# PRECERAMIC CAVE USE IN BELIZE

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# ABSTRACT


## PRECERAMIC CAVE USE IN BELIZE

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Little evidence for human use of caves in Belize is available for the long span of time from the first human habitation of the area until the beginnings of Maya civilization. This thesis seeks to further the understanding of preceramic people in Belize by examining the information that is available from the few archaeological projects which have uncovered evidence of Paleoindian and Archaic use of caves throughout the Maya area and surrounding region, but with an emphasis on Belize, and explores what those data might indicate as to the nature and extent of preceramic cave use.

The conclusions of this research suggest that significant cave use by preceramic peoples occurred throughout Mesoamerica, primarily for practical and not necessarily ritual purposes, such as short-term seasonal habitation and water procurement. While there is currently little evidence for this in Belize, the paucity of data probably stems from a lack of focused research, logistical challenges, the ephemeral nature of the preceramic archaeological record, and subsequent destruction or obfuscation of cultural residue by later Maya use of caves.

## Acknowledgements

I am greatly indebted to numerous people who helped me in the process of writing this thesis. First and foremost, I would like to thank my advisor, Dr. Jaime Awe, for providing me with the opportunity of doing research in Belize and encouraging me to pick whatever topic I was interested in. I would also like to thank Dr. Smiley for pushing me way past my known limits in all his classes, and for always being interested, enthusiastic, and helpful no matter what I came to him with. I appreciate Dr. Kellner's assistance throughout pre-thesis class, and her insightful comments on this thesis. Dr. Holley Moyes and the crew of the Belize Cave Research Project, thanks for taking me to so many caves and weathering out Hurricane Earl with me. My entire cohort provided great companionship and comradery throughout the process. Hannah Zannotto, Keith Solmo, and Brian Snyder – I couldn't have gotten through it without you.

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**Dedication**

To Keith – An awesome friend, archaeologist, climbing partner, and all-around badass.
I miss you buddy.

# Chapter 1: Introduction

In this thesis, I explore the manner and extent in which preceramic people utilized caves and rockshelters in Belize, the Maya area, and the surrounding region (Figure 1.1). I do this by reviewing all the published literature about known cave and rockshelter sites with any evidence of preceramic use and by examining the data for any patterns or information, which could lead to insights about the little known early human populations of the region.

Exceedingly little is known about the people who lived in Belize and the surrounding area before the Maya, encompassing the entire Archaic and Paleoindian periods, a span of at least 10,000 years. The Paleoindian and Archaic periods not only represent the vast majority of time that people have occupied the region, but they also contain the dynamic and seminal advances of humankind moving from mobile micro-bands exploring and colonizing an unfamiliar environment, to developing wild plants into new domesticated species and carefully coaxing a settled lifestyle out of a complex and changing environment.

One of the primary reasons that so little is known about the preceramic period is that the ephemeral remains left behind by a scattered, low-density population are very difficult to detect in the dense tropical vegetation of Belize. Along river courses and in alluvial valleys, sites of great antiquity are likely to be buried under meters of soil, and in other open areas it is anyone's guess where sites may be located, so it is merely fortuitous to happen upon one.

One motivation for this study to focus on examining caves for evidence of preceramic use is that cave floors are not covered in concealing vegetation, and they provide a discrete locus within which to search. While caves may contain deep, difficult to discern deposits, they may also have well-preserved and intact remains. For these reasons, several researchers have recently

suggested that caves are particularly promising places in which to look for evidence of preceramic occupation in the Maya lowlands (Moyes 2006; Lohse et al. 2006; Awe, personal communication 2015). The other inspiration was an interest in exploring how preceramic people may have been using caves as spaces, and as unique places on the landscape.

A great deal of recent research has explored how caves functioned as important ritual spaces and occupied a central role in the cosmology of the Classic period Maya and other Mesoamerican societies (Brady 1989; Brady and Prufer 2005; Moyes 2006). It is now well established that caves were rarely used as utilitarian spaces or habitations by the Maya, but were rather seen as having powerful religious and political implications, and were viewed with a sacred reverence to which regular offerings and sacrifices must be made. The Maya viewed caves as ritual spaces beginning in the Preclassic period when evidence begins to show up of Maya cave use, all the way through the Late Classic period, at which time cave use drops off dramatically (Moyes et al. 2017).

So, how were preceramic people, as antecedent to the Maya, utilizing the caves? Did the ritual importance of caves begin with the earliest Maya, coeval with the rise in population, dependence on agriculture, and social complexity? Or is there evidence that religious beliefs about caves originate from an earlier time? And importantly, is there enough data from which to draw any serious conclusions? If not, it is hoped that the data described herein can still provide context for understanding the antiquity of cave use in the Maya lowlands, provide guidance for future research, and insight into the preceramic occupation of Belize.

Figure 1.1. Preceramic cave sites and areas mentioned in the text. (Image courtesy of Google Earth)

**Objectives**

To further the understanding of preceramic cave use in Belize, this thesis specifically seeks to provide information toward answering the following questions: What was the nature and extent of preceramic cave use in Belize? Are caves a productive place to look for evidence of preceramic occupation of the Maya lowlands? Can these data tell us anything about later Maya use of caves? For example, did the way the Maya used and viewed caves have precedent beginning with preceramic peoples that continued into or influenced Maya culture, or was it a unique and new cultural development within Maya society?

## Organization

In the first chapter of this thesis, I provide a general overview of the goals of the project and explain the theoretical assumptions guiding the research. In Chapter 2 I present the methodological strategies used to explore the topic, which included fieldwork and a literature review. Chapter 3 provides an overview of the Paleoindian and Archaic periods in Belize, while Chapter 4 outlines the historical trajectory of cave research in the area. Chapters 5-7 detail the available data from all published literature about sites throughout Mesoamerica, but focusing especially on Belize, that contain evidence of preceramic cave use. The final chapter offers my conclusions and a discussion of how these data may inform future research.

## Theoretical Approach

In this thesis I use a *landscape archaeology* approach for investigating the preceramic occupation of Belize through the lens of cave use, and for understanding the role that caves played in the lives of preceramic people in Belize. Landscape archaeology focuses on the cultural importance of the physical geography of the world in which people inhabit, seeing it as an active agent in cultural phenomena, constraining and providing the canvas on which social and economic structures and ideologies are constructed, changed, and reinforced (Knapp and Ashmore 1999). Landscape in this view encompasses not just all aspects of the physical environment, but also the human geography such as political, ethnic, linguistic, and religious spheres (Anschuetz et al. 2001; Thomas 2012; Ashmore 2009; Fleming 2006; Tilley 2008).

The landscape paradigm can be thought of as several overlapping ideas. Landscapes are seen not merely as the same as the physical environment, but rather the human experience of the natural world viewed through cultural systems. Landscapes are therefore cultural products,

transformed places and spaces that are meaningful and value-laden actors in the life of the inhabitants. These culturally constructed and meaningful landscapes are the ground on which the daily lives of people are lived, and are ever-changing and constantly being re-organized and re-envisioned (Anschuetz et al. 2001).

Various applications and visions of a landscape approach to understanding culture have been used extensively in Mesoamerican archaeology (Ashmore 2009). The different ways of utilizing a landscape approach intersect with other similar theoretical approaches, such as cultural ecology, and can be useful from processual and post-processual vantages (Anschuetz et al. 2001). Ashmore (2009) specifically mentions four kinds of landscape archaeology used in Mesoamerica that are all applicable to the study of cave use: ecology and land use, social history, ritual expression, and cosmologic meaning.

Caves, as important parts of the physical geography of the Maya lowlands, likely played a significant role in the way early settlers would have viewed and interacted with their region and each other. A landscape approach to studying caves is particularly useful because cave sites cannot be viewed accurately as isolated and individual sites, but rather serve particular roles as part of a larger cultural landscape with important ties to specific surface sites, groups, and activities.

In the Yucatán, there is no doubt that as important sources of life-giving water, humans would have "mapped-on" to cave locations. The location of cave openings and cenotes would have been crucial information for survival in the unique and arid geological region. Because of the important role these places occupied in the survival of the early people of the area, and the fact that caves would have been crucial navigational tools in an otherwise undifferentiated environment, they also may have taken on certain religious or ritual meaning, as they did for the

Maya. Caves also may have served as social meeting places or perhaps territorial boundaries. Using a landscape approach helps orient this research toward understanding how and why people may have interacted with cave spaces and how the caves in turn impacted their culture, settlement, and subsistence.

## Chapter 2: Methods

To achieve the research goals of this thesis, two primary avenues of information gathering were employed: undertaking original fieldwork that involved exploring a number of caves in Belize, and conducting an extensive review of existing published data. The fieldwork component is only briefly described here, as it unfortunately did not produce any new preceramic data relevant to this thesis. As noted above, the cultural remains of preceramic people are ephemeral at best, even around surface sites that have been extensively investigated. For this reason, the bulk of this thesis relies on data derived from previously published research.

### Fieldwork

In the summer field season of 2016, I worked with the Belize Cave Research Project (BCRP), under the direction of Dr. Holley Moyes and Dr. Jaime Awe, so that I could have the opportunity to visit several caves throughout western Belize. The goal of the BCRP is to investigate Maya religion, ritual, and ideology through identifying, surveying, mapping, excavating, and inventorying artifacts in cave sites throughout west-central Belize (Moyes et al. 2017).

The purpose of my field investigations was to execute an informal preliminary survey of a random selection of caves and to conduct excavations and surface reconnaissance specifically aimed at uncovering evidence of preceramic use. I also wanted to understand the realistic logistical challenges of accessing and studying the caves and the potential for preceramic cultural remains. I was aware that it would be a great challenge and I would need a prodigious amount of luck to actually find preceramic remains, but I was hopeful that I would at least encounter an area worth investigating, and that I would have the time and support to do so. Unfortunately, the

project had its own separate schedule and goals focused on Maya ritual use of caves, which made it very difficult to plan my own investigations or to take the time to do extensive explorations. However, I did get a good sense of the particulars and vagaries of cave research in Belize, and it was necessary to go along with another project to visit as many sites as I did.

Our explorations took us throughout west-central Belize, to caves near the Macal River, sites in the Mountain Pine Ridge area, as well as the Caves Branch River Valley and Indian Creek tributaries of the Sibun River. The survey and site visits included a relatively wide variety of terrain, climate, and elevation (about as much elevation and climate variability as exists in the Maya lowlands), and to caves ranging in size and complexity from single-room, house-sized grottos such as Mano Cave, to gigantic cathedral-like rooms and extensive labyrinthine passages at caverns such as Lost World (Figure 2.1).

