A ZOOARCHAEOLOGICAL ANALYSIS OF THE SYMBOLIC USE OF ANIMALS BY THE ANCIENT MAYA IN PERI-ABANDONMENT DEPOSITS AT BAKING POT, BELIZE

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ABSTRACT

A ZOOARCHAEOLOGICAL ANALYSIS OF THE SYMBOLIC USE OF ANIMALS BY THE ANCIENT MAYA IN PERI-ABANDONMENT DEPOSITS AT BAKING POT, BELIZE

KATIE K. TAPPAN

Zooarchaeology provides a unique and necessary perspective within archaeology because it yields information on human-animal interactions, the symbolic use of animals, and other human behaviors other artifact types my not. In the Maya lowlands, archaeologists have examined animal remains to understand how they represented ideas about the world both in the past and the present. In the Belize River Valley of west-central Belize, animal remains are present in Terminal Classic (AD 750-900) period peri-abandonment deposits, defined as “dense, midden-like concentrations of mostly ceramics and various other artifacts,” (Lonaker et al. 2017b:11). In much of the previous analyses of peri-abandonment deposits (e.g., Clayton et al. 2005; Garber et al. 2004; Houk 2000; Koenig 2014; Stanton et al. 2008) faunal remains are mentioned but a lack of depth is taken in their analysis (Burke et al. 2020).

This study first explores the organization of animals by the Classic Maya including documenting the depictions and uses of species, the symbolic use of animals in contemporary ritual, symbolic animal use archaeologically, and animals in peri-abandonment deposits. Zooarchaeological methods are used to analyze the faunal remains in peri-abandonment deposits at Structures B2, B6, B7, and B15 at the Belize Valley site of Baking Pot, Belize. A Middle-Range Theory framework, incorporating analogy and taphonomy, is used to inform the methods of this research and to test archaeological correlates of different behaviors represented by the animal in the deposits. The results are then viewed through a symbolic anthropology framework employing key symbols to explore human behaviors. This research concludes by demonstrating, based on the faunal remains, peri-abandonment deposits are the result of ritual pilgrimages to remember community history and to reinforce social identities after the decline of Classic Maya socio-political structure.

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Dedication

I would like to dedicate this thesis to my family for their support, and to my dad, William Tappan, for being my biggest supporter in perusing archaeology.

Chapter 1: Zooarchaeological Questions at Baking Pot

Artifact-dense deposits, referred to as peri-abandonment deposits by the Belize Valley Archaeological Reconnaissance (BVAR) Project, have been excavated at multiple sites in the Maya region, including at the site of Baking Pot, Belize. Even though the exact function of these deposits is still under investigation, this research assumes that they are associated with a ritual purpose (Awe et al. 2020; Burke et al. 2018, 2020; Davis 2018; Hoggarth et al. 2016, 2020; Wisner et al. 2017, 2018). For clarification purposes, ritual in this thesis means the strategic way people interact with the world through their material culture (Bell 1992). Animal remains serve as a proxy to explore the rituals employed in the creation of the deposit. Animals have been employed as symbols by the ancient Maya and continue to be used by the contemporary Maya, therefore their inclusion in this thesis provides a necessary perspective on symbolism other artifact classes do not offer.

The Terminal Classic Maya

The Terminal Classic period for the Maya lowlands spans from AD 750-900 (Hoggarth et al. 2014a). Questions concerning this time period explore Classic Maya collapse, specifically the decrease of trade and increase of conflict between states (Coe and Houston 2015:174), as well as the socio-political disintegration, and the depopulation of regional centers (Aimers 2007; Hoggarth et al. 2014a). Beginning between AD 751-790, alliances between states wither (Coe and Houston 2015:174) and the frequency of warfare increases (Kennett et al. 2012). After AD 830, new construction of major site cores slows or ceases, and there is a shift to living within peripheral sites (Coe and Houston 2015:174-175). Cities in the northern Maya lowlands, however, began to rise as prominent socio-political centers during this period, though population numbers were still lower than the Classic period until the Postclassic period (McKillop 2006:100). The Classic to Postclassic transition (AD 750-1050) is cited by Demarest et al. (2004:545) as being somewhat ambiguous, disagreed upon, and regionally diverse. The nature of the Terminal Classic period and decline are, therefore, disagreed upon and contentious within the archaeological community (Hoggarth et al. 2014a).

The term “collapse” is often used in the literature, and though there was profound socio-political change, Aimers (2007) suggests the term is not representative of the events in the Maya lowlands during the Terminal Classic and early Postclassic periods. The extent of the decline of some Classic Maya socio-political systems and their causes are still debated (Aimers 2007; Demarest et al. 2004:545; Webster 2002:327). Webster (2002:327) argues there is likely not a single cause for the decline of the Classic period Maya, but instead suggests a mix of potential causes for the decline including warfare, drought, disease, population growth, among others (see also Aimers 2007; Davis 2018; Hoggarth et al. 2014a; Santley et al. 1986). Populations discontinued occupation of city centers and dependent villages differentially in coastal and arid regions during this time period, supporting a non-ubiquitous transition (Ebert et al. 2014; Hoggarth et al. 2014a; Santley et al. 1986:123). Stantley et al. (1986:123) suggest a combination of dense settlement and over-exploitation of agriculture resources during the Classic period may have led to societal decline in the Terminal Classic period.

Baking Pot

The ancient Maya polity of Baking Pot is located in the Belize River Valley approximately 10 km outside of the modern town of San Ignacio, Cayo District, Belize (Figure 1.1). The site, which sits on the southern banks of the Belize River was occupied during the Middle Preclassic through the Late Postclassic periods (600 BC - AD 1300; Hoggarth et al. 2014b). The maximum population of Baking Pot is estimated to be slightly over 3,000 people during the Late Classic period (AD 600-800; Hoggarth 2012:62). Both the palace complex and settlement at Baking Pot were abandoned during the Late to Terminal Classic period (AD 600-900; Hoggarth and Awe 2015:504). Hoggarth and colleagues (2014a) also highlight a gap in the occupation of Baking Pot between the Terminal Classic and Late Postclassic period based on radiocarbon dated human remains.

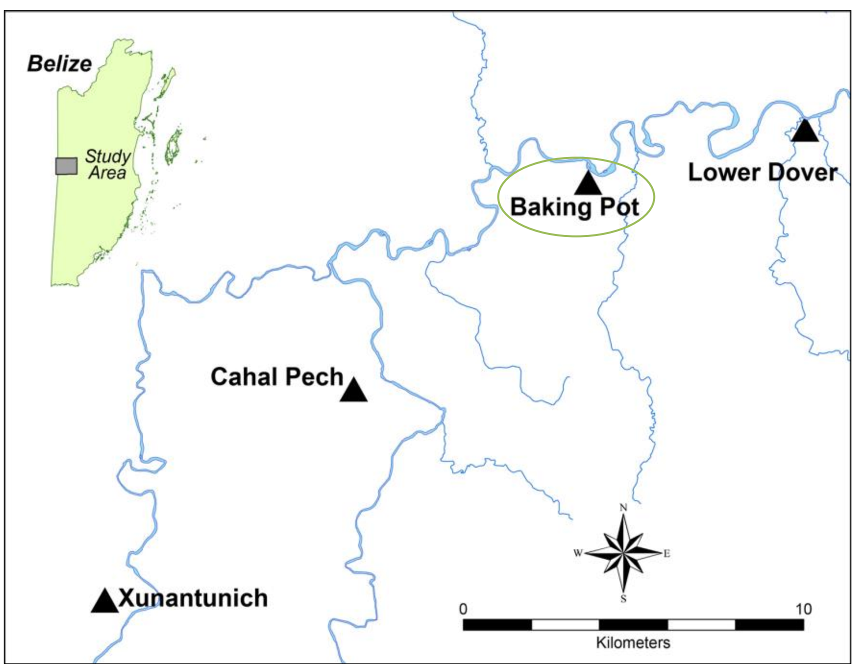

Figure 1.1 Location of Baking Pot, Belize (Adapted from Tappan et al. 2019).

The monumental epicenter at Baking Pot consists of two architectural groups joined by a causeway, Groups A and Group B (Aimers 2003:149). During the first regional settlement study of the Belize Valley in the 1950s and 1960s, Willey et al. (1965:304) categorized Baking Pot as a major site because of its monumental architectural features. Furthermore, Groups A and B at Baking Pot make up the core of the ceremonial center (Hoggarth 2012).

The first excavations at Baking Pot were conducted at Group A in 1924 by Ricketson, subsequently followed by research carried out by Bullard and Bullard (1965), and Willey and colleagues (1965). Investigations at Baking Pot have been carried out since 1992 by the BVAR project under the direction of Jaime Awe and Julie Hoggarth, beginning in the settlement areas (see Hoggarth 2012) and moving into Groups A and B (Audet 2006; Sullivan and Hoggarth 2015). This includes excavations at Group A and Group B by Audet (2005, 2006) focusing on socio-political organization, and excavations of Structures B1 and B7 at Group B by Helmke (2008) to understand construction phases and function of the structures. Helmke (2008) suggests Structure B7 at Baking Pot was likely an *audiencia* (i.e., royal court) structure comparable to the *audiencia* structure at the nearby Belize Valley site of Cahal Pech.

Peri-abandonment Deposits

In recent years, the BVAR Project investigations have focused on peri-abandonment deposits at sites across the Belize River Valley (Awe et al. 2020), including within the Baking Pot epicenter (Figure 1.2). Defined as "dense, midden-like concentrations of mostly ceramics and various other artifacts," these deposits have been interpreted as ritual in context (Awe et al. 2020; Burke et al. 2018, 2020; Davis 2018; Lonaker et al. 2017b:11). Peri-abandonment deposits have also been referred to as problematic, special, terminal, and ritual deposits, and have been attributed to ceremonial, midden, and feasting behaviors by different researchers (Burke et al. 2018; Clayton et al. 2005; Garber 1989; Stanton et al. 2008). These deposits are located in front of stairs and in the corners of courtyards and include several artifact types, such as ceramics, lithics, ritual paraphernalia, instruments, and human and faunal remains (Awe et al. 2020; Burke et al. 2018, 2020; Davis 2018; Hoggarth et al. 2020; Lonaker et al. 2017b). At Baking Pot, Davis (2018) discussed artifact compositions of the deposits and argued inclusion of multiple artifact types can be used to more accurately interpret the significance of these deposits. Like many of the excavated peri-abandonment deposits in the Belize Valley, the Baking Pot deposits date to the Terminal Classic period (AD 750-900; Davis 2018).

Figure 1.2 Example of a peri-abandonment deposit from unit B7-102 at Baking Pot, Belize (Photo taken by Sydney Lonaker for the BVAR Project).

In much of the previous analyses of peri-abandonment deposits (Clayton et al. 2005; Garber et al. 2004; Houk 2000; Koenig 2014; Stanton et al. 2008) faunal remains are mentioned but a lack of depth is taken in their analyses (Burke et al. 2020). Burke and colleagues (2020) initiated systematic analysis of faunal remains in peri-abandonment deposits as a proxy for understanding the nature and intent behind the deposits at the sites of Baking Pot and the nearby site of Xunantunich, Belize. The faunal remains in these deposits vary in taxa, exhibiting elements with low meat utility and low frequencies of butchery marks (Burke et al. 2020; Wisner et al. 2017; Wisner et al. 2018). For example, fauna in domestic or midden deposits should yield more meat and display evidence of butchering, while fauna in ritual deposits should consist of more complete skeletal elements lacking evidence of butchery and a low meat yield (Burke et al. 2020; Götz and Stanton 2013; Masson and Peraza Lope 2013; Montero López 2013). Based on the context of the faunal and artifactual remains, the peri-abandonment deposits at Baking Pot have been identified as ritual and not domestic in nature (Burke et al. 2020; Hoggarth et al. 2020).

Palka (2014:6) describes Maya ritual landscapes and pilgrimage as integral to Maya ideas about community origins, social identity, and notions of territory. Palka (2014:9) further states these places are maintained for ritual activities, and are connected to histories, memories, and identities. Small portable offerings are taken on pilgrimages to ritual landscapes and offered to spiritual forces to gain favor, show devotion, contact deities and ancestors, and point out troubles to be solved (Palka 2014:49). Palka (2014:5) suggests ritual landscapes are separated from contemporary human settlements because of the spiritual dangers they may pose and the important separation of nonhuman space to pilgrimage practices. Archaeologically, these pilgrimage landscapes are associated with ceremonial architecture, ritual artifacts, astronomical alignments, and sanctuaries (Palka 2014:51). Small portable offerings of various artifact types, including ceramic figures and incense burners, are placed near abandoned structures (Palka 2014:72) and resemble peri-abandonment deposits in the Belize Valley. Within the context of intensive agriculture and drought during the Terminal Classic period (Ebert et al. 2014; Hoggarth et al. 2014a; Santley et al. 1986:123), the deposits at Baking Pot and other sites in the region may be to petition the gods to resolve agricultural issues, a common function for pilgrimage (Palka 2014). Peri-abandonment deposits may be further explored in this framework as evidence of pilgrimage to uninhabited sites as ritual landscapes, fitting a ceremonial function based on the archaeological correlates discussed in the next chapter.

Excavation of Peri-abandonment Deposits at Baking Pot

Excavated during the 2013-2016 field seasons by the BVAR Project, faunal remains from peri-abandonment deposits at Baking Pot were exported to the Northern Arizona University, Department of Anthropology, Faunal Analysis Laboratory (NAUDAFAL). The Baking deposits (Figure 1.3) were excavated using cultural levels and all recovered materials were screened through a ¼ inch screen (Sullivan and Hoggarth 2015).

A total of 18 excavation units were placed in Baking Pot's Group B during the 2013-2016 BVAR Project field seasons in order to document peri-abandonment deposits (Table. 1.1) Excavations at Structure B15 (previously Structure B17) in the royal palace complex of Group B began during the 2013 field season. Structure B15 is described by Sullivan and Hoggarth (2015) as a high platform structure on the southern side of Courtyard 4. The main focus of the 2013 excavations, which consisted of units B15-1 and B15-2, was to expose possible peri-abandonment deposits (Hoggarth et al. 2014b). Excavation units B15-1 and B15-2 measured 3m north-to-south and 9m east-to-west each (Hoggarth et al. 2014b). Unit B15-1 was placed along the front side of Structure B15 in Courtyard 3 (Hoggarth et al. 2014b). Unit B15-2 was placed in front of Structure B1 (Hoggarth et al. 2014b). During the 2014 field season three more units, B15-3, B15-4, and B15-5, were established on top of Structure B15 (Sullivan and Hoggarth 2015). Unit B15-3 was a 2-by-2m unit placed to follow a stone alignment running east-to-west (Sullivan and Hoggarth 2015). Unit B15-4 expanded unit B15-3 to the north by one meter, and unit B15-5 extended the excavations to the east by one meter, making all three units one large excavation going down to the same level (Sullivan and Hoggarth 2015).

Excavations of peri-abandonment deposits at the intersection of Structures B6 and B7 in Plaza B at Baking Pot also began during the 2015 field season (Hoggarth et al. 2016). Excavation units B6-1 through B6-5 were placed along the front staircase of Structure B6, though the units varied in size and shape (Hoggarth et al. 2016). Unit B6-1 measured 2m north-to-south and 3m east-to-west and was placed in the center of the Structure B6 staircase. Unit B6-2 was an "L" shaped unit added as an extension of the southeast corner of B6-1 (Hoggarth et al. 2016). Unit B6-3 measured 1m north-to-south and 3m east-to-west and was placed to the east of unit B6-2 to follow the stairs (Hoggarth et al. 2016). Unit B6-4 measured 1.5m north-to-south and 2.5m east-to-west and was placed to the east of unit B6-3 at the corner of the staircase, where unit B6-5, measuring 4m north-to-south and 2m east-to-west, would connect to the north end of B6-4 and follow the staircase back to the wall of the structure (Hoggarth et al. 2016). Unit B7-100 was placed at the juncture of Structure B6 and B7 and measured 2m north-to-south by 3m east-to-west before it was extended to the north with B7-100 Ext. A, measuring 1m north-to-south by 2m east-to-west (Hoggarth et al. 2016).

Peri-abandonment deposits were also investigated during the 2015 field season at Structure B2 with three primary excavation units (Hoggarth et al. 2016). The first, B2-1, measured 3m north-to-south and 2m east-to-west and was located on the lower area of the outset stair (Hoggarth et al. 2016). The second, B2-2, measured 2-by-2m initially then extended with 2.5m extensions, one to the north and one to the south to locate the corner of Structures B2 and B21 (Hoggarth et al. 2016). Finally, B2-3 initially measured 1.5m north-to-south by 2m east-to-west and was then extended one meter to the north located along the eastern side of the B2 outset stair (Hoggarth et al. 2016).

Beginning in the 2016 field season, the BVAR Project began applying new methods for excavating peri-abandonment deposits at Baking Pot, which included dividing all deposits into 1-by-1m standard sub-lot designations (see Davis 2018; Lonaker et al. 2017b; Hoggarth et al. 2017). During the 2016 field season, unit B6-6, 3m north-to-south and 8m east-to-west, was established to connect previous units B5-5 and B7-100 (Lonaker et al. 2017a; Davis 2018). The 3m north-to-south by 5.5m east-to-west unit B7-102 was also added in the 2016 field season to extend unit B7-100 to the south, and this section of the deposit was divided into 1m-by-1m sub-lots to follow the new deposit excavation methods (Lonaker et al. 2017a). Previous excavations of Structure B2 were connected during the 2016 field season. The unit B2-4, measuring 2.5m north to south by 1.5m east-to-west, was established to connect units B2-2 and B2-3 (Lonaker et al. 2017a). Some artifacts recovered from B2-3 gave the unit the initial designation of peri-abandonment deposit, though Lonaker et al. (2017a) state B2-3 was later revealed to be associated with the collapse of the structure. The report for the 2016 field season also deemed the artifacts from B2-4 were likely associated with collapse of terminal phase construction and not related to the deposit, stating it had fill-like characteristics (Lonaker et al. 2017a).

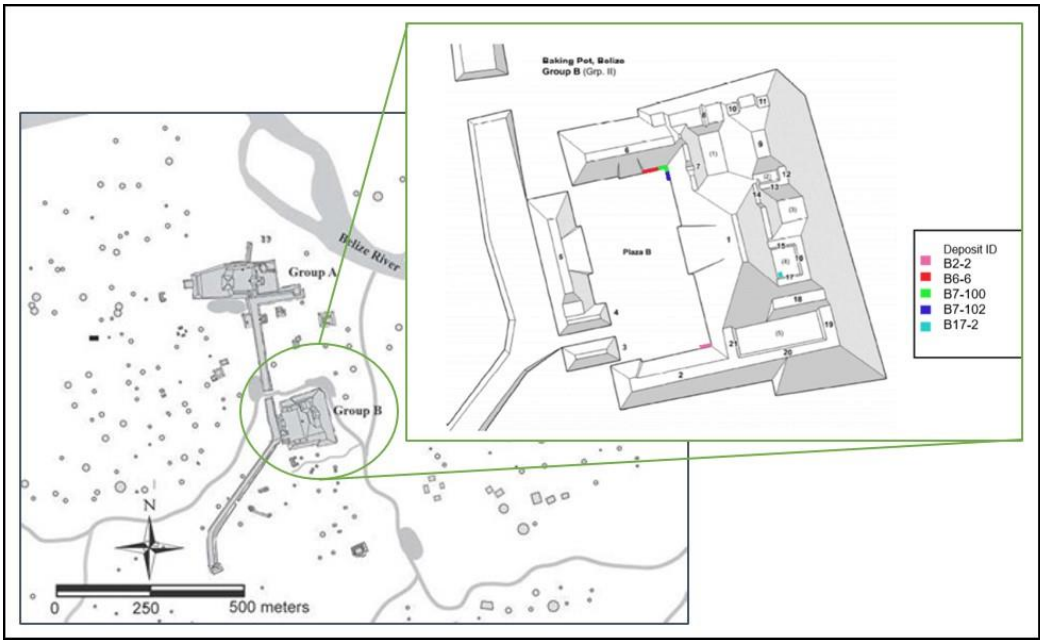

Figure 1.3 Map of the location of the B2, B6, B7, and B15 peri-abandonment deposits at Baking Pot Group B (Adapted from Hoggarth et al. 2014b and Davis 2018).

