece (this volume).

Sam Connell’s study of Chaa Creek (Connell 2000) and its’ smaller sub-site of Stela Group shows that it is smaller spatially than SPP and shows only a few architectural traits that are similar to SPP (Connell 2003). Stela Group’s largest structure M1 (Connell 2000) measures an approximate five meters tall compared with Structure A1 at SPP which is measured approximately 11 m tall (Conlon 1999). Again the orientation is roughly ninety degrees off (similar more to Zubin than SPP). The main similarities between the two are in the situation of each site on elevated ground and in the ceramic evidence. The Stela Group is located on the western edge of the Chaa Creek site complex on a ridge of land separated from the much smaller Plantain group by a ravine and from the Tunchilen Group by Chaa Creek itself. This presents a significantly isolated situation for Stela Group. Comparably, the remote nature of SPP is well documented by authors within this volume and in previous reports. I suggest that the proximity and less rugged terrain surrounding Stela Group provided for residential sites in the surrounding areas in contrast to Sak Pol Pak, where, being significantly more remote, residential sites were incorporated directly into the complex. Connell’s description of this grouping refers to it under the subheading of “Stela Group (Site CC1): Ancestor Veneration and Divination” in his article in Perspectives on Ancient Maya Rural Complexity (Iannone and Connell 2003). When ceramic evidence is compared between the two sites, we find some similarity in the forms but a full comparison is not yet possible due to the relative paucity of ceramic evidence at SPP. Connell (2003) situated Stela Group within the same temporal period, Late Classic, as SPP’s occupation as well. In my opinion, the most tantalizing suggestion for future excavations at SPP is the prospect of discovering elite or sub-elite burials within the structures as at Stela Group and other similar sites, and potentially enabling the labeling of SPP under a similar moniker as Stela Group at Chaa Creek.
The site of Nohoch Ek, as described by Coe and Coe (1956) and later revisited by Taschek and Ball (2003), is geographically situated at the crest of a small rise of approximately 35 m above its surrounding countryside, almost equidistant from both the Mopan and Macal Rivers within the Belize River Valley (Coe and Coe 1956; Taschek and Ball 2003). Interestingly, the hierarchical placement and analysis arising from the Coe’s 1949 excavations is somewhat refuted by the later investigators. The earlier conclusions that Nohoch Ek served as a “marginal ceremonial group” (Coe and Coe 1956: 381) morphed into an assertion that the grouping of structures represented a form much more akin to the agricultural manors of medieval Europe and that Nohoch Ek was nothing more than a “Late Classic Maya manor” (Taschek and Ball 2003: 385).

A comparison of the artifactual and ceramic evidence between SPP and Nohoch Ek indicates some similarity between ceramic styles and wares. Interestingly, Ball and Taschek have stated that the “Mt. Maloney Black” found at Nohoch Ek “does not occur at Tikal (farther west), San José (slightly north), or even Pacbitun (south) and is supplanted progressively but rapidly by a red-finished ware (“Garbutt Creek-Vaca Falls” Group) to the east even within the lower Belize Valley” (Taschek and Ball 2003: 376). This assertion of a lack of similarity with Pacbitun’s ceramic evidence may not be borne out when we consider the assemblages from the 2011 SPP excavations. Within the ceramic assemblage that came from the areas defined as residential at SPP, “Mt. Maloney Black” is represented (Reece, this volume). Indeed, Coe and Coe (1956) imply that Nohoch Ek was within the political sphere of Benque Viejo (now known as Xunantunich) with their assertion that the ceramics they found show “a Late Classic to possibly Postclassic monochrome horizon during which Nohoch Ek appears to have been in close contact with the El Cayo-Benque Viejo locale” (Coe and Coe 1956: 381). Admittedly, the reference to “El Cayo” would include the broad region in which Pacbitun and SPP are located, the Belize River Valley, and although I suggest that some 56 years after this quote was written, the reference to an association with the entire region may be somewhat overreaching, I do feel the main utility of the Coe and Coe (1956) assertion lies in its temporal reference to the Late Classic and its focus on ties between Nohoch Ek and Xunantunich. This earlier statement and the 2011 discovery of “Mt. Maloney Black” at SPP, seems to question Ball and Taschek’s assertion that this type does not occur “further south at Pacbitun” (Taschek and Ball 2003: 376).

The artifacts of Nohoch Ek also show some similarity with SPP’s assemblages. Chiefly, this similarity lies with the ground stone artifacts and other lithic evidence. The areas identified by Conlon (1999) as residential did reveal upon excavation some typical residential artifactual evidence (see Reece, this volume) with the mano fragments, a broken metate and also an obsidian blade. Since Taschek and Ball have reassessed Nohoch Ek as a “residential plaza group” writ large (Taschek and Ball 2003:385) this, combined with the similarity of artifactual and ceramic evidence excavated in the provisionally identified residential areas of SPP, supports Conlon’s (1999) early designation of these residential areas as such. This still leaves unexplained however, the primary function and association of SPP.
**Political Relationships**

Ball and Taschek have proposed, in contexts within the Belize River Valley, some interesting alternative models for local and regional Classic period political organization that I feel are appropriate to mention here due to their primary focus on smaller centers in the Belize River Valley. Each example that is cited is located within relatively close proximity of Pacbitun and SPP. Briefly, based on the work of urban anthropologist Richard Fox (1977), these authors postulate that the region is divided into “six distinct communities focused on the major centers of Naranjo, El Pilar, Buenavista, Baking Pot, Las Ruinas (Arenal) and Pacbitun” (Ball and Taschek 1991: 151). The authors base these conclusions on an interpretation of Central Place Theory derived from the field of Geography that is combined with the view that the lowland Maya realm consisted primarily of a segmentary state system of organization (Ball and Taschek 1991). Without going into great detail here, the basic designation of Pacbitun as a being on a level comparable to the other five aforementioned centers, leads towards the logical conclusion that it should have represented within its’ hinterland, similar types of sites as those found within the other centers’ peripheries. The authors adopt Fox’s “regal ritual city” and “administrative city” labels for these centers and further discuss the political organizational foci of this class of settlement. In their concluding statements the authors assert that by comparing a “site type’s frequency, relative hierarchical position... and spatiotemporal relationships to other similar sites... makes possible an evaluation of its organizational role within a bygone society” (Ball and Taschek 1991:162).