Of the many cave sites that we visited, Lost World seemed to hold promise for containing preceramic remains. Large faunal bones present in the cave were thought by previous visitors to the cave to possibly represent Pleistocene animals. Additionally, the project was scheduled to spend up to two weeks in the cave, providing time for investigations. I performed a non-systematic survey of all passages and rooms that I observed, in search of anything that might be of preceramic age. Unfortunately, no surface artifacts were observed that indicated a pre-Maya presence, no soil depth was present in the bottom of the cave, and the faunal remains were so friable, fragmentary, and generally in such a poor state of preservation that I was not able to even surmise what animals the bones might represent.

Long Cave was another site that had some potential, and I spent several days there. A Lowe point was previously found on the surface near one of the entrances (Moyes personal communication 2016), and before I arrived the team conducted test excavations in the area where

the point was found. Nothing was found in those excavations of preceramic age. Some areas of the main cave passage appeared to have some soil depth, but the cave is hydrologically active and it may be unlikely that there are intact deposits of sufficient age. There was also not sufficient time to perform test excavations.

I did not find anything of preceramic age as result of my fieldwork, and I encountered no area in the numerous caves that I visited that presented a great opportunity for searching for it. None of the caves we visited, however, was chosen for the potential for preceramic remains, as that is not the research focus of the BCRP.

Figure 2.1. 2016 season fieldwork: Lost World cave (upper left), karst hills of the Sibun River Valley (lower left), mapping and inventorying artifacts at Actun Am (right).

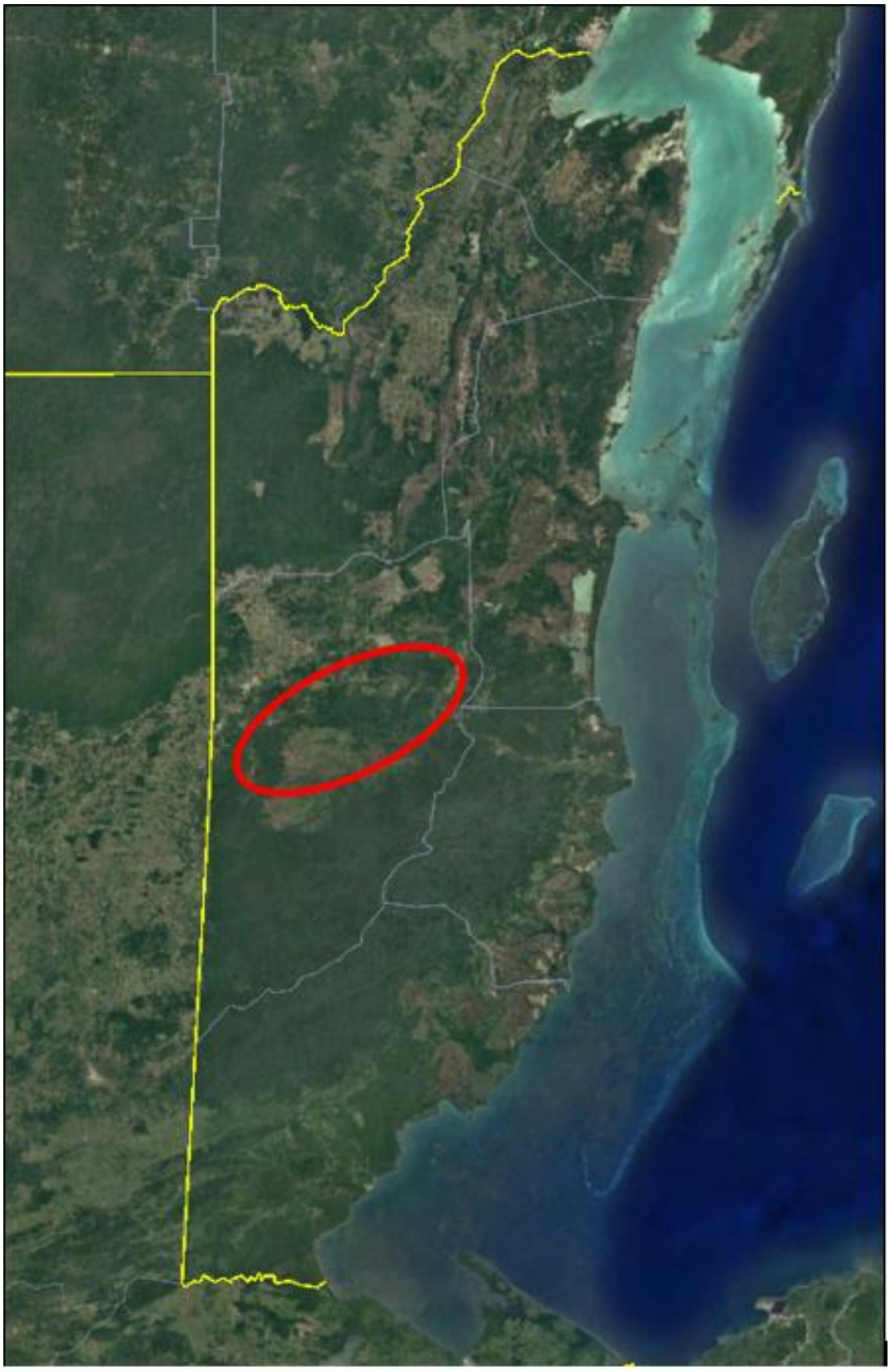

Figure 2.2. General area of 2016 cave exploration, excavation, and survey fieldwork in west-central Belize. (Image courtesy of Google Earth)

## Literature Review

Since no new positive evidence of preceramic cave use was acquired through the fieldwork season, the real data for this thesis was gathered through an extensive review of all available literature, site records, and research reports with mention of early cave use throughout the Maya area and greater Mesoamerica, as well as personal communication with some of the researchers currently studying caves in the Maya lowlands.

The search for relevant literature began by studying the extensive digital library of articles, papers, books, presentations, theses, and dissertations on cave and preceramic research in the Maya lowlands amassed by Dr. Awe for the Western Belize Regional Cave Project (WBRCP). I also accessed online all the Belize Valley Archaeological Reconnaissance (BVAR) Project and the Western Belize Regional Cave Project (WBRCP) annual reports, and the annual Research Reports in Belizean Archaeology published by the Institute of Archaeology. After reading through those resources, I mined their bibliography sections for further references and relevant researchers and authors. I used that information to search Cline library at NAU and its interlibrary loan system with the other Arizona universities, journal databases such as JSTOR, AnthroSource, Wiley Online Library, Sage Premier, and Project MUSE, as well as Google scholar and personal web pages of researchers at sites such as Academia.edu and ResearchGate. Journals that were of particular value included *Latin American Antiquity*, *Ancient Mesoamerica*, *Mexicon*, *Current Research in the Pleistocene*, and *Journal of Archaeological Research*. During the two years of this project, I have kept abreast of the important ongoing relevant research, such as that being conducted by Keith Prufer et al. (2017) in southern Belize.

The initial focus of my research was centered exclusively on Belize, however since there were few known preceramic cave sites or finds from Belize I expanded my search and looked

further afield, to the entire Maya area and into greater Mesoamerica to get a better understanding of the broader regional context. I also wanted to understand whether the paucity of preceramic cave sites and data was due to lack of focused research, luck, the vagaries of sampling, environmental factors, or if there was a good likelihood that it did not exist, and a regional approach seemed to give useful context.

## Notes on Terminology

### *Preceramic*

The term *preceramic* is used in this thesis to denote the entire span of time before humans in the region began producing pottery. The time at which pottery was beginning to be produced in Belize (ca. 1200-800 BC), was also the time that significant changes in settlement patterns and subsistence strategies were taking place, and as such is when the occupants of the region are thought to be ethnically, linguistically, and culturally Maya (Awe 1992; Hammond 2013).

Therefore, the preceramic, as used in this thesis, encompasses the Paleoindian and Archaic periods. The terms Early and Late Preceramic are also used in the literature to denote periods of the Late Archaic (ca. 2500-900 BC). Although we have limited data for Belize and the dates are still in question, it is useful to separate the Late Archaic from the previous period, as it appears that important changes were occurring in subsistence strategies during this time. There is good evidence that increasing crop cultivation and land clearing, as well as a shift to more settled lifeways, was occurring over the last couple millennia of the Archaic period (Lohse et al. 2006; Pohl et al. 1996). However, for the purposes of this thesis, which covers the Archaic as well as the Paleoindian period, it would be cumbersome to consistently use both terms, and it is

therefore useful and with precedent that I use the term preceramic to denote this long period before settled agricultural societies arose.

*Cave and Rockshelter*

This thesis focuses on both cave and rockshelter sites with evidence for preceramic use. The terms "cave" and "rockshelter" are sometimes used in inconsistent and confusing ways, and often the terms are used interchangeably (Moyes 2012). A simple, generally accepted differentiating factor between caves and rockshelters is that caves contain a "dark zone" area large enough for a person to enter (White and Culver 2012). This is the area of a cave in which no outside light penetrates from the surface, and is differentiated from the light zone, which receives direct illumination from the sun, and the twilight zone, which does not receive direct light but in which it is still possible to see with available light from a nearby entrance. The term rockshelter generally refers to part of a rock cliff face in which the wall is overhanging or where there is a recessed area which provides shallow shelter from the elements directly overhead but is otherwise open to the outside and fully lit during the daytime.

The division between the two seemingly distinct geomorphological features is often not totally clear, however. In some ways, the spaces are used and viewed differently by people, but they can be indistinct. Common ways in which caves and rockshelters are difficult to differentiate are instances in which a feature is primarily a rockshelter, but has a small cave area in the back; when two or more rockshelters are connected via short tunnels; or when a cave system has one or more conspicuous large openings that function as a shelter.

Often, archaeological cave or rockshelter sites are referred to by their locally or previously used name, including terms like *cueva* or *actun*, regardless of the technical

classification. It is also typical to classify sites into the binary categories of open-air versus sheltered, thus there is a tradition of combining rockshelter and cave sites.

A distinction can also be made between how the geomorphological space of a cave or rockshelter is used and viewed culturally, as opposed to a researcher's technical classification. The deep symbolism that some cultures such as the Maya attach to caves, has been known to be associated with lesser than grand, deep cave structures when none are available (Brady and Ashmore 1999). Likewise, rockshelters tend to be preferred for habitation over true caves (Moyes 2012), however if the mouth of a cave provides suitable shelter, it could be utilized in the same manner.

The purpose of this discussion is to clarify why and how both types of features were included in this thesis, and how caves and rockshelters can in certain aspects be very different yet used, viewed, and referred to in the same way. In this thesis I will use the name of the site, which often includes a term such as *cueva*, cave, rockshelter, or *actun*, but specify in the description of that site as well as I can whether it is a cave or rockshelter.