Table 1.1 Units excavated in the Baking Pot epicenter associated with peri-abandonment deposits.

Year	Structure	Excavation Unit	Unit Size	Unit Location	Associated Deposit
2013	B15	B15-1	3m x 9m	Front Str. B15 Ct. 3	B15 deposit
		B15-2	3m x 9m	Front of Str. B1	B15 deposit
2014	B15	B15-3	2m x 2m	E-W on top Str. B15	Humus/coll.
		B15-4	Ext. 1m	Ext. B15-3 to N 1m	Humus/coll.
		B15-5	Ext. 1m	Ext. B15-3 to E 1m	Humus/coll.
2015	B6	B6-1	2m x 3m	Along B6 front stairs	Deposit/coll.
		B6-2	B6-1 Ext.	Along B6 front stairs	Deposit/coll.
		B6-3	1m x 3m	Along B6 front stairs	Deposit/coll.
		B6-4	1.5m x 2.5m	Along B6 front stairs	Deposit/coll.
		B6-5	4m x 2m	Along B6 front stairs	Deposit/coll.
	B7	B7-100	2m x 3m	Juncture of B6 and B7	B7 deposit
		B7-100 Ext. A	1m x 2m	Ext. B7-100 to N 1.5m	B7 deposit
	B2	B2-1	3m x 2m	Lower area outset stair	No deposit
		B2-2	7m x 2m	To corner of B2	B2 deposit
		B2-3	2.5m x 2m	E side B2 outset stair	Str. collapse
2016	B6	B6-6	3m x 8m	Connect B5-1 and B7-100	B6 deposit
	B7	B7-102	3m x 5.5m	Ext. B7-100 to S	B7 deposit
	B2	B2-4	2.5m x 1.5m	Connect B2-2 and B2-3	Str. collapse

Research Questions

For this research, several questions are explored to determine the symbolic nature of animals used in peri-abandonment deposits. Highlighting the taxa present and the association of specific fauna together is necessary to investigate the ritual nature of these deposits. First, what elements, species, sides, body portions, and cultural or natural taphonomic modifications are exhibited by the zooarchaeological remains from peri-abandonment deposits? Second, using ethnographic literature, are the animals recovered from each deposit representative of the extraordinary or supernatural world by the Maya? Finally, do symbolic representations of the fauna, and the sides, elements, and cultural modifications present, support the argument that peri-abandonment deposits are evidence of ritual behaviors and can this information be used to support the use of animals for ritual behaviors in other contexts? The overarching goal of this thesis is to compile a dataset of archaeological, epigraphic, and ethnographic examples of Maya symbolic animal use to answer more specifically what animal remains can tell us about the function of the Baking Pot peri-abandonment deposits.

Why Zooarchaeology?

Given that several publications (Awe et al. 2020; Davis 2018; Hoggarth et al. 2020) outline the use of ceramics in understanding peri-abandonment deposits, why is it important to consider a zooarchaeological perspective alone? As a field, zooarchaeology not only provides data on taxa, meat-utility, and artifact construction elements, but it also supports the exploration of the function of unique features like peri-abandonment deposits, given that animals are symbolically important to the Maya. First, aside from depictions of ritual activities and animal symbolism on ceramics, which are few and far between and are even less often well preserved, faunal remains with discernable anatomical features are more likely to be identified to taxon and skeletal elements. Second, these features are easily determined by training zooarchaeologists with comparative collections. While taphonomic processes take their toll on animal remains, they are still often-times abundant, especially in peri-abandonment deposits. Finally, since animal use has been documented ethno-historically by the Spanish, providing even more information on their symbolic use, faunal remains are the most logical means of comprehending the ritual use of peri-abandonment deposits.

Thesis Organization

This thesis is organized into five chapters. This chapter outlined the purpose of the present research and provided a brief background on the materials and questions to be examined. Chapter 2 explores previous research on Maya symbolic animal use in literature and the archaeological record to gain a comprehensive understanding of the directions the study of Maya symbolic animal use has taken. This chapter further familiarizes the reader with literature on the topic. Next, the chapter investigates what is known about animals in peri-abandonment deposits. Archaeological correlates that will be used to explore the purpose of peri-abandonment deposits as feasting, midden, and ritual, are then laid out and defined. The chapter concludes with a discussion of taphonomy and how it is used in reconstructing human behaviors.

Chapter 3 outlines the materials and methods used in this research, including the theoretical underpinnings informing the methods, specifically Middle-Range Theory and analogy. Basic zooarchaeological methods, including cleaning, data collection, taxonomic identification, and data entry are also outlined.

Chapter 4 presents the results of this research by deposit. Each deposit is given a subsection with faunal remains first described taxonomically, followed by bone side, body portion, element, cultural or natural taphonomic effects, and bone artifacts identified. When applicable, a brief discussion of any contexts outside of, but in association with, the deposit are explored.

Finally, Chapter 5 begins with a thorough explanation of symbolic theory, specifically key symbols, as it is employed to interpret the faunal data. Each of the three research questions are restated and addressed in order, beginning with a discussion on species, element, side, body portion, and taphonomy, and followed by an interpretation of animals used as representations of the extraordinary or supernatural, addressing peri-abandonment deposits as ritual behavior. The chapter concludes providing possible ritual behaviors contributing to peri-abandonment deposits and providing future directions for research on the subject.

Chapter 2: Framework for Understanding Symbolic Use of Animal

For zooarchaeologists to understand the importance of species in faunal assemblages, a framework of their symbolic use in literature, art, and the archaeological record must be built. Here, using the organization of animals by the Maya, depictions and uses certain species are described as well as the symbolic use of animals in contemporary ritual, symbolic animal use archaeologically, and animals in peri-abandonment deposits. In order to provide a concise and revenant background to Maya animal symbolism, animals appearing in the deposits and animals closely associated with these animals are discussed. The archaeological correlates outlining evidence for midden, feasting, and ritual fauna used in this research are outlined at the end of the chapter.

Maya Animal Organization in Literature

In the *Popol Vuh*, the sacred book of the Quiché Maya, Christenson's (2007:40) translation and commentary explores the parallels, referred to as, merismus, as "the expression of a broad concept by a pair of complementary elements, which are narrower in meaning." The author further provides two examples of parallels explaining how ancient Maya populations may have categorized animal species. The first, *deer-birds*, is a label for all wild animals (Christenson 2007:40). The second, pairs the predominant domesticated animals, *dog-turkeys* (Christenson 2007:40). Distinguishing between wild and domesticated animals provides insight into the importance of the species separation into categories and suggests a change in importance tied to subsistence.

Two stories are presented below as examples of why some animals got to keep their long tails and others did not. Across the Maya region, animals show up in stories as symbols of cultural significance. For example, the Tzeltal Maya tell a story of two brothers. While the older climbs a tree to get honey, the younger waits below. As described, the younger brother asks for honey, but all the older brother provides is wax (Teeter 2001; Thompson 1970). As the story continues, it is said the younger brother shaped the wax with pieces of sharpened palm wood imbedded at the top. These then became gophers, burrowing underground cutting the roots of the tree until the tree falls, at which point the old brother falls to the ground and shatters into all the animals of the land (Teeter 2001; Thompson 1970). The larger pieces of the older brother became the deer, peccary, and paca, and the small pieces became birds (Teeter 2001; Thompson 1970). Given the death of the older brother, their grandmother accuses the younger of killing his brother. The younger brother suggests his grandmother shell corn for the animals she wanted to keep as pets and warns her that if she laughs the animals will escape and leave only their tails. Unfortunately, as told, the grandmother laughed, so now the deer, peccary, rabbit and paca do not have tails (Teeter 2001; Thompson 1970).

A similar story conveyed by Teeter (2001) explains how the animals from Mopan, Tzeltal, and Palencano Chol creation stories also lack tails. In this story, Venus, the central Mexican god of the morning and evening star depending on the planet's cycle (Miller and Taube 1993), collects animals in a pen (Teeter 2001). His wife is told that if she laughs the animals will escape. Unfortunately, his wife considers him ugly, so she laughs, leading to the animals' escape (Teeter 2001). As he tries to grab the fleeing animals, he is only able to regain the white-tailed deer, brocket deer, rabbit, and peccary, but as he reached out and grabbed their tails they broke off and got away (Teeter 2001). These stories reflect animal categorization based on looks, and in this case with the common trait of not having a long tail. Given this foundation, zooarchaeologists can begin to view the categorization of animals differently than genus and species classifications, and instead include categories tied to physical traits and breeding abilities. This recognizes the ancient Maya likely grouped animals very differently based on their use or ceremonial context.

Symbolic Mammals

Mammals appear frequently in Maya art, stories, language, and as faunal remains in archaeological contexts. Both the contemporary and ancient Maya hold mammals in high regard (Teeter 2001; Thompson 1970; Pohl 1983). Multiple dimensions of regard for these animals must be explored in human-animal relationships, the relationships between animals, and the relationship between animals and the Maya world and cosmos.

Maya Relating Themselves to Animals

The Maya identify with particular animals because of the traits of the animal. Large cats, such as jaguar and puma, are associated with warriors and the elite for their reference to strengths, fierceness, and bravery (Saunders 1994). The two are often depicted in motifs of sacrifice as jaguar or puma impersonators (Pohl 1981). The jaguar was the most common *uay*, or spirit companion, taken on by lords in rituals involving spiritual leader transformations (Miller and Taube 1993:102). The jaguar is well represented in Maya art, stories, and ritual. This animal is often seen in association with elites, warriors, deities, and ritual leaders (Figure 2.1). In the *Popol Vuh*, the religious text of the Quiché Maya, the hero twin Xbalanque is often referred to on pictorial pots and other motifs as “Yax-Balam” (i.e., blue jaguar) and is depicted with jaguar skin on his body and around his mouth (McKillop 2006). The word for jaguar in Maya is *balam* referenced in the hero twin's name (Saunders 1994).

Figure 2.1 Classic period polychrome vase depicting three versions of God A' and Jaguar in flames, all aspects of Xbalanque (Kerr Vase #2942).

Postclassic Yucatec use of *balam* also relates to the name of a warrior society adorned with a *balam* insignia clothes (Saunders 1994). Saunders (1994:110) further suggests that the "spreading [of a] jaguar skin" is the act of warfare, further tying the jaguar to warrior society. Within the context of a warrior, the *balam* is further used as a symbol of strength, fierceness, bravery, and hunting abilities, suggesting elite people, mostly warriors and rulers, are the jaguar (Saunders 1994). For example, use of *balam* in Yax-Balam's name could signify the bravery and strength needed to enter the underworld Xibalba, and oppose and outwit the gods there. Additionally, Classic Maya kings demonstrated their association with the power of the jaguar by wearing jaguar pelts, headdresses, jaguar teeth necklaces, and other jaguar adornments.

Additionally, they implemented jaguar imagery into their thrones with jaguar pelt cushions, and even thrones that took the shape of a jaguar (Miller and Taube 1993). Ritual leaders also associated themselves with the jaguar and are depicted wearing jaguar headdresses and other articles of clothing (Figure 2.2).

Across many Maya sites, jaguar remains, pelts, teeth, and art are often found in association with individuals of elite status and their remains (i.e., in burials), and are not commonly found in commoner sites or middens. Jaguar are an apex predator in the Maya world and eat deer. The jaguar-deer dance is a representation of the constant struggle for power the elites have over commoners, the commoners represented as deer (Burke et al. 2018; Pohl 1983:71).

Figure 2.2 Depiction on the Late Classic vase Altar de Sacrificios of a lord taking on the jaguar in ritual leader transformation (Miller and Taube 1993:103).

Symbolic Herbivore, Omnivore, and Insectivore Mammals

Deer were often depicted as victims of sacrifice for agricultural purposes, as they represent the sun (Figure 2.3) (Burke et al. 2020; Pohl 1981,1983). They were considered a food of the elite, associating them with ritual feasting (Burke et al. 2020; Emery 2004). The deer was associated with the sun and is depicted in the Dresden Codex as hanging from a sky band by its tail and holding torches (Pohl 1983). In the *Popol Vuh*, the gods take the form of a deer and demand a young deer sacrifice (Pohl 1983). In some of these depictions of deer sacrifice other animals including snake, jaguar or puma, vulture, and frog or toad are also referenced (Pohl 1983). In another example Pohl (1981) mentions that the Dumbarton Oaks vase depicts a vulture and a jaguar or puma impersonator holding spears, commonly associated with sacrifice, while waiting around a deer without antlers being scorched on the rear. Pohl (1981) compares the depiction on the Dumbarton Oaks vase with a depiction at Temple II in Tikal of a vulture and large cat sending a spear into a tied-up victim of sacrifice representing the death of the deer man. Deer are discussed further in the following discussion of the *Cuch* ritual.

Figure 2.3 Classic Maya carved vessel depicting a human and a deer (Kerr Vase #196; from Coe 1973).

The coati, belonging to the Procyonidae Family like raccoons, is an omnivorous and social animal that travels in packs or small herds (Encyclopaedia Britannica 2018). Hamlin (1984) suggests coati are used as a symbol of replenishing the fertility of the crops. Similarly, Hamblin (1984), citing Bishop Landa, explains how coatis at Cozumel destroyed corn fields after traveling in herds. Faunal analyses conducted on Cozumel shows an abundance of coati, with the coatis consisting of 73.95% of the overall minimum numbers of individuals (Hamblin 1984:143-145). Additionally, the abundance of coati remains coincides with observations Hamblin (1984) made in Landa's and other ethnographic accounts, specifically that of women raising coatis as pets and consuming them as they are often associated with fertility. Hamblin (1984) also describes the Late Classic Period pottery from Altar de Sacrificios depicting a woman holding, what Pohl (1981) believes to be coatis. Coati are further discussed below as part of the *Cuch* ritual.

Peccary were consumed by the ancient Maya and continue to be consumed today by contemporary Maya (Schlesinger 2001:159). The Dresden Codex depicts peccaries hanging in the air by a noose around their foot, which may be indicative of being captured by jerk-up snares (Schlesinger 2001:159; Tozzer and Allen 1910:352). Peccary are also incorporated into the *Cuch* ritual discussed below.

Bats are the messengers of the underworld and are often found associated with cave rituals, but because bats live in caves, their presence in cave faunal assemblages cannot always be tied to ritual activity without further evidence (Emery 2004). In the *Popol Vuh*, a bat swoops down and decapitates Hunahpu the hero twin who was sticking his head out of his blowgun to check for dawn (Tedlock 1985). The "God of Caverns", one of the gods of the underworld, is represented as a bat (Tozzer and Allen 1910:365). The leaf-nosed bat in particular is depicted with its characteristic nose in glyphs and represents the month *Zots* (Figure 2.4; Tozzer and Allen 1910:365).

Figure 2.4 Images of bats from unprovenanced Classic period Maya vessel. Probably the killer bat of the Popol Vuh (Kere Vase #5224).

Symbolic Carnivore Mammals

The jaguar has symbolic importance to the Maya outside their association with strength, power, and transformation discussed above. Jaguar gods also symbolized night, caves, the sun, and the underworld (Miller and Taube 1993:103-104). The jaguar god of the underworld is represented as the sun passing through the underworld on the hunt during the night (Miller and Taube 1993:104; Schlesinger 2001:165).

Dogs are associated with rulers as guides to the underworld and are often seen buried with them (Figure 2.5) (Stanchly and Awe 2015). Cave rituals often involve dogs because of their association with the underworld, as caves are portals to the underworld (Emery 2004). Dogs were one of the only domesticated animals kept by the Maya. Five different domestic dog breeds have been identified including the Mesoamerican common dog, *xoloitzcuintles* (the hairless dog), *tlalchichi* (the short-legged dog), the short-nosed or Maya dog, and the wolf-dog hybrid (Stanchly and Awe 2015) and are therefore a managed species for both ritual (Emery 2004) and consumption with population growth (Stanchly and Awe 2015).

Figure 2.5 Unprovenanced Classic Maya vase with images of dog (center), monkey (right), and frog (left) (Kerr Vase #1181).

Symbolic Amphibians

Amphibians are highlighted in Maya literature, motifs, and the archaeological record in ritual contexts (Dobkin de Rios 1974; Emery 2004; Hamblin 1984; Pohl 1981; Teeter 2001 and Tozzer and Allen 1910). Frogs and toads are associated with the Four Chacs, the Yucatec rain gods, and are said to accompany them in song in the rainy season (Hamblin 1984). Common species in the region include the Gulf Coast toad, marine toad, Mexican tree frog, and *woj* (or *uo*) toad or Mexican burrowing toad (Schlesinger 2001). Varying in colors and behaviors, these species do not appear to be distinguished symbolically outside of being a frog or toad. The frog or toad is depicted in the Madrid Codex as well, with a creature with a stout, tailless body, flat head and toothless mouth (Thompson 1970).

As Hamblin (1984) states, frogs and toads are often both associated with the rain gods, though some variations in the ways they are depicted could indicate one over the other, but without further ethnographic research it would be difficult to identify how. Given their association with rain, the second month in the Maya calendar, the beginning of which correlates to August 5th in the Gregorian calendar system is *uo*, the Maya word for frog (Hamblin 1984).

Frog and toad motifs are present in Maya ceremonial contexts and may be associated with ritual drug use of the ancient Maya. For example, Emery (2004) references the use of cane toad poisons as hallucinogens in ritual. In other contexts, frog and toad motifs have been identified by Dobkin de Rios (1974) and discussed in the contexts of psychotropic drug use in ancient Maya ritual. Two whistles with frog representations are pointed to by Dobkin de Rios (1974) and discussed as components of ritual drug use, as it is explained the role of auditory sensation is an important component to these rituals that is often overlooked. Frogs are often depicted with three dots on the back of their head said to represent the poison glands (Dobkin de Rios 1974; Pohl 1981), and it would be an interesting piece of evidence for the poison's use in ritual if these dots specifically depicted poison glands.

Symbolic Birds

Both black vultures and king vultures are depicted in Maya art and Codicies (Schlesinger 2001:187), and are often depicted scavenging dead humans (Schlesinger 2001:187 and Tozzer and Allen 1910:332). Tozzer and Allen (1910:332) state the king vulture appears often in Maya writing due to its abundance in the region and importance as a scavenger, while the black vulture is less represented and is usually associated with death and birds of prey. The king vulture is depicted as a god in the Dresden Codex with a human body and a bird head (Tozer and Allen 1910:330). Tozzer and Allen (1910:330) state the vulture god is depicted having a connection with rain in the Dresden Codex.

The ocellated turkey was raised and consumed by the Maya and appears in writing, and art (Figure 2.6) (Schlesinger 2001:197 and Tozzer and Allen 1910:326). The bird was often depicted as a decapitated sacrifice (Hamblin 1984:95), as seen in the Nuttall and Dresden Codices (Tozzer and Allen 1910:326). Landa also refers to birds in general being decapitated as sacrifices, not just turkeys (Hamblin 1984:95). Turkeys are also depicted in snares or trapped in baskets in the Tro-Cortesianus (Schlesinger 2001:197; Tozzer and Allen 1910:326), or as headdresses Tozzer and Allen 1910:328). Turkeys also have a connection with rain as depicted in the Aubin manuscript and the Vaticanus (Tozzer and Allen 1910:326).

Figure 2.6 Classic Maya vase depicting a turkey (Kerr Vase #1001).

Macaws, parakeets, and other birds appear in faunal assemblages on Cozumel and Hamblin (1984:91) states their bright colorful feathers were likely used for decoration. In the *Popol Vuh*, before the time of people of maize, the sun, moon, and stars, Seven Macaw posed as the sun (Schlesinger 2001:212; Tedlock 1985:89). Seven Macaw thought he was magnificent as the sun and that his white beak, and shiny teeth and nest shown light down like a sun (Schlesinger 2001:212-213; Tedlock 1985:89). The hero twins saw this was not true and acquired the help of an old couple to take Seven Macaw's shiny trinkets, causing him to die without greatness (Schlesinger 2001:213, Tedlock 1985:89). Like turkeys, macaws are often depicted as headdresses in the codices, and are typically seen on women (Tozzer and Allen 1910:315). Schlesinger (2001:213) states there are not many natural history accounts of scarlet macaws, possibly because of the downfall of Seven Macaw.