Attention must be paid to the work done by Anabel Ford and her studies of the Belize Valley site of El Pilar and its outlying hinterland. Specifically I highlight her comments on the community of the ridgeland of El Pilar’s realm where she states “the ridgeland have the greatest number of elite residences and the presence of the most imposing of monumental public architecture” (Ford 2004:245). She continues, and asserts that the ridgeland “represent a contrast between the haves and the have-nots, [and] between administrative and peasant households” (Ford 2004:248). May we now be able to infer that SPP, located isolated high on a prominent ridge, with an imposing 11m tall structure, a possible altar and two residential areas, may in fact represent the residence of an administrative or religious leader with regional ties to Pacbitun? Further excavation is necessary and will yield more clues and lead towards a more definitive understanding of what occurred at SPP.

**Concluding Thoughts**

I have attempted to briefly outline some of the basis for the classification of Pacbitun’s hinterland site of Sak Pol Pak variously as a “minor center” (Willey et al. 1965), “fourth level settlement” (Adams and Jones 1981), “minor ceremonial center” (Bullard 1960), “Level 6 – Minor Ceremonial Center” (Hammond 1975) or possibly as an example of a Plaza Plan 4 configuration (Becker 2003). In so doing, I have also attempted to show a basic congruence of the found artifacts and ceramics with three other similarly categorized sites located within a very short distance of and situated similarly. This similarity chiefly being, that they are situated in a geographic location that is an elevated position relative to their surroundings (albeit not to the extremity of the isolated mountain top settlement of Sak Pol Pak). I have also, in choosing the
particular comparative examples, shown that the comparison of sites of this size that are, in fact labeled similarly, is indeed problematic. Nohoch Ek appears to be a large residential grouping and with its’ multiple construction phases, only its’ final Late Classic incarnation appears somewhat similar to Sak Pol Pak. Zubin appears to have had a continuous occupation, with multiple and changing primary functions over a much greater length of time. Chaa Creek is dissimilar in spatial dimensions, but similar in artifactual evidence, somewhat similar in geographic situation and offers tantalizing clues that in future investigations at Sak Pol Pak, burials of individuals of status may lend support to the labels of ritual or administrative center being placed on Sak Pol Pak.

Categorization of these middle level sites has presented problems in the past and will likely continue to do so well into the future. Primary decisions on whether to look at the quantitative attributes of each site or the qualitative aspects will affect the label placed on each site and will necessarily separate it from other sites that may in fact be similar, but categorized differently due to the investigator’s personal viewpoint. I suggest that a more holistic approach to describing site size that combines both qualitative and quantitative attributes is necessary. I believe the Iannone and Connell (2003) monograph and their “middle level settlement” label goes a long way towards this goal. They highlight the categorization issue with their references to the complexity of rural settlements and the difficulties inherent in attempting to corral all of the disparate data, classification schemes, and descriptive terminology into a manageable, globally inclusive and practical system of middle level site classification. A concerted global attempt at re-classifying sites utilizing the same criteria is needed. I suggest that a pan-Maya system needs to be discussed and adopted before doing so. There’s a mountain of work ahead, both in the field and in our collective thought processes. With this in mind, as we said before the arduous trek to the top of the mountain and to Sak Pol Pak: “Ko’ox” (let’s go!).

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Acknowledgments

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A Report of the Burials and Human Skeletal Remains from the North Group, Eastern Court, Pacbitun, Belize

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Archaeological excavations conducted at the North Group of the Eastern Court during the 2010 field season (Cheong 2011) revealed three burials which contain a minimum of four individuals. The Eastern Court is a plaza located directly behind Structure 1 and Plaza A, the main plaza, on the north eastern sector of the Epicenter. The Eastern Court is bounded by the back side of Structures 1, 4, and 5 on the west, the North Group to the north, and Structures 11, 41, and the entrance to the Mai Causeway, on the east (Healy 1990:251). The North Group (Figure 1) consists of a restricted access courtyard created by Structures 34, 35, 36, 37, and 40 along with Structures 38 and 39. All three burials were of a simple pit variety according to the grave typology developed by W.B.M. Welsh (1988:16). The skeletal preservation of these burials was very poor resulting in the fragmentation of the bones during retrieval. The very poor state of preservation is typical in the subtropical environment. The following report describes the results of the analysis of the skeletal remains from the North Group conducted in June of 2011.

Figure 1. Map showing all 2010 excavation units at the North Group (Cheong 2011:Fig.6).
EC-Burial-1

EC-Burial-1 is a simple pit burial (Welsh 1988:16) and contained the remains of a single infant. The estimated age of the individual is 4 years old (+/- 12 months), due to dentition present and the incomplete development of the molar roots. The preservation of EC-Burial-1 was very poor resulting in the recovery of mostly teeth and some cranial fragments. The individual of EC-Burial-1 was interned with one shell bead. As the preservation was very poor no orientation or burial position were observed. The sex of the individual could not be determined due to age.

EC-Burial-1 was located inside Plaza Floor 1, which is made up of 12 cm of plastering, directly in front of Structure 38. It was excavated from southeastern quadrant of Sub Unit 1A at the depth of 127 cm from datum. The datum of Sub Unit 1A or Datum 1 was set at 60 cm above ground on the southeastern corner of Unit 1 (Cheong 2011:98). An analysis of ceramic material found within Plaza Floor 1 dates the plaster floor construction to that of the Late Classic Period (AD 600 – 900) (Cheong 2012). The circumstance, location and depth of EC-Burial-1 could suggest that it is a possible cache offering. The reasoning being that there was no indication of disturbance was identified on the plaster surface and that the remains were found inside the plaster floor instead of beneath the plaster, it was interned directly at the central axis in front of the structure similar to that of dedicatory cache offering, and that only cranial remains very recovered with none post cranial skeletal remains.

The dentition of EC-Burial-1:

Maxillary: 1 canine (unsided)
1 first incisor (unsided)
1 second incisor (unsided)
1 right 1st deciduous
1 right second deciduous molar
1 left first deciduous molar
1 left second deciduous molar

Mandibular: 1 right first deciduous molar
1 left first deciduous molar

EC-Burial-2

EC-Burial-2 (Figure 2) is a simple pit burial (Welsh 1988:16) and contained the remains of a single adult. The preservation of EC-Burial-2 was very poor and highly fragmentary, thus sex of this individual was undetermined. Based on the orientation of long bones, initially uncovered in Unit 2B of Structure 36, the head is oriented to the south (north-south axis) and the body was observed as in an extended dorsal position. This type of head orientation and body position is typical of the burials recovered from Pacbitun (Robertson 2010:168-169).
The individual of EC-Burial-2 was interned with 12 musical instruments (11 ceramic ocarinas and one flute). Unfortunately, the exact location of these musical instruments in the burial is unknown because of root disturbance. These musical instruments were mostly complete (with a few still functional) and all are mold made dating to the Tzib phase of the Late Classic Period (AD 700 – 900) (Cheong 2011:117). Burials interned with musical instruments are quite rare in the Maya subarea; the few known cases are Burial 1-1 of Pacbitun with a pottery hand drum, and a ceramic red painted, composite, flute-and-rattle instrument; Burial 2-1 of Pacbitun with five ceramic, tubular air spring flutes, eight anthropomorphic and zoomorphic effigy ocarinas, and a blue painted, composite, flute-and-rattle instrument (Healy 1988:29-30; Healy et al. 2008:24-25); a burial from El Paraiso, Guatemala with nice pottery bells, three drums, one flageolet and one whistle (Shook 1947:182); and the ancient Maya cemetery on Jaina Island, Mexico.

EC-Burial-2 was interned in the exact location where the central axis of Structure 36 and Structure 37 meet in the plaza, in front of both structures. The lower section of the burial was
Initially uncovered in the western half of Unit 2B and Unit 2D was excavated in order to uncover the upper portion of the burial. EC-Burial-2 was located at the depth of 153 cm from datum (Cheong 2011:114,116). The datum for both Unit 2B and 2D was set at 60 cm above ground on the southeastern corner of Unit 2. Unit 3 Floor 1 and Floor 2 were not encountered during the excavation of both Unit 2B and Unit 2D, this is possibly due the removal of the plaster floors in antiquity for the internment of the individual of EC-Burial-2. Ceramic analysis indicates that Unit 3 Floor 2 dated to the Tzul phase of the Early Classic Period (AD 300-600), and Unit 3 Floor 1 dated to the Late Classic Period (AD 600–900) (Cheong 2012). This meant that EC-Burial-2 was interned sometime after the construction of Unit 3 Floor 1 and Floor 2. By combining the dates of the floors and the dates of the musical instruments, it is deduced that EC-Burial-2 dates to the Late Classic Period (AD 600-900).

**The dentition of EC-Burial-2:**

Maxillary: 1 left canine
1 right first molar

Mandibular: 1 right second premolar
1 left first premolar
1 right molar
1 right second molar

**Post cranial skeletal remains of EC-Burial-2:**

2 proximal phalange (hand)
4 intermediate phalange (hand)
1 distal phalange (hand)
12 metacarpal fragments
2 phalange fragments
420 tibia fragments
2 fibula fragments
379 unidentifiable fragments

**EC-Burial-3**

EC-Burial-3 (see Figure 2) is a simple pit burial (Welsh 1988:16) and contained a minimum of two individuals. The preservation of EC-Burial-3 was poor and highly fragmentary but a definite outline of an adult was noticeable. During the recovery of EC-Burial-3, it was observed that it is a burial of a single individual (Number 1) interned in an extended dorsal position with the head oriented south (north-south axis). This type of head orientation and body position is typical of the burials recovered from Pacbitun (Robertson 2010:168-169). However, during the skeletal analysis, it was discovered (based on number of teeth and their appearance)
that the minimum number of individual was two. This is based on the presence of the multiples of anterior teeth and two deciduous molars.

Based on the wear pattern, it can be infer that individual Number 1 was older than the other due to the development of dental and exposure of dentin. However, age assessment beyond determining that the bone and teeth are from an adult was not possible. Individual Number 2 with the deciduous molars is possibly 10 years (+/- 30 months) of age, this could account for the presence of the deciduous molars. Sex for both individual was undeterminable. Individual Number 1 was the most complete of all the human remains recovered at the North Group.

EC-Burial-3 was discovered directly east of and 10 cm below EC-Burial-2. This meant that EC-Burial-3 is an earlier burial than EC-Burial-2 (Cheong 2011:121). The cranial fragments of Individual Number 1 were encountered directly above a row of single course of cut limestone blocks in which Unit 2A Floor 1 was plastered to. It is possible that during the internment of Individual Number 1, the grave digger found this row to be a good stopping point and thus laid the head of Individual Number 1 on this row of cut limestone. Based on the location and depth of EC-Burial-3 we can determined that it is slightly older than EC-Burial-2 but definitely not earlier Early Classic Period (AD 300-600) as EC-Burial-3 was interned in the construction fill of Unit 3 Plaza Floor 2 as it is dated to the Early Classic Period. It is safe to infer that EC-Burial-3 is also dated to the Late Classic Period (AD 600-900).

Individual Number 1 of EC-Burial-3 exhibit dental modification, in the form of filing and inlays, as observed on the left first mandibular incisor representing Type B4 filing based on the typed classification outlined by Javier Romero (1970:51). Dental modification for the Maya probably reflected Maya ideals of personal adornment and attractiveness; it does not seem to definitively indicate social status (Fastlicht and Romero 1951:45-50; Romero 1970:58; Song 1996:A4). The dental modification are as follows; one right first incisor Type G4 with inlay missing, one right second incisor Type G4 with hematite inlay, one left second incisor Type C3 filing, one left first incisor Type B4 filing, one right first incisor Type B4 filing and one left canine Type C2 filing.

A piece of the cranial fragment recovered indicates slight porotic hyperostosis. Porotic hyperostosis is condition exhibiting lesions on the cranial vault caused by iron-deficiency anemia with high frequency among population of maize-based diet (White and Folkens 2005:320).

It is probable that EC-Burial Individual Number 2 was interned between EC-Burial-3 Individual Number 1 and Ec-Burial-2 and dated between these two burials as well. Another possibility is that EC-Burial Individual Number 2 was the earliest burial of all three individual discussed in the previous sentence and during the internment of EC-Burial Individual Number 1. The bones of EC-Burial Individual Number 2 were not notice and thus disturbed and this is why EC-Burial-3 has a minimum number of two individual.
The dentition of EC-Burial-3 Individual Number 1:

Incisors:
Maxillary:  
1 right first incisor
1 right incisor (Type G4 inlay missing)
1 left first incisor
1 right second incisor (Type G4 hematite inlay)
1 left second incisor (Type C3 filing)

Mandibular:  
1 right first incisor (no wear)
1 right second incisor (no wear)
1 right first incisor (Type B4 filing) (dentin exposed)
1 right second incisor (dentin exposed)
1 left first incisor (Type B4 filing)
1 left second incisor (dentin exposed)

Canines:
Maxillary:  
1 left canine (Type C2 filing)

Mandibular:  
1 left canine

Premolars:
Maxillary:  
1 right first premolar
1 right second premolar
1 left first premolar
1 left second premolar

Mandibular:  
1 right first premolar
1 right second premolar
1 left first premolar

Molars:
Maxillary:  
1 left first molar (little to no wear)
1 left second molar (little to no wear)
1 right second molar (little to no wear)

Mandibular:  
1 left first molar
1 left second molar
1 right first molar
1 right second molar

Cranial of EC-Burial-2:
27 cranial fragments (one with slight porotic hyperostosis)

Post cranial skeletal remains of EC-Burial-3 Individual Number 1:

106 lower arm fragments (ulna and radius)
1 humerus diaphysis fragment
8 femur diaphysis fragments
2 fibula fragments
12 long bone fragments
1 distal phalange (hand)
1 metacarpal fragment
22 trabecular bone fragments
80 cortical bone fragments

The dentition of EC-Burial-3 Individual Number 2:

Incisors:
Maxillary: 1 right first incisor
Mandibular: 1 right first incisor (no wear)
1 right second incisor (no wear)

Canines:
Maxillary: 1 left canine
Mandibular: 1 right canine (mamelons)

Premolars:
Maxillary: 1 right first premolar
Mandibular: 1 right first premolar

Molars:
Maxillary: 1 right second molar (little to no wear)
1 left second deciduous molar (no wear)
Mandibular: 1 right second deciduous molar
Conclusions

While it is not feasible to discern mortuary behavior of the inhabitants of the North Group based on only three burials with a minimum number of individual of four. The burial treatments in terms of head orientation to the south (north-south axis), laid dorsally in an extended position and the one example of grave goods (musical instruments) being present, does conform to the mortuary behavior of Pacbitun and is in line with burial practices among the ancient Maya of the Belize River Valley during the Late Classic Period.

Each burial has its uniqueness; EC-Burial-1 is possibly a human sacrifice interned as a dedicatory cache or offering to Structure 38, EC-Burial-2 with its musical instrument as grave goods and EC-Burial-3 with its dental modification and signs porotic hyperostosis.

A note worth mentioning is that the southern section of the plastered floor (Unit 3 Floor 3) in Unit 3D was not present. This portion of the floor might have been removed in antiquity, possibly during the creation of EC-Burial-2 or during the burial of other individual not encounter during the 2010 field season. The location of this anomaly is directly next to where the central axis of Structure 36 and Structure 37 meet, this is the customary location where burials are interned. It is worth investigating in the near future.
Acknowledgements

We would like to thank Dr. Terry Powis for his continual support and teachings that fueled our interest in pursuing the study of the ancient Maya. We would like to show our gratitude and thanks to Professors Paul Healy and Gyles Iannone who have spend countless hours educating and guiding us in all aspect of Mesoamerican and Maya studies at Trent University. We would like to acknowledge and thank Mr. Alfonso Tzul for permitting us to perform archaeological investigation on his private property. For providing us his home as a place to conduct this osteological analysis, we would like to declare a big thank you to Dr. Francis Morey. We would like to acknowledge all the workmen who took part in the excavation during the field season of 2010. For the continual support, encouragement we received and for providing an inviting learning environment, we would also like to thank the Institute of Archaeology of Belize. Finally, we would like to voice our gratitude for the support in the form of a collaborative grant that we have received from Trent University Archaeological Research Center (TUARC), which made this analysis possible.
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Shook, Erwin M.

Song, Rhan-Ju
Welsh, W. B.M.

White, Tim D and Pieter A. Folkens
This is a preliminary report on the faunal remains recovered during the 2010 field season excavations at the North Group of Pacbitun. The North Group (see Cheong and Snetsinger, this volume), situated on the Eastern Court of Pacbitun, consists of a restricted access courtyard created by Structures 34, 35, 36, 37, and 40 along with Structures 38 and 39. The Eastern Court is a plaza located directly behind Structure 1 and Plaza A, the main plaza, on the north eastern sector of the Epicenter. The Eastern Court is bounded by the back side of Structures 1, 4, and 5 on the west, the North Group to the north, and Structures 11, 41, and the entrance to the Mai Causeway, on the east (Healy 1990:251).

The majority of the faunal sample comes from secondary construction fill contexts, in two cases where they came from ritual (caches) contexts and none from domestic contexts, often associated with residential housemound middens (Cheong 2011, 2012). As such, little can be said regarding the utilization of the remains by the inhabitants of the North Group in respect to specific patterns of food consumption. It is valid to assume that the remains (excluding those from the ritual caches contexts) were once consumed as food items. The modification seen in most of the freshwater snail or *jute* remains is typical of that associated with intentional breakage, where the spires were broken off to facilitate with the extraction of the meat inside (Healy et al. 1990:174-175). It is known from analysis of stable carbon and nitrogen isotopes of human remains recovered from Pacbitun that the inhabitants exploited and subsisted on *jute* to supplement part of their diet (White et al. 1993:354). The faunal remains recovered from secondary construction fill contexts might not provide much information about the inhabitants of the North Group but it is still an important dataset that can provide information into the subsistence practices and consumption trend temporally for the inhabitants of the Pacbitun’s Epicenter. This is because the remains primary contexts would have been housemound middens that were subsequently used as construction fill material.

Ceramic material recovered associated with the faunal remains in their individual construction fill contexts from the North Group, dates the remains to between Mai phase of the Middle Preclassic Period (900 – 300 BC) and Tzib phase of the Late Classic Period (AD 700 – 900).

**Methods**

Only unmodified faunal materials are presented in this report. They were sorted into invertebrate and vertebrate remains. For invertebrate, they are sorted into their lowest zoological taxon when possible. However for vertebrates, only provenience and their description are presented, as a trained zooarchaeologist was not available during the preliminary analysis of
these remains. Only the number of individual specimens or NISP was recorded and minimum number of individuals (MNI) was not calculated.

The Faunal Remains

A total of 622 faunal remains were recovered from 14 excavation units placed on Structures 34, 36, 37 and 38. Of this total, shell/invertebrate remains constitute the vast majority of the assemblage at 73.5 % or 457 NISP, while bone/vertebrate remains amount to 26.5% or 165 NISP.

Preservation of the assemblage is considered excellent for all shell materials and poor for vertebrate remains. The majority of the bone or vertebrate sample is highly fragmented. Shell is preserved better because of their calcium carbonate composition and shell remains tend to preserve more readily than bone in highly acidic soil conditions. The high level of bone fragmentation may be caused their subsequent utilization as construction fill material and also as a result of butchering techniques or processing of vertebrates. Shell remains also exhibit more recognizable diagnostic features than bones and even highly fragmented unmodified shell can be identified to the species level.

Invertebrate Remains

Shell remains are represented by both local freshwater species and Caribbean marine shells (Table 1). Freshwater species include jute snails (Pachychilus indiorum and Pachychilus glaphyrus) (Healy et al. 1990:171, 174, Fig. 2) and apple snails (Pomacea flagellate). Marine shells include conch (Strombus sp.) and Atlantic thorny oyster (Spondylus americanus) (Abbott 1954:369-370, Plate 36).

The majority of the shell remains are that of freshwater jute snails and most exhibit modification indicative of meat extraction were they were either snapped along the apex, or simply punctured. Jute snails are typically found in large quantity at Pacbitun because within a radius of eight km from the site are five streams: Yal Tutu, Sayab, Barton Creek, Xomble, and Privacion Creek, where jute snails are in abundance and are still exploited by the modern day Maya inhabitant of San Antonio Village, two kms west of the site core (Healy et al. 1990:178). It is worth noting that the tallies are only identifiable to the genus level (Pachychilus) and not sorted into species of Pachychilus indiorum and Pachychilus glaphyrus. Overall, there are only a handful of Pachychilus glaphyrus with the rest being Pachychilus indiorum.

The three freshwater apple snails (Pomacea flagellate) all came from EC-Cache-1 in Sub Unit 1A of Structure 38, at the depth of 168.5 cm to 172 cm below Datum 1 (Cheong 2011:9). Datum 1 was set at 60 cm above ground on the southeastern corner of Unit 1. All unmodified Atlantic thorny oyster (Spondylus americanus) came from EC-Cache-6 in Unit 3C and Unit 3D of Structure 36, at the depth of 148 cm to 157 cm below datum (Cheong 2011:34, 37, 39). Datum for Structure 36 was set at 60 cm above ground on the southwestern corner of Unit 3A. The Spondylus sp. remains along with Charlie Chaplin figure carved from Spondylus sp. and
Strombus sp., were located inside the two Minanha Red: Minanha Variety bowls placed lip to lip. Minanha Red: Minanha Variety bowls dated to Tzul phase of the Early Classic Period (AD 300 - 600) (Gifford 1976: 156-159; Healy 1990:257).

Table 1: List of invertebrate remains

<table>
<thead>
<tr>
<th>Taxa</th>
<th>NISP</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Pachychilus</em> sp.</td>
<td>372</td>
</tr>
<tr>
<td>Pomacea flagellate</td>
<td>4</td>
</tr>
<tr>
<td>Strombus sp.</td>
<td>17</td>
</tr>
<tr>
<td>Spondylus americanus</td>
<td>64</td>
</tr>
<tr>
<td>TOTAL</td>
<td>457</td>
</tr>
</tbody>
</table>

Vertebrate Remains

The 165 bone remains were not identified into either genus or species level as a trained zooarchaeologist were not available during the preliminary analysis of these remains. As such they are cataloged based on provenience information, an accompanying description and NISP. Some of the remains were recognizable as possible white-tailed deer (*Odocoileus virginianus*) and domestic dog (*Canis familiaris*).
Table 2. List of vertebrate remains from Structure 36.

<table>
<thead>
<tr>
<th>UNIT</th>
<th>LEVEL</th>
<th>CATALOG #</th>
<th>COMMENTS</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 South</td>
<td>4</td>
<td>PAC-10BO-049</td>
<td>1 bone fragment</td>
<td>1</td>
</tr>
<tr>
<td>3C</td>
<td>1</td>
<td>PAC-10BO-050</td>
<td>1 long bone (deer?)</td>
<td>1</td>
</tr>
</tbody>
</table>
| 3C     | 6B    | PAC-10BO-051| 46 bone fragment  
15 long bone  
1 distal tibia epiphysis (deer)  
1 third phalanx (deer)  
1 phalanx  
1 proximal phalanx  
1 radius (proximal & shaft) (deer)  
1 spinal process  
1 proximal radius | 68       |
| 3C     | 6     | PAC-10BO-052| 18 bone fragment  
1 femoral head (proximal) (deer)  
2 long bone (deer)  
2 long bone  
1 carpal  
2 phalanx (1 deer & 1 medium sized animal)  
1 vertebra (medium size)  
1 caudal vertebra (small animal)  
1 radius-ulna (small animal)  
1 molar (carnivore?)  
7 long bone  
16 bone fragment  
1 innominate fragment (medium size)  
1 scapula fragment (small animal)  
1 metapodial (distal fragment) (deer)  
1 distal radius-ulna (deer) | 57       |
| 3D     | 3     | PAC-10BO-056| 1 proximal femur                                                                                                                            | 1        |

Total: 128
Table 3. List of vertebrate remains from Structure 37.

<table>
<thead>
<tr>
<th>UNIT</th>
<th>LEVEL</th>
<th>CATALOG #</th>
<th>COMMENTS</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2A</td>
<td>2</td>
<td>PAC-10BO-054</td>
<td>1 long bone</td>
<td>1</td>
</tr>
<tr>
<td>2B</td>
<td>2</td>
<td>PAC-10BO-055</td>
<td>1 distal phalanx</td>
<td>1</td>
</tr>
<tr>
<td>2B/2D</td>
<td>EC-Burial-2</td>
<td>PAC-10BO-057</td>
<td>1 bone fragment</td>
<td>1</td>
</tr>
</tbody>
</table>

Total: 3

Table 4. List of vertebrate remains from Structure 38.

<table>
<thead>
<tr>
<th>UNIT</th>
<th>LEVEL</th>
<th>CATALOG #</th>
<th>COMMENTS</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>1</td>
<td>PAC-10BO-041</td>
<td>1 bone fragment</td>
<td>1</td>
</tr>
<tr>
<td>1A</td>
<td>2</td>
<td>PAC-10BO-044</td>
<td>1 long bone</td>
<td>1</td>
</tr>
<tr>
<td>1A</td>
<td>5</td>
<td>PAC-10BO-042</td>
<td>2 fragment, 1 long bone, 1 long bone (possibly deer), 7 bone fragment</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAC-10BO-043</td>
<td>5 long bone, 2 mandible fragment, 1 tooth (cerndal) (lower premolar)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>PAC-10BO-048</td>
<td>1 bone (turtle?)</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>PAC-10BO-045</td>
<td>3 long bone, 1 long bone (deer), 2 fragment, 1 tooth (canine) (carnivore?)</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAC-10BO-046</td>
<td>1 proximal humerus (unfused)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAC-10BO-047</td>
<td>1 proximal radius-ulna</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 long bone</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 fragment</td>
<td></td>
</tr>
</tbody>
</table>

Total: 34

Conclusion

This report provided a brief overview of the faunal remains recovered during the 2010 field season excavations at the North Group of Pacbitun. Although this small assemblage came mostly from secondary construction fill contexts and thus was not useful for the study of consumption pattern of the inhabitants of the North Group itself, it is important in providing temporal data on the consumption pattern and dietary trend of the inhabitant of Pacbitun’s Epicenter. In regards to this analysis, it is not entirely complete as freshwater jute snails still needs to be sorted into species of *Pachychilus indiorum* and *Pachychilus glaphyrus*, and the vertebrate remains needs to be identified into their lowest possible zoological taxon.
Acknowledgements

I would like to thank Dr. Terry Powis for allowing me to conduct my master thesis research at the North Group of Paebitun. I would like to acknowledge Ms. Arianne Boileau for the preliminary identification and description of the vertebrate remains. A special thanks to Ms. Agata Wesolowski for creating the tables for this report. Finally, I would like to voice my gratitude for the support in the form of a collaborative grant that we have received from Trent University Archaeological Research Center (TUARC), which made this analysis possible.
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Preliminary Report on the Middle Preclassic Vertebrate Remains from Pacbitun, Belize

Arianne Boileau
(Trent University)

This investigation presents the results of an analysis of 1744 vertebrate remains recovered from Middle Preclassic (800-300 BC) deposits at the Maya site of Pacbitun, Belize. From 1995-1997 and 2008-2011, the excavations were conducted in four different plazas of the site core (Plazas A, B, C, and D) and were focused on documenting the early Middle Preclassic (800-600 BC) to late Middle Preclassic (600-300 BC) occupations at the site. This analysis presents the taxonomic composition of the assemblage, along with the relative abundance of each taxon. Taphonomic processes that potentially affected the faunal assemblage are also discussed.

Location

The ancient Maya site of Pacbitun is a medium-sized center located in the foothills of the Maya Mountains of the Cayo District, Western Belize, approximately 3 km east of the modern village of San Antonio. The central precinct of the site sits atop a limestone plateau that is oriented east-west. The current configuration of the epicenter consists of 40 masonry structures, including temple-pyramids, palace-like range structures, one ball court, two causeways, and 20 stelae and altars. The site core comprises three major plazas (A, B, and C) along with two secondary plazas (D and E), located to the north of the main site axis, and a number of smaller courtyard groups. The epicenter covers an area of only 0.5 km², while the site and its agricultural sustaining area likely covered a territory of 9 km² (Bill 1987; Healy 1990).

One of the site’s main characteristics is its location at the junction of two distinct ecozones: the tropical rainforest and the Mountain Pine Ridge. The site is surrounded to the north, west, and east by the fertile soils of the limestone lowlands, which are covered by a tropical broadleaf forest. About 3-4 kms to the south, this tropical setting sharply gives way to the Mountain Pine Ridge, which is sparsely covered with oak and pine. The granite formations of this ecozone are not considered suitable for agriculture (Healy 1990). Lastly, multiple secondary and tertiary water sources are available within 5-10 kms of the site, namely the Macal and Belize Rivers. These water sources provided access to riverine resources and were used as a major transportation network (Hohmann and Powis 1999). The location of Pacbitun was likely chosen by the early Maya to take advantage of the locally contrasted microenvironments and their diverse resources (Graham 1987; Healy 1990).

Excavation History

The first systematic archaeological excavations at Pacbitun were conducted between 1984 and 1987 by the Trent University-Pacbitun Archaeological Project, directed by Dr. Paul F. Healy. The aim of the research project was to document the diachronic development of Pacbitun, in both the site core and periphery (Bill 1987; Campbell-Trithart 1990; Healy 1990; Richie 1990;
Sunahara 1994; Healy et al. 2007). The excavations revealed a long stratigraphic sequence of occupations extending from the early Middle Preclassic (800 BC) to the Late Classic (AD 900) periods (Healy 1990).

New excavations were conducted between 1995-1997 by the Trent University-Preclassic Maya Project, and between 2008-2011 by the Pacbitun Regional Archaeological Project (PRAP), the latter under the direction of Dr. Terry Powis. These new excavations focused on documenting the Preclassic occupations at the site. They were conducted in Plazas A, B, C, and D. Faunal remains during these excavations were recovered from both primary and secondary contexts (Healy and Awe 1995; Arendt et al. 1996; Hohmman and Powis 1996, 1999; Hohmman et al. 1999; Powis 2009, 2010, 2011) (Table 1).

Table 1. Number of specimens by primary and secondary contexts.

<table>
<thead>
<tr>
<th>Primary contexts</th>
<th>Number of specimens</th>
<th>Secondary contexts</th>
<th>Number of specimens</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-floor deposits</td>
<td>342</td>
<td>Plaza fill</td>
<td>29</td>
</tr>
<tr>
<td>Floor deposits</td>
<td>509</td>
<td>Construction fill</td>
<td>29</td>
</tr>
<tr>
<td>Perimeter deposits</td>
<td>184</td>
<td>Secondary midden</td>
<td>380</td>
</tr>
<tr>
<td>Primary midden</td>
<td>271</td>
<td>Total</td>
<td>438</td>
</tr>
<tr>
<td>Total</td>
<td>1306</td>
<td>Total</td>
<td>438</td>
</tr>
</tbody>
</table>

The excavations showed the presence of early and late Middle Preclassic structures in the sub-plaza levels. Substantial quantities of domestic refuse, including ceramics, lithic debitage, faunal remains, were found inside and around the structures, indicating that they likely served as domestic households. The artifactual assemblage from the early Middle Preclassic structures suggests a predominantly egalitarian society. During the late Middle Preclassic, the social system may have become more hierarchical, as indicated by the increased frequency of long-distance exchange goods and the presence of substantial quantities of shell ornaments and debris (Arendt et al. 1996; Hohmann and Powis 1996, 1999; Hohmman et al. 1999; Powis 2009, 2010).

Methodology

The identification of faunal remains was facilitated by the use of comparative collections from the Archaeozoology Laboratory at Trent University and the Department of Vertebrate Paleontology at the Royal Ontario Museum. Additional references consulted include osteology manuals by Olsen (1982) and Gilbert (1993). Vertebrate remains were identified to the highest taxonomic level possible. When mammal bones could not be identified to family or genus, they were classified in broader taxonomic groups, for instance, small, medium, or large mammal species, following Savage (1971) and Emery (2007). The large mammal category is composed of white-tailed deer (*Odocoileus virginianus*), brocket deer (*Mazama americana*), tapir (*Tapirus bairdii*), jaguar (*Panthera onca*), puma (*Puma concolor*), and peccary (*Tayassu* spp.). Medium-sized mammals include domestic dog (*Canis familiaris*), armadillo (*Dasyphus novemcinctus*),
opossum (*Didelphis* spp.), agouti (*Dasyprocta punctata*), Paca (*Agouti Paca*), smaller felids (*Leopardus pardalis* or *Leopardus wiedii*), rabbits (*Sylvilagus* spp.), and raccoons (Procyonidae). Finally, the small mammal category is comprised of small rodents such as gophers (*Orthogeomys* spp.), mice (Cricetidae), and squirrels (Sciuridae).

All samples in the analysis were quantified using the Number of Identified Specimens (NISP) and the Minimum Number of Individuals (MNI) as measures of abundance. Following standard practices among Maya zooarchaeologists, NISP values were calculated by including all specimens identified at least to the class level. MNI values were calculated on the basis of the most common anatomical element in each assemblage, using stratigraphic provenience, species, age, and sex. Information regarding surface modification (natural, animal, or anthropogenic) and age was also recorded.

**Taphonomy**

The taxonomic composition of the faunal assemblage was probably affected by the techniques used in the recovery of the remains. All deposits were screened in the field using a 1/4 inch wire mesh screen. This screen size is generally biased against the recovery of small faunal remains (Casteel 1972; Schaffer 1992; James 1997). It has been shown at several Maya sites that the use of smaller mesh sizes can improve the recovery of small remains, especially small fish and rodents (Masson 2004; Wake 2004). Additionally, excavation methods were not constant, as soil samples collected from the floor surface of Sub-Strs. B-1 and B-2 in Plaza B were wet-screened using a 1/16 inch mesh screen (Powis 2009). This variation in screen mesh size might be a source of bias, but could not be addressed in this preliminary report.

In general, the preservation of the faunal remains is poor. The bone surfaces are significantly damaged and muscle attachments and other bony landmarks are frequently indistinct. Moreover, a majority of bone remains show signs of exfoliation. Exfoliation can be defined as the loss of the first few millimeters of cortical bone (Morin 2004:128). This condition frequently hindered the identification of marks on the animal remains.

Many of the remains are also heavily fragmented. Only 280 specimens were identified at least to the family level, representing 16 % of the total assemblage. This high degree of fragmentation could have been caused by the intentional manufacture of objects, the extraction of marrow from the bones, or the deposition process. This fragmentation, combined with the poor preservation of the bone surfaces, hindered the identification of many of the fragments. Consequently, the majority of the long bones of mammals could only be assigned to broad taxonomic groups.

**Taxonomic composition of the assemblage**

The assemblage of vertebrate remains recovered from Pacbitun includes a total of 1744 specimens, with 1431 specimens identified at least to the class level (Table 2). Faunal specimens are mainly composed of unidentifiable mammal fragments (*n* = 1125), as well as unidentifiable fragments (*n* = 313). Mammals are the most frequently identified animals of the collection. They
are followed in frequency by reptiles, fish, birds, and amphibians. Two hundred eighty specimens were identified at least to the family level, representing 28 taxa (Table 3).

Table 2. Distribution of faunal remains by zoological class.

<table>
<thead>
<tr>
<th>Taxa</th>
<th>NSP</th>
<th>%</th>
<th>MNI</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish</td>
<td>7</td>
<td>0.4</td>
<td>3</td>
<td>5.7</td>
</tr>
<tr>
<td>Amphibians</td>
<td>1</td>
<td>0.1</td>
<td>1</td>
<td>1.9</td>
</tr>
<tr>
<td>Reptiles</td>
<td>30</td>
<td>1.7</td>
<td>8</td>
<td>15.1</td>
</tr>
<tr>
<td>Birds</td>
<td>6</td>
<td>0.3</td>
<td>1</td>
<td>1.9</td>
</tr>
<tr>
<td>Mammals</td>
<td>1387</td>
<td>79.6</td>
<td>40</td>
<td>75.4</td>
</tr>
<tr>
<td>Unidentified</td>
<td>313</td>
<td>17.9</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>1744</td>
<td>100.0</td>
<td>53</td>
<td>100.0</td>
</tr>
</tbody>
</table>

As with most Maya faunal assemblages, the Pacbitun sample is fairly small. Two factors may possibly explain this situation. First, conditions for faunal preservation in the humid tropics are generally unfavorable due to the acidic nature of the soils (Stanchly 2004). Second, ancient disposal practices in the tropics may have included the discard of refuse at a distance from the households and removal of the refuse through burning and burial (Emery 2008).

The mammalian assemblage is dominated by the white-tailed deer, red brocket deer, armadillo, and peccary. However, it should be noted that the importance of the armadillo may be increased by the presence of bony scutes which preserve well and are highly diagnostic. Other identified mammal species include opossum, tapir, pocket gophers, Paca, agouti, and rabbit. All of these taxa might have been consumed by the Maya, with the possible exception of pocket gophers, which may be intrusive, as this species has a tendency to dig large burrows (Shaw 1991:167).

Carnivores are represented by the domestic dog, coati (Nasua nasua), weasel (Mustela frenata), and felids. The presence of carnivores begs the question of whether they were included in the diet, or used as pets or during hunting activities. There is evidence that dogs were consumed by the Preclassic Maya (Shaw 1991:259-267; Clutton-Brock and Hammond 1994; White et al. 2001). At Pacbitun, dogs are only represented by three specimens. Although they might have constituted a dietary resource, they do not appear to have been an important source of mammal protein, contrary to what was observed at Cerros (Carr 1986), Colha (Shaw 1991), or Cuello (Clutton-Brock and Hammond 1994). Four species of Felidae—jaguar, puma (Puma concolor), margay (Leopardis wiedii), and ocelot (Leopardus pardalis)—are each represented by one specimen. Cats are generally considered as taxa of mythological importance. They might indicate that rituals were performed by the Preclassic Maya of Pacbitun.
Table 3. List of identified taxon by NISP and MNI for all contexts.

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>NISP</th>
<th>MNI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Osteichthyes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ictaluridae</td>
<td>Catfish</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Serranidae</td>
<td>Groupers</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sparisoma spp.</td>
<td>Parrotfish</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Unidentified fish</td>
<td></td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td><strong>Amphibia</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Bufo marinus</em></td>
<td>Cane toad</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Reptilia</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large iguanidae</td>
<td>Iguana</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Testudines</td>
<td>Turtle</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>Kinosternon spp.</td>
<td>Mud turtle</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Colubridae</td>
<td>Colubrid</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Crotalidae</td>
<td>Viper</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td><strong>Aves</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meleagrididae</td>
<td>Turkey</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Unidentified bird</td>
<td></td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td><strong>Mammalia</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Didelphis marsupialis</em></td>
<td>Common opossum</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><em>Didelphis virginiana</em></td>
<td>Virginia opossum</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><em>Dasyphus novemcinctus</em></td>
<td>Nine-banded armadillo</td>
<td>34</td>
<td>6</td>
</tr>
<tr>
<td>Homo sapiens</td>
<td>Human</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td><em>Canis familiaris</em></td>
<td>Domestic dog</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Canidae</td>
<td>Dog, fox, coyote</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td><em>Nasua nasua</em></td>
<td>White-nosed coati</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><em>Mustela frenata</em></td>
<td>Long-tailed weasel</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Puma concolor</td>
<td>Cougar, puma</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Panthera onca</td>
<td>Jaguar</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Leopardus wiedi</td>
<td>Margay</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Leopardus pardalis</td>
<td>Ocelot</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Felidae</td>
<td>Cats</td>
<td>2</td>
<td>-</td>
</tr>
</tbody>
</table>
The reptile assemblage is dominated by turtles. Most of the turtle remains are caraPace or plastron fragments that could only be identified at the level of the order. One remain was identified as a mud turtle (*Kinosternon* spp.). Turtle meat and eggs still constitute an important food resource for the Maya, likely because they have a high protein value (Emery 1990:52). Turtles could have been easily obtained from the small springs and the permanent water reservoir found near Pacbitun. Snakes are the second most common reptile group, with six colubrid and three viper remains. Lizards are represented by large iguanas, either of the green (*Iguana iguana*) or black (*Ctenosaura similis*) variety. Both snakes and iguanas can be considered dietary species (Götz 2004; Teeter 2004; Masson and Lope 2008), but their remains could also be intrusive to the faunal assemblage. Additionally, it is possible that snakes would have been used in rituals (Pohl 1983:78-79, 102). The small frequency of snakes and iguanas makes it difficult to form conclusions about their role as dietary resources. The amphibian assemblage is represented by a single bone from a cane toad (*Bufo marinus*), which is probably intrusive.

Fish remains at Pacbitun include freshwater species, represented by one catfish (*Ictaluridae*), and marine species, represented by one grouper (*Serranidae*) and one parrotfish (*Sparisoma* spp.). Other fish remains (*n* = 4) were highly fragmented and could only be identified to the class level. The very small proportion of fish recovered at Pacbitun is unexpected, given that the site is located near two major river systems. Large quantities of both

<table>
<thead>
<tr>
<th>Animal</th>
<th>Number of Specimens</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Tapirus bairdii</em></td>
<td>1</td>
</tr>
<tr>
<td><em>Tayassu</em> spp.</td>
<td>13</td>
</tr>
<tr>
<td><em>Odocoileus virginianus</em></td>
<td>138</td>
</tr>
<tr>
<td><em>Mazama americana</em></td>
<td>17</td>
</tr>
<tr>
<td>Cervidae</td>
<td>17</td>
</tr>
<tr>
<td>Artiodactyla</td>
<td>2</td>
</tr>
<tr>
<td><em>Orthogeomys</em> spp.</td>
<td>7</td>
</tr>
<tr>
<td><em>Agouti Paca</em></td>
<td>3</td>
</tr>
<tr>
<td><em>Dasyprocta punctata</em></td>
<td>4</td>
</tr>
<tr>
<td><em>Sylvilagus</em> spp.</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total** 1431

<table>
<thead>
<tr>
<th>Animal</th>
<th>Number of Specimens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small mammal</td>
<td>15</td>
</tr>
<tr>
<td>Medium mammal</td>
<td>20</td>
</tr>
<tr>
<td>Large mammal</td>
<td>81</td>
</tr>
<tr>
<td>Unidentified mammal</td>
<td>1009</td>
</tr>
</tbody>
</table>

**Total Number of Specimens** 1744
freshwater and Caribbean marine shells have been recovered at the site, indicating that the Preclassic Maya of Pacbitun exploited aquatic resources (Hohmann and Powis 1996, 1999; Stanchly 1999; Hohmann 2002; Powis 2009, 2010). The small size of the fish assemblage may result from biases caused by the collecting methods or the preferential degradation of fish remains over time.

Likewise, bird remains are rare at Pacbitun, possibly because their fragile bones do not preserve well in the acidic soils of tropical rainforests. Like fish remains, the recovery of small bird remains might have been affected by the collecting methods employed during the excavations. One remain was identified as a turkey (Meleagrididae). The other specimens show a high degree of fragmentation and could only be identified to the class level. Nevertheless, the size of the fragments suggests the presence of a medium to large bird.

**Subsistence Practices**

The taxonomic composition of the faunal sample suggests the selective exploitation of large terrestrial mammals, such as white-tailed deer, brocket deer, and peccaries. This pattern is underscored by the fact that most specimens identified as large mammals \((n = 81)\) are probably artiodactyls. The diet included a variety of other terrestrial mammals of small to medium size, especially the armadillo \((Dasyphus novemcinctus)\). The ancient population of Pacbitun also exploited aquatic resources to a lesser extent, as is indicated by the presence of turtles and fish from both marine and freshwater habitats. Both preservation and recovery methods could have affected the representation of aquatic resources in the assemblage.

The dietary patterns at the site suggest the exploitation of the local habitat, which favored large-sized terrestrial taxa, as well as mammals and reptiles of small and medium size. Moreover, the Preclassic Maya of Pacbitun possibly enjoyed access to non-local animal resources, including marine fish. The exploitation of a wide variety of resources is observed at other Preclassic sites, such as Cahal Pech (Stanchly 1995; Powis et al. 1999), Cerros (Carr 1986), Colha (Shaw 1991), Cuello (Wing and Scudder 1991), El Mirador (Thornton and Emery 2004), Seibal, and Altar de los Sacrificios (Pohl 1990).

**Conclusion**

This preliminary report has provided a brief overview of the exploitation of animal resources at Pacbitun during the Middle Preclassic (800-300 B.C.). The majority of the vertebrate remains identified were possibly consumed as subsistence items. Acquisition of animal resources would have focused on the exploitation of artiodactyls (white-tailed deer, brocket deer, peccary), along with small- and medium-sized animals, such as armadillos, agouti, Paca, turtles, and iguanas. The variety of animals utilized indicates a broad-based subsistence pattern, relying upon a number of locally available animal resources. The Pacbitun’s inhabitants also possibly exploited both freshwater and marine resources. More detailed investigation of the exploitation of animal resources at Pacbitun will shortly be available in an M.A. thesis by the author.
I would like to thank Dr. Terry Powis for inviting me to join his research program and for allowing me to examine the faunal remains of Pacbitun. Dr. Powis also provided important information about the site. Further thanks are extended to Eugène Morin, Norbert Stanchly, Erin Thornton, and Kevin Seymour for their help in the identification of the vertebrate remains. Special thanks to the staff of the Department of Vertebrate Paleontology of the Royal Ontario Museum for allowing me to use their comparative collections. The zooarchaeological research presented here was supported by a Social and Humanities Research Council of Canada scholarship as well a Fonds de Recherche Société et Culture du Québec grant.
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