*Dates*

The research at cave sites detailed in this thesis use several conventions for reporting dates associated with artifacts, stratigraphic layers, and cultural sequences. This includes both calibrated and uncalibrated radiocarbon years before present, reported in years B.C., calibrated years B.C., BP, cal BP, or sometimes stated as "years ago." In this thesis I refrain from altering any of the nomenclature used in the original studies and present the dates as reported, in order to avoid introducing any error. I try to make clear which is being referred to in the descriptions, however the variety of methods can be confusing and is not always clear.

## Chapter 3: A Review of the Preceramic in Belize: The Paleoindian and Archaic periods

This chapter summarizes the pre-Maya occupation of the Maya lowlands, and provides an overview of the few major projects that have focused on this largely unknown period. The relative lack of data on these early periods in comparison with the later Maya civilization highlights the difficulty in finding preceramic sites, and the need for further explorations focused on the preceramic in Belize.

The large span of time after initial colonization of the region, but before the implementation of agriculture, pottery use, sedentism, and the rise of complex civilization, is often referred to as the preceramic. The preceramic is generally divided into two major periods: Paleoindian and Archaic (Zeitlin and Zeitlin 2000). During these time periods human subsistence adaptations follow a general trajectory from a nomadic big-game hunting strategy to more settled lifeways with an increasingly varied diet and procurement strategies based on hunting, gathering, and limited horticulture (Figure 3.1).

### Paleoindian Period (ca. 11,500 – 8,000 B.C.)

The Paleoindian period marks the earliest human occupation of the region. The exact timing, method, route, origin, and dispersal of the first inhabitants coming into the New World is still in contention (Chatters 2015, Graf et al. 2014, Stinnesbruck et al. 2017, Chatters et al. 2014, Bonnichsen et al. 2005), but the current conservative consensus is that sometime during the Terminal Pleistocene, by at least 14,000 BP (Faught 2008), humans made their way into the Americas. There may have been several routes or separate migrations, but the primary path was likely from Siberia into the northwest coast of North America (Waters and Stafford 2013, Zeitlin

and Zeitlin 2000). Dozens of well-dated sites located throughout North and South America indicate a widespread human presence by 11,000 B.C. (Faught 2008).

In Mesoamerica, there are a few sites that have been controversially dated to as early as 40,000 years ago, but the earliest well-dated and accepted sites indicate people being in middle America by around 11,500 B.C. (Zeitlin and Zeitlin 2000). The diagnostic tools of the Paleoindian period in Mesoamerica are fluted Clovis and Fishtail points (Figure 3.2). There are not many examples of either one, and the points are more common in their respective heartlands far to the north and south (Perrot-Minot 2014). Belize is in fact fairly unique in the fact that both Clovis and Fishtail have been found in overlapping geographical distribution, possibly suggesting an overlapping of cultures or traditions.

The only evidence of a Paleoindian occupation in Belize comes from seven or eight surface-found projectile points without associated dates (Lohse 2006; Stemp et al. 2015), and recent excavations at Tzib Te Yux and Maya Hak Cab Pek rockshelters in southern Belize (Prufer et al. 2017). The points are fluted, large, and otherwise morphologically resemble artifacts found throughout the Americas which have been dated to the Paleoindian period (Figure 3.2). The points have not been found in any Archaic or Maya contexts, but are assumed to be Paleoindian in nature based on their morphology. So far, the only dated remains or in-situ artifacts from the Paleoindian period in Belize come from the recent excavations at Tzib Te Yux and Maya Hak Cab Pek in southern Belize (further described in Chapter 5), and consist of expedient lithic tools, jute deposits, and burials (Prufer et al. 2017; Prufer personal communication 2016; Orsini 2016).

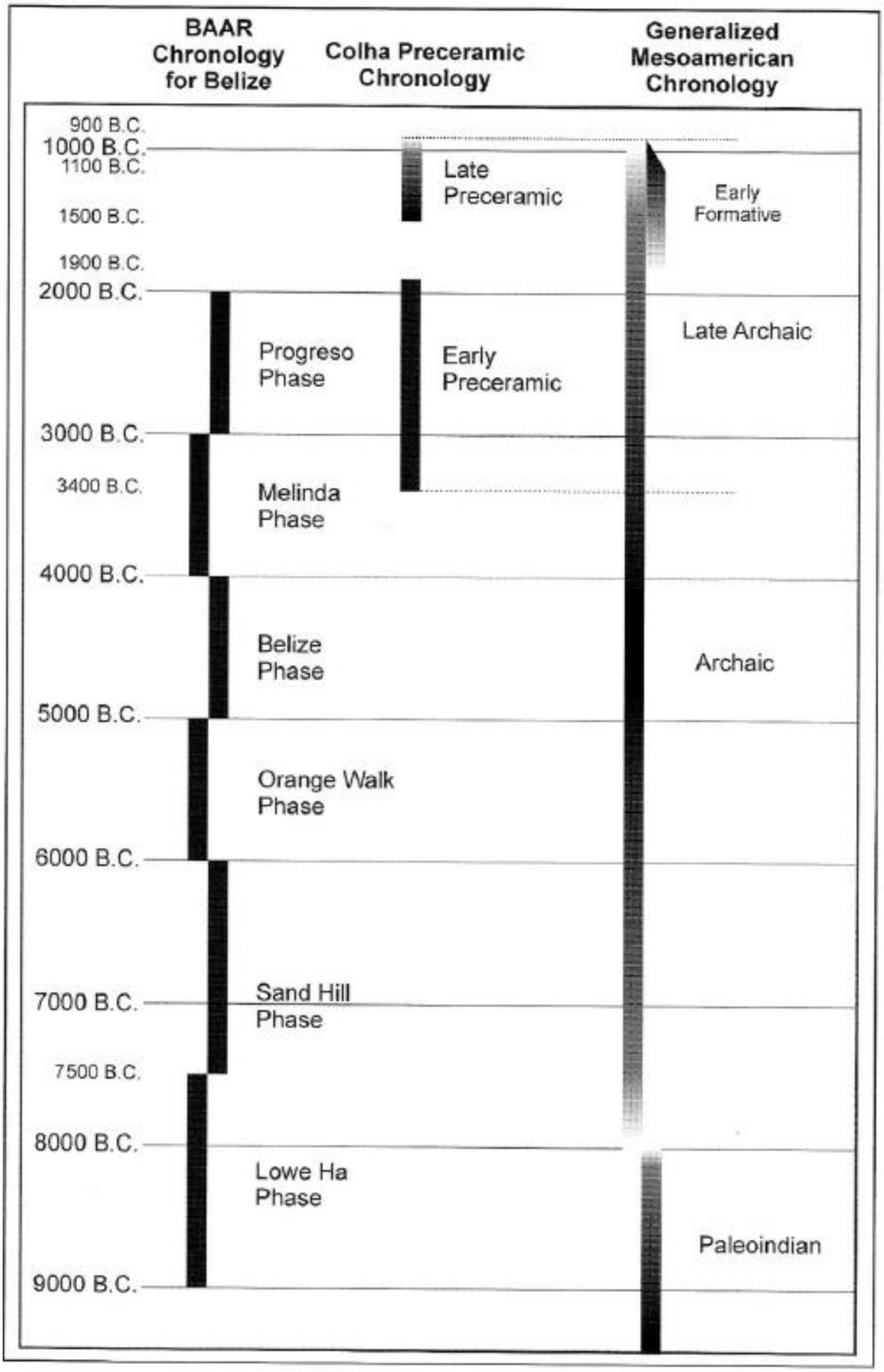


Figure 3.1. Cultural chronology of Belize and Mesoamerica. (figure courtesy of Awe)


Figure 3.2. Paleoindian projectile points from Belize. (photos courtesy of Jaime Awe)

**Archaic Period (ca. 8000 – 1000 B.C.)**

Rosenswig (2015) describes the Archaic as being a "mosaic of adaptation" from the end of the Younger Dryas around 8000 BC to between 1200-800 BC. A long and dynamic period, the Archaic is manifest by hunter-gatherers gradually increasing food production and moving toward sedentism.

Considerably more data exists for the Archaic period in Belize than the Paleoindian period, however it is still represented by only a handful of sites and surface finds, and the period is still poorly defined and understood. The Archaic period is defined by more varied subsistence

strategies, a few distinct styles of projectile points, the appearance of ground stone tools, and the addition of diagnostic lithic tools called constricted adzes in the Late Preceramic, which were likely used to cultivate domesticated plants (Lohse 2010).

Lowe and Sawmill points (Figure 3.3) are the characteristic artifacts of the Archaic period in Belize (Kelly 1993), along with constricted adzes, blades, cores, and two other proposed types of points tentatively called Ya'axche and Allspice (Stemp and Awe 2013). The function of the Lowe and Sawmill points is not entirely clear. Based on size, morphology, micro and macro use-wear, breakage patterns, design, and locational patterns of finds, Stemp et al. (2016) concluded that Lowe points may have been used as tips of thrusting spears or harpoons, and as knives, while the Sawmill points, being somewhat more gracile, could have been used as dart points and knives. To date, a total of 85 Archaic points has been found, ranging all across Belize (Stemp et al. 2017). Three of the Lowe points have associated C14 dates of 2500-1900 BC (Pohl et al. 1996), and no Sawmill points have been found in dateable context.

A recent discovery in southern Belize of a Lowe point at Maya Hak Cab Pek has been dated to roughly 8500-8200 BC (Prufer personal communication 2016). This date, which is significantly earlier than the previous dates for Lowe points, suggests that either Lowe points could span the entire Archaic, or that the later dates could be in error, as the recent discovery is well-dated and in good context. It is unlikely that a point style would persist for the breadth of the entire Archaic period, and the Lowe points do share many morphological characteristics with points typical of the early Archaic in other regions. The older date may make more sense, however, the dating of these artifacts is still in question.


Figure 3.3. Sawmill (left) and Lowe (right) points from Belize. (photos courtesy of Jaime Awe)

The end of the Archaic period and the transition to the Early Preclassic occurs across Belize between 1200 and 800 BC (Lohse 2009, 2010). At this time, pottery was first produced in the area, and settled villages arose that were occupied by Maya people. The question still exists of whether the Archaic inhabitants of the area simply changed subsistence strategies, settling into villages and developing into the culture of the Maya, or whether Maya people immigrated into the area and replaced or subsumed the preceramic population. There is evidence for seamless temporal continuity between preceramic constricted uniface production and a Middle Formative platform at Colha Operation 4046 (Iceland 2005), and other sites in northern Belize began to be substantially populated in the Late Preceramic (Lohse 2010). The nature of the transition from the end of the Archaic and into the Formative is still unclear.

**Preceramic Research in Belize**

To date, only a few significant projects have focused on the preceramic period within Belize. This includes Richard MacNeish's Belize Archaic Archaeological Reconnaissance project (BAAR) conducted from 1977 to 1981 (MacNeish et al. 1980; MacNeish and Nelken-

Turner 1983; MacNeish 1981, 1982), the Colha Preceramic Project (Hester et al. 1996; Iceland 1997), the Belize Preceramic Project (Lohse 2007), the Belize Postclassic Project (Rosenswig and Masson 2001; Rosenswig 2004), and the BVAR Project. BAAR, the Belize Postclassic Project, and the Colha Preceramic Project uncovered numerous sites dating to the Late Archaic throughout northern Belize. The Belize Valley Archaeological Reconnaissance Project (BVAR) began incorporating the search for preceramic remains into their investigations in 2000, and has subsequently uncovered evidence of at least 15 Archaic projectile points (Awe personal communication 2018). The Belize Preceramic Project likewise met with considerable success in their aim to confirm Archaic cultural deposits at Actun Halal.

Currently, Keith Prufer's Bladen Paleoindian and Archaic Project is focusing on the preceramic period in southern Belize at the rockshelter sites of Tzib Te Yux and Maya Hak Cab Pek (Prufer et al. 2017; Orsini 2016). A recent BVAR study conducted by a fellow NAU graduate student, Keith Solmo, set out to find preceramic sites in the Belize River Valley by predictive modeling based on paleosols, and succeeded in finding a site with a Sawmill point and an associated scatter of lithic materials. Unfortunately, he was not able to obtain a reliable date for the site, but it is presumed to be preceramic (Solmo 2017). The rapidity with which new points are being found and reported to researchers, as well as the success rate of those researchers who make it a point to seek out preceramic sites, suggests that there is an abundance of evidence of early human occupation of Belize, but that it needs to be systematically sought out to be found.

## Chapter 4: A Review of Cave Research in Belize

This chapter briefly summarizes the major archaeological projects, researchers, and phases of work done in caves to this point in Belize, in order to provide a background as to the scale and direction of previous research from which this thesis draws data. Cave research has a relatively limited history compared to the effort expended on understanding large surface sites, but has expanded greatly in recent years (Awe 1996; Brady 1989; Brady and Prufer 2005). Several very detailed histories of archaeological cave research in the Maya area have been presented in previous publications (McNatt 1996; Brady 1989), and this chapter primarily draws from these sources.

Research into the archaeology of caves in Belize has previously been divided into three distinct phases of investigations: Early, Middle, and Recent (Brady 1989). The phases were named, however, at the beginning of a new transition into the latest period, in which cave archaeology has become a distinct sub-discipline in Maya and Mesoamerican studies.

The Early period of cave archaeology begins with the first archaeological explorations of the Maya area, by explorers Stephens and Catherwood (1962 [1843], 1969 [1841]). The accounts of Stephens and Catherwood were not very detailed and were not focused on providing specific descriptions of sites, but rather were intended to give an enticing account of the exotic remains of mysterious past cultures to a popular audience. The publications of Stephens and Catherwood succeeded in igniting significant interest in the prehistory of the region. Roughly a half century later, two American archaeologists, Edward H. Thompson and Henry Mercer, performed cave studies nearly simultaneously in the Yucatán (Mercer 1897, 1975; Thompson 1897). Thompson

and Mercer's investigations both included visits to Loltun Cave, which is discussed further in Chapter 6. Henry Mercer surveyed, mapped, and collected artifacts at 29 caves in the Yucatán (Mercer 1897, 1975), and Edward Thompson undertook significant research on caves and provided evidence for the ritual use of caves and cenotes (Thompson 1897).

The Middle period follows a gap of a couple decades during which little significant research was undertaken or advancements made in cave archaeology in the Maya lowlands. The most significant work during this period was Eric Thompson's (1959) article in which he lays out eight different Maya uses of caves. This synthesis formed the foundation for modern cave research in the area (Awe 1996) even though it was not based on fieldwork. The most significant work in caves during this time was performed by David Pendergast, who excavated and reported on many caves in the Maya region and treated them with the same investigative rigor as surface sites (Pendergast 1964, 1969, 1970, 1971, 1974).

The emergence of Maya cave archaeology as a distinct sub-discipline in the 1980s and 1990s was marked by Barbara MacLeod and Dorie Reents' excavations at Petroglyph Cave (Reents-Budet and MacLeod 1986), Jim Brady and Andrea Stone's work at Naj Tunich (Stone 1995), and the Western Belize Cave Research Project (WBCRP) directed by Jaime Awe (Awe 1998, 1999; Griffith et al. 2000; Halperin et al. 2003; Ishihara et al. 2001; Mirro 2007; Morehart 2002; Moyes 2000, 2006). Since the initiation of the WBRCP twenty years ago, research into the archaeology of caves in the region has been consistent and extensive.

A small but dedicated group of researchers has continued to focus on caves, and the ritual and symbolic role that these landforms played in Maya life (Brady and Prufer 2005; Moyes 2001, 2006). The Belize Cave Research Project (BCRP) has surveyed, mapped, and excavated dozens of caves in the last several years (Moyes et al. 2017). It has been only in the last 15 years

or so that much of the evidence for preceramic cave use in the Maya area has been uncovered (Lohse et al. 2007; Gonzalez et al. 2014), although research into early cave use in greater Mesoamerica has been underway since the 1950s (MacNeish and Peterson 1962). This evidence will be covered in detail in the following chapters.

## Chapter 5: Evidence for Preceramic Cave Use in Belize

Very little evidence exists to indicate that caves were used in the preceramic period in Belize (Table 5.1). A couple of rockshelters currently being excavated in southern Belize, however, have stratified deposits representing Paleoindian and Archaic occupations. Several other sites contain some suggestion of possible early use, but very little solid data. All the early data, however, has been uncovered within the last couple of decades, suggesting that continued investigation may yet reveal significant new deposits.

### Actun Halal

Actun Halal, a shallow cave site in the Macal River Valley of western Belize (Figure 5.1), contains some of the best evidence of Archaic occupation or use of caves in Belize. The site consists of two overhanging rockshelter-like entrances with a 26-m-long cave passage between the entrances, and two small interior chambers. Actun Halal was first investigated in 1999-2001 by the WBRCP (Griffith and Helmke 2000, Griffith and Morehart 2001, Griffith et al. 2002).

Six 1 x 1-m excavation units were dug during the 2000 field season, which were spread out between the entrances and along the walls. Level 7 of Unit 4 near the southeast entrance to Chamber 1, contained 5 chert flakes and an expedient scraper/chopper along with 31 animal bones, one of which was a tooth of an extinct horse (Griffith and Morehart 2001). The following season WBRCP returned to Actun Halal to expand Unit 4 to a 2 x 2-m unit and further investigate the possible early remains.

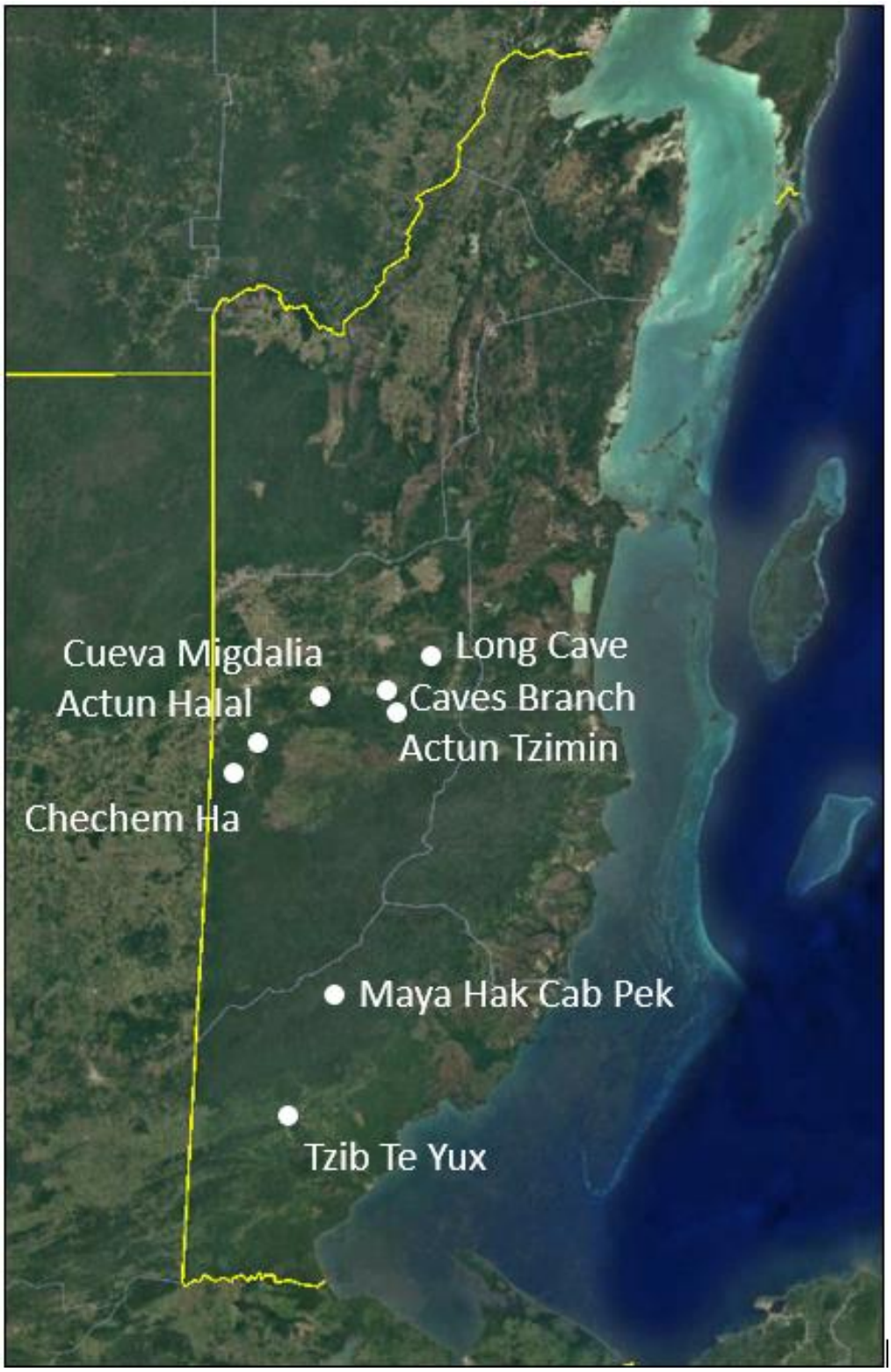


Figure 5.1. Caves and rockshelters in Belize with evidence for preceramic use. (Image courtesy of Google Earth)

The 2001 excavations recovered many artifacts and faunal remains below the lowest level with ceramics. Levels 8-10 (48-133 cm below surface) contained 44 lithic flakes, 125 pieces of faunal bone, six possible fire-affected rocks, five pieces of burnt wood, a white chert chopper, a large faunal canine tooth, and a human tooth (Griffith et al. 2002). The faunal remains from these levels were confirmed to be from extinct fauna including spectacled bear, peccary, and horse (Egeland 2003, 2004; Hecker 2000). Unfortunately, no radiocarbon dates were obtained from the WBRCP investigations, and the association of the artifacts and faunal remains may not be completely secure (Lohse 2007).

Following up on the potential for an extremely unique find of an intact Archaic or Paleoindian site in Belize, Lohse (2007) renewed excavations at the site in 2006. The excavation consisted of placing a 2 x 3-m unit in the area (Area A) where the previous project had recovered the Pleistocene faunal remains, a 1 x 2-m unit near Entrance 1 (Area B), and a test unit just outside the dripline of Entrance 1. The Area A excavations went nearly a meter deep but stopped short of bedrock due to time constraints. Sediments dated to the late Pleistocene were encountered in this area, but no diagnostic, dateable artifacts, or even definitively human-produced artifacts were recovered from these levels. However, the investigators explicitly left open the possibility that earlier cultural deposits do exist, but that they did not find them (Lohse 2007). Excavations in Area B proceeded to a depth of 1.5 m, but did not go to bedrock either. Below the ceramic-bearing levels, a crude bifacial flaked-stone tool was recovered, which resembled a constricted adze, a diagnostic tool of the Late Preceramic in Belize.

Based on artifact, pollen, and radiocarbon evidence, the 2006 excavations found evidence for human use of the cave beginning in the Late Archaic, with possibly two separate components, one from around 2400-1800 B.C., and the other from 1440-1210 B.C. An earlier

radiocarbon date of 4240 B.C. is based only on charcoal with no associated artifacts, but could represent even earlier use (Lohse 2007).

**Tzib Te Yux**

Tzib Te Yux is a small rockshelter site, located in the Rio Blanco Valley of southern Belize (Figure 5.1). The site was discovered in 2009, and then excavated from 2012-2018 by the Uxbenká Archaeological Project. The rockshelter contained deposits dating to the Paleoindian period, with stratified layers representing over 5,000 years of early human occupation (Prufer et al. 2017).

Tzib Te Yux is located 8 meters above the Rio Blanco River, and is 37 meters long and up to 4.5 meters wide, with an overhanging wall of conglomerate and silicified limestone creating the shelter and a mostly flat floor surface made up primarily of jute shells and rock breakdown.

The excavations revealed that the top 20 cm of fill was rather disturbed and mixed, but below that there were intact layers which returned 17 AMS 14C dates almost all in perfect sequence. The first early dates, at 8768-8629 B.C., came from only 25 cm below ground surface, with the earliest dates at 58 cm below surface coming in at 10,571-10,526 B.C. Artifacts in the early layers consisted of lithic materials, including an alternate-beveled blade fragment (Meredith 2014), faunal bone, jute shells, and charcoal. The investigators have interpreted the site as a hunting and animal processing area as well as a shelter, although analysis of the artifacts and samples is still ongoing (Prufer et al. 2017).

Tzib Te Yux contains some of the best evidence of early occupation of the Maya lowlands, in a well-dated intact stratigraphic sequence, with a possible diagnostic projectile point

fragment near the lowest cultural level. It is, however, like most of the other well-dated early sites in the region, a shallow rockshelter rather than a cave.

**Maya Hak Cab Pek**

Maya Hak Cab Pek is a large rockshelter located in the Bladen Preserve in the Toledo District of southern Belize. It is currently being investigated by the Bladen Paleoindian and Archaic Project directed by Keith Prufer. The site has a sheltered area of 42 x 11 m, and is characterized as a dry rockshelter. While investigations are ongoing and the data are preliminary, the site so far has yielded dates as early as 10, 300 B.C. (Orsini 2016), with 13 Archaic and four Paleoindian human burials, and a complete Lowe point dating to roughly 8500-8200 B.C. (Prufer personal communication 2016).

**Chechem Ha**

Chechem Ha is a developed tourist cave located in the Macal River Valley in far western Belize, near the Guatemalan border (Figure 5.1). The cave was discovered in modern times by the son of the land owner in 1989. Over the next few years it was subsequently visited by archaeologists, mapped by cavers, and opened to tourists. Located on a steep hill side with a single entrance, the cave has over 300 m of tunnels and five chambers, as well as numerous alcoves and ledges (Moyes 2006). Chechem Ha is one of the few cave sites in Belize with deep stratified deposits to have been deeply excavated, well past confirmed cultural layers.

The site was first inspected by the WBRCP in 1996, with systematic investigations following in 1998-1999 (Ishihara et al. 2000). The site was subsequently thoroughly studied by Holley Moyes for her dissertation research (2006). The Maya assemblage consists of hundreds of

whole or partial ceramic vessels, thousands of sherds, unmodified stones, speleothems, jute shell, and some lithics. Most of the assemblage dates to the Late Classic period.

The WBRCP project thoroughly surveyed, mapped, and excavated Chechem Ha Cave. As a result of the investigations, some limited evidence of possible preceramic use was uncovered. Of the 44 radiocarbon dates obtained by Moyes at Chechem Ha, nine returned preceramic dates. Most of the early dates, however, come from levels with no indication of human usage (Moyes et al. 2017). A few are still somewhat questionable with no associated artifacts, but still possibly represent early human use, due to a fairly heavy amount of charcoal. The earliest dates (9600-9220 B.C. and 4690-4450 B.C.) which could possibly be the result of human use of the cave come from Level 14 of Chamber 2, which contains moderate amounts of charcoal, but no artifacts. Later dates which could represent human use come in at 1320-930 B.C., with slightly higher levels of charcoal concentration. The first dates that Moyes suggests do represent unambiguous human use, 1190-920 B.C., come from Level 11 of Chamber 2, which is a layer below the first level with early Cunil-like ceramics, but overlaps it in date (Moyes et al. 2017).

The data from Chechem Ha indicate that, at the very latest, humans were using the cave to some degree at around the time of the introduction of ceramic use. It is also very possible that at least light use of the cave began to occur in the Late Preceramic or possibly as early as the Early to Middle Archaic.

**Caves Branch Rockshelter**

Caves Branch Rockshelter is located in the Caves Branch River Valley east of Belmopan, Belize (Figure 5.1). The area is characterized by karstic hills which are filled with caves that

were extensively utilized in prehistory. The rockshelter is 35 meters long, 10 meters deep, and 15 meters high, with a small dark zone cave area near the deepest part of the rockshelter.

The site has seen two phases of investigations as part of the BVAR project. Juan Luis Bonor originally located and tested the site in 1994-95 (Wrobel and Tyler 2006). The early excavations uncovered 31 burials and estimated that there were at least 150 individuals interred there. Based on the density of burials and the associated pottery the investigators classified the site as a Late Preclassic Maya cemetery.

The site was revisited in consecutive field seasons from 2005-2007, again as part of the BVAR project, led by Gabriel Wrobel (2008). Excavations uncovered 66 additional burials of Late Preclassic to Terminal Classic Maya affiliation. Associated with one of those burials, Burial 66 (EU 22H/23H, Lot 131 in Operation 1B), was a preceramic Lowe point. The burial was a disturbed adult female in a tightly flexed position, and the Lowe point was near the lower torso and knee (Wrobel 2008). Burial 66 was located near the back wall of the rockshelter, within 10 meters of the dripline and close to but not within the small dark zone cave area, and the burial was at the deepest cultural level of excavations. Multiple overlapping burials were in close proximity to Burial 66, as were several ceramic vessels dating to the Protoclassic. The bones were dated using AMS and returned a date of AD 80-250, corroborating their association with the ceramics.

No other cultural remains or dated material recovered from Caves Branch Rockshelter were of preceramic affiliation. The scenarios put forth by the excavators of the site for why the Lowe point was present with a Maya burial include either that the point was found by the individual and kept and used as a tool, or that it was curated as a sacred or ritual item (Wrobel 2008). The latter interpretation may make more sense given that the point was apparently

intentionally buried with the person, indicating some level of personal significance. However, since the Lowe point itself was slightly removed from the bones and pottery (9 cm from the knee) and it was found at the lowest cultural level of a highly jumbled and disturbed cemetery site, the possibility remains that the point was deposited in the rockshelter by preceramic people and the area was subsequently dug into during Maya interments, resulting in the point becoming associated with a Maya burial.

**Actun Tzimin, Long Cave, and Cueva Migdalia**

Isolated preceramic projectile points have been reportedly found on the surface of two caves in west-central Belize, as well as the tooth of an extinct horse. A Sawmill point was found in Actun Tzimin (Lohse et al. 2006), however, the only published data available for it is a picture of the point. Likewise, a Lowe point was reported from one of the entrances of Long Cave. Excavations were carried out at the location of the find by BCRP, which did not result in any additional cultural material. Nothing else found in the cave indicates early use.

In Cueva Migdalia, the tooth of an extinct Pleistocene horse was found in the back dirt from a looter's excavation (Helmke and Ishihara 2002). The location of the tooth in a cave, which would not be the typical habitat for a horse, could possibly suggest that the tooth was brought into the cave by humans. However, it is unclear when the tooth may have been brought in, and it is also very possible that it was brought in by a predator or by other means. The locations of these artifacts and the circumstances of their finding do not provide strong evidence that the caves were used in the preceramic, but they are listed here as possible further indication of early cave use in the area.

**Summary**

Evidence of preceramic cave use in Belize comes from several locations, but most of the evidence is limited and not definitive of intensive use by preceramic people. The best and most recent evidence comes from Tzib Te Yux and Maya Hak Cab Pek in southern Belize. However, as mentioned previously, the sites are shallow rockshelters and not caves with a dark or even twilight zone. Actun Halal was investigated over several seasons, with the notable intention of looking for preceramic occupation of the site. Actun Halal produced dates and diagnostic artifacts of the Late Preceramic, with possible association between Pleistocene faunal remains and human-made artifacts, which would indicate very early use of the site.

The other sites contain evidence which is considerably less certain of representing preceramic occupation. Chechem Ha has charcoal which dated well into the Pleistocene, and it gradually got denser and later in time to where it is plausible that it represents human use, just before or at the transition to the ceramic period. Caves Branch Rockshelter contained a diagnostic Archaic Lowe point in association with a Maya burial. It is unclear, however, whether the point represents a curated item or mixed and disturbed context. A single surface-found Sawmill projectile point was found in Actun Tzimin, a Lowe point was found on the surface in Long Cave, and a tooth from an extinct horse was found in Cueva Migdalia, but these isolated finds provide limited evidence that the caves were used during the preceramic.

Table 5.1. Cave and Rockshelter Sites with Possible Preceramic Use in Belize

| Site | Location | Kind of Material | Preceramic Dates | Reference |
|---|---|---|---|---|
| Actun Halal | Macal River Valley, Cayo | Lithic flakes and tools, constricted adze | 2400-1800 B.C.; 1440-1210 B.C; association with Pleistocene fauna | Lohse 2007 |
| Tzib Te Yux | Rio Blanco Valley, Toledo | Lithics, Lowe point, faunal bone, jute shells, charcoal | 10,571-10,526 B.C. to 8768-8629 B.C. | Prufer et al. 2017 |
| Maya Hak Cab Pek | Bladen Preserve, Toledo | Human burials, faunal remains, lithics including Lowe point | Long sequence beginning at 10,300 B.C. | Orsini 2016 |
| Chechem Ha | Macal River Valley, Cayo | Charcoal without associated artifacts | At least by 1190-920 BC; possibly as early as 9600-9220 BC or 4690-4450 BC | Moyes 2006 |
| Caves Branch | Caves Branch River Valley, Cayo | Lowe point | None – point found in Maya context | Wrobel 2008 |
| Actun Tzimin | Caves Branch River Valley, Cayo | Sawmill point | None – surface find | Lohse et al. 2006 |
| Long Cave | Sibun River Valley, Cayo | Lowe point | None – surface find | Moyes personnel communication 2016 |
| Cueva Migdalia | Barton Creek Valley, Cayo | Extinct horse tooth | None – Pleistocene animal remains with no associated artifacts | Helmke and Ishihara 2002 |

## Chapter 6: Evidence for Preceramic Cave Use in the Yucatán Peninsula

Outside of Belize, evidence of preceramic cave use in the Maya area is found only in the northern Yucatán Peninsula (Table 6.1; Figure 6.1). The evidence from the area is very early and significant. Also, more so than in any other area, the dataset is expanding at a fantastic rate, with numerous finds of Late Pleistocene human skeletons in submerged caves reported within the last decade.

The Yucatán is an extremely flat, low-lying peninsula nearly devoid of surface topography. The Puuc hills, a karstic range in the northwestern part of the peninsula where Loltun Cave is, are the only major topographic feature on the peninsula, and only rise to an elevation of less than 1000 ft. The underlying geology consists of nearly horizontally-bedded Neogene limestone, which was fractured and dissolved during periods of low sea level, resulting in a vast network of underground rivers and caves. Sinkholes, or cenotes, provide surface access to the underground systems, and have been the main source of water for the inhabitants of the region, since rainwater quickly disappears into the underground aquifer resulting in almost no surface water.

The unique geology of the Yucatán, along with its history and status as a top recreational scuba diving tourist destination, account for the spate of recent discoveries of early archaeological remains. Unfortunately, the recreational popularity of the caves also puts the sites in considerable danger of being disturbed or destroyed (Arroyo-Cabrales et al. 2015).

Figure 6.1. Cave sites with evidence of early use in the Yucatán Peninsula.
(Image courtesy of Google Earth)

**Loltun Cave**

Loltun Cave is a large dry cave system located in the southwest portion of the state of Yucatán (Figure 6.1). Loltun was one of the first places to be explored archaeologically in the Maya area, and the first cave to have been studied extensively in the region. In the late 1800s, Edward H. Thompson (1897) performed an intensive and thorough investigation of the cave, especially for the time, but he did not uncover any evidence of early human use. Thompson did, however, interview local Maya to get an important ethnographic account that the cave had been

used as a refuge during the Caste War beginning in 1847, and it was used daily for acquiring water.

Following close in the footsteps of Thompson was Henry Mercer (1896) from the University of Pennsylvania. Mercer's two-month expedition was designed to look for "evidence of man's antiquity in the caverns of Central America." The team explored 29 caves, and excavated in 10 of them, one of these being Loltun Cave. Mercer found no evidence of occupation by people earlier than ceramic-producing Maya, and therefore concluded that "no earlier inhabitant ever occupied this region, and that the culture of these cave people was not developed in Yucatán, but was brought by them from somewhere else," but accepted that "the discovery of an earlier culture-layer at a cave unvisited by us will upset the inference" (1896). The belief that the Yucatán and the rest of the Maya lowlands had been colonized initially by the Maya would persist for nearly another century.

It was not until another series of explorations and excavations in Loltun Cave from 1977-1981 by INAH and led by Ricardo Velasquez Valadez (1980), that earlier deposits were found at the site. The Loltun Project recorded hundreds of instances of rock art, some of which was attributed to "a hunting and collecting society (ca. 2000 B.C.)." In an area of the cave called Huechil, they documented an aceramic layer of abundant lithic flakes and tools below the layer with Early Preclassic pottery. A radiocarbon date taken from the top of the preceramic level returned a date of 1805 B.C. ± 150. The preceramic levels also contained large quantities of lithic percussion and cutting tools, and bone tools directly associated with bones of extinct Pleistocene megafauna including horse, mastodon, and bison (Velasquez 1980). Based on the artifact and Pleistocene fauna association, the cave has been regarded as evidence of a Paleoindian occupation.

**Tulum area cenotes**

Recent exploration of the extensive underwater cave systems near the town of Tulum, Quintana Roo, Mexico (Figure 6.1), has rapidly uncovered numerous finds of very early human use of the caves (Gonzalez et al. 2014, Gonzalez et al. 2008). These cave sites not only represent early use of caves, but also contain remains of the earliest inhabitants of the region. The remains date to the beginning of the late Pleistocene, and are among the earliest known human remains in the entire hemisphere (Stinnesbruck et al. 2017). The first investigations in the Tulum cenotes were carried out in 2008 after a diver reported finding a skeleton deep within one of the caves. The discovery was brought to the attention of Arturo H. Gonzalez at the Museo del Desierto, Saltillo, who has since spearheaded the continuing investigations into the caves.

The first discoveries in 2008 consisted of three human skeletons in association with Pleistocene megafauna and hearths (Gonzalez et al. 2014). The individual skeletons were named Naharon (20 to 30-year-old female), Las Palmas (44 to 50-year-old female), and El Templo (25 to 30-year-old male), and they were found nearly complete and articulated, with two of them having indications of being intentionally placed. The remains were found at depths of 23 m, 24 m, and 9 m below current sea level. Dating of the remains was problematic due to the low amount of organic matter in the bones, and some results did not match. The Naharon skeleton returned a date of 11,570 BP, but is controversial due to low organic material present; the Las Palmas individual was dated to 8,050 BP using radiocarbon dating, and 12,000-10,000 BP using Uranium-Thorium techniques; and the El Templo individual was not able to be dated due to degradation of the remains. The associated faunal assemblage contained a diverse array of mostly extinct Pleistocene remains, including ground sloths, glyptodonts, llamas, tapirs, elephants, bats, peccaries, horses, foxes, and agouties.

After the initial discoveries, additional skeletons were found in 2009, 2010, and 2011 (Gonzalez et al. 2014). The skeletons were named Chan Hol I, Chan Hol II, Muknal, Pit I, and Pit II. The remains have returned dates ranging from 11,396-8792 cal BP. One set of remains, Chan Hol II, was mostly stolen from the cave in 2012 before much analysis could be conducted. Luckily, however, the approximately 10% of bones that remained were partially covered in stalagmite formations that researchers could date using Uranium-Thorium dating techniques as well as stable isotope analysis. Based on their data, the researchers estimate the age of the Chan Hol II remains at approximately 13,000 BP (Stinnesbruck et al. 2017).

Hoyo Negro is another cenote in the Tulum region that has yielded preceramic remains. The site is a submerged collapsed pit which is part of the Sac Actun cave system (Figure 6.1). The pit is 62 m in diameter, with a max depth of 55 meters below sea level. Hoyo Negro contains the remains of at least 26 large mammals in addition to one human individual. Faunal remains include extinct animals such as ground sloth, gomphothere, and sabertooth cat, as well as extant species such as coyote, coati, peccary, tapir, bobcat, and puma. The human skeleton was found at the bottom of the pit, 600 m from where the nearest surface entrance would have been located before the cave was inundated (Chatters et al. 2014).

The human remains from Hoyo Negro are of a small, thin, female between the ages of 15 and 16 years old. The skeleton was found intact, with fractures to the pelvis suggesting that the individual died from a fall. The bones had calcite speleothems on them, indicating that they were present on the cave floor before the area was inundated, as the speleothems were created by dripping water when the cave floor was dry.

The skeleton was dated using a variety of techniques, materials, and substantiating climate data. Enamel from the upper third molar of the skeleton was directly dated using AMS

14C, the speleothems on the surface of the bones were dated using Uranium-Thorium dating, and data from the inundation of the cave at the end of the Last Glacial Maximum and dates obtained from extinct megafauna remains found in association with the human remains all substantiate a calibrated age for the skeleton of 12,900-12,700 years ago (Chatters et al. 2014). This date makes the skeletal remains from Hoyo Negro one of the oldest of only a handful of human skeletons reliably dated to the late Pleistocene in the Western Hemisphere.

**Summary**

The extensive recent evidence of very early use of the cave systems in the Yucatán Peninsula indicates that cave use was not a limited activity for preceramic occupants of the region, but more likely was an essential part of their daily lives. It also indicates that with the continuation of significant underwater cave exploration in the region, much more evidence of early cave use is likely to be uncovered in the near future. Uses of the cave systems may have been dominated by the search for fresh water, as there was virtually no natural surface rivers or lakes in the area, due to the unique flat karst geology of the Yucatán Peninsula. Other evidence points to intentional burying of individuals in the caves, which suggests a possible ritual use of caves as well. Finally, the remains of charcoal concentrations appear to represent hearths, which could either indicate extended, or at least overnight, camps in the caves, whether intentional or simply unexpected layovers from a long water-gathering or burial ceremony, or further ritual activity being carried out in the caves. Also, in a nearly featureless geographical plain as the northern Yucatán, the caves likely served as important markers and perhaps pilgrimage or meeting locations, and the knowledge of their locations likely would have been widely shared, as Healy (2007) mentions was the case in the post-contact period.

Table 6.1. Preceramic Cave Sites in the Yucatán Peninsula

| Site | Location | Kind of Material | Preceramic Dates | Reference |
|---|---|---|---|---|
| Loltun Cave | Yucatán, Mexico | Lithic debitage and tools, “bone instruments” | Before 1805 B.C., and association with extinct Pleistocene fauna | Velasquez 1980 |
| Hoyo Negro | Tulum, Quintana Roo, Mexico | Human skeletal remains | 12,900-12,700 cal. BP | Chatters et al. 2014 |
| Chan Hol I | Tulum, Quintana Roo, Mexico | Human skeletal remains | 9194-8792 BP | Gonzalez et al. 2014 |
| Chan Hol II | Tulum, Quintana Roo, Mexico | Human skeletal remains | Ca. 13,000 BP | Gonzalez et al. 2014 |
| El Pit I | Tulum, Quintana Roo, Mexico | Human skeletal remains | 11,396–11,150 BP | Gonzalez et al. 2014 |
| El Pit II | Tulum, Quintana Roo, Mexico | Human skeletal remains | No published date | Gonzalez et al. 2014 |
| Naharon | Tulum, Quintana Roo, Mexico | Human skeletal remains | 11,570 BP | Gonzalez et al. 2014 |
| El Templo | Tulum, Quintana Roo, Mexico | Human skeletal remains | Not dated due to degradation of remains | Gonzalez et al. 2014 |
| Muknal | Tulum, Quintana Roo, Mexico | Human skeletal remains | 9732–10,298 BP | Gonzalez et al. 2014 |
| Las Palmas | Tulum, Quintana Roo, Mexico | Human skeletal remains | 8,050-12,000 BP | Gonzalez et al. 2014 |

## Chapter 7: Evidence for Preceramic Cave Use in Mesoamerica

A great deal more solid and expansive evidence exists for early cave and rockshelter use outside of the Maya area in Mesoamerica, than within it. Most of that evidence comes from central and southern Mexico, due in large part to the extensive work of Richard "Scotty" MacNeish in the Tehuacán Valley and by Kent Flannery in the Valley of Oaxaca. The lone southern example of early Mesoamerican use of rockshelters and caves comes from El Gigante Rockshelter in highland Honduras. The cave and rockshelter sites listed in this chapter (Figure 7.1; Table 7.1) comprise some of the most significant archaeological sites in Mesoamerica. The sites are noteworthy because the earliest evidence of maize domestication as well as several other important food crops was found at the sites, and their deep and continuous stratigraphic sequences contain vital information for understanding the transition from hunting and gathering lifeways to more sedentary agricultural societies in Mesoamerica.

Unfortunately, due to the wealth of sites and information coming out of caves and rockshelters in central Mexico, this chapter will only cover briefly a few sites nearer to Belize and the Maya area. The abundance of data concerning preceramic cave use from the Tehuacán Valley, Valley of Oaxaca, and other areas is too great to cover in detail here and beyond the scope of this thesis. Due to the importance of these sites to the overall chronology of Mesoamerican cultural development, timing of plant domestication, and the controversial nature of some of their findings and methods, there is a significant corpus of other work to reference for these sites (MacNeish et al. 1972; Flannery 1986).

Figure 7.1. Selected sites and areas with evidence for preceramic cave use in Mesoamerica. (Image courtesy of Google Earth)

**Tehuacán Valley**

The Tehuacán Project was one of the most extensive and important archaeological projects to ever be conducted in Mesoamerica (Zeitlin and Zeitlin 2000). Initiated in 1960 by Richard MacNeish, the project set out to provide a regional cultural chronology dating back to the earliest inhabitants of Mesoamerica, and to understand the shift from hunting and gathering to agriculture and sedentism (MacNeish et al. 1972). The project lasted five years (1960-1965) and resulted in a five-volume set of reports. While some of the dates and chronology have been adjusted following further investigations, including the earliest date for the domestication of maize, the data from the Tehuacán Project still provides the basis for the current knowledge of the Archaic and Paleoindian settlement in the region, as well as early plant domestication (Zeitlin and Zeitlin 2000).

The Tehuacán Project investigated numerous sites throughout the Tehuacán Valley, which is located in the southern part of the state of Puebla (Figure 7.1). The project focused on several cave sites which produced evidence of extended sequences of occupation stretching back approximately 10,000 years. Among the most important cave sites are Coxcatlán, El Riego, Abejas, Tecorral, San Marcos, and Purrón.

The cave sites were interpreted by MacNeish as mostly functioning as repeatedly used temporary seasonal camps, by people who were exploiting a variety of resources. The project documented how subsistence strategy and the nature of cave use changed through the different phases and by season. The interpretation of the function of the sites was based on careful stratigraphic control and the analysis of the abundance of cultural material that came out of the caves, including botanical and faunal remains, lithic tools and debitage, as well as use-surfaces and the patterning of the artifact locations.

A cultural chronology for the region was developed and the phases were named after several of the caves. The earliest phase, Ajuereado, is dated to between 12,000-9000 years ago, and consists of bifacial stone tools including large projectile points, as well as faunal remains of numerous animals as well as botanical remains suggesting a surprisingly varied subsistence strategy for Paleoindians. The Archaic phases are El Riego (7000-5000 B.C.), Coxcatlán (5000-3400 B.C.), and Abejas (3400-2000 B.C.). Throughout these phases, which cover the entire Archaic, there are a wide variety of artifacts indicating subsistence based on seasonally available plants and game that is very diverse. An increasing reliance on numerous plant species, and the introduction of ground stone, occurs during the El Riego phase, more botanical diversity in the diet occurs in the Coxcatlán phase, along with some possible cultigens, and by the Abejas phase cultivation of maize takes place.

**Valley of Oaxaca**

Southeast of the Tehuacán Valley lies the Valley of Oaxaca (Figure 7.1), which contains three cave sites with preceramic deposits which were investigated initially by Kent Flannery (1986). Flannery worked closely with MacNeish and had similar aims of providing broad and temporally deep cultural chronological data, as well as finely detailed information about the lives of preceramic and early agricultural people of the region. The sites of Guilá Naquitz, Martinez Cave, and Cueva Blanca, span the entire Archaic period and provided a wealth of chronological data, much like the Tehuacán caves.

Guilá Naquitz is a small rockshelter, measuring 11 x 8 meters in occupational area, and contained important evidence for the early move towards agriculture. The earliest phase at Guilá Naquitz (8900-6700 B.C.) consisted of crude and informal flaked tools, as well as baskets, cordage, and netting. An impressive quantity and array of botanical remains was also present, including maguey, mesquite, acorns, pine nuts, and wild onions.

The other early cave sites investigated by Flannery in the Valley of Oaxaca include Cueva Blanca and Martinez Cave. Cueva Blanca contained Paleoindian remains as well as late Archaic projectile points. Martinez Cave contained a late Archaic component which appeared to be focused on plant processing, with abundant ground stone and lithic artifacts with use-wear indicative of cutting plants, but no projectile points.

**Ocozocoautla, Chiapas**

Santa Marta Rockshelter was first investigated by MacNeish and Peterson (1962) in 1959. The site is located in western Chiapas, near the town of Ocozocoautla (Figure 7.1). The initial investigation was focused on finding evidence for the domestication of maize, but they found instead that the site had early occupations dating to the early Holocene. The initial

excavations were very brief, and were followed by additional research in the early 1980s by Santamaria and Garcia-Barcena (1982). These investigations identified eleven different occupations or phases beginning in the Early Holocene and continuing up until colonial times. More recently, another study was initiated at Santa Marta which identified Pleistocene occupations, with dates as early as 12,500 cal BP (Acosta 2010).

The Pleistocene occupation of Santa Marta is marked by expedient flaked stone technology and a broad subsistence pattern, with no fluted points indicative of big-game hunting. The dates associated with the early occupation are ca. 10,500-9,800 radiocarbon BP. In this very early time, the remains suggest a focus on plant resources, with even ground stone present. The occupation of Santa Marta grew in the middle Archaic, with an even more varied subsistence strategy indicated by fruit and root plant remains, but no domesticates.

Los Grifos is a cave/rockshelter site located less than a kilometer from Santa Marta. Dates for the early occupation of Los Grifos span from ca. 9500-8800 radiocarbon BP. The shelter contained a Clovis point and Fishtail point, as well as faunal remains representing deer, peccary, and Pleistocene horse, suggesting a focus on big-game hunting, unlike nearby Santa Marta (Santamaria 1981).

**El Gigante Rockshelter, Honduras**

Located in highland Honduras near the southern periphery of greater Mesoamerica (Figure 7.1), El Gigante is a dry rockshelter with abundant soil depth and multiple cultural horizons which has yielded evidence of human occupation spanning over 9,000 years. The site is located along the Estanzuela River near Marcala, La Paz, in pine-oak forest, at an elevation of 1,300 meters above sea level. The rockshelter is comprised of ignimbrite tuff bedrock and is 42 meters long, 17 meters deep, and 12 meters high (Scheffler et al. 2012).

Investigations at El Gigante began in the early 1990s, when George Hasemann from the Instituto Hondureño de Antropología e Historia visited the site after hearing of looting and realized its immense research potential. The initial investigations found more than 2 meters of deposition and included a Fishtail type projectile point, with two associated radiocarbon dates of 9,904-9,044 and 8,934-8,273 BC (Scheffler 2008). No formal report was produced for the original work, however, due to the untimely death of Dr. Hasemann in 1998.

The site was subsequently investigated in 2000-2001 by Timothy Scheffler, who at the time was a graduate student at Pennsylvania State University. Scheffler excavated nineteen 1-$m^2$ units and found nine cultural strata up to a depth of 2.5 m. Fifteen radiocarbon dates were obtained, which indicated that there were three major cultural occupations ranging from the Early Archaic to the Early Classic.

Seven radiocarbon dates establish the earliest occupation of El Gigante to between 10,040 and 9,100 BP. Cultural material from the earliest occupation included lithic debris and projectile points which stylistically resembled Pedernales points, a Middle-to-Late Archaic point typically found in southern Texas. Other materials found in the earliest stratum gave clues as to the subsistence strategies of the occupants and the probable seasonal nature of the use of the rockshelter. Faunal remains were dominated by common deer, and plant remains included maguey, ciruela seeds from hog plum fruit, and avocado seeds, all wet-season plants suggesting the site was used primarily July-September, and not year-round (Scheffler et al. 2012).

The Middle Archaic component of El Gigante dates to 7350-6050 BP. No bifacial projectile points were found from the Middle Archaic occupation, and the remains suggested a more diversified foraging strategy and reliance on smaller game and a wider array of plant resources. Fauna such as turtles, birds, snails, and crabs were present, along with botanical

remains of avocado, hackberry, ciruela, apple, maguey, and grasses, as well as hearth and pit features. The remains suggested a more frequent or longer occupation than in the previous phase (Scheffler et al. 2012). Undated handprint rock art was also present in the rockshelter, and while it is presumed to be associated with the Formative period, it could be associated with any of the occupations.

**Summary**

The area of Mesoamerica beyond the Maya region, particularly southern Mexico, contains numerous caves and rockshelter sites with long stratigraphic sequences indicating human use stretching back to the Pleistocene. The available information for the area has benefited from concerted research efforts by several key devoted archaeologists and multi-year research programs. The sites were not just excavated with the intention of understanding the sites themselves, but were part of an effort to provide a timeline and theory of the broad cultural development and plant domestication of Mesoamerica.

Most of the sites in the region are dry rockshelters or shallow caves, which significantly aids in preservation of very ancient material, especially botanical remains. The caves may also have been more suitable locales for temporary habitation than caves in the Maya region. The significant discovery of the earliest evidence of maize domestication in a cave site in the area has continued to spur more research and interest in the region, which continues to provide data on early peoples.

The substantial contributions that the caves in this chapter have provided to studies of the preceramic occupation of Mesoamerica are many. As opposed to the surface-found isolated projectile points that dominate the evidence for the preceramic in Belize, these sites contain

detailed data that shed considerable light on the way of life of early people. The data show people who have a complex subsistence strategy based on much more than sole reliance on big-game hunting, but rather a broad practice of gathering numerous types of plants and other resources as well as hunting a wide variety of animals, as early as the Paleoindian period. Some form of horticulture was also being practiced quite early, and full domestication of staple food crops occurred well within the Archaic period.

Table 7.1. Selected Preceramic Cave Sites in Mesoamerica Outside Maya Area

| Sites | Location | Kind of Material | Preceramic Dates | Reference |
|---|---|---|---|---|
| Coxcatlán, El Riego, Abejas, San Marcos, Purrón | Tehuacán Valley, Mexico | Botanical (early domesticates), lithics, projectile points | Long sequence beginning around 10,000 B.C. | MacNeish et al. 1972 |
| Guilá Naquitz, Cueva Blanca, Martinez Cave | Oaxaca Valley, Mexico | Botanical (early domesticates), lithics, projectile points | Long sequence beginning at 8900 B.C. | Flannery 1986 |
| Santa Marta, Los Grifos | Chiapas, Mexico | Lithics, botanicals, projectile points | Long sequence beginning at 12,500 BP | Santamaria 1981; Garcia-Barcena and Santamaria 1982; Acosta Ochoa 2010 |
| El Gigante | La Paz, Honduras | Fishtail and other projectile points, lithic debris, faunal and botanical remains | 10,040-9,100 BP; 7350-6050 BP | Scheffler et al. 2012 |

# Chapter 8: Results and Conclusions

The cave and rockshelter sites detailed in this thesis present a variable and broad, yet mostly scant and elusive, picture of the early inhabitants of Mesoamerica. Some of the sites provide a detailed depiction and uninterrupted sequence spanning thousands of years, representing micro-bands of people accessing and skillfully utilizing the variety of plant and animal resources available to them in their environment, while other sites provide a mere shadowy glimpse of an enigmatic people moving across the landscape in the form of an isolated projectile point or a scatter of charcoal.

## Results

In this thesis I set out to compile and synthesize all the data regarding preceramic cave use in Belize and the surrounding region. Of the hundreds of caves and rockshelters which have been investigated archaeologically in the Maya area, a total of 18 have yielded some evidence of use during the preceramic period, with 8 of those being in Belize. The central Mexican region of greater Mesoamerica contains many more preceramic cave and rockshelter sites, and 10 of these are included in this thesis from the southern end of that area. One large rockshelter in southern Mesoamerica, El Gigante in Honduras, also contains preceramic deposits, for a total of 29 sites detailed in this study (Figure 8.1).

Figure 8.1. Cave and rockshelter sites and areas with evidence of preceramic cave use detailed in the study. (Image courtesy of Google Earth)

**Problems and Challenges**

Many challenges came with attempting to understand the use of caves during the preceramic in Belize. The evidence is still extremely limited, and therefore any attempt at analysis or understanding is very difficult. The likely reasons for the evidence being currently limited are several.

Not many researchers have been or are currently interested in looking for evidence of preceramic cave use, or even investigating the preceramic period at all. There is a distinct and understandable bias in Belizean and Maya archaeology in general, toward studying the impressive monumental centers of the Classic period civilization, instead of digging through meters of overburden to hopefully uncover a few heavily-patinated lithic artifacts from the preceramic. In cave research, the focus has been on the fascinating ritual and political role that

caves played in Late Classic Maya society, which is strongly evidenced as soon as you enter most caves by the profusion of large ceramic ollas in every corner. These intentional biases may also result in unintentional misinterpretation of preceramic remains because evidence of early occupation is not expected to be there.

Another major reason for the lack of evidence is that small bands of mobile hunter-gatherers do not leave behind much of an archaeological signature, and most cave sites in Belize do not provide good context for preservation. Ephemeral use of a cave by a few people many thousands of years ago using mostly perishable items in a wet environment does not tend to leave a record which persists and is readily identifiable. When artifacts do persist, they may be deeply buried, and cave stratigraphy and therefore associations of material are often very difficult to identify and comprehend. What is not deeply buried also has stood a good chance of being disturbed by later Maya populations, or looted in the present day.

**Discussion**

Despite the problems listed above, what can the research reported herein tell us about preceramic cave use in Belize? While I had hoped to be able to make some significant insights into how preceramic people used and viewed their landscape, their subsistence strategies or ritual behavior, it is clear by looking at the currently available data that it is insufficient to make many meaningful conclusions based on what we now know. However, there are a few points that are at least worthy of discussion.

First, preceramic people utilized caves and rockshelters throughout Mesoamerica. Due to the currently scant amount of evidence, most research that delves into the antiquity of cave use in the region either begins with the Preclassic, or only mentions very briefly that caves may have

been used sporadically by earlier populations (e.g., Moyes et al. 2017). However, there are many well-dated and stratified sites from central and southern Mexico, a well-documented site in highland Honduras, several remains of very early humans in the inundated cave systems of the Yucatán, and several sites in Belize with some indication of preceramic use.

Despite there being some evidence of preceramic cave use in Belize, however, it is possible that caves were not heavily used in the southern Maya lowlands. The area is dominated by karst geology with hundreds of caves that have seen significant research, and yet there is little solid evidence of preceramic use. It is most likely that other reasons account for the lack of evidence, as noted above, but at this point we must reserve the possibility that due to the nature of the caves in the region, or perhaps other aspects of the way the local preceramic populations were using the landscape or viewed caves, they preferred to avoid them. Ethnographic analogies exist for culture groups such as the Navajo, who consider caves to be dangerous places associated with witchcraft and avoid them almost entirely (Nicolay 2012), which could have been the case with preceramic people in Belize.

Second, it appears that the way in which preceramic people were using cave spaces was possibly in a generally more utilitarian and functional manner, as opposed to ritual, than later populations. The caves and rockshelters which have deposits that are well-preserved enough to make functional inferences, show that the sites were being used primarily as temporary or seasonal camps. Other sites, such as the cenotes in the Yucatán and Loltun cave, were clearly very important for gathering fresh water. There is indication, however, that the cenotes may have been used for burial as well. There is also rock art at many of the sites, including Guilá Naquitz, El Gigante, Santa Marta, Loltun Cave, and Actun Halal, but it is unclear if any of it is associated with the early components of the sites.

It is likely, however, that evidence of ritual activity in caves from the preceramic may not persist in the archaeological record. For example, if baskets were used in the way that the Maya used ceramic vessels to catch water and provide offerings inside caves, the baskets would likely have disintegrated in the intervening millennia. Most of the artefactual evidence that is found in Maya caves, after all, is ceramic vessels, and their abundance and location, along with a lack of other functional material and refuse, is typically how and why ritual function is interpreted. Many Archaic period ritual caches in caves in the Southwest consist solely of perishable split-twig figurines (Nicolay 2012), and if similar items were cached in Belizean caves they would not survive in the wet environment.

The nature of Archaic ritual activity may also play a role in it being less visible in the archaeological record. Marcus and Flannery (2004) argue that ritual activity coevolved with social complexity, from occasional ad hoc rituals performed when groups coalesced in the Archaic to more elaborate and planned events as civilization advanced. Given the assumed small and scattered Archaic population, the residue of occasional ritual activity performed at caves as the groups traveled across the landscape, would be very small indeed.

At this point, therefore, the question of preceramic cave ritual must mostly be left unresolved, but it can be said that there is currently no solid evidence for it. The lack of evidence suggests that the strong association of ritual activity and religious significance that the Maya attach to cave spaces may have been a later cultural invention, without deep roots in the hunter-gatherer past.

Third, there may be distinct differences in the ways in which different types of formations were used, such as shallow rockshelters vs. deep caves, and dry vs. wet vs. inundated caves and rockshelters. With the currently limited data set, it is hard to distinguish between what

has been found based on differential preservation and significant focus of archaeological research, and what represents a lack of or affinity for use of certain types of caves in certain areas. Since early populations were highly sensitive to and dependent on their environment, there may have been regional differences in use as well. If there was no overarching cultural belief system among the widely scattered small bands of people about how to view and use caves, local environmental factors may have strongly influenced how people used caves.

There does seem to be some correlation between regions, cave types, and site assemblages. The caves outside of the Maya area, as well as the sites in southern Belize, are mostly dry rockshelter or shallow cave sites, and tend to have deeply stratified deposits with evidence of significant repeated occupations throughout the Preceramic. This could be due both to good preservation in the sites and the fact that these types of cave features are suitable for habitation. The submerged cave sites in the Yucatan all follow a very similar pattern of containing isolated human remains without associated artifacts. This is certainly due in large part to the fact that most artifacts or other evidence of human activity would not survive in the inundated environment, but also could be indicative of the way the caves were used. The sites in central Belize, which are mostly characterized by deep, convoluted wet caves with dark zone areas, seem to exhibit evidence of more isolated and ephemeral use of the caves.

## Conclusion

Because of the many questions that remain and the possibility of good preservation in cave sites, more concerted research effort focused on looking for preceramic cave use in Belize is warranted. The findings and recommendations of this thesis are basically anecdotal, as the limited dataset does not allow serious statistical analysis or significant evidence-based

arguments. However, this study provides some basic information regarding the nature of the sites and their distribution, and by looking at the data some patterns can be observed and perhaps some recommendations made as to where future research should be directed.

In general, it appears that a fruitful place to look for evidence of preceramic occupation in the Maya lowlands would be rockshelter sites with significant deposition, as well as the inundated caves of the Yucatan peninsula. The typical deep, wet caves that are so abundant in Belize may not be the easiest locales in which to find evidence for preceramic use, but nevertheless could provide an intriguing glimpse into preceramic human behavior if evidence was found within the dark zone of such a cave, and therefore would be worth looking into and this should be considered when future cave research programs are devised. Hopefully this study can provide the basis upon which a research program into early cave use in Belize can emanate.

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