In contrast to turkeys in the codices, owls are depicted as associated with drought (Tozzer and Allen 1910:328). Yum Cimil (God A), the god who resides in the lowest of the nine levels of Xibalba, is sometimes depicted as half owl half human (Schlesinger 2001:216). Yum Cimil is the god of death, and the owl is almost always representative of death among the Maya and is referred to as the Moan bird (Tozzer and Allen 1910:338). In this form, the owl is specifically a screech owl. Like turkeys and macaws, owls are depicted in the Dresden Codex as headdresses associated with women (Tozzer and Allen 1910:338). There is only one depiction of a man associated with the Moan bird in the codices (Tozzer and Allen 1910:338).

Unlike the turkey, macaw, and owl, herons are rarely depicted as headdresses and are one of the few water birds depicted in the codices (Tozzer and Allen 1910:324). When they are depicted as headdresses in the codices, they are usually worn by men (Tozzer and Allen 1910:324) as opposed to women, who are associated with turkeys, macaws, and owls. Other water birds shown in Classic Maya iconography include cormorants, which often are associated with a water sign, suggests that the Maya saw this bird as a symbol of existence in both the upperworld and the underworld (Davis 2018:54). Polychrome vessels with cormorant imagery have been found in the peri-abandonment deposits at Baking Pot, Structure B2 (Figure 2.7).

Figure 2.7 Cabrito Cream vase sherds with cormorant iconograph from Baking Pot Structure B2 deposit (Davis 2018:Figure 4.10).

Symbolic Reptiles

Turtles were a common food source for the ancient Maya (Hamblin 1984:65 and Schlesinger 2001:222). In Maya cosmology, the world is either a turtle or a crocodile floating in the sea, with plants sprouting from their backs (Coe and Houston 2015:244). Turtles are associated with water and abundance (Pohl 1983), and their carapace is often used as a drum to make thunder sounds during rituals (Miller and Taube 1993:174). They are referenced multiple times in association with rain in the codex Tro-Cortesianus (Tozzer and Allen 1910:322).

As previously mentioned, in Maya cosmology, the world is either a turtle or a crocodile floating in the sea (Coe and Houston 2015:244). Crocodiles float with a small amount of their back and head above water, the rest of the crocodile swims through the waters of Xibalba (Schlesinger 2001:234). Coe and Houston (2015:147) state the body of a crocodile was also used by the Maya to represent the night sky in the Classic period.

Contemporary Maya, including the Ch'orti' in Guatemala, believe there are supernatural snakes in bodies of freshwater that cause earthquakes (Coe and Houston 2015:245). The B6 and B7 deposits, the two largest deposits, also have snakes. A boa constrictor is depicted in a trance dance scene on a vase from Altar de Sacrificios. In the scene, an old god is looking to the sky while singing and dancing, and the snake has its mouth around his head and wraps its body under his arm (Pohl 1983; Schlesinger 2001:272).

The iguana is important to ancient Maya cosmology (Figure 2.8). There was a belief that the world was within a house, and the four walls of the house were iguanas that reached up to the sky (Schlesinger 2001:226; Thompson 1970:214). Each of the four iguanas was associated with a color and a cardinal direction and the tails of the iguanas reached to the sky to form the roof of the house (Schlesinger 2001:226; Thompson 1970:214). The house of the world was called *Itzamna* and Schlesinger (2001:228) states the Maya concept of *Itzamna* was so great and encompassing it was almost never drawn, and it was a concept elite in the lowlands held onto through the Classic period.

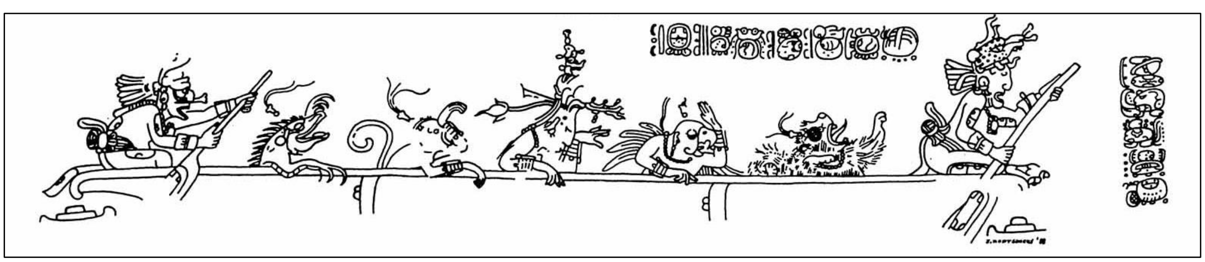

Figure 2.8 Scene carved on Tikal Miscellaneous Text 38a,. One of 37 incised bones found in Burial 119 - tomb of ruler Hasaw Chan K'awil. Image of Maize God at center of canoe, being carried by "Paddler Gods" (Stingray Paddler and Jaguar Paddler). Also in canoe; iguana, spider monkey, macaw and howler monkey (John Montgomery Image JM00780).

Symbolic Fish

Fish are associated with water (Tozzer and Allen 1910:307) and are symbolically significant to the ancient and contemporary Maya. Fishermen in the Postclassic period would perform fishing rituals to fishing gods, one was the god *Kak Ne Xoc* (fire-tailed shark) (Thompson 1970:310). Landa also reports fishermen making sacrifices at shrines and anointing their fishing tools before a successful fishing trip and describes some of the deities surrounding the task (Hamblin 1984:45). Fish sacrifice as tribute to the gods is depicted in the codices, particularly the Dresden Codex (Tozzer and Allen 1910:308). Fish is an excellent source of protein and is overall nutritious, a good balance for an agricultural diet (Hamblin 1984:45-46). Hamblin (1984:46) states the faunal assemblages on Cozumel suggest a heavy marine source diet in the Late Postclassic.

Symbolic Shells

Both marine and freshwater shells are symbolized in writing and art (Burke et al. 2020; Hamblin 1984:47; Schlesinger 2001:314 and Tozzer and Allen 1910:297). Shells were also traded long distances in some cases (Hamblin 1984:47; Schlesinger 2001:314) and the creatures inside them are a source of food (Schlesinger 2001:308). Shells are made into various artifacts, including adornments and instruments (Burke et al. 2020; Hamblin 1984:47; Schlesinger

2001:314; Tozzer and Allen 1910:297). Snails in general are symbolic of death, as depicted in the Bologna Codex where shell is decorated with flint points, a symbol of death (Tozzer and Allen 1910:297).

Freshwater Shells

Apple snails are associated with water, the winter solstice, death, and the goddess of fertility and childbirth Ixchel (Figure 2.9) (Burke et al. 2020; Emery 1989). Emery (1989) states apple snails are best harvested in late December through early January, and while they are considered consumed fauna there may be a ceremonial component to their use (Burke et al. 2020).

Figure 2.9 Apple snails from Baking Pot excavations (Photo by Chrissina Burke).

Marine Shells

Conch are found all over the Maya world at archaeological sites and their meat is still consumed today (Figure 2.10) (Schlesinger 2001:308). Conch trumpets have been found throughout the Maya area, including at Mayapan (Schlesinger 2001:312), on Cozumel (Hamblin 1984:47), and at Baking Pot in the faunal analysis for this research. Conch is also used to make beads and pendants, the perforation manufacturing process for which is discussed in the next chapter. Thorny oysters are also common in archaeological assemblages as personal adornments (Schlesinger 2001:314). Oliva shells are represented in the Codices as “an oval shape, pointed at each end, with a longitudinal lip and short spire at one extremity” (Tozzer and Allen 1910:297). The Oliva shell in the codices, and in Maya writing in general, represents the number zero (Tozzer and Allen 1910:298).

Figure 2.10 Conch shell

Example of Animal Symbolism in Contemporary Ritual

The *Cuch* ritual practiced today across the Maya region celebrates the continuation of life, the agricultural cycle, and fertility (Schlesinger 2001:182). The ritual transfers the cargo, or responsibility or burden, of holding the next fertility ceremony onto the next ceremony giver (Pohl 1981; Schlesinger 2001:182). The ritual has been reconstructed by Mary Pohl (1981) using both depictions of the ritual by the ancient Maya and ethnographic literature completed by the Spanish, and of the ritual as it is practiced today. Following Spanish influence on the Maya ritual, it is often practiced with regards to the patron saint of a village or in association with the Christmas holiday (Pohl 1981). To appreciate the importance of animals in the ritual, it is necessary to describe the three parts of the ceremony. The contemporary ritual incorporates bull and pig imagery, but Pohl (1981) suggests this is due to Spanish influence and argues the ritual likely involved deer and peccary in precolonial times. The coati, however, is still present in the contemporary ritual at X-Cacal, Quintana Roo (Pohl 1981).

The ritual begins with the raising of a tree or pole representing the harvest and agricultural fertility (Pohl 1981). During this stage at X-Cacal, Quintana Roo, for example, a coati impersonated by one of the performers climbs the tree and throws seeds and hangs yams and gourds on the branches to represent a “sacred tree of abundance” (Pohl 1981:514). Behaviorally, coatis are destructive to crops, making their use in the contemporary *Cuch* ritual peculiar, though other symbols surrounding the coati could better connect them with the part they play in the contemporary ritual. The symbolism of fertility associated with the coati connects its presence as the distributor of seeds and crops in the present day *Cuch* ritual, symbolizing agricultural fertility (Pohl 1981). There is a certain duality to the coati using these examples as both a natural destructor of agriculture and yet a symbol of agricultural fertility.

After the raising of the tree or pole, there is a bull fight in the contemporary *Cuch* ritual, in which a real bull or bull impersonator is lassoed and tied to a pole (Pohl 1981; Schlesinger 2001:182). This resembles ancient Maya depictions of a deer tied to a ceiba tree seen in the

Postclassic Period Madrid Codex (Figure 2.11) (Burke et al. 2020; Pohl 1981). The portion of the Popol Vuh discussing deer sacrifice discussed above may be alluded to in the *Cuch* ritual, with the deer sacrifices sometimes depicted without antlers or with the antlers cut off. Finally, a polychrome vase known as the Calcehtok vessel also includes a deer, along with a sacred tree figure (Pohl 1981) likely related to the tree or pole used in the first stage of the modern *Cuch* ritual. This tree is depicted as a deity with three dots above its ear, symbolic of a frog or toad (Dobkin de Rios et al. 1974), along with a blue-tailed snake, which Pohl (1981) suggests represents sacrifice and water for the Maya. Pohl (1981) suggests the *Cuch* ritual in ancient times used a deer instead of a bull like the contemporary ritual based on the symbolism of the deer and possible depictions of the ancient ritual. The ritual concludes by symbolically transferring the responsibility to the next ceremony giver. In the contemporary ritual, this is done by giving the next ceremony giver a pig head on top of a decorated pole to represent the cargo transfer (Pohl 1981; Schlesinger 2001:182). In ancient times however Pohl (1981) states the pig head may have been a peccary head.

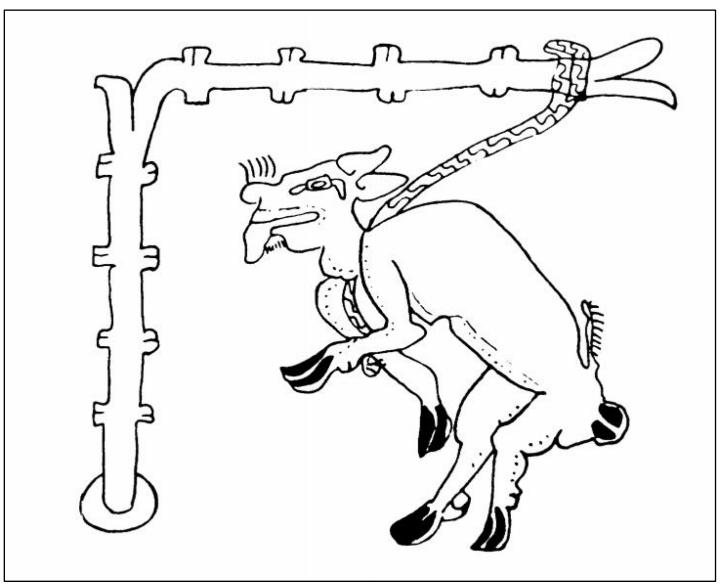

Figure 2.11 A deer without horns tied to a ceiba tree depicted in the Postclassic Madrid Codex(Pohl 1981:517).

Symbolism of Archaeological Animals

Archaeology sites throughout the Maya world contain animal remains of greater or lesser preservation. Given this, comparing zooarchaeological data with the information provided ethnographically is imperative to a holistic understanding of animal importance to the Maya. At Cueva de los Quetzales, a cave at the Classic period Maya site Las Pacayas in Guatemala, presents a well-preserved faunal assemblage associated with elite ritual activity (Emery 2004). The only entrance to the cave during the time of its use is in the center of the main "politico-religious" complex of the site to limit access (Emery 2004), as Caves hold many religious meanings to the Maya such as portals to the underworld, links to gods and ancestors, and the birthplace of divine Maya rulers (Emery 2004 and Pohl 1983). Compared with other assemblages, Cueva de los Quetzales is similar in size to those created by elite activities, such as those found at the site Arroyo de Piedra, approximately 15 km away and dating to the same period (Emery 2004).

The type of rituals interpreted from the remains at Cueva de los Quetzales are commonly thought of as exclusionary rituals. Emery (2004) explains these are often hidden from the public and employ rare or inaccessible goods or animals. Examples of more rare or elite animals could include those tied to a group or lineage, or those used for sacrifice. Often the species or ages of the animals are managed species and sub-adults, to demonstrate elite control over them (Emery 2004). Emery explains adult individuals are typically found in Maya subsistence assemblages, and subadult animals both domestic and wild are more frequently found in elite ritual deposits showing the control over the use of sub-adults based on status (Emery 2004; Pohl 1981, 1983).

Compared to the Arroyo de Piedra site, the Cueva de los Quetzales Cave had a much higher number of subadult individuals and managed species, particularly a high number of felids and canids, which are absent from Arroyo de Piedra, and a higher number of artiodactyls than Arroyo de Piedra (Emery 2004). In this case, context, age, and species are used in tandem to show the more controlled use of caves by elites for rituals. Emery (2004) also shows body portions and completeness can be used to differentiate between the ritual models using Stiner's "index of completeness" (see Stiner 1994) to calculate the ratio of limb to non-limb elements, which Emery (2004) found to be true for dogs, deer, and other intermediate and large mammals in Cueva de los Quetzales.

The side the skeletal element is from can also be a determinant of ritual activity. For example, Emery (2004) explored the importance of left sided elements commonly found in caves, which she suggests are present because of their association with the underworld and the setting sun. At Cueva de los Quetzales and Arroyo de Piedra, Emery (2004) found most mammals were represented by a proportionate amount of left and right sided elements, except for artiodactyls, specifically deer, with more left sided elements found in Cueva de los Quetzales for them.

Unfortunately, difficulty exists in determining if the faunal remains in caves are there because of cave ritual, as many of the animal species that live in or frequent caves are also used in cave rituals, and above ground ritual activity debitage can be placed in caves as an offering (Emery 2004). Furthermore, the evidence for managed sub-adult species, such as the dog, associated with caves and the underworld, whole mammals, likely sacrificed or ritually interred, combined with the comparison between Cueva de los Quetzales and Arroyo de Piedra provides a better case for the faunal remains in Cueva de los Quetzales placed there in elite cave ritual (Emery 2004).

Burials at the Maya site of Cahal Pech in Belize show the domestic dog being buried with individuals of elite status, shifting the focus of the domestic dog from subsistence to symbolic importance. The domestic dog remains excavated since 1988 at the site date to between the Preclassic and Terminal Classic periods, and include modified teeth and bone contained in burials and deposits (Stanchly and Awe 2015). Stanchly and Awe (2015) note many scholars (see Carr 1986, Clutton-Brock and Hammond 1994; Shaw 1999; Wing 1978; Wing and Scudder 1991; Wing and Steadman 1980) have observed a great reliance on domestic dogs as subsistence in the Preclassic period, though data shows a decline in their exploitation at the end of the Preclassic period.

The dog remains from the Classic period in the site core are almost exclusively modified teeth (Stanchly and Awe 2015). Burials B1-7 and H1-1 at the site contained large amounts of domestic dog teeth (Stanchly and Awe 2015). Awe (2013) states that Burial B1-7, dated to AD 550-650, the end of the Early Classic beginning of the Late Classic period, is one of the two richest tombs discovered at Cahal Pech due to the extent of elaborate grave goods including ceramics, jadeite beads, ear flares, and pendants, worked shell and bone objects such as a shell ink pot and carved bone spatula, and a dog tooth necklace among other burial goods. The tomb is the only one at Cahal Pech with multiple individuals, containing at least three individuals (Awe 2013; Stanchly and Awe 2015). Awe (2013) states this multiple individual burial may associated with the gaining influence of the major polity of Caracol in the Belize Valley at the end of the Early Classic period, as burials with multiple individuals are more common at Caracol. There was a total of 3,290 perforated dog teeth found associated with B1-7 (Stanchly and Awe

2015:230-231). The dog teeth found in the tomb Stanchly and Awe (2015) believe are from a dog tooth necklace, with an estimated number of 398 dogs needed to make the necklace based on pairing the upper incisors. What Stanchly and Awe (2015) say they do not know is if the teeth were accrued all at once or over time with natural dog deaths, but to their knowledge it is the largest collection of perforated dog teeth in the Maya Lowlands from a burial or any other offering.

Burial H1-1 also has a variety of elaborate grave goods and it is the only Terminal Classic, AD 850-950, burial of a high-ranking elite, likely the last ruler (Awe 2013), found at Cahal Pech (Awe 2013; Stanchly and Awe 2015). All the dog remains in this burial consisted of perforated teeth, but there are differences between the teeth in the H1-1 and B1-7 tombs (Stanchly and Awe 2015). The teeth in H1-1 were a mix of adult and subadult dog lower third or fourth premolars and lower first or second molars (Stanchly and Awe 2015). The age of each dog from B1-7 is unknown, and the B1-7 teeth also had incisors and canines (Stanchly and Awe 2015:232-233). The number of dogs needed to account for the teeth differ between the two burials with 481 perforated teeth total and 52 sub-adult dogs in H1-1 (Stanchly and Awe 2015:231-233).

Stanchly and Awe (2015) state apart from a Preclassic period midden at Tolok, there is a lack of evidence of dogs being used for subsistence during this period, and dogs are represented at Cahal Pech during this time in ritual burials and caches. This may be because of the significance of the dog as a guide for royalty to the afterlife, so dog remains are often found buried with them (Emery 2004; Pohl 1983; see also Tozzer and Allen 1910). It is therefore important to recognize the use of an animal in ritual context can change through time periods based on needs for subsistence or other trends.

Animals and Peri-abandonment Deposits

In most previous analyses of peri-abandonment deposits, researchers (Clayton et al. 2005; Garber et al. 2004; Houk 2000; Koenig 2014; Stanton et al. 2008), briefly mention the presence of faunal remains, but their cultural significance is generally ignored (Burke et al. 2020). In an effort to address this omission, Burke and colleagues (2020) initiated systematic analysis of faunal remains in peri-abandonment deposits as a proxy for understanding the nature and intent behind the deposits at the sites of Baking Pot and the nearby site of Xunantunich, Belize. The faunal remains in these deposits vary in taxa, exhibiting elements with low meat utility and low frequencies of butchery marks (Burke et al. 2020; Wisner et al. 2017; Wisner et al. 2018). For example, Burke, and colleagues (2020) argue fauna in domestic or midden deposits should yield more meat and display evidence of butchering, while fauna in ritual deposits should consist of more complete skeletal elements lacking evidence of butchery and a low meat yield (Götz and Stanton 2013; Masson and Peraza Lope 2013; Montero López 2013).

Based on the context of the faunal remains, the peri-abandonment deposits at Baking Pot have been identified as ritual and not domestic in nature by (Burke et al. 2020). Animal taxa identified in deposits are argued to be representative of ideological and symbolic importance to the ancient Maya (Burke et al. 2020; Emery 2003, 2004; Pohl 1981, 1983). Elite use of fauna can be determined by observing markers of restricted access through the taxon and age of individuals represented in a faunal assemblage (Emery 2004; Montero López 2013). Pohl (1983) has addressed similarities in faunal assemblages, iconography, and ethnographic and ethnohistoric accounts between burials, caches, caves, and cenotes in the Maya region, arguing that due to their link conceptually, these spaces can be analyzed as a single behavioral unit.

Archaeological Correlates

Burke et al. (2020) present a table of the archaeological correlates for fauna in peri-abandonment deposits that will be followed in this thesis. The archaeological correlates for faunal remains in peri-abandonment deposits differentiate: midden deposit fauna (Chase et al. 2004; Montero López 2013), feasting deposit fauna (Hayden 2001; Masson 1999a, b; Montero López 2009; Pohl 1981; Russell 2012:383-392), and ritual deposit fauna (Emery 2004; Pohl 1981, 1983; Stanton et al. 2008).

Midden

Burke et al. (2020:6) state middens are typically defined as "a concentrated feature of accumulated domestic refuse and may consist of a variety of artifacts and ecofacts associated with the daily lives of individuals". They also note that the archaeological correlates of faunal remains in midden contexts should manifest the following characteristics. First, the remains should be represented predominantly by locally diverse species (Burke et al. 2020; Powis et al. 1999). Midden faunal materials should also show taphonomic evidence of butchering, such as cut marks, chop marks, scrape marks, slicing, and percussion impact (Binford 1981; Burke et al. 2020; Lyman 2008; Potts and Shipman 1981), evidence of cooking seen as various levels of burning, and a minimal degree of intact elements due to processing the animal for consumption (Brady and Villagran de Brady 1989; Burke et al. 2020). Fauna in midden contexts should also consist of elements with high meat utility and a high degree of element fragmentation (Burke et al. 2020; Emery 2004) as well as elements of low meat utility discarded in the midden.

Feasting

Feasts may be defined as "the communal consumption of food and drink" (Dietler 2001:65), including both flora and fauna, "as a diverse set of cultural and ritual practices" (Burke et al.

2020). Like midden fauna, feasting fauna should have taphonomic evidence of butchering with variation based on animal processing differences (Burke et al. 2020). Foods commonly consumed by the Maya along with species that may not be commonly consumed but are known to be in feasting contexts should be present, but there should also be a lack of very species diverse fauna because of this (Burke et al. 2020; Emery 2004). Feasting contexts should also have the remains of more managed animals, that is, animal species know to be eaten by the elite, and particularly young individuals whose access is limited (Burke et al. 2020; Emery 2003, 2004; Götz and Stanton 2013; Masson and Peraza Lope 2008; Montero López 2013).

Ritual

Faunal remains in ritual contexts should not solely consist of consumed species (Burke et al. 2020; Emery 2004). Faunal remains in ritual contexts should exhibit a high level of species diversity, and local and non-local species (Burke et al. 2020; Emery 2003, 2004). Elements in ritual contexts should also be low to non-meat yielding (Figure 2.12), with a lack of cut marks or other taphonomic evidence of butchery (Burke et al. 2020; Emery 2004). Artifacts can also appear in ritual contexts, ranging from bone and shell tools, personal adornments, instruments, and more. (Burke et al. 2020 and Palka 2014:52). Ritual contexts will lack domestic remains such as everyday food preparation utensils (Palka 2014:52), and average domestic consumed faunal remains (Burke et al. 2020).

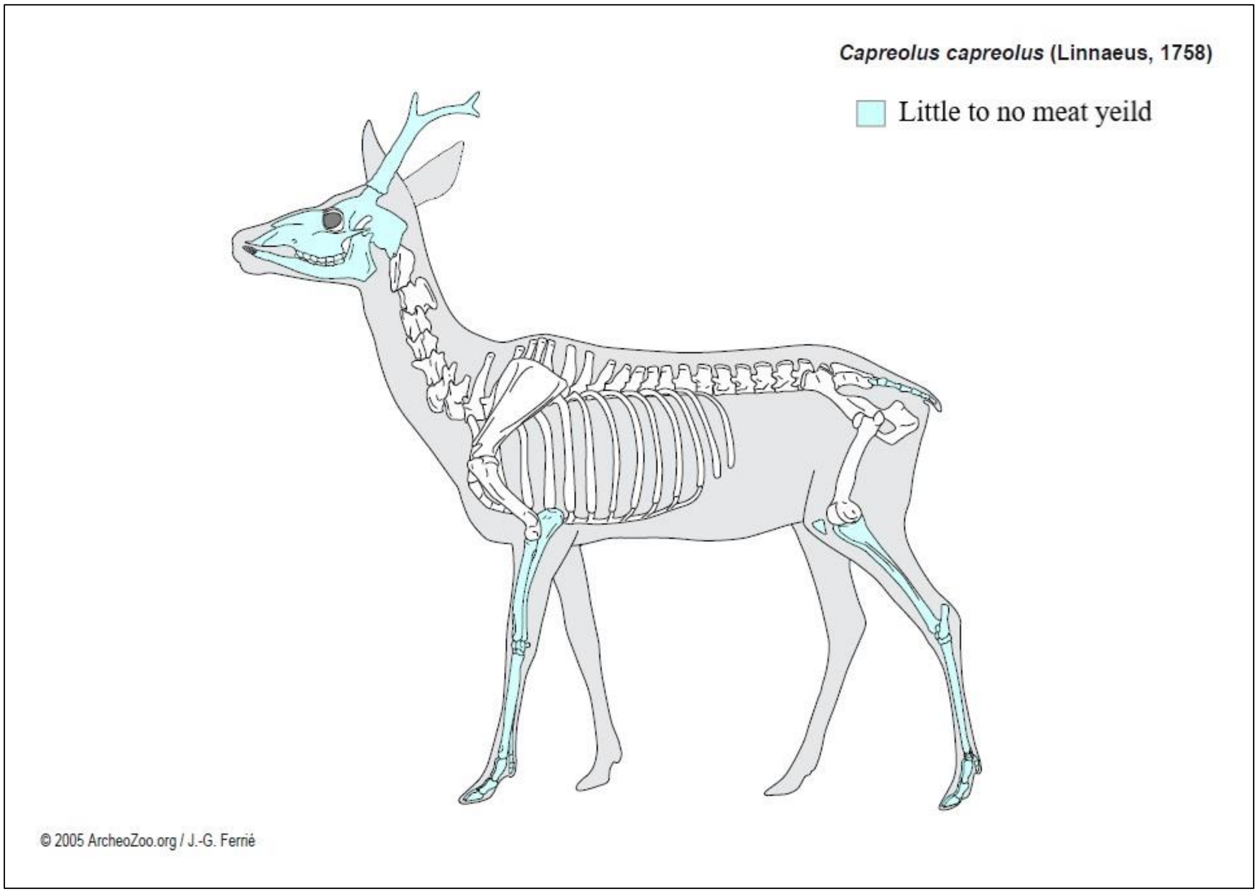

Figure 2.12 A Roe deer skeleton (similar to White-Tailed) depicting low to non-meat yielding portions (Image adapted from J.-G. Ferrié 2005 ArchéoZoothèque).

This chapter provides a breakdown of the framework used in this research. The information on animal species in this chapter is referenced in the discussion of the data and conclusions about the faunal remains. The correlates presented here are used later in the analysis of the faunal remains in the Baking Pot peri-abandonment deposits to access their purpose. The next chapter outlines the methods used and the theory informing the research methods to answer my research questions.

Chapter 3: Materials, Methods, and Theoretical Underpinnings of Zooarchaeology

This chapter outlines the analysis of faunal remains from peri-abandonment deposits at Baking Pot. The materials and methods used for the analysis, including species comparatives used, and cleaning and identification of taphonomic effects are discussed here. Theoretical underpinnings of zooarchaeology, Middle-Range Theory, and analogy are explored in relation to informing the methods used in this research.

Baking Pot Faunal Materials

Faunal remains in peri-abandonment deposits at the ancient Maya site of Baking Pot in Belize have been excavated by the BVAR Project over multiple field seasons. The structures associated with these deposits are Structures B2, B6, B7, and B15. The excavated faunal materials were prepared for export from the country of Belize to the NAUDAFAL by lead project zooarchaeologist Dr. Chrissina Burke, myself, and other project zooarchaeologists. The exports were completed in compliance and with permission from the Belize Institute of Archaeology.

Cleaning Methods

All faunal remains were dry brushed with a dry, soft bristle, toothbrush to remove all excess dirt. The other BVAR Project zooarchaeologists and I assessed any remains that were not positively identified and bagged as faunal remains in the field to determine if the remains were human or animal and re-bagged and labeled them accordingly. All bags of faunal remains were then counted, and the quantity was written on the associated artifact card and line on the export form before the bag was boxed with others for export to the NAUDAFL. Most marine and freshwater shell materials were analyzed in Belize by the project zooarchaeologists during the summer 2018 field season and not exported. The information needed from the shells for the purposes of the BVAR Project, this research, and other student research could be collected in the field using comparative collections and literature.

Theory Informing Methods

While founded and developed through the Processual archaeology paradigm, zooarchaeology benefits from aspects of both Processual and Postprocessual paradigms, specifically the use of quantitative theories for data collection and analysis as well as symbolic and humanistic approaches for interpreting data patterns. For this research Middle-Range Theory, a byproduct of Processual archaeology, is employed to structure data collection and analysis methods to interpret the data collected in conjunction with Cognitive Archaeology (also often referred to as Structural or Symbolic Anthropology, see Chapter 5) to explore the symbolic use of animals by the ancient Maya. Middle-Range Theory examines the various effects on the archaeological record to separate natural processes from cultural to identify human behaviors (Raab and Goodyear 1984). For the purposes of this research, Middle-Range Theory is applied to emphasize data collection procedures and statistical analyses. Zooarchaeology relies heavily on standardized methods to allow comparison of multiple datasets (Lyman 1994).

Processual archaeology was initially described as the New Archaeology, a paradigm developed and advocated by Lewis Binford, to strengthen archaeology’s scientific pursuits and expand beyond the limits of the Culture History paradigm. The Culture History approach relied on simple classifications of culture, while Processual based theories investigated human behavior through the effects of natural processes on cultural adaptations (Flannery 1972). Early in his research, Binford (1962) argued that archaeologists should understand their data in terms of systems, focusing on each system (natural and cultural) and its interactions could help them better understand human behaviors. As such, Processualism is a highly data-based approach, favoring objective testing methods over more subjective ways of interpreting data.

Given the reliance of Processual theories on a systems approach and statistically significant and empirically collected data, the research conducted is limited to objective questions that do not often delve into more humanistic themes. Processual theories also seek to create universal laws, which can be problematic, making overgeneralizations. While these approaches do not often address questions of symbolism, ritual, individuality, gender, agency, or any other questions lacking direct data the theoretical underpinnings presented by Processual archaeologists is imperative to zooarchaeological research because it brings a cohesive and standardized framework for data collection and analysis (Reitz and Wing 2008:27-30).

Middle-Range theorists applied analogy to explore data patterns. As defined by Binford (1967:1) analogy is “an inferential argument based on implied relationships between demonstrably similar entities.” Analogy can compare different data with the archaeological record, such as ethnographic, ethnohistoric, or iconographic texts, and in comparing these data with archaeological assemblages expand interpretations, or fill in gaps, so to speak. Analogy can be separated into two types, Direct Historical and Archaeological (Stahl 1993). Direct Historical Analogy uses ethnographic information from a contemporary culture to fill in knowledge gaps through time about the culture archaeologically (Stahl 1993). Marcus and Flannery (1994) illustrate where the Direct Historical approach presents challenges in colonized areas. Marcus and Flannery (1994) use ethnohistoric records by the Spanish to explore Zapotec ritual and symbolism. The authors warn these ethnographic and ethnohistoric accounts may introduce biases based on the views of the colonized by the colonizers. Even considering Binford (1967) argues analogy cannot solely rely on interpretations based on ethnographic data, this project employs a Direct Historical approach, with the inclusion of a comparative model, Cognitive Archaeology, to assist with reducing bias as argued by Stahl (1993). Marcus and Flannery (1994) also suggest the incorporation of Cognitive Archaeology to decipher Zapotec ritual and symbolism from material culture for this same purpose.

Archaeological Analogy can be used to infer similarities between assemblages from different contexts, such as caves or tombs. Archaeological Analogy is used in this research by comparing faunal assemblages to identify patterns in the symbolic use of animals, such as overlap between different taxa or inclusion of one species over another in each context.

Taphonomy is another major component of Middle-Range Theory. Taphonomy is defined as the transition of organics from the biosphere to the lithosphere or geological record (Efremov 1940; Lyman 1994:1). Binford introduced the concept of taphonomy, originally a paleontological term, to Middle-Range Theory (O'Brien, Lyman, and Schiffer 2005). The recognition of taphonomic processes on archaeological material culture transitions a static archaeological record to a dynamic cultural system (O'Brien, Lyman, and Schiffer 2005). Only after identifying taphonomic effects on archaeological materials can human behaviors be understood (O'Brien, Lyman, and Schiffer 2005). Taphonomy, in this research, will also be used to determine if species are invasive, if elements may have been displaced stratigraphically, and any environmental effects skewing analysis of cultural modification on bones. While Middle-Range Theory and the use of analogy inform the methods outlined below used in this research, symbolic anthropology will be used later in the discussion, as it informs the interpretation of the data.

Data Collection Methods

Data collected on the faunal materials from Baking Pot includes, element, portion, body portion, side, sex, age, taxon, size class, taphonomic and cultural modifications, and artifact type when applicable based on element preservation. The faunal remains were catalogued in an Excel spreadsheet, with columns for provenience information, NAU catalog number, quantity, taxonomic information, skeletal information, cultural and taphonomic modifications, bone artifact information, and comments. Descriptive zooarchaeological statistical analyses in accordance with Lyman (1994), were used to determine frequencies of taxon, element, side, body portion, cultural modifications, and taphonomy to inform interpretations of human behaviors. Statistical analyses mainly relied on Number of Identified Specimens (NISP), due to the preservation of the skeletal elements. As discussed in Chapter 4, preservation did not allow for the majority of the elements to be sided, rendering Minimum Number of Individuals (MNI) unusual and biased. Without MNI the bias of overrepresentation presented by NISP must be recognized, and tables of all elements and ascertainable sidedness are presented by taxon. Taphonomic effects were noted in the database during analysis and in my interpretations about the fauna.

Zooarchaeological Data

To begin the data collection process, first, the element and side of a bone specimen should be discerned. This is done by identifying diagnostic anatomic features on the bone. This may begin with the shape of the cross section of the bone. For example, many mammal tibiae shafts are triangular in cross shape. Features on bone are used for identification, for example, the tibial crest is a projection on the cranial surface towards the proximal end of the tibia. Once the tibial crest confirms the element is a tibia, it can also be used to side the element. Holding the tibia with the crest facing away from you, the crest will hook towards the side the tibia is from. If it hooks to the right, it is a right tibia. Nutrient foramen, holes on bone where veins travel through, are also useful for identification of element and side. On the tibia for example, the nutrient foramen is on the caudal and lateral surface, and the foramen travels down towards the distal end. The nutrient foramen on a tibia is on the same side the element is from. If you had just a tibia shaft fragment, you could identify the element and side by orienting its features.

Second, To determine taxon, comparative texts and websites, along with the comparative collection in the NAUDAFAL, and trips to the Museum of Northern Arizona Charles L. Douglass Comparative Collection, and the Stanley J. Olsen Zooarchaeological Collection at the Arizona State Museum were used to compare elements not found in the NAUDAFAL comparative or adequately represented in the comparative literature. Taxonomic delineations were made conservatively to the lowest taxonomic category achievable based on diagnostic features.

Natural and Cultural Taphonomic Effects

Third, taphonomic effects are identified. Taphonomic effects can disguise or eliminate cultural modifications made by humans, such as butchery marks, and they can also place elements out of their primary context, such as burrowing animal activity or other natural events. Natural taphonomic effects include but are not limited to root etching, burning due to forest fires, exfoliation, diagenesis, soil staining, and animal gnawing. Root etching is caused by the acidity in roots and appears macroscopically on the surface of bone as a configuration of wavy lines (Fisher 1995:43). Burning occurs in three variations. Browning is a scorched surface on the bone, or superficial burning due to low heat (Lyman 1994:385). Carbonized bone turns black as the collagen in bone is carbonized (Lyman 1994:385). Lastly, calcined bone is white due to continued heating and oxidation of bone (Lyman 1994:385). Exfoliation is the loss of cortical bone due to weathering (Fisher 1995:31).

Cultural taphonomic effects are caused by human behaviors and may include but are not limited to animal butchery processes including cut marks, scrape marks, and chop marks, burning, bone working into tools, adornments, musical instruments, and other artifacts, and residues left on bone such as paint and ochre. Butchery is defined by Lyman (1987:252) as “the human reduction and modification of an animal carcass into consumable parts.” Lyman (1994:294) states this definition includes, but is not limited to, products for consumption as food. Intentionally placed holes in artifacts can be differentiated from holes created by natural taphonomic effects. Biconally perforating is the process of drilling an object from both sides to meet in the middle to create a hole (Garber 1989). What are referred to as drilled holes here are uniconally drilled or drilled all the way through in one direction (Garber 1989). Both biconnaly and uniconally drilled holes have a conical or collapsed smooth shape in the direction of the drilling and produce more integrally sound perforations than those created by natural taphonomic puncturing of the shell from processes such as roots or pebbles (Hohmann 2014b:67; Tappan et al. 2019). The types of drilling can therefore be differentiated. Noting taphonomic effects on the faunal remains will be of considerable importance in inferring human behaviors.

The next chapter will discuss the results of the faunal analysis conducted through these methods and frameworks. Components of the first question posed in this thesis will be addressed including taxon, element, side, body portion and natural and cultural taphonomic effects. Middle-Range Theory and its emphasis on taphonomy as a theoretical underpinning is reflected in the next chapter.

Chapter 4: Results of Zooarchaeological and Taphonomic Analyses

Below are the results of faunal analysis for peri-abandonment deposits at Baking Pot. The deposits are discussed by associated structures and not reduced further by excavation unit. The units arbitrarily divide several of the deposits along their associated structures and were placed in order to control recording and collection in the field. This suggests that limited insight will be gleaned from the breakdown of materials by unit, specifically given my questions. Considering this, four peri-abandonment deposits are described and presented herein. Deposits occur at Structures B15 (relabeled by the BVAR Project from B17), B2, B6, and B7.

Contextual information such as lot and level for the faunal remains comes from the artifact cards completed during excavation. This leaves limitations for what can be known about the deposits. Given the interests here, faunal remains with associated artifact cards having any descriptor tied to a deposit were considered part of this research. Complete discussion includes all taxon, element and side distribution, taphonomic effects, and artifact types when applicable. The ambiguity of deposit designation occurs where artifact cards were labeled with contexts such as “humus” or “collapse” for example, or excavators were unaware they had encountered a peri-abandonment deposit. Given the unexpected and sometimes delayed identification of the deposits, faunal remains from these contexts could be part of the deposit. To include information from these ambiguous contexts, a brief discussion of the faunal remains to taxonomic level is undertaken below. Additional information on context associated by unit, level, and lot were recorded, and these data, along with additional zooarchaeological information, are available in NAU Open Knowledge for future investigators (https://openknowledge.nau.edu).

Deposits at Structure B2

The Structure B2 deposit has an NISP of 153 (Table 4.1). The largest portion of the deposit is apple snails (*Pomacea flagellata*), with an NISP of 57. The apple snails could be overrepresented due to fragmentation. As mentioned previously, their shells are thin and prone to frequent crushing. Even considering fragmentation, apple snails still make up a significant portion of the deposit in comparison to relatively low numbers of other identified taxa. Aves are present, with one medium size bird long bone fragment and one turkey (cf. *Meleagris* sp.) humerus fragment. If size classes are combined, Class Mammalia has a total NISP of 60, the majority of which are small-medium and large sizes equally. Identifications more specific than Mammalia include two probable white-tailed deer (cf. *Odocoileus virginianus)* specimens, one white-tailed deer specimen, and 22 *Agouti paca* specimens. Reptilia are represented with eight medium-large turtle carapace fragments. The only other shell in the deposit, and single faunal artifact in the deposit is a marine shell (*Americoliva reticularis*) tinkler with a drilled hole (Figure 4.1).

Figure 4.1 Marine shell tinkler from the Structure B2 deposit.

Table 4.1 Identified specimens from the Structure B2 deposit.

Taxon	**NISP**	**%NISP**
Class Aves MED	1	0.65%
cf. *Meleagris* sp.	1	0.65%
Class Mammalia SM-MED	26	16.99%
Class Mammalia MED	5	3.27%
Class Mammalia MED-LG	3	1.96%
Class Mammalia LG	26	16.99%
cf. *Odocoileus virginianus*	2	1.31%
Odocoileus virginianus	1	0.65%
Agouti paca	22	14.38%
Order Testudines MED-LG	8	5.23%
Americoliva reticularis	1	0.65%
Pomacea flagellata	57	37.25%
Total:	**153**	**100.00%**

Elements within the B2 deposit were not sided, even after identification of the element, to a lack of discernible anatomical features. No cut marks were identified on the elements in the deposit, and the only evidence of worked bone is the tinkler described above. Two instances of polish on elements were found, but the nature of these taphonomic effects cannot be confidently identified as cultural. One medium-large mammal long bone fragment displayed calcined and carbonized burning, but like the polish, it is not possible to definitively state these effects were culturally produced. Burning in ritual deposits is present through burning objects like candles and *incencarios*, as well as burning animal remains, sometimes in associated hearths Brown (2002:103) Exfoliation was the most common taphonomic effect with 24 elements lacking layers of the cortical surfaces. Finally, some of the exfoliated elements also included substantial root etching effects (Figure 4.2 and Table 4.2).

Figure 4.2 Example of root etching on faunal remains. A hair pin from the Structure B6 deposit.

Table 4.2 Taphonomic modifications in the Structure B2 deposit.

Modification	**NISP**
Calcined Burned	1
Carbonized Burned	1
Drilled Hole	1
Exfoliation	24
Root Etching	2
Polish	2
Total:	**31**

*Some elements have multiple or no modifications and therefore these numbers do not equal the taxonomic and element NISP.

Faunal remains with contexts labeled humus and/or collapse, have a total NISP of 315, with 150 of those specimens identified as mammals of various size classes. There are 14 specimens cf. Artiodactyla and Artiodactyla, and four either cf. Cervidae or Cervidae as well. Taxon identified from Cervidae include four cf. *Mazama* sp. and *Mazama* sp. specimens combined, and 21 cf. *Odocoileus virginianus* and *Odocoileus virginianus* specimens combined. Of the Family cf. Tayassuidae and Tayassuidae, there are 25 specimens combined, with four *Pecari Tajacu* specimens. There are seven Order cf. Testudines and Testudines specimens combined. There are also one or two specimens each of cf. *Alouatta* sp., cf. *Canis lupus familiaris*, cf. *Tapirus Bairdii*, *Cuniculus paca*, and *Sylvilagus* sp. Shells account for 73 of the total specimen (37.91%), with only one marine shell specimen of *Americoliva reticularis* and the remainder freshwater shell including *Nephronaias* sp. bivalves, *Pachychilus indiorum* and *Pachychilus glaphyrus* jute, and apple snail (*Pomacea flagellata*).

Deposits at Structure B6

The deposit at B6 has a total NISP of 1703. There are a wide variety of fauna in the B6 deposit. The largest quantity belongs to Class Mammalia with 797 specimens of various size classes. The second largest group, with 556 specimens, is *Pomacea flagellata*. Including the apple snails, shells have an NISP of 590. Shell species include *Lobatus gigas* and cf. *Lobatus gigas*, *Americoliva reticularis* and cf. *Americoliva reticularis*, *Dentalium* sp., *Nephronaias* sp., *Orthalicus princeps*, *Pachychilus glaphrrus*, *Prunum apicinum*, and Order Decapoda and Family cf. Strombidae. There are also 20 Chordata specimens, 51 Aves specimens, two Actinopterygii specimens, and 10 Reptilia specimens. Order Testudines and specimens closely following have a NISP of 89. Order Squamata and those closely following have a NISP of 16. There is one cf. *Aratinga* sp. and one cf. *Meleagris* sp. specimen as well. There are nine *Dasypus novemcinctus* specimens, 35 *Odocoileus virginianus* and closely following specimens combined, seven *Tayassu pecari* and closely following specimens, 14 *Canis lupus familiaris* specimens, one cf. *Leopardis pardalis* specimen, one cf. *Crocodylus moreletii* specimen, and more (see Table 4.3).

Table 4.3 Identified specimens from the Structure B6 deposit.

Taxon	**NISP**	**%NISP**
Phylum Chordata SM	3	0.18%
Phylum Chordata SM-MED	10	0.59%
Phylum Chordata MED	2	0.12%
Phylum Chordata MED-LG	5	0.29%
Class Actinopterygii SM-MED	2	0.12%
Class Aves SM	18	1.06%
Class Aves SM-MED	24	1.41%
Class Aves MED	9	0.53%
Order cf. Accipitriformes MED	1	0.06%
Order cf. Accipitriformes MED-LG	1	0.06%
cf. *Aratinga* sp.	1	0.06%
cf. *Meleagris* sp.	1	0.06%
Class Mammalia	2	0.12%
Class Mammalia SM	33	1.94%
Class Mammalia SM-MED	114	6.69%
Class Mammalia MED	303	17.79%
Class Mammalia MED-LG	215	12.62%
Class Mammalia LG	130	7.63%
Dasypus novemcintus	9	0.53%
Didelphis virginiana	1	0.06%
Philander opossum	1	0.06%
Family Platyrrhini MED	1	0.06%
Order Artiodactyla MED-LG	7	0.41%
Order cf. Artiodactyla LG	5	0.29%
cf. *Mazama americana*	1	0.06%
Odocoileus virginianus	29	1.70%
cf. *Odocoileus virginianus*	6	0.35%
Tayassu pecari	2	0.12%
cf. *Tayassu pecari*	5	0.29%
Canis lepus familiaris	14	0.82%
Family Felidae MED-LG	1	0.06%
cf. *Leopardus pardalis*	1	0.06%
Order Rodentia SM	7	0.41%
cf. *Agouti paca*	1	0.06%
cf. *Liomys salvini*	2	0.12%
Class Osteichthyes SM	4	0.23%
Class Reptilia SM	1	0.06%
Class Reptilia SM-MED	1	0.06%
Class Reptilia MED	8	0.47%
Order Crocodilia MED-LG	1	0.06%
Order cf. Crocodilia MED	1	0.06%

Taxon	NISP	%NISP
Order cf. Crocodilia MED-LG	1	0.06%
cf. *Crocodylus moreletii*	1	0.06%
Order Squamata SM-MED	11	0.65%
Order cf. Squamata SM	1	0.06%
Order cf. Squamata MED	4	0.23%
Family cf. Boidae SM-MED	6	0.35%
Family cf. Boidae MED	2	0.12%
Family cf. Boidae MED-LG	1	0.06%
Order Testudines SM	7	0.41%
Order Testudines MED	72	4.23%
Order Testudines MED-LG	6	0.35%
Order Testudines LG	3	0.18%
Order cf. Testudines MED	1	0.06%
cf. *Claudius angustatus*	1	0.06%
Order Anura	13	0.76%
Order Decapoda	1	0.06%
Family cf. Strombidae	8	0.47%
Lobatus gigas	2	0.12%
cf. *Lobatus gigas*	2	0.12%
Americoliva reticularis	4	0.23%
cf. *Americoliva reticularis*	2	0.12%
Pomacea flagellata	556	32.65%
cf. *Pomacea flagellata*	3	0.18%
Dentalium sp.	1	0.06%
Nephronaias sp.	5	0.29%
Orthalicus princeps	3	0.18%
Pachychilus glaphyrus	1	0.06%
Prunum apicinum	2	0.12%
Total:	**1703**	**100.00%**

Taphonomic effects to the faunal remains in the B6 deposit include natural and human created modifications (Table 4.4). Cultural modifications present are those created during the artifact-making process, including bone working, cut working, cut worked holes, drilled holes, and unidentified working. Burning is present on 33 specimens and may be natural or cultural. A total of four instances of cut marks are present in the B6 faunal remains. Cut marks are present on a medium size Class Mammalia long bone fragment, a large size Class Mammalia vertebra with parallel cut marks on the dorsal and lateral surface and cut marks on a large size Class

Mammalia refitted vertebra. Natural taphonomic effects include carnivore gnawing, chipping back caused by carnivores, rodent gnawing, limestone exfoliation, root etching, and burning if it is naturally caused.

Table 4.4 Taphonomic modifications in the Structure B6 deposit.

Modification	**NISP**
Browned Burned	21
Bone Working	4
Chipped Back	7
Carnivore Gnawing	2
Calcined Burned	6
Cut Marks	4
Carbonized Burned	6
Cut Worked	17
Cut Worked Hole	1
Drilled Hole	13
Green Break	3
Lime Exfoliation	3
Polish	6
Root Etching	23
Rodent Gnawing	4
Worked	43
Total:	**163**

*Some elements have multiple or no modifications and therefore these numbers do not equal the taxonomic and element NISP.

There are a total of 63 artifacts from the B6 deposit. Artifacts include five bone awls, six bone beads, six blanks, eight bone pendants, seven fragments of identified detritus, two hair pins, eight needles, one preform, two shell beads, two shell gorgets, two shell pendants, eight tooth beads, four shell tinklers, and two unknown artifacts that are teardrop in shape and made of marine shell (Figure 4.3). All 14 *Canis lupus familiaris* specimens are teeth, many of which are tooth beads with a drilled hole for stringing (see Stanchly and Awe 2015). Both the Family Felidae and *Leopardis pardalis* specimens are also teeth, the ocelot incisor is identified as a tooth bead or pendant.

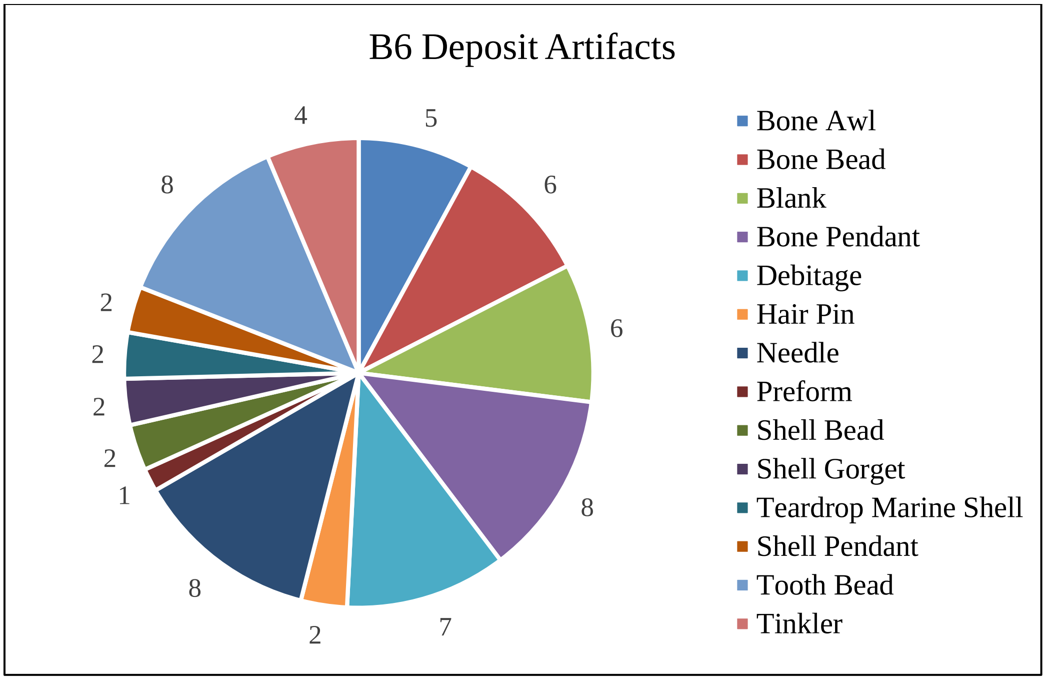

Figure 4.3 Faunal bone artifacts from the Structure B6 deposit.

The humus, architectural collapse, and not applicable (NA) contexts at Structure B6 have an NISP 1023. The largest portion of the fauna are mammals of various sizes, with an NISP of 678, 66.28%. Amphibia, Reptilia, Rodentia, and Aves are also represented. There are 34 white tailed deer or probable deer specimens, and four *Mazama* sp. specimens, one of which is closely following. There are 141 shell specimens, 107 of which are *Pomacea flagellata*, accounting for 10.46% of the assemblage.

Deposits at Structure B7

The deposit at Structure B7 also included three human burials, 4-1, 4-2, and 4-3, discussed in detail by Davis (2018: 39-41). Unfortunately, the faunal remains were not identified in the field as associated with a specific burial. Therefore, the fauna cannot be discussed in association with a specific burial but instead must be discussed in a more general sense. The burial and collapsed sediments above the burial contexts at Structure B7 have an NISP of 146(Table 4.5). There are 13 Class Aves specimens, 101 Class Mammalia specimens, one Order Anura specimen, six Order Rodentia specimens, seven Order Squamata specimens, and one Order Decapoda specimen. Including Order Decapoda, shells have a combined NISP of six. There is one *Odocoileus virginianus* specimen present and nine turtle specimens present.

Table 4.5 Identified specimens from Structure B7 burials.

Taxon	**NISP**	**%NISP**
Order Anura	1	0.68%
cf. *Hyla* sp.	1	0.68%
cf. *Rana* sp.	1	0.68%
Class Aves SM	4	2.74%
Class Aves SM-MED	9	6.16%
Class Mammalia SM	5	3.42%
Class Mammalia SM-MED	32	21.92%
Class Mammalia MED	14	9.59%
Class Mammalia MED-LG	45	30.82%
Class Mammalia LG	5	3.42%
Odocoileus virginianus	1	0.68%
Order Rodentia	6	4.11%
Order Squamata	7	4.79%
Family Testunudae	9	6.16%
Order Decapoda	1	0.68%
Oliva sp.	1	0.68%
Pomacea flagellata	2	1.37%
Prunum apicinum	2	1.37%
Total:	**146**	**100.00%**

The deposit context at Structure B7 has an NISP of 535 and a wide variety of taxon. The largest portion of the fauna are Class Mammalia of various size classes with an NISP of 200 specimens. Mammals identified to a specific taxon include 14 Artiodactyla, with 10 identified further to *Odocoileus virginianus*, one cf. *Felis pardalis* specimen, one *Didelphis virginiana*, nine *Sylvilagus* sp. specimens, and six Order Rodentia. The only fish in the deposit is one Actinopterygii specimen. With several different size classes represented, Aves have an NISP of

94. Birds identified beyond Class include one Order cf. Accipitriformes specimen, one cf. *Ergetta caerulea* specimen, one cf. *Melanerpes formicivorus* specimen, two Order cf. Galliformes specimens, one *Meleagris* sp. specimen, three Family Psittacidae specimens, and one cf. *Aratinga* sp. specimen.

Reptiles in the deposit include two Class Reptilia specimens, one cf. *Crocodylus moreletii* specimen, 49 Order Testudines specimens, and one cf. *Kinosternon* sp. specimen. There is also one Order Anura specimen present. The remainder of the fauna in the B7 deposit are shells, the majority of which are *Pomacea flagellata* with an NISP of 90, or 16.82% of the assemblage. Other shells include two Order Decapoda specimens, one Family cf. Strombidae specimen, two cf. *Lobatus* specimens with one identified further to cf. *Lobatus gigas*, three *Dibaphimitra florida* specimens, 12 *Americoliva reticularis* specimens, seven various *Oliva* specimens, one *Olivella* sp. specimen, 15 *Nephroniais* sp. specimens, and four *Prunum apicinum* specimens (Table 4.6).

Table 4.6 Identified specimens from the Structure B7 deposit.

Taxon	**NISP**	**%NISP**
Phylum Chordata	1	0.19%
Class Actinopterygii	1	0.19%
Class Aves SM	52	9.72%
Class Aves SM-MED	33	6.17%
Class Aves MED	4	0.75%
Class Aves MED-LG	3	0.56%
Class Aves LG	1	0.19%
Class cf. Aves LG	1	0.19%
Order cf. Accipitriformes	1	0.19%
cf. *Egretta caerulea*	1	0.19%
cf. *Melanerpes formicivorus*	1	0.19%
Order cf. Galliformes	2	0.37%
Meleagris sp.	1	0.19%
Family Psittacidae	2	0.37%
Family cf. Psittacidae	1	0.19%
cf. Aratinga sp.	1	0.19%
Class Mammalia SM	19	3.55%

Taxon	NISP	%NISP
Class Mammalia SM-MED	45	8.41%
Class Mammalia MED	50	9.35%
Class Mammalia MED-LG	59	11.03%
Class Mammalia LG	27	5.05%
Order Artiodactyla	1	0.19%
Order cf. Artiodactyla	3	0.56%
Odocoileus virginianus	8	1.50%
cf. Odocoileus virginianus	2	0.37%
cf. *Leopardus pardalis*	1	0.19%
Didelphis virginiana	1	0.19%
Sylvilagus sp.	9	1.68%
Order Rodentia	6	1.12%
Class Reptilia MED	2	0.37%
cf. *Crocodylus moreletii*	1	0.19%
Order Testudines SM-MED	5	0.93%
Order Testudines MED	41	7.66%
Order Testudines LG	3	0.56%
cf. *Kinosternon* sp.	1	0.19%
Order Anura	8	1.50%
Order Decapoda	2	0.37%
Family cf. Strombidae	1	0.19%
cf. *Lobatus* sp.	1	0.19%
cf. *Lobatus gigas*	1	0.19%
Dibaphimitra florida	3	0.56%
Americoliva reticularis	12	2.24%
Oliva porphyria	2	0.37%
Oliva sayana	1	0.19%
Oliva sp.	3	0.56%
cf. *Oliva* sp.	1	0.19%
Olivella sp.	1	0.19%
Nephroniais sp.	15	2.80%
Pomacea flagellata	90	16.82%
Prunum apicinum	4	0.75%
Total:	**535**	**100.00%**

Taphonomic effects to the faunal remains from deposit B7 include natural and human created modifications. Natural effects include exfoliation, sometimes due to limewater, root etching, and rodent and carnivore gnawing. Burning is also present on 13 specimens and may either be from natural or human causes, such as cooking for consumption or as a result of being near *incensarios* (incense burners). The remainder of the taphonomic effects are cultural and represent the artifact manufacturing process. These include working, polish, and cut and drilled holes. Cut marks are present on the top of a bone awl of three refitting fragments, and two cut marks on the anterior side of a right Little Blue Heron (cf. *Egretta caerulea*) tibiotarsus (Table 4.7). There are a total of 32 faunal artifacts in the B7 deposit. Artifacts include five bone awls, one bone bead, two bone needles, two shell beads, one possible shell pendant, 16 tinklers, one possible tinkler, and four unknown artifact types due mostly to taphonomic effects (Figure 4.4).

Table 4.7 Taphonomic modifications in the Structure B7 deposit.

Modification	**NISP**
Browned Burned	12
Carnivore Gnawing	1
Calcined Burned	3
Cut Marks	4
Cut Worked	7
Cut Worked Hole	1
Drilled Hole	7
Exfoliation	74
Green Break	1
Lime Exfoliation	18
Polish	8
Root Etching	21
Rodent Gnawing	4
Worked	32
Total:	**193**

*Some elements have multiple or no modifications and therefore these numbers do not equal the taxonomic and element NISP.

The humus and collapse contexts at Structure B7 have a total NISP of 179. Class Mammalia of various size classes have a total NISP of 76. Mammals identified further include specimens from Order Rodentia, Family Cervidae, *Odocoileus virginianus*, and *Pecari tajacu*. Aves are represented with 13 specimens of various size classes, two Order cf. Psittaciformes, and one Order cf. Piciformes. There is only one fish specimen (*Sparisoma viride*). Reptiles are represented with one Class Reptilia, seven Order Testudines, and 13 Order Squamata specimens.

The remaining fauna are shells, including one *Nephronaias calamitatum* specimen, nine *Pachychilus indiorum* specimens, and 24 *Pomacea flagellata* specimens.

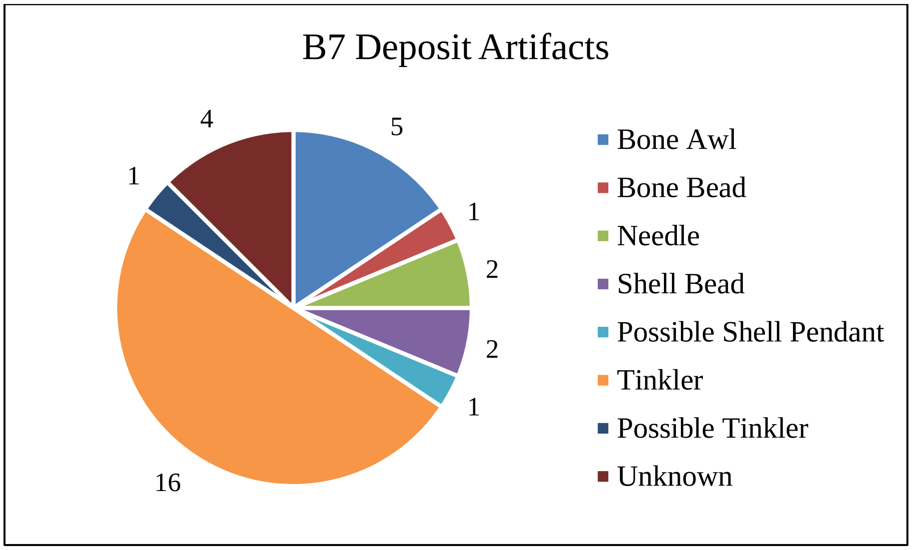

Figure 4.4 Faunal bone artifacts from the Structure B7 deposit.

Deposit at Structure B15

The deposit at Structure B15, formerly known as B17, has an NISP of 175 (Table 4.8). The largest portion of the deposit is apple snails (*Pomacea flagellata*), with an NISP of 63. The apple snails, however, could be overrepresented due to fragmentation. Even considering fragmentation, apple snails still make up a significant portion of the deposit in comparison to relatively low numbers of other identified taxa. Class Mammalia of various sizes have an NISP of 26. Specimens identified further than Class Mammalia include nine *Odocoileus virginianus* fragments, one Family Dasypodidae specimen, one Family Felidae specimen, and three *Sylvilagus* sp. specimens.

Table 4.8 Identified specimens from the Structure B15 deposit.

Taxon	**NISP**	**%NISP**
Phylum Chordata	2	1.14%
Class Amphibia	3	1.71%
Class Aves SM	6	3.43%
Class Aves SM-MED	4	2.29%
Class Aves MED	1	0.57%
Class Aves MED-LG	1	0.57%
Family cf. Momotidae	2	1.14%
Class Osteichthyes	1	0.57%
Class Mammalia	8	4.57%
Class Mammalia SM	4	2.29%
Class Mammalia MED	6	3.43%
Class Mammalia MED-LG	6	3.43%
Class Mammalia LG	2	1.14%
cf. Odocoileus virginianus	1	0.57%
Odocoileus virginianus	8	4.57%
Family Dasypodidae	1	0.57%
Family Felidae	1	0.57%
cf. *Sylvilagus* sp.	2	1.14%
Sylvilagus sp.	1	0.57%
Order cf. Crocodylia LG	3	1.71%
cf. *Crocodylus moreletii*	6	3.43%
Order cf. Testudines MED	1	0.57%
Order Testudines MED	17	9.71%
Family cf. Strombidae	1	0.57%
Family Strombidae	2	1.14%
cf. *Lobatus* sp.	1	0.57%
Lobatus gigas	1	0.57%
cf. *Oliva* sp.	1	0.57%
cf. *Olivella* sp.	1	0.57%
cf. *Olivella floralia*	1	0.57%
Prunum apicinum	2	1.14%
Dentalium sp.	3	1.71%
cf. *Nephronaias* sp.	1	0.57%
Nephronaias sp.	8	4.57%
Pachychilus indiorum	3	1.71%
Pomacea flagellata	63	36.00%
Total:	**175**	**100.00%**

Aves are present with 12 specimens identified to Class Aves and one Family cf. Momotidae specimen. There are three Class Amphibia specimens. Reptiles are also represented by three large Crocodylia specimens and six specimens cf. *Crocodylus moreletii*. Only two specimens could not be identified further than Phylum Chordata. The remainder of the fauna in the deposit are shells including Family Strombidae, *Lobatus* species, *Oliva* species, *Olivella* species, *Prunum apicinum*, *Nephronaias* sp., and *Pachychilus indiorum* specimens, along with the previously mentioned *Pomacea flagellata* fragments.

In the Structure B15 deposit, no elements could be sided. Among sided elements, however, there does not appear to be an element side preference, as both right and left sided elements appear almost equally. Only six cranial portion elements belong to cf. *Crocodylus moreletii* teeth. The majority of the taphonomic effects on the fauna are natural and include exfoliation and exfoliation because of lime, root etching, rodent gnawing, and staining (Table 4.9). Cultural modifications to the remains include biconical perforation, carving, cut working, working, drilled holes, polish, and shell debitage, necessary processes for bone artifact creation. Completed artifacts in the deposit include needles, personal adornments, such as a shell bead, a shell disk, a shell ring, shell tinklers, and a conch (*Lobatus gigas*) instrument with the apex cut worked off (Figure 4.5).

The Humus and collapse contexts at structure B15 have a total NISP of 111. Class Mammalia of various sizes represent the largest portion of the fauna with a total NISP of 59. Mammalia identified more specifically include white-tailed deer (*Odocoileus virginianus*), domestic dog (*Canis lupus familiaris*), cottontail rabbit (*Sylvilagus* sp.), and cf. grey fox (*Urocyon cinereoargenteus*). Only one Aves specimen was identified in these contexts. For Reptila, seven Order Testudines specimens were recovered. Finally, a total of 17 shells, including *Prunum apicinum*, several Family Strombidae, *Dentalium* sp., *Nephronaias* sp., and *Pomacea flagellata* were identified.

Table 4.9 Taphonomic modifications in the Structure B15 deposit.

Modification	NISP
Bitonally Perforated	1
Carved	2
Cut Worked	4
Drilled Hole	9
Exfoliation	39
Lime Exfoliation	1
Longitudinal Break	1
Polish	18
Root Etching	15
Rodent Gnawing	1
Shell Debitage	1
Staining	15
Worked	20
Total:	**127**

*Some elements have multiple or no modifications and therefore these numbers do not equal the taxonomic and element NISP.

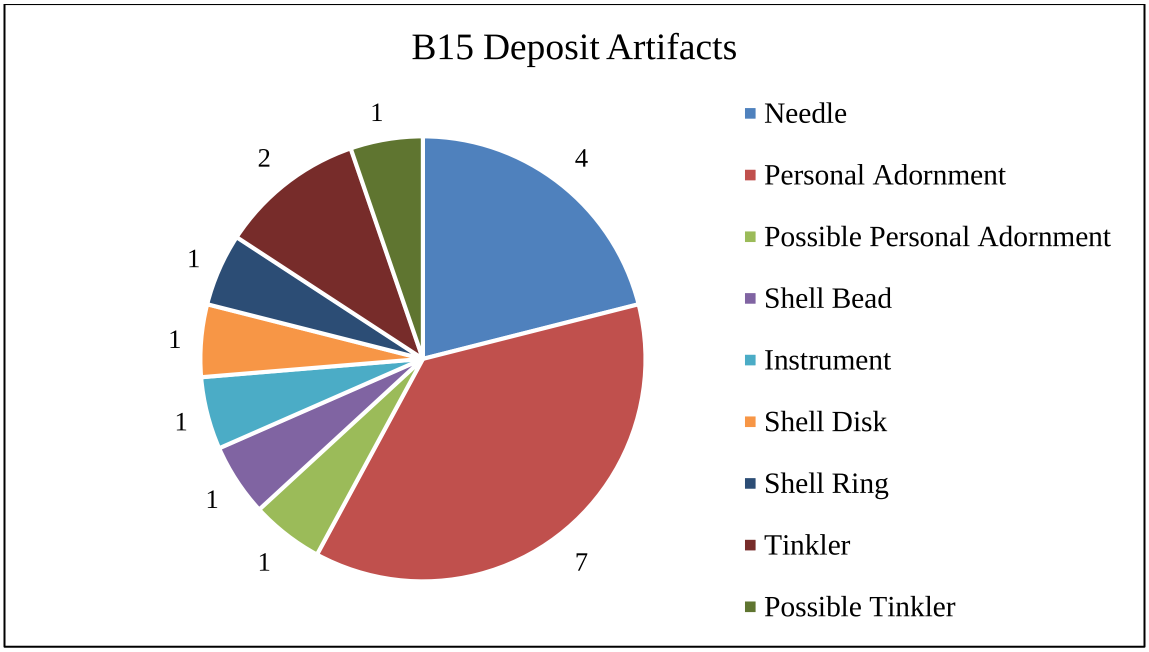

Figure 4.5 Faunal bone artifacts from the Structure B15 deposit.

The faunal remains within peri-abandonment deposits at Structures B2, B6, B7, and B15 are species diverse overall, including exotic species like marine shell. Aside from an abundance of natural taphonomic effects to the remains, much of the modification in each deposit is cultural and caused by specific artifact making processes. There does not, however, appear to be a preference in element side in the deposits. The next chapter explores these data within a symbolic theoretical framework to explore these deposits as ritual in nature.

Chapter 5: Symbolic Anthropology and Concluding Thoughts

Archaeological theory has developed from Processualism, a highly quantitative approach favoring objective testing methods over more subjective ways of interpreting data, to Postprocessual archaeology, incorporating qualitative humanistic elements. Combining key symbols with the quantitative data driven methods of Middle-Range Theory allows for a humanistic zooarchaeological analysis of peri-abandonment deposit fauna.

Postprocessual archaeology is a reaction and critique of the rigid empirical approach characteristic of Processual archaeology. Postprocessual approaches, instead, incorporate intersectional ways of investigating the past, and often argued should be evaluated in their own contextual framework (Redman 1991). The emphasis on context is achieved through Postprocessual theories investigating individuals, symbols, rituals, gender, ethnicity, age, and agency. Within Postprocessual archaeology, symbolic anthropology allows for more interpretations to be made from a humanistic perspective, essentially bringing the human back into archaeology. Symbolic anthropology used here addresses the why questions Middle-Range Theory alone, cannot. There is a possibility, however, for interpretation to stray too far from a basis on archaeological data, making the combination of rigorous Processual based methods paired with interpretive symbolic frameworks of Postprocessual theories imperative to the research of symbolic animal use by the ancient Maya.

Cognitive or Symbolic Anthropology

When paired with Middle-Range Theory and analogy, Symbolic Anthropology allows for engagement between the symbolic use of animals by the ancient Maya and their presence in peri-abandonment deposits (Figure 5.1).

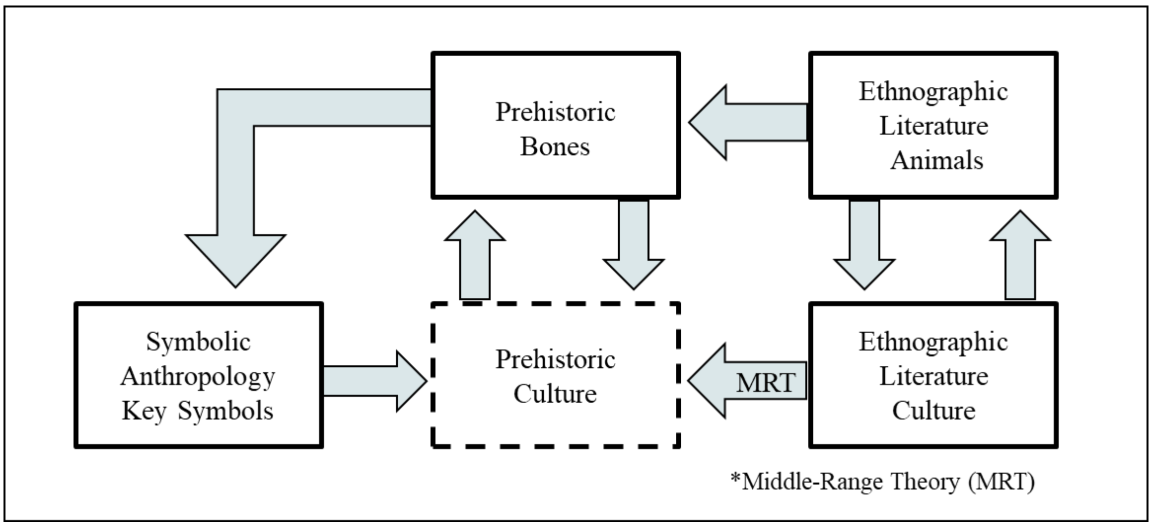

Figure 5.1 Diagram illustrating the combination of Middle-Range Theory and Key Symbols to investigate Maya symbolic animal use in this thesis.

Within symbolic anthropology, the concept of key symbols is used to both recognize and interpret the importance of symbols within a specific cultural context (Ortner 1973). Symbol is defined by Ortner (1973:1339) as “a vehicle for cultural meaning”. Ortner (1973:1339) argues symbols can serve as indicators of five separate cultural ideas. First, a symbol can indicate that the ideological idea referenced is culturally important to the community. Second, and somewhat related, that importance of the idea is lacking in indifference, meaning the individuals within the community possess either a positive or negative reaction to the symbol. Third, the subject of the symbol is often observed in many different contexts including actions, conversations, and symbolic domains such as mythology, ritual, and art. Similarly, the fourth indicator suggests the symbol can serve a greater cultural elaboration via language or vocabulary, specifically with regards to explaining the nature of the subject. Finally, the symbol can be restricted culturally, especially when considering the rules or sanctions of use or misuse. These key symbols inform how animals were and are important to the Maya.

Within this context, Ortner (1973:1339) further defines two extremes along the symbol spectrum. One extreme of the spectrum suggests symbols summarize or represent in an emotionally powerful way how the community explains their cultural system. Second, on the opposite side of the spectrum, symbols allow people to elaborate upon their cultural system by providing a means for sorting out complex ideas and communicating them to others in an orderly action (Ortner 1973:1339-1340). For example, the jaguar and deer in relationship to each other depicting the elite-commoner relationship for the Maya are summarizing symbols. The deer as a symbol of sacrifice for agricultural fertility is an elaborating symbol, and it is used to represent a need for the community and a way to resolve it.

Essentially, summarizing symbols represent the idea that what you see is what you get, while elaborating symbols may be used by the community to conceptualize the world around them (Ortner 1973). A symbol may fall anywhere between these two categories on a spectrum. The turtle, for example, is not only seen as an explanation for the world in the sea, but also represents water, and thunder when turtle shell drums are used, placing the turtle in between the two ends of the spectrum as a symbol. For this research, using Ortner's (1973) key symbols concept supports the use of animals as symbols to both explain or represent the undifferentiated emotions or ideas of a culture, and as a tool to understand or make sense of and convey ideas about the world.

Considering Ortner's theoretical framework and the questions outlined at the beginning of this thesis, the results of data collection are interpreted by deciphering the symbolic nature of animals used in peri-abandonment deposits. Highlighting the taxa present and the association of specific fauna together is necessary to investigate the ritual nature of these deposits, and to answer the questions below.

Question 1: Zooarchaeological Patterns

First, what elements, species, sides, body portions, and cultural or natural taphonomic modifications are exhibited by the zooarchaeological remains from peri-abandonment deposits? This question builds a foundation for investigating the patterns observed from identifying species to ascertain the level of diversity in the deposits. Species diversity is built upon in later questions (see below) to ultimately determine the use of the animals and explain the ritual function of the deposits. The element and body portion components of the question allow for the identification of specific bones of an animal, to understand if materials with higher or lesser meat utility yields explains their use in the deposits. Understanding the presence or lack of high meat yielding parts also aids in determining the type of context in which the remains are found, which is further explored in the third question about ritual behavior. Side identification may reveal a trend in left-right symbolism, if one is present. Side significance is discussed by Emery (2004) in Chapter 2 of this thesis.

The final part to this question, identifying both natural and cultural taphonomic effects to the remains, addresses the changes the remains have undergone both during their use and initial deposition, as well as throughout their deposition until their excavation. Taphonomic effects are important to note as they both bias and inform our understanding of animal use by the ancient Maya. Each aspect of this question will be explored for the deposit contexts of Structures B15, B2, B6, and B7.

Species Diversity

The peri-abandonment deposit context at Structure B2 has a relatively low level of species diversity compared to the B15, B6, and B7 deposits (Figure 5.2). The B2 deposit is not as species diverse as the rest, which may, in part, be due to the unidentifiable nature of many of the mammal remains. The inability to identify many of the mammal remains presents a taphonomic bias toward a much lower level of species diversity than there may in fact be. The animals present in the deposit, however, will be discussed further in the second and third research question.

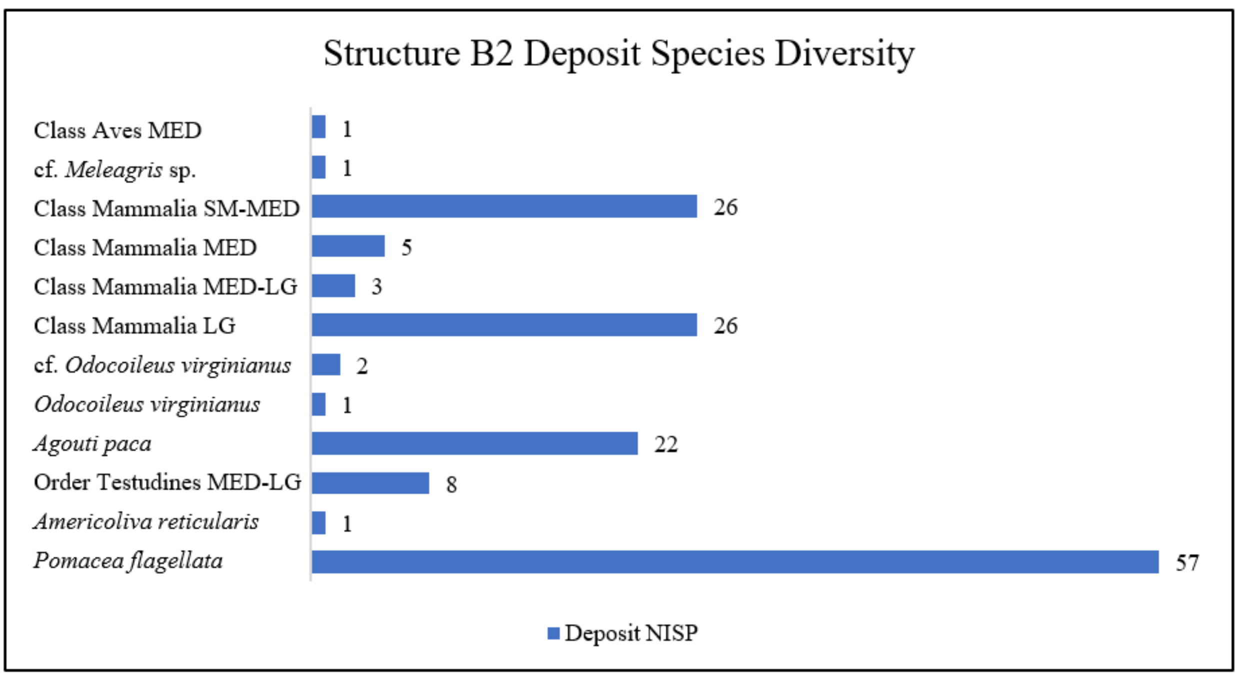

Figure 5.2 Graph depicting species diversity in the Structure B2 deposit.

The peri-abandonment deposit context at Structure B6 has the highest NISP (n=1,703) and a much higher level of species diversity compared to the B15 deposit, and especially the B2 deposit (Figure 5.3). The fauna includes birds, fish, mammals, rodents, reptiles, amphibians, and a variety of freshwater and marine shells. Further identified birds include parakeet and turkey species, and unidentified birds of prey (Order Accipitriformes). Identified Mammalia include armadillos, primates in the Family Platyrrhini, Artiodactyls including brocket deer and white-tailed deer, and white-lipped peccary, domestic dog, wild cats including ocelot, and rodents including *Agouti paca* and Salnin’s spiny pocket mouse. Fish include both bony fish and ray-finned fish but could not be identified further. Thirteen specimens from Order Anura are present, which encompasses frogs and toads. Reptiles range from crocodiles, including Morelet's crocodile, snakes, including the Family Boidae, and turtles including musk turtles. The shell species are comparable to the other deposits. Species diversity is one indicator of ritual behaviors based on the archaeological correlates discussed in Chapter 2. The significance of many of these animals will be discussed in the following questions.

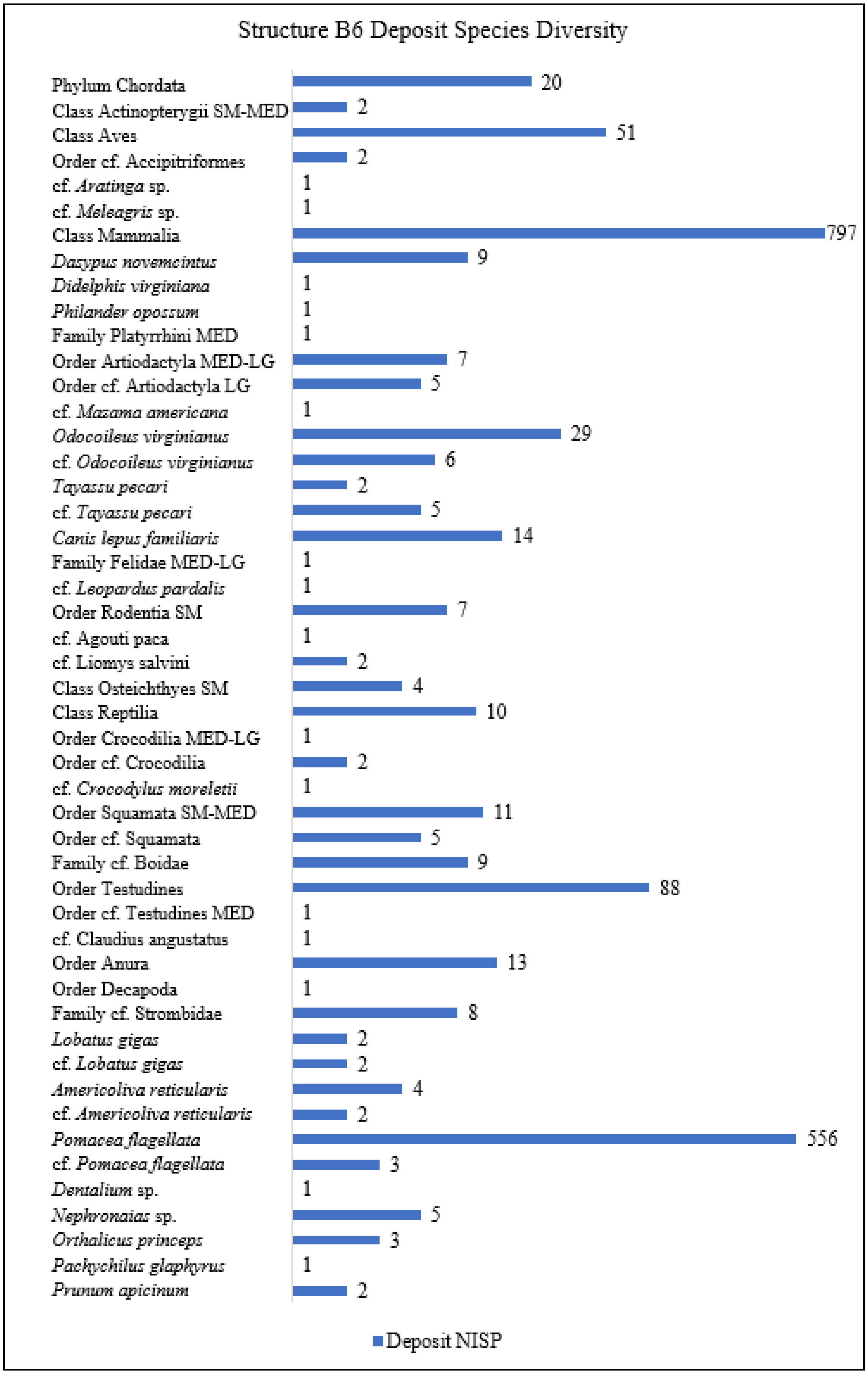

Figure 5.3 Graph depicting species diversity in the Structure B6 deposit.

The peri-abandonment deposit context at Structure B7 has the second highest NISP (*n*= 535) and a high species diversity comparable to B6 (Figure 5.4). Fauna in the B7 deposit includes birds, fish, mammals, reptiles, frogs and/or toads, and freshwater and marine shell species. Birds include birds of prey (Order Accipitriformes), little blue heron, turkey, woodpecker, land fowl (Order Galliformes), parakeets, and members of the parrot family (Family Psittacidae). Mammals include Artiodactyls, including white-tailed deer, ocelot, armadillo, and rabbit. Reptiles include Morelet's crocodile and turtles including mud turtle. The shells include freshwater and marine species and are comparable to the other deposits. The animals will be further discussed in the following questions.

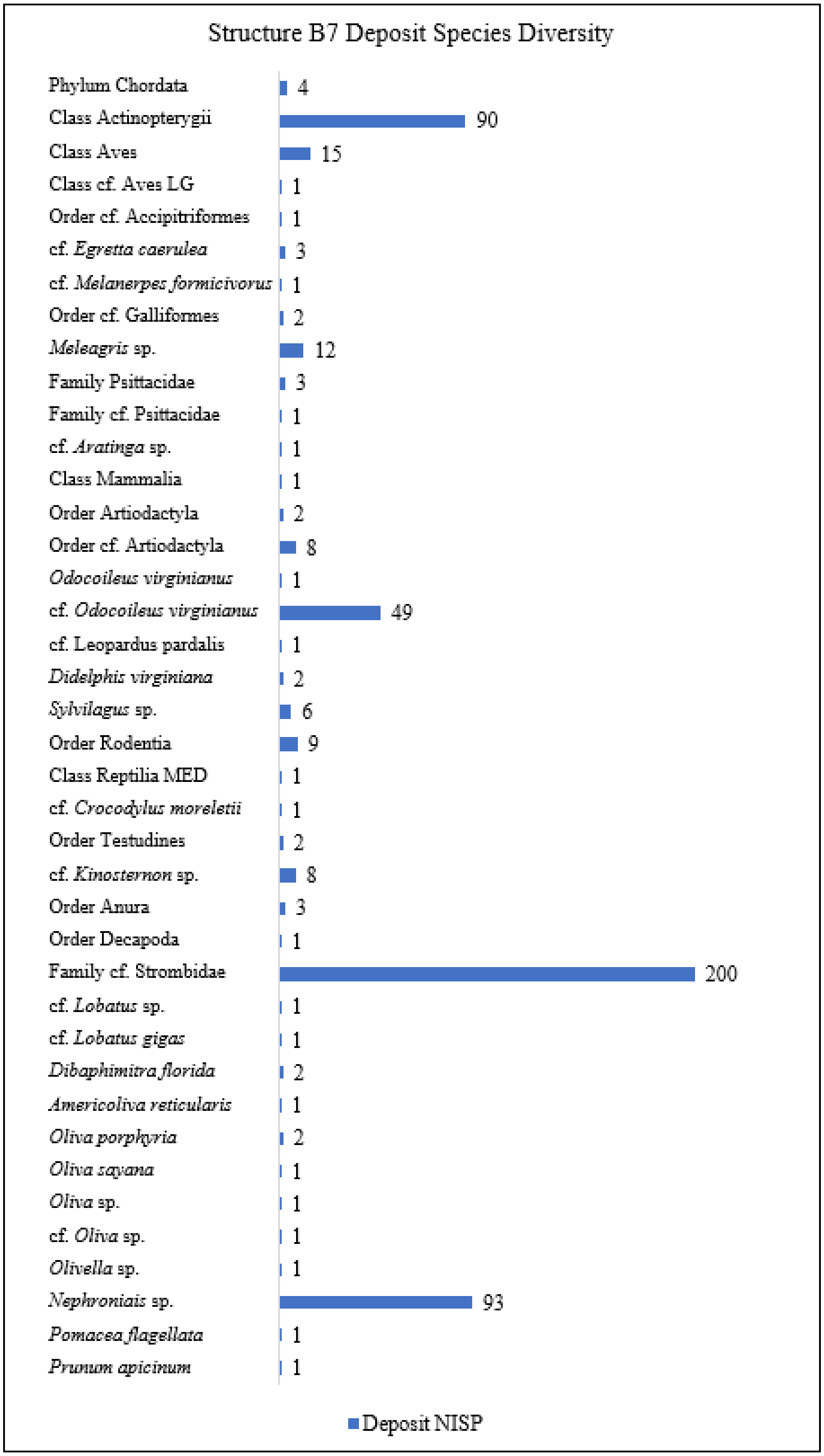

Figure 5.4 Graph depicting species diversity in the Structure B7 deposit.

The peri-abandonment deposit context at Structure B15 has a high level of species diversity, ranging from various mammals, birds, amphibians, fish, reptiles, and freshwater and marine shell species (Figure 5.5). Birds identified further than Class Aves include two Family cf. Momotidae, which encompasses birds known as Motmots, which are small and can be colorful. Identified mammals include white-tailed deer, members of the armadillo family, members of the felidae family, and cottontail rabbit species. Reptiles include crocodiles, Morelet's crocodile, and turtles. Marine species like Family Strombidae, *Lobatus gigas*, and *Oliva* species are not local as Baking Pot is an inland site, yet they are as present in the B15 deposit as freshwater species, with the exception of a high number of apple snails. The animals will be discussed further in the following questions.

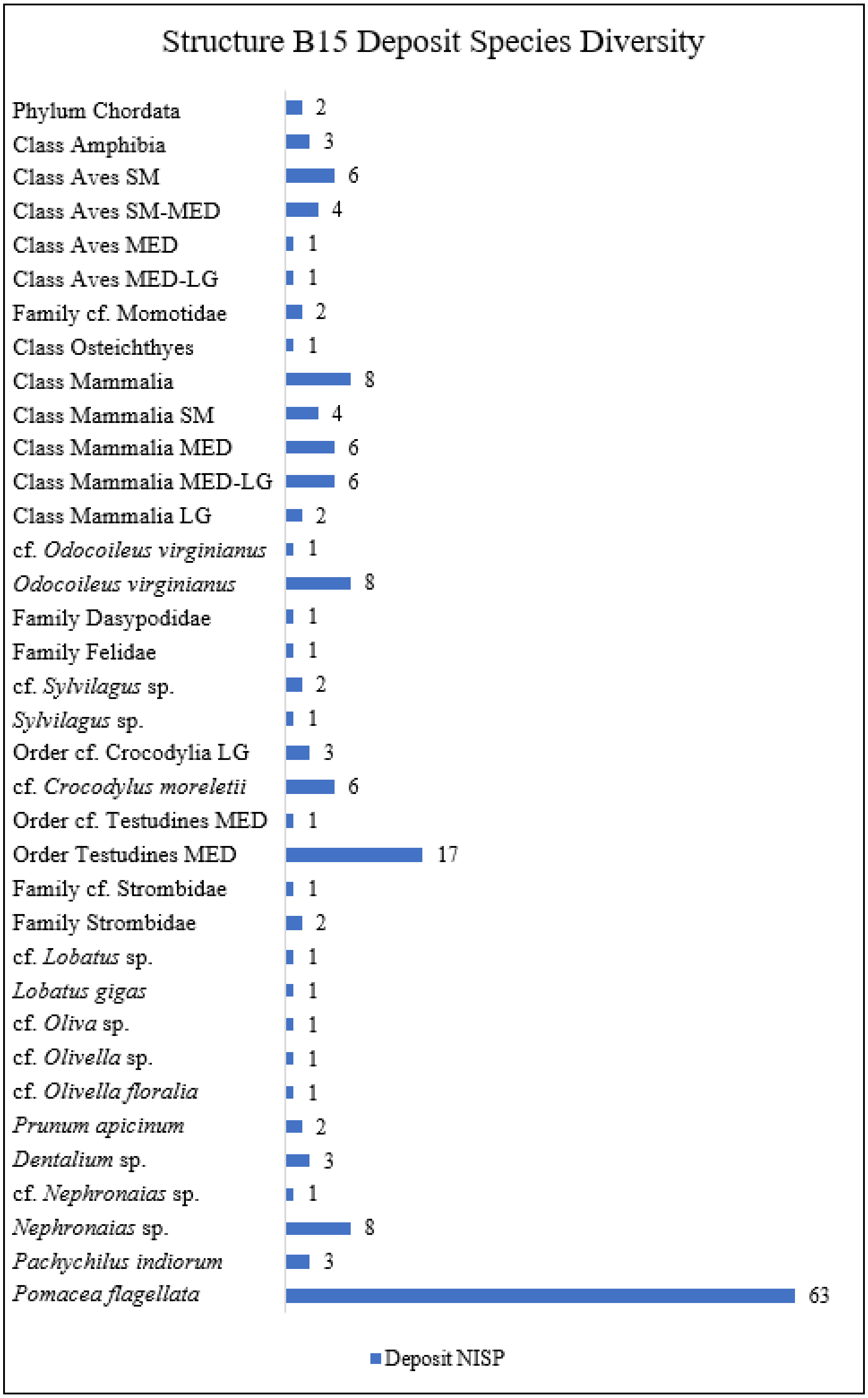

Figure 5.5 Graph depicting species diversity in the Structure B7 deposit.

Element, Side, and Body Portion

Due to taphonomic effects and fragmentation, none of the elements in the B2 deposit were able to be sided, and as a result, side preference data is biased for the B2 deposit. (Table 5.1). Side preference is therefore not ascertainable in this deposit. Birds have an NISP of two total and both are appendicular elements, one humerus and one long bone. Depending on the long bone, these may both have a high meat yield. Class Mammalia includes 24 cranial fragments, and fragments of four ribs, one femur, 30 long bones, and one scapula. Of these and depending on species, meat could be yielded from any of the appendicular and axial portions present. Specimens identified to white-tailed deer, however, are not high meat yielding parts as they are two dentary fragments and one first phalanx. *Agouti paca* consist solely of 22 cranial fragments, and the only turtle elements are carapace fragments, part of the exoskeleton.

Table 5.1 Identified elements from the Structure B2 deposit

Element	Class Aves			cf. *Meleagris* sp.			Class Mammalia			*Odocoileus virginianus* & cf.			*Agouti paca*			Order Testudines		
Cranial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Cranial	-	-	-	-	-	-	-	-	24	-	-	-	-	-	22	-	-	-
Dentary	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
Axial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Rib	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
Appendicular	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Femur	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Humerus	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Long Bone	-	-	1	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-
First Phalanx	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Scapula	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Exoskeleton	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Carapace	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8

There is no apparent side preference in the B6 deposit fauna (Table 5.2). The lack of side preference, particularly with deer remains, is interesting, because left sided elements represent the underworld and the setting sun (Emery 2004). This suggests the underworld or setting sun is likely not what deer symbolize in this deposit. Instead they could be symbolizing sacrifice as discussed in Chapter 2. Bird portions with a high meat yield include one femur, five humeri, and 30 long bone fragments, depending on the long bones. The rest of the elements have relatively low meat yields. Class Mammalia has a range of meat utility elements, with most of the elements being long bones, which the yield cannot be known for. Of the white-tailed deer remains, meat yielding portions include two rib fragments, one femur, and one humerus. The rest of the white-tailed deer elements are cranial, vertebrae and pelvis, calcanei, and phalanges. Domestic dog, wild cat, ocelot, crocodile, and Morelet's crocodile remains only consist of cranial elements. The presence of low meat yielding elements in the deposit suggest the animal portions were not meant as consumables, but for their relationship to the animal itself symbolically.

Table 5.2 Identified elements from the Structure B6 deposit

Element	Phylum Chordata			Class Actinopterygii			Class Aves			Order cf. Accipitriformes			cf. *Aratinga* sp.			cf. *Meleagris* sp.		
Axial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Centrum	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dorsal Fin	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Synsacrum	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vertebra	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Appendicular	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Coracoid	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-
Carpometacarpus	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Femur	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Humerus	-	-	-	-	-	-	-	-	4	-	-	-	1	-	-	-	-	-
Long Bone	-	-	11	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-
First Phalanx	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Radius	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
Tarsometatarsus	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	1	-	-
Talon	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Tibiotarsus	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Ulna	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Unknown	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Element	Class Mammalia			*Dasypus novemcintus*			*Didelphis* virginiana			*Philander opossum*			Family Platyrrhini			Order Artiodactyla & cf.		
Cranial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**

Antler	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
Canine	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cranial	-	-	72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dentary	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Incisor	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molar	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mandible	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maxilla	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parietal	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Premolar	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tooth	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Axial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Caudal Vertebra	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Centrum	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Innominate	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lumbar Vertebra	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rib	8	4	99	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Thoracic Vertebra	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vertebra	-	-	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Appendicular	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Astragalus	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcaneus	-	2	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Femur	6	4	8	1	-	-	-	-	-	-	-	-	-	-	-	-	4	-
Humerus	3	2	4	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Long Bone	-	-	475	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metacarpal	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metapodial	-	-	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phalanx	-	-	4	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
First Phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Second Phalanx	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Third Phalanx	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Radius	-	-	4	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Tibia	2	2	5	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Ulna	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Exoskeleton	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Dermal scoot	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Unknown	-	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Element	cf. *Mazama americana*			*Odocoileus virginianus* & cf.			*Tayassu pecari* & cf.			*Canis lepus familiaris*			Family Felidae			cf. *Leopardus pardalis*		
Cranial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Incisor	-	-	-	-	1	1	-	-	-	1	-	2	-	-	1	1	-	-
Molar	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-
Premolar	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-
Axial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**

Centrum	-	-	-	-	-	-	-	-	-	-	5	2	-	-	-	-	-	-
Innominate	-	-	-	-	1	4	-	-	-	-	-	-	-	-	-	-	-	-
Lumbar Vertebra	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Rib	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Synsacrum	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-
Appendicular	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Calcaneus	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Femur	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Humerus	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Long Bone	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-
Phalanx	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
First Phalanx	-	-	1	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-
Second Phalanx	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-
Third Phalanx	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Radius	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Radio-ulna	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
Tibia	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Element	Order Rodentia			cf. *Agouti paca*			cf. *Liomys salvini*			Class Osteichthyes			Class Reptilia			Order Crocodilia		
Cranial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Cranial	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tooth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Axial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Rib	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vertebra	-	-	-	-	-	-	-	-	-	-	-	4	-	-	4	-	-	-
Appendicular	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Humerus	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Long Bone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-
Phalanx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Ulna	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Element	cf. *Crocodylus moreletii*			Order Squamata & cf.			Family cf. Boidae			Order Testudines & cf.			cf. *Claudius angustatus*			Order Anura		
Cranial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Cranial	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
Tooth	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Axial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Centrum	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Vertebra	-	-	-	-	-	16	-	-	9	-	-	3	-	-	-	-	-	3
Appendicular	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Femur	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Humerus	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Long Bone	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	7
Radius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1

Radio-ulna	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Tibia	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Exoskeleton	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Carapace	-	-	-	-	-	-	-	-	-	-	-	79	-	-	-	-	-	-

As with the B2 and B6 deposits, there is no apparent side preference in the B7 deposit fauna (Table 5.3). Bird elements with a relatively high meat yield are nine femora, three humerii, and 75 long bones depending on the elements. The rest of the elements have relatively low meat yield. Class Mammalia elements with high meat yield include one femur, one humerus, and 176 long bones, again, depending on the long bones. The only white-tailed deer elements with high meat utility are three rib fragments. The rest of the deer elements have little to no meat utility. As with the B6 deposit, a lack of meat yielding elements suggests the elements were placed in the deposit as associated with the animal species itself, not as a consumable.

Table 5.3 Identified elements from the Structure B7 deposit

Element	Phylum Chordata			Class Actinopterygii			Class Aves and cf.			Order cf. Accipitriformes			cf. *Ergetta caerulea*		
Axial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Furcula	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Synsacrum	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Vertebra	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Appendicular	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Coracoid	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Carpometacarpus	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-
Dorsal Fin	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Femur	-	-	-	-	-	-	6	1	2	-	-	-	-	-	-
Long Bone	-	-	-	-	-	-	-	-	73	-	-	-	-	-	-
Tarsometatarsus	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Talon	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Tibiotarsus	-	-	-	-	-	-	-	1	1	-	-	-	-	1	-
Ulna	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-
Element	cf. *Melanerpes formicivorus*			Order cf. Galliformes			*Meleagris* sp.			Family Psittacidae & cf.			cf. *Aratinga* sp.		
Appendicular	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Carpometacarpus	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-
Humerus	-	1	-	-	-	-	-	-	-	-	1	-	-	1	-

Long Bone	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Pollex	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Portion	Class Mammalia			Order Artiodactyla & cf.			*Odocoileus virginianus* & cf.			cf. Leopardus *pardalis*			*Didelphis virginiana*		
Cranial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Antler	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Cranial	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Dentary	-	-	-	-	-	-	-	5	1	-	-	-	-	-	-
Incisor	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Mandible	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-
Tooth	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Axial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Axis Vertebra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Centrum	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Rib	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-
Vertebra	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Appendicular	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Femur	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-
Humerus	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Long Bone	-	-	176	-	-	-	-	-	-	-	-	-	-	-	-
Radius	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Tibia	2	3	5	-	-	-	-	-	-	1	-	-	-	-	-
Ulna	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Element	*Sylvilagus* sp.			Order Rodentia			Class Reptilia			cf. *Crocodylus moreletii*			Order Testudines		
Cranial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Dentary	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Incisor	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-
Tooth	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Axial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Ilium	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Innominate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Rib	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Pelvis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Vertebra	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2
Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Appendicular	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Femur	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Humerus	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Long Bone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Radius	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Scapula	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Tibia	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Tibio-fibula	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-

Exoskeleton	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Carapace	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29
Peripheral Carapace	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Element	cf. *Kinosternon* sp.			Order Anura											
Appendicular	**L**	**R**	**N**	**L**	**R**	**N**									
Astragalus	-	-	-	1	-	-									
Calcaneus	-	-	-	1	-	-									
Calcaneum-astragalus	-	-	-	-	-	2									
Femur	-	-	-	-	-	1									
Tibia	-	-	-	1	1	-									
Tibio-fibula	-	-	-	1	-	-									
Exoskeleton	**L**	**R**	**N**	**L**	**R**	**N**									
Carapace	-	-	1	-	-	-									

There does not appear to be any side preference in the B15 deposit fauna. Of the birds, many elements are appendicular with only one axial element, a rib fragment. The elements with a higher meat yield, in this case three femora, two humeri, and one long bone, do not outnumber the appendicular elements with a low meat utility (Table 5.4). Class Mammalia consists of axial and appendicular elements that have a relatively high meat utility. White-tailed deer elements, however, have a low meat utility and include the patella, astragalus, and first and second phalanx, except for one humerus fragment. Rabbits only consist of one rib fragment, one calcaneus fragment and one humerus fragment and do not make a sound argument for meat utility. Crocodiles consist of three long bone fragments, which depending on the long bone may or may not have high meat yield, and teeth which have none. Turtle portions present also do not have relatively high meat yields, with one tibia and one ulna, and 16 carapace fragments which have no meat yield. B15 included, the deposits do not provide evidence of the animals' primary function as consumption, but as a reference to the animals and their meanings themselves.

Table 5.4 Identified elements from the Structure B15 deposit

Element	Phylum Chordata			Class Amphibia			Class Aves			Family cf. Momotidae			Class Osteichthyes		
Axial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Rib	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Second Dorsal Spine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Appendicular	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Coracoid	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Femur	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-
Humerus	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
Long Bone	-	-	-	-	-	2	-	-	1	-	-	-	-	-	-
Tibia	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Tarsometatarsus	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Tibiotarsus	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Ulna	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-
Unknown	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-

Element	Class Mammalia			*Odocoileus virginianus* & cf.			Family Dasypodidae			Family Felidae			*Sylvilagus* sp. & cf.		
Axial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Innominate	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Rib	-	-	2	-	-	-	-	-	-	-	-	-	1	-	-
Appendicular	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Astragalus	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
Calcaneus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Femur	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-
Humerus	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-
Long Bone	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-
Patella	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
First Phalanx	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Second Phalanx	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Third Phalanx	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-
Exoskeleton	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Dermal Scoot	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-

Element	Order cf. Crocodylia			cf. *Crocodylus moreletii*			Order Testudines & cf.		
Cranial	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Tooth	-	-	-	-	-	6	-	-	-
Appendicular	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Long Bone	-	-	3	-	-	-	-	-	-
Tibia	-	-	-	-	-	-	-	-	1
Ulna	-	-	-	-	-	-	-	-	1
Exoskeleton	**L**	**R**	**N**	**L**	**R**	**N**	**L**	**R**	**N**
Carapace	-	-	-	-	-	-	-	-	16

Natural and Cultural Modifications

Natural taphonomic effects on the faunal remains from B2 are rather few except for overall fragmentation of the remains. Natural taphonomic modifications in the B2 deposit include exfoliation and root etching. The two calcined and carbonized specimens could either be natural (e.g., caused by a wildfire) or cultural. Polish may also be caused through various natural processes or culturally. The only certain cultural modification to the B2 faunal remains is a drilled hole in a shell tinkler. Like the B15 deposit, there is no evidence of cut marks or any other make caused by processing an animal for consumption. The lack of cut marks is indicative of a lack of butchery of the animals in the B15 deposit, along with the other deposits. Pobiner et al. (2018:385) state while butcher experience levels are difficult to quantify, based on the experiments conducted there is no statistically significant relationship between cut mark frequency and butcher experience level. The study suggests butchering will leave cutmarks on bone no matter the butcher's level of experience.

Fragmentation is prevalent in the B6 deposit. Other natural taphonomic modifications include carnivore gnawing and chipping back, lime exfoliation, root etching, and rodent gnawing. Polish is also present, and some may be from natural or cultural causes. Aside from several browned, calcined, and carbonized remains, which may be a mix of natural and cultural causes tied to wildfires and proximity to *incensarios* respectively, the majority of cultural taphonomic effects are part of artifact manufacturing processes. Cultural modifications as part of artifact manufacturing processes in the B6 deposit include bone working, cut working, cut worked holes, drilled holes, and polish. Bone artifacts include bone awls, beads, pendants, hair pins, needles, blanks, preforms, and tubes. Shell artifacts include detritus, beads, gorgets, tinklers, pendants, and two small unknown iridescent teardrop shaped artifacts (Figure 5.6).

There is a total of four specimens, two which refit, with cut marks on the B6 faunal remains. One specimen is a medium size class Class Mammalia long bone fragment with cut marks and is also browned burned, one is a large size class Class Mammalia vertebra with parallel cut marks on the dorsal/lateral surface, and the last specimens are two refitting fragments of a size class large Class Mammalia vertebra. These few specimens may have at one point been prepared for consumption, but their intended use has changed, as there are not enough specimens with cut marks to indicate the deposit is the result of feasting or midden activities.

Figure 5.6 Teardrop-shaped shell artifacts.

Natural taphonomic effects to the B7 deposit fauna also include fragmentation, along with carnivore gnawing, exfoliation, lime exfoliation, root etching, and rodent gnawing. Browned, calcined, and polish remains are also present, which can be natural or cultural. Like the other deposits, most of the cultural modifications on the B7 fauna are parts of artifact making processes. These include cut working and cut worked holes, drilled holes, bone working, and polish. Bone artifacts include awls, beads, needles, and a few unknown artifacts.

Shell artifacts include beads, tinklers, and a possible pendant. There is a total of four specimens in the deposit with cut marks. One is a little blue heron (cf. *Egretta caerulea*) right tibiotarsus with two cut marks on the anterior shaft, and the others are three refitting fragments of a bone awl with a cut mark on top. Similar to the deposits at structures B15, B2, and B6, the deposit at structure B7 does not have enough specimens with cut marks to indicate the deposit is the result of feasting or midden activities, and one of the instances of a cut mark is on a tool.

Natural taphonomic effects on the faunal remains from B15 are rather few except for overall fragmentation of the remains. Natural modifications include exfoliation and exfoliation due to lime, root etching, rodent gnawing, and staining. The remaining taphonomic effects to the faunal remains are cultural modifications made by the ancient Maya. All cultural modifications on the B15 deposit remains are parts of artifact working processes.

Cultural modifications include biconical perforation, carving, cut working, working, drilled holes, polish, and shell detritus. There is one shell bead in the deposit that is biconally perforated, uniconally perforated artifacts in the deposit include shell tinklers and personal adornments. Other shell artifacts in the B15 deposit include a shell disk, a shell ring, and a possible conch (*Lobatus gigas*) instrument where the apex of the shell is cut worked off. Non shell artifacts include needles. None of the fauna in the B15 deposit exhibits evidence of cut marks, or any other mark made by the butchering, preparation, or consumption process, and there is therefore no evidence the fauna in the B15 deposit was meant for consumption.

Species diversity, lack of meat utility parts, and lack of evidence of butchery for consumption indicate the B2, B6, B7, and B15 deposits are a result of ritual behavior. Species diversity spans from local mammals, birds, reptiles, amphibians, and freshwater shells, to non-local fauna, specifically marine shell that needed to be brought inland to Baking Pot. Many of these species have known symbolic significance to the Maya, as addressed in the upcoming questions. The lack of butchery marks is an important factor in determining ritual behavior. The animals were not placed in the deposit as a result of their consumption, but as a result of their symbolism.

Question 2: Animals Used as Representations of the Extraordinary or Supernatural

Second, using ethnographic literature, are the animals recovered from each deposit representative of the extraordinary or supernatural world by the Maya? This question builds upon the first by providing information about animal species identified in order to understand their importance and how it relates to their placement in the deposits. Animal species appearing in a deposit in high numbers and species appearing across deposits will be focused on here.

White-tailed deer (*Odocoileus virginianus*) are present in all four of the peri-abandonment deposits at Baking Pot analyzed for this thesis. White-tailed deer appear in many different facets of Maya ideology and religion. In both ethnographic stories about how some animals do not have tails discussed in the background chapter of this thesis (Teeter 2001; Thompson 1970), white-tailed deer are mentioned as one of the animals who got away without a long tail. Keeping in mind Ortner's (1973) concepts of key and elaborating symbols, white-tailed deer and the other animal species that got away without their long tails in these stories are a way of understanding and conveying the observation that some animals in the Maya world do not have long tails as many others do. The Maya organization of tails versus no tails is important to understanding how the Maya group animals together. To that same end, deer also appear in the merismus in the *Popol Vuh* discussed by Christenson (2007) and highlighted in the background chapter of this thesis. The first, and the one relevant here, is “deer-birds” seen in lines 338-339 of the *Popol Vuh* used to describe all wild animals (Christenson 2007:40). Also discussed in the background chapter of this thesis, Pohl (1981) states it is very likely deer were the original animal used in the Maya Cuch ritual before the bull was introduced by the Spanish, as deer were associated with sacrifice and the sun (Burke et al. 2020, Pohl 1981, 1983), and in the *Popol Vuh*, the gods take the form of a deer and demand a young deer sacrifice (Pohl 1983).

Wild cats are present in all the deposits with exception to B2, the smallest deposit. Ocelot remains were identified from deposits B6 and B7 (one specimen each), and Family Felidae remains were identified from the B6 and B15 deposits (one specimen each). While there are no identified jaguars in the deposits, the possibility is not omitted because of the presence of Felidae remains and many large mammals that could not be further identified. The Ocelot is a small spotted cat, and further research on its substitute for a jaguar when one is not available should be conducted. As discussed in the background chapter of this thesis, the jaguar is a symbol of bravery, power, and strength channeled and associated with by the elite, as it is an apex predator of the Maya world (Burke et al. 2018; Miller and Taube 1993:102; Saunders 1994). As deer are consumed by jaguar, the jaguar-deer relationship is one of recognizing power (Burke et al. 2018). The jaguar-deer dance is a representation of the constant struggle for power the elites have over commoners (Burke et al. 2018; Pohl 1983:71). The relationship of jaguar and deer and their appearance together in contexts could be interpreted as elaborating symbols, as the Maya understand and navigate their socio-political landscape.

Both turtle and crocodile remains were identified in all four deposits, with the exception of B2, which does not have crocodile. Discussed in the background of this thesis, in Maya cosmology, the world is either a turtle or a crocodile floating in the sea, with plants sprouting from their backs (Coe and Houston 2015:244). Coe and Houston (2015:147) also state the body of a crocodile was used by the Maya to represent the night sky in the Classic period. Turtles are associated with water and abundance (Pohl 1983), and their carapace is often used as a drum to make thunder sounds during rituals (Miller and Taube 1993:174). Contemporary Maya, including the Ch'orti' in Guatemala, believe there are snakes that cause earthquakes in bodies of freshwater (Coe and Houston 2015:245). The B6 and B7 deposits, the two largest deposits, also have snakes.

Turkey remains are in all deposits apart from B15, where bird remains could not be identified further than size class. Turkey and macaw are often depicted in the codices as headdresses and are almost exclusively worn by women as discussed in Chapter 2 (Tozzer and Allen 1910:315). The B7 deposit also had parakeet remains, a bird which is often used for its bright colorful feathers. Little blue heron remains were recovered from the B7 deposit. As discussed in Chapter 2, contradictory to turkey and macaw, herons, associated with rain and water, are rarely depicted as headdresses and when they are, they are worn by men (Tozzer and Allen 1910:324).

Apple snails (*Pomacea flagellata*) are present in significant quantities in all four of the deposits. As discussed before, their numbers may be overestimated using NISP due to fragmentation, but they are present in high quantities, nonetheless. As discussed in Chapter 2, apple snails are associated with water, the winter solstice, death, and the goddess of fertility and childbirth Ixchel (Burke et al. 2020; Emery 1989). Emery (1989) suggests apple snails are best harvested in late December through early January, and while they are considered consumed fauna there may be a ceremonial component to their use (Burke et al. 2020). Apple snails occurred in high frequencies in the deposits, with an NISP of 37.25% in B2, 32.83% in B6, 16.82% in B7, and 36% in B15.

The mammal remains in the deposits appear to be symbolic of the sociopolitical structure of the Classic Maya, with the jaguar deer dance discussed in Chapter 2, and as a way of asking favors like agricultural fertility through deer sacrifice and passing responsibilities symbolically through a peccary seen in the *Cuch* ritual discussed in Chapter 2. Snakes and frogs or toads are also depicted with jaguar or puma in deer sacrifice scenes (Pohl 1981). Supernatural or extraordinary symbolic animal representations are present through Maya understandings of the world. Turtle and crocodile remains represent the world itself (Coe and Houston 2015:244), with deer (Burke et al. 2020; Pohl 1981,1983) and macaw (Schlesinger 2001:212; Tedlock 1985:89) as the sun, jaguar as the sun in the underworld (Miller and Taube 1993:104; Schlesinger 2001:165), dogs as guides to the underworld (Stanchly and Awe 2015; Emery 2004), frogs and toads as rain and the four Chacs (Hamblin 1984), and snakes as the cases of earthquakes (Coe and Houston 2015:245). The jaguar is also symbolic of the supernatural or extraordinary as a common animal taken on in transformation rituals (Miller and Taube 1993). Apple snails are associated with water, the winter solstice, death, and the goddess of fertility and childbirth Ixchel (Burke et al. 2020; Emery 1989) and have a supernatural association with the deposits. Fish, like deer, are also discussed in the codices and by Landa as sacrifices to the gods (Tozzer and Allen 1910:308). The following question will explore the connections between the animals and explore their ritual significance.

Question 3: Peri-abandonment Deposits and Ritual Behavior

Finally, do symbolic representations of the fauna, and the sides, elements, and cultural modifications present, support the argument that peri-abandonment deposits are evidence of ritual behaviors and can this information be used to support the use of animals for ritual behaviors in other contexts? This final question explores the greater goal of this research and its application beyond peri-abandonment deposits, specifically with regards to animals as symbolic representations or even proxies for interpreting symbolic behaviors archaeologically.

A wide array of species present in the deposits, the inclusion of exotic species like marine shells that had to be brought inland, and species not known to be consumed such as ocelot and large cats, suggests the animals present are there for their symbolic significance. The B2 deposit did not have a high level of species diversity as B6, B7, and B15. The B2 deposit, however, has a lower NISP than the rest of the deposits and many of the mammal remains could not be identified further.

The B6, B7, and B15 deposits all had wild cat remains. All of the deposits have white-tailed deer remains, though the remains are not mostly high meat utility portions and lack evidence of butchery for consumption. The presence of cat and deer may be symbolic of the elite-commoner relationship, or of deer sacrifice, as jaguar are often depicted in association (Pohl 1981). Cat and deer may also represent the sun both in the sky and as it travels through the underworld (Pohl 1981; Miller and Taube 1993:104; Schlesinger 2001:165). This places deer and cats at both ends of the symbol spectrum, as a statement of social structure and as a way of understanding and explaining the world.

Turkey remains are present in all the deposits except B15, where bird remains could not be identified further. The only high meat utility turkey element is one humerus in the B2 deposit, the rest are one tarsometatarsus and one carpometacarpus in B6 and B7 respectively. There is also no evidence of butchery on the turkey remains. Turkey are one of the many animals associated with water in the deposits. The B7 deposit has parakeet, Family Psittacidae, and little blue heron remains. The parakeet and other parrot family remains have no evidence of butchering and may have been used in association with their colorful feathers, or the story of Seven Macaw posing as the sun in the *Popol Vuh* discussed in Chapter 2 (Schlesinger 2001:212; Tedlock 1985:89). The presence of parrots in the deposits may be indicative of their supernatural origin in the *Popol Vuh* as the sun. Like turkey, parrots are depicted in the codices as headdresses worn by women (Tozzer and Allen 1910:315). Little blue heron is present in B7 as a right tibiotarsus with two cutmarks present on the anterior side of the shaft. The tibiotarsus, however, does not have high meat yield. Unlike turkey and parrots, herons, representing water and rain, are rarely represented in the codices as headdresses, but when they are, they are worn by men (Tozzer and Allen 1910:324). These birds appear in the deposits due to their symbolic, supernatural representation, and not as consumables.

Turtle and crocodile remains are present in all but the B2 deposit, with no evidence of butchery. These animals are present due to their symbolic association with water, and the supernatural or extraordinary as the world floating in the sea (Coe and Houston 2015:244). Frogs and toads are present in B6, B7, and B15 and may be representative of their supernatural association with rain and the four Chacs as previously discussed (Hamblin 1984). As discussed previously, dogs are guides for the underworld and dog tooth necklaces have been recovered from burials at Cahal Pech (Stanchly and Awe 2015). Dog tooth beads were recovered in the B6 deposit and may represent the underworld in this way. Finally, