The Bladen Paleoindian and Archaic Project, 2014 Field Season Report prepared for the Forest Department, Government of Belize

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Introduction

This report describes research conducted by the "Bladen Paleoindian and Archaic Project" in the Bladen Preserve, a Protected Area in the Toledo District of southern Belize. This study was a pilot for broader research program that involved limited excavations in a rockshelters in the Ek Xux Valley of the upper (western) Bladen reserve. Permits for this project were granted to granted by the Forestry Department and the Belize Institute of Archaeology (IA) to conduct this research from 11 to 22 February 2014. The research presented here is a collaboration between IA and the University of New Mexico.

Here we summarize the test excavation activities at Maya Hak Cab Pek (MHCP) rockshelter as well as a portion of the on-going laboratory analyses. MHCP is located in the Ek Xux valley of the Maya Mountains, within the uninhabited wilderness of the Bladen Nature Reserve, in the Toledo District. The purpose of this study is to explore the earliest presence of humans in Belize and Central America during the Paeloindian and Archaic Period (10,500-2,500 BC). Previous research conducted by Dr. Prufer suggests that these earliest pioneering hunters and gatherers occupied this region, and this preliminary project explored their presence through limited excavations in one rockshelter in the upper Bladen. Permission was requested and granted from the Institute of Archaeology and the Forest Department, in consultation with the Ya'axché Conservation Trust (YCT). Funding for this project was secured from the Alphawood Foundation based on preliminary conversations with the Institute of Archaeology. This project can be considered a pilot study which we hope will lead to continued investigation and additional funding for a larger study of human adaptation and ecology in the Maya Mountains prior to the development of agriculture. The results of these studies will be of interest to scientists in archaeology and environmental studies, conservation planning, and the Belizean public.

Little is known about the timing and nature of the occupation of the earliest humans in Belize and Central America. Data from Mexico and lower Central America indicate clearly that humans were present by approximately 10,500 BC (Zeitlin and Zeitlin 2000), and perhaps earlier. Poorly constrained chronological information as well as a general lack of stratified Paleoindian

contexts has been a major constraint to developing models of human colonization, adaptation, and cultural change in Central America. Much of what we know about the earliest time periods (10,500 – 4,000 BC) comes from excavations in drier Oaxaca and Tehuacan valleys in Central Mexico (Flannery and Macneish 1992) as well as a robust but scattered variety of spot finds and isolated contexts (MacNeish 1982; Lohse 2010). Archaic (4,500-2,000 BC) sites are better known, but very limited in scope and areal exposure (e.g. Rosenswig and Masson 2001) and bracket the transition from hunting and gathering to early agriculture (Kennett et al 2006; Voorhies et al. 2002). However, contextualized studies from the southern Maya Lowlands that constrain Paleoindian and Archaic occupations and describe both precise chronological sequences are lacking. We seek to combine three of the best types of datasets for interpreting early human activities and adaptation (1. artifact sets, either stone or perishable; 2. organic indicators of diet, hunting, and plant exploitation; and 3, features associated with human activities). These are very rare in Mesoamerica and unheard of in the tropical Maya Lowlands.

Some of the best preserved contexts for this type of study are rockshelters, which are known locations of early food processing and tool making activities by hunter-gatherers, but in the Maya Lowlands these types of contexts have not been well studied. Elsewhere in Mesoamerica rockshelters have been documented as producing some of the most detailed and important botanical data for interpretation of the origins and spread of agriculture, early plant and animal exploitation, human diet, and ancient ecosystems. Examples from other regions of Mesoamerica include Rockshelters in Tehuacan, Mexico and the El Giante rockshelter, Honduras (Scheffler et al 2012).

Prufer (2002) hypothesized that the interior of the Maya Mountains would have been an ideal location for preceramic people to have settled due to unusual diversity of important plant and mineral resources as well as abundant year round water supplies. We expect that the presence of early inhabitants of the region will be detectable in large rockshelters known to be the location of Formative period human activity. The rockshelter where we excavated was the subject of preliminary excavations by Prufer in 1998 and 1999 (Figure 2) as part of his dissertation research with the Maya Mountains Archaeological Project (see Dunham and Prufer 1997). These studies provided radiocarbon dates and ceramics dating to the Middle Preclassic (ca. 400 BC) from relatively shallow excavations, suggesting the possibility of much longer cultural sequences (Prufer 2002). Nearby studies of cave contexts within the Ek Xux valley dated to the Archaic period (ca. 3,500 BC). Generally, excavations in caves and rockshelters in the Bladen produced a myriad of organic materials and faunal remains and resulted in the collection of some of the best preserved human remains in the Maya Lowlands (Saul et al. 2005). The unusual preservation of organic materials makes these ideal locations for studies of early human adaptation in the region.

Project Logistics and Personnel

The project entailed camping the Bladen Nature Reserve for 11 nights. A camp was established at AC Cave which was the location of previous archaeological camps in the 1990s. The project team consists of five professional archaeologists, local archaeological assistants, two protected area rangers from theYCT, and a staff member from the Institute of Archaeology (Table 1). In

addition, and given the necessities of equipment for the project a porters were be employed to carry supplies into the Bladen for 1 day at the start of the project and 1 day at the end of the project to carry project supplies and archaeological materials out of the preserve. These individuals were selected in consultation with the YCT Protected Areas Manager.

Access to the Bladen was via an established trail system from Golden Stream Village used by YCT rangers. The hike into the Bladen took two full days. The route is shown on Figure 1. A campsite was established at AC Camp in the Ek Xux Valley located at AC cave at an elevation of 230.24 meters above sea level. Its geographic location is at 16.496278 latitude and -88.9144 longitudes. Camping activities were "zero impact." All non-biodegradable trash was removed from the preserve at the end of the project and all organic waste buried away from any watercourses. The project **did not** involve collecting any extant plant or animal specimens. Collections were limited to materials of archaeological interest including artifacts and fossilized (ancient) faunal and floral materials from excavations. At the end of the project all excavation trenches were lined with tarps, backfilled, and leveled to their original state.

Figure 1. GPS Track showing route into the Bladen as well as locations of AC Camp and Maya Hak Cab Pek Rockshelter

BPAAP Personnel 2014	
	Foreign Archaeologists
Dr. Keith Prufer	University of New Mexico
Dr. Mark Robinson	Louisiana State University
Mr. Christopher Merriman	University of New Mexico
Ms. Willa Trask	Texas A&M University
Mr. Clayton Meredith	University of New Mexico
	Belizean Field Personnel
Mr. Josue Ramos	Archaeologist - Belize Institute of Archaeology
Mr. Vigilio "Dilo" Cal	Ranger - Ya'xche Conservation Trust
Mr. Mateo Rash	Ranger - Ya'xche Conservation Trust
Mr. Jose Mes	Archaeological Assistant - Santa Cruz Villlage
Mr. Pedro Pop	Archaeological Assistant -Silver Creek Village
Mr. Oligario Sho	Archaeological Assistant -Santa Cruz Village
Mr. Virginio Tzub	Archaeological Assistant -San Jose Village
	Other Collaborators
Mr. Marchilio Ack	Logistics - Head Ranger, Ya'xche conservation Trust
Mr. Lee Mcloughlin	Research and Logistical Coordination - PAM Director Ya'xche Conservation Trust
Ms. Olatz Gartzia	Ecologist - Ya'xche Conservation Trust

Table 1. BPAAP research and support team 2014

The site of MHCP is located along the western side of the valley and is a 20m high outcrop of bedded limestone with easily discernable bedding planes shadowing a dry shelter (Figure 2). The ground surface of the rockshelter runs roughly SSE to NNW with a slope gradient that varies between 6 and 14 degree towards the north. The dripline extends to 8m from the cliff face and the dry surface area is approximately 150m^2. Excavations in the rockshelters was based on previous studies and targeted areas where the deepest deposits were likely to be located.

Figure 2. Maya Hak Cab Pek Rockshelter prior to the 2014 excavations. View point is looking

Results of this initial pilot project include:
(a) Documented a long history (present to before 10,000 BC) of human use and impacts in the region in artifacts and organic remains.
(b) Exposed a significant population of human remains that will provide detailed information on regional demographic change at key points in the history of the Maya (i.e. Archaic/Formative and Formative/Classic Period transitions)
(c) Produced significant samples of organic macrobotanical materials useful for understanding diet and ecosystems.
(d) Produce faunal remains from modern and ancient animals that will provide information regarding human diet and climate conditions for the oldest samples.

Methods

Excavation units were established on a north-south grid. These units were excavated in 20 cm arbitrary levels within the natural strata in the upper ~130 cm. Following the transition to the preceramic deposits stratigraphy became less clear and we switched to 10 cm levels within the natural stratigraphy. Horizontal provenience control was maintained using excavation unit corner nails, and vertical control relied on a permanent line level embedded in the rockshelter wall. All sediment was screened through 1/8 inch mesh, and screened artifacts were bagged separately by type (e.g. flaked stone, ceramics, fauna). Diagnostic artifacts, radiocarbon samples, large faunal elements, unusual or unique artifacts, and burial materials (human remains and associated artifacts) were piece plotted using hand tape measures for northing and easting coordinates and line levels for elevations. All artifacts and faunal material were collected. Charcoal for radiocarbon dating and species identification and sediment samples were taken from each level as well as from burials. At the conclusion of this field season's work, the three excavation units were lined with tarps and back filled.

Excavation Descriptions

Three test units were excavated during this field session (Figure 3). Two of which were 2x2 m and a third was 1x3 m (Figure 3). Unit 1 west (1W) was placed over the older 1998 excavations. Unit 1 east (1E) was placed adjacent and to the east of Unit 1 west. These units were excavated to roughly 260 cm below the datum. SubOp 14-02 Unit 1 was set up at the north end of the rockshelter.

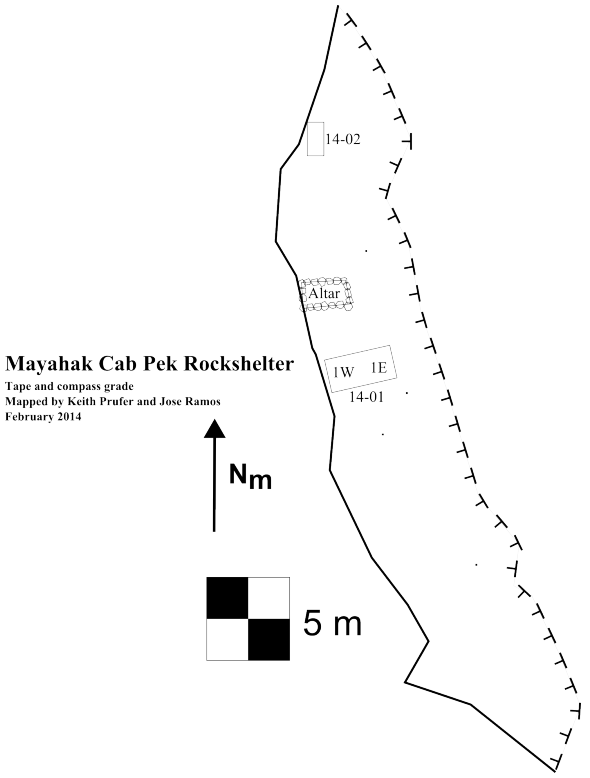

Figure 3. Planview map of Maya Hak Cab Pek including 2014 test excavation units.

Stratigraphy: The stratigraphy in 1E and 1W is shown in Figure 4 and can be divided into two general stratigraphic units. Unit I (~130-230 cmbd) can be characterized as black (10YR 2/1) silt to silty-loam fine grained matrix with varying degrees of sub-angular to angular cobble-boulder sized clasts of limestone interpreted as roof fall. This stratigraphic unit is poorly sorted and likely represents the natural accumulation of exogenic (silt) and endogenic (roof fall) sediment. This portion of the profile could not be divided into clear stratigraphic sub-units as seen in the overlying Unit II, largely due to the intrusive nature of Burials 5 and 6. Artifact and faunal concentrations in Unit I are moderate and importantly lack ceramics. Jute concentrations also drop to less than 5 percent of the matrix. The size and amount of cobbles tended to increase with depth and in level 13 and 14 comprised roughly 75 percent of the matrix.

Unit II (~25-130 cmbd) consisted of the upper portions of the stratigraphy can be generally characterized as two repeating stratigraphic sub-units which include midden fill and underlying dense concentrations of cobbles that likely represent occupation surfaces. This sequence of midden deposit and underlying cobble fill was repeated no less than three times. A possible fourth floor may have been present but was obscured by Burial 3 in Unit 1 East and previous excavations in Unit 1 West. The midden deposits contain high amounts of flake stone, faunal material, ceramics, much of which show evidence for burning. Jute concentrations in Unit II comprised up to 50 percent of the matrix. The dense cobble horizons primarily consisted of sub-round to sub-angular limestone and porphyritic igneous clasts. Clast size is can be considered well sorted and typically less than 10 cm in maximum dimension. Given the generally rounded nature of the clasts, they likely derived from river gravels, not roof fall. The

fine grained matrix encompassing both midden and cobble horizons consisted of black (10 YR 2/1) silt to silty-loam sediment.

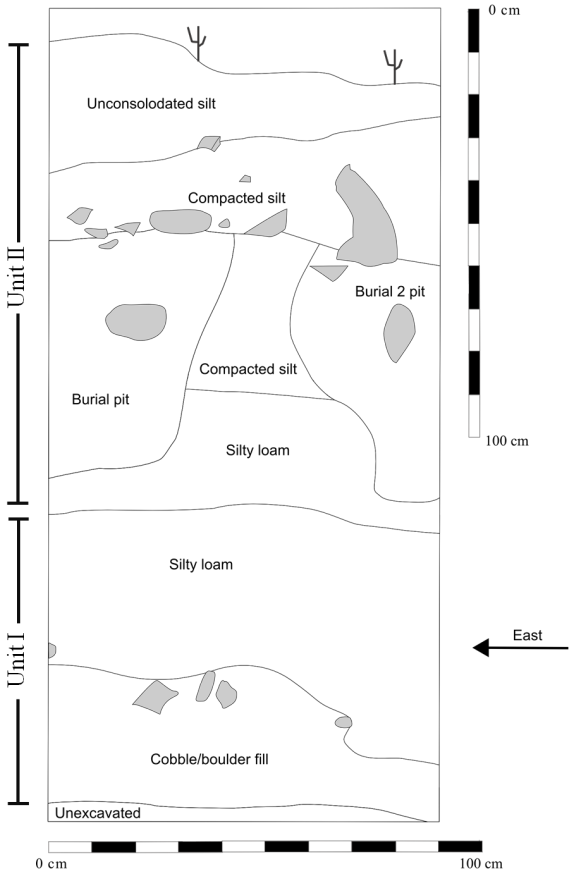

Figure 4. Stratigraphic profile of Unit 1 East, south wall. Most of the rock from the cobble floors had been removed at the time of profiling as a safety measure, and therefore does not appear in this figure.

Unit 1 West: This unit was placed over the 1998 excavations. The upper ~135 cm of back fill from the initial excavation and was removed in bulk and not screened until undisturbed sediment and a tarp left behind by the previous excavators was encountered at a depth of 135 cm below datum. Beneath the previous excavation's back fill, burials 1 and 2 were encountered. At a depth of 127 to 140 cm below datum a series of aligned stones was encountered in the northern portion of the unit. This alignment and the presence of high concentrations of jute to the north indicated the presence of another burial. Due to time constraints, this burial was not excavated.

At a depth of 144 to 167 (level 5), a large quantity of evenly spaced cobbles indicated the presence of a cobble floor. Jute concentration drops markedly during this transition and ceramics were not recovered beneath this depth. At the base of this level, the northern half of the unit contained abundant charcoal and fire cracked rock. In the absence of fire affected soils, this surface is unlikely to be a fire hearth and is likely the result of dumping of fire cracked rock in the area. Given the nature of this transition, and the lack of distinct burial features beneath this cobble floor, subsequent levels were excavated in 90x100 cm quadrants and materials from each quadrant were collected separately.

The aceramic horizon extends from 167 to 242 cm below datum and contains fairly consistent quantities of faunal bone, lithic materials, and roof fall. Obsidian flakes were recovered from levels 7 through 10 to a depth of 230 cm below datum. Feature 3, a burn feature containing numerous faunal long bones and abundant charcoal in the southwestern quadrant at a depth between 186 and 199 cm below datum, may have been associated with a cobble floor that was subsequently disturbed. The deposit contains numerous fire cracked rocks, small subangular cobbles, and tested chert nodules.

Bedrock in this unit is sharply sloping from a high in the southwest corner of the unit at a depth of 217 cm below datum to a low in the northeast corner at a depth of 267 cm below datum. Isolated human bone (proximal portions of a femur and a complete calcaneous) were recovered from just above this surface in the northwestern quadrant at a depth of 227 to 229 cm below datum. The femur fragment is heavily mineralized (subfossil) and preservation differs markedly from any human skeletal elements and faunal remains recovered during the 2014 excavations. Given the slope of the surface, the high density of lithic artifacts (particularly in the northern half of the unit), and the different states of preservation of the femur and calcaneous, it is likely that this material originated further south or west and rolled down slope.

Unit 1 East: This unit was excavated in 14 levels beginning at the modern ground surface to a depth of 230 cmbd. Levels 1-8 were with Unit II stratigraphy and included a series of at least four cobble surfaces. Levels 1-6 represent midden fill that included lithics, ceramics, faunal material and one hafted biface fragment. Beginning at level 7 (100-113 cmbd) the unit was divided and only the western 1 x 2 meters were excavated. This served two purposes. First it provided a stable surface to enter and exit the unit as excavations continued. Second, given the time constraints, it was impractical to continue to excavate such a large unit. Artifact density was low in this level and included lithics, ceramics, and faunal material. Burial 3 was also encountered in this level, the bottom of which determined the end of the level. Level 8 (~113-130 cmbd) consisted of a dense (~70%) jute concentration, low artifact density, and terminated at a cobble horizon that marked the upper level of Burial 5. Also in level 8, a semi-circular rock feature was encountered in the northern 35 cm of the unit. Suspecting that this was yet another burial, and lacking the time necessary to adequately excavate another interment, this feature was left for future excavation and the unit was dug only in the southern 165 cm.

Levels 9-14 were stratigraphically within Unit I. Level 9 (~130-170 cmbd) began with the exposure of Burial 5 and ended on a layer of cobble-boulder sized rock. Artifact density was low to moderate and included lithics, faunal material, and a small amount of jute, but no ceramics. In addition, the nature of the flaked stone in level 9 and the subsequent levels shifted to include debitage indicative of biface manufacture and a small amount of unifacially retouched tools not seen in Unit II. Level 10 (170-180 cmbd) included a small portion of Burial 5, as well as a moderate amount of lithics and fauna. Level 11 (180-190 cmbd) had a high rock content and a moderate amount of lithics (including obsidian), fauna, and charcoal. This level terminated at a cobble roof fall horizon. Levels 12 (190-200 cmbd) and 13 (200-210 cmbd) also had a moderate amount of artifacts and fauna. There was also a possible small rock lined hearth feature (~30 cm in diameter) which contained a high proportion of burned lithics and bone fragments in

level 12. Level 13 terminated at a large cobble horizon. Level 14 (210-230 cmbd) included the cobble horizon and Burial 6. Artifact density within the burial feature was moderate and consisted primarily of lithics, but also included a small amount of faunal material. Outside of the burial feature, artifact density was low to moderate. This level ended at the bottom of Burial 6, but did not reach bedrock or sterile deposits.

SubOp 14-02 Unit 1: This unit was placed at the northern end of the rockshelter. Burials were encountered shortly after excavation of this burial commenced. Given this, the stratigraphy of the unit is somewhat unremarkable with mixed and scattered materials in the ~30 cm between the ground surface and the burials. These materials were disturbed during the excavation of the burial pit (the margins of which could not be identified), and are consistent with deposits in the uppermost levels elsewhere in the rockshelter.

Preliminary Burial Descriptions

MHCP 14-01, Units 1E and 1W

Burial 1 was a primary burial located in unit 1W. It is believed that this burial represents a possible burial feature identified by the MMAP in 1998 that could not be excavated due to time constraints. A single primary individual was placed within a ring of rocks of varying sizes potentially represent the lining of a pit, however the lack of defined sediment or artifact change prevents this from confidently being said. A large rock was placed over the cranium and additional rocks of varying sizes were placed over the postcranial skeleton. Burial one consists of an adult possible male. The individual was tightly flexed in a supine position, with the knees and arms flexed over the chest. The individual is orientated with the head to the north and the cranium facing east/ southeast. The bone is poorly preserved and friable, and several foot and pelvic elements were missing from the southern end of the feature, potentially due to rodent or anthropogenic (possibly burial 2) activity. Several infant bones were recovered from the northern portion of the burial feature. These bones may be associated with nearby Burial 1998 28/30-1 (a nearby infant burial excavated in 1998) or other unknown nearby burial feature and disturbed by rodent, anthropogenic, or taphonomic activity.

Burial 2 was a primary burial located in unit 1W, approximately 10cm below the termination of the 1998 unit 29/30, and directly south and approximately 5-10 cm above Burial 1. The individual was interred within a small pit partially lined with small cobbles and covered with what appears to be a small cobble layer. The individual appears to be very tightly flexed in a seated position facing south. Fish bones were recovered from directly underneath the cranium and may be associated with the burial. Based on preliminary field observations the individual is a subadult of unknown sex between the ages of 11 and 17 years. Bone preservation is good to fair. Bones in the northern most extent of burial 2 may have been impacted by a rodent run located between burials 1 and 2.

Burial 3 was a primary burial located in Unit 1E, below a cobble stone layer and possibly in the same level as 1998 Burial 28/30-2 (Adult). The walls of the burial pit appear to have been lined with smaller rocks and capped by a ring of larger rocks. The burial matrix consisted had a lower

concentration of jute than the surrounding matrix. No artifacts or burial goods were associated with the burial, and the burial matrix did not contain any charcoal, ceramics or worked lithics. The individual was an adult female placed in a tightly flexed position on their left side (legs tightly flexed to chest and forearms positioned between left and right legs), with their head oriented to the north and facing east. Bone preservation was excellent.

Burial 5 was a primary burial in Unit 1E, below Burial 3. Burial 5 is located directly below a dense jute layer, with the jute layer appearing to terminate right at the top of the burial feature. The burial pit is defined by an incomplete oval formation of large flat rocks (ranging in size from approximately 10 to 30cm in diameter with the eastern portion of the oval missing). The individual was placed directly below and within the ring of rocks, with the skeleton roughly following the curvature of the rocks. Several similarly sized large flat rocks were located directly east and about 20 cm below the top of the burial. These may be rocks somehow vertically displaced from the overlying cap stone circle. Several elements of the primary individual's arm, leg, hand, and foot were located underneath these rocks. Most arm and leg long bones were cleanly broken mid diaphysis. It is possible these broken bones are somehow related to the displaced capstones. The burial matrix itself contained few jute, and jute is absent from the sediment below the burial. This suggests the dense jute layer was either cut through to inter the individual or the dense jute layer was added after the individual was interred. The primary individual was flexed with the feet tucked underneath the pelvic region, and positioned on its left side with the head to the north and facing east. The individual is a possible male subadult between the ages of 10 to 15 years based on dental development. Bone preservation is good to excellent, with the cranium and axial skeleton experiencing the greatest degree of fragmentation.

Burial 6 is a possible primary burial located in Unit 1E, directly northwest of Burial 5. It is the deepest burial at MHCP excavated to date. The skeletal material was all recovered from a very small area (approximately 30cm by 50cm in diameter), and covered by two large rocks. Although no soil changes were able to be identified, the tight clustering of the bones suggests they were placed within a small pit before being capped by stones. The individual appears to have been disarticulated after death, however the some elements were still articulated which suggests at least some degree of soft tissue was present at the time of interment. A large amount of chert debitage was recovered from throughout the burial matrix. No additional artifacts, jute, or ceramic material was associated with the burial. The individual is an adult female. Bone preservation is good to poor, with most elements highly fragmented and friable. Excavation terminated after the removal of Burial 6.

MHCP 14-02, Unit 1

Burial 4 was encountered during the excavation of 14-02 Unit 1, located in the northeastern portion of the rock shelter. No burial pit could be identified; however medium to large stones were roughly arranged on the northeastern side of the burial may represent a portion of a lined cist. The burial was associated with a cobble fill layer. Multiple individuals were present within the unit, and the lack of burial pit and considerable taphonomic disturbances made distinguishing between individuals complicated. Furthermore, large non-human mammal bone

was intermixed throughout the unit. At least 1 primary individual was present (P1) an adult possible female placed in an extended supine position with the head to the north. The head of P1 was placed on an oval shaped metate. Several fetal bones were recovered from the pevic region of this individual, and may represent an additional primary individual. Additional bones not associated with the P1 were encountered throughout the unit, and may be the result of portions of nearby primary burials extending into the unit, secondary burials, or bones disturbed by taphonomic forces. A rodent run was identified in the southern end of the unit, running through the lower legs of the primary individual. Bone preservation was fair to poor. Time constraints and the complexity of the unit prevented full excavation of all human remains in the unit. Once the primary individual and other remains were exposed, documented, and removed, the unit was carefully covered and backfilled to allow for future excavation.

Burials Summary

The two 2014 excavations in the rock shelter yielded at least six primary burials and at least three more probable burial features were identified but unable to be excavated due to time constraints (two in 14-01 and one in 14-02.) Additional isolated human skeletal elements were found in many levels. Mortuary behavior observed in the burial features from the upper ceramic levels appears to be consistent with the burials excavated by the Maya Mountains Archaeological Project in the 1990s. Burial positions and interment styles vary from extended to flexed and include individuals of all ages. Burial features for flexed burials tend to be round or oval in shape and covered by small to medium sized rocks. The upper levels of the northern rock shelter are complex, with a large amount of comingling and prehistoric disturbance of human skeletal material (both anthropogenic and taphonomic in nature). Mortuary behaviors for the deeper possible pre-ceramic levels also are variable, with both flexed and possible disarticulated bundle burials being encountered. Interestingly, all flexed or extended burials excavated in 2014 (Burials 1, 3, 4, and 5) were oriented with the head to the north, however this may be a coincidence as other orientations were noted during previous excavations at the rock shelter. Further excavations and thorough analysis of the skeletal and mortuary data is needed to understand how mortuary practices changed through time at MHCP.

Discussion

Our preliminary work at MHCP produced the most comprehensive assemblage of Paleoindian and Archaic remains excavated in the Maya area to date. The rockshelter measures 32m wide by 8m deep and is protected from the elements by a high cliff face that overhangs the ground surface. Two excavation units were placed in the center of the rockshelter and excavated in arbitrary 20cm and 10cm levels to maintain vertical and horizontal controls over data that were recovered. All sediments and soils were carefully screened in 1/8 inch mesh. All artifacts and organic materials were separated, labeled, carried from the site to our base camp, and exported to the University of New Mexico.

In total, 16 m^3 of soil matrix was excavated at MHCP. Excavations were difficult and slow given the dense deposits of human remains, faunal, and other organic materials. Abundant cultural material was documented in all levels of excavation. Though analysis of the excavated materials is still ongoing, some preliminary results indicate the importance of this site. The top

seven stratigraphic levels contained ceramics and likely date to the last 3,000 years, representing the duration of the Classic Maya (ca. 1,500 BC to 1,200 AD). Stratigraphic Unit I including levels 8 through 14 contained no ceramics and an ordered sequence of four AMS 14C dates from these levels ranges from 3,995 BC to 10,030 BC, encompassing the Late Archaic through Paleoindian periods (Figure 5). The radiocarbon sequence for the upper (Maya) levels is still being processed.

At total of six complete and one partial skeletons were excavated in these two units. Four of these were excavated from likely Classic Maya levels and have not yet been analyzed. Two complete and one partial skeleton are currently being studied. Direct dating of the latter skeletons is underway, but has proved difficult.

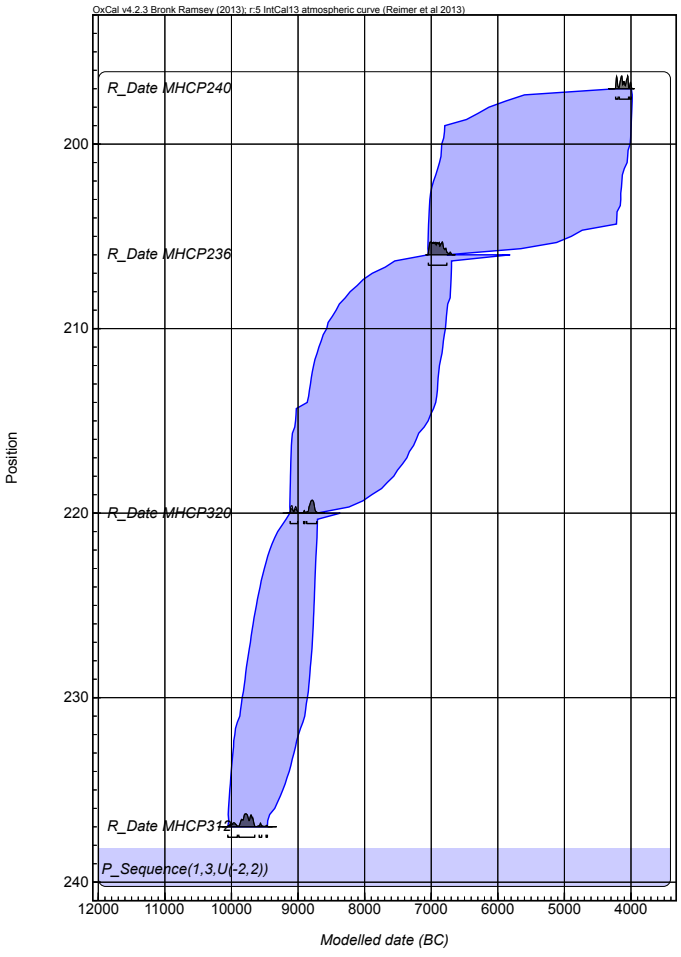

Figure 5. Modeled chronology for MHCP pre-ceramic levels (below 180cm, y-axis is depth, x-axis is time). The sequence, in order, ranges from approximately 4,000-4,300 BC to 9,500 – 10,000 BC. All levels are associated with artifacts and faunal materials.

Preliminary tests failed to extract sufficient organic carbon from the bone, and we are now using the XAD method to isolate amino acids, which is proving fruitful, and we expect to have direct bone dates in November 2014. Dates on charcoal associated with the burials gives some indication of their age. Burial 5 was bracketed between two charcoal dates from the Early Archaic period and likely was buried between 4,000 BC and 7,000 BC. A piece of charcoal

directly associated with Burial 6 dates to between 8,700 BC and 9,100 BC, during the Paleoindian period. Assuming contemporaneity between the charcoal and human remains, this is one of the oldest complete skeletons ever recovered in Central America. Partial Burial 1 (a femur and a bones from the foot) was associated with a charcoal date of 9,450 BC to 10,030 BC. Burials 5 and 6 were also studied to determine aspects of their diet using stable isotopes of Carbon (C) and Nitrogen (N), which have revealed that neither individual consumed agricultural grains (i.e. corn) associated with farming people in Mesoamerica. Further research will include completing stable isotope analyses and conducting molecular DNA analyses on the skeletons to establish genetic relationships between the skeletal remains, Classic Period Maya data, and modern Amerindian populations.

In addition to the skeletal remains, MHCP produced an abundance of artifacts and organic materials that can illuminate both cultural and environmental histories of the earliest inhabitants of the Maya area. Over 25kg of stone tools and tool making debris (debitage) were recovered. We are conducting analyses into technological aspects of early tool making in the region and will begin to attempt to extract residues from the tools to determine if they were used for butchering animals or harvesting plants. Faunal remains of over 30 species of mammals, birds, and amphibians (12kg total) were recovered during the excavation and are being analyzed at the University of Mississippi for taxa identification. Samples of these materials will be subjected to stable isotope analysis of Carbon (C) and Oxygen (O) at UNM to aid in reconstructing environmental and climate histories of the region during the Paleoindian and Archaic periods. Finally, wood identification analysis is being undertaken on wood and charcoal to reconstruct forest structures in the early Holocene.

Based on our initial excavations, which were limited to approximately 2% of the level surface of MHCP, we believe that the site may contain as many as 60 early Holocene burials, making it potentially the most important early site in Central America.

Additional Survey of Muklebal Tzul Valley

Within 3km of MHCP are two prehistoric surface sites namely, Ek Xux and Muklebal Tzul. Considering the remote location and lack of visitation or inspection by a licensed researcher or Institute of Archaeology (IA) personnel for the last decade, a site visit to Muklebal Tzul was conducted. Muklebal Tzul is a Kekchi Maya name meaning “The Hill of many Tombs” and was discovered in 1995 by the Maya Mountain Archaeological Project (MMAP).

The site visit was conducted on the 29th of February 2014 by Mr. Josue Ramos of the Belize Institute of Archaeology with the assistance of Mr. Pedro Pop, who was able to guide Mr. Ramos to the site. Mr. Pop had previously worked with Peter S. Dunham and Keith M. Prufer in the early 1990’s in the MMAP. Muklebal Tzul was located after a hike of approximately 2.75 kilometers away from AC camp. However, the distance from Muklebal Tzul in a straight line to AC camp is 2.1 kilometers southwest (Figure 6).

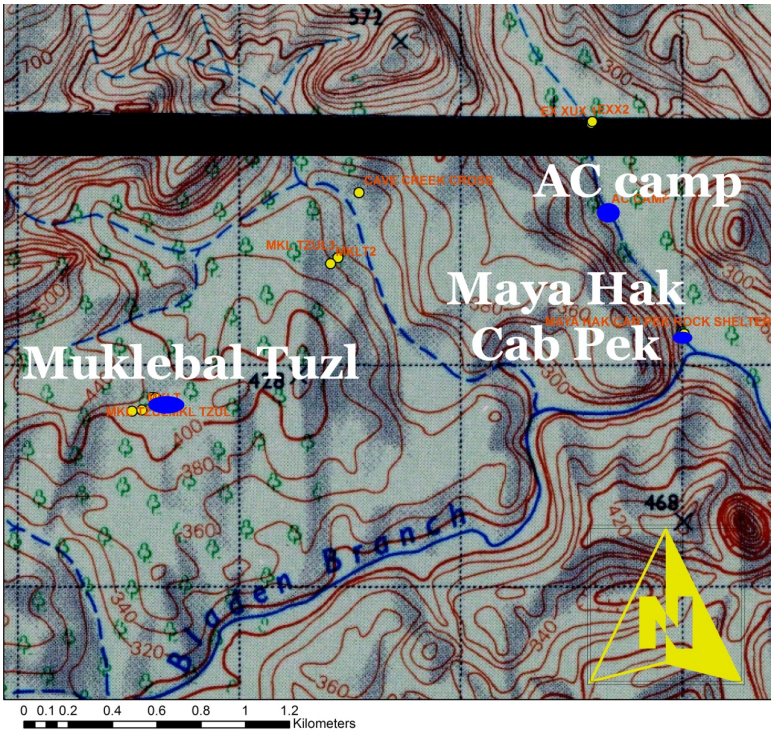

Figure 6. Map showing the location of the AC camp and Muklebal Tuzl and Maya Hak Cab Pek.

Upon inspection of the site it was observed that several of the mounds have been looted, in particular those in the plazuela group with the double tomb. The double tomb however was excavated in 1997 under the MMAP (Dunham et al. 1997). The report does not indicate it was backfilled; however, standard archaeological practice is to backfill completed excavations. In addition, Mr. Pop clearly remembered the structures and tombs, and that they were properly excavated and backfilled in the 1990's. One of the perfect examples is the structure with the double tomb, which was and still remains backfilled/closed. Therefore the open tombs and structures are a clear indication of looters in the area. The looting however is not recent rather between three to five years ago. This conclusion is based on garbage and string (Guatemalan origin) left behind by the looters, still sturdy enough to be part of the string used during the MMAP (Figure 7). The tomb's cap stones and other stones are randomly scattered around and it was never closed or backfilled. The geographic location of this tomb is UTM 16 Q 0293675 1823938 at an elevation of 405 meters above sea level. The overall count of looted structures that were inspected on this site visit was 7 different structures, each structure having a varying magnitude of looters trenches.

Another interesting feature of Muklebal Tzul is the water fountain still functioning as it did in the later part of the Classic Period (Prufer and Kindon 2005). This water fountain is referred as Kux Lin Ha meaning "living water" (Figure 8). It is at a lower end of the core site at an elevation of 386 meters above sea level. Its geographic location is UTM: 16 Q 0293512 1823900. Overall this entire site is still impressive to the naked eye and perhaps a reason why looters target this remote site in the Bladen Nature Reserve. The YCT rangers have a large area to patrol and with the incursion of illegal Guatemalans into Belize it is unclear if it is Belizeans or "xateros" who

looted the site. Nonetheless the rangers have agreed to patrol more frequently in the area despite the difficult two day hike to get to the site from the nearest village in Toledo.

Figure 7. Image showing one of the looted tombs at Muklebal Tzul.

Figure 8. Image showing the Kux Lin Ha at Muklebal Tzul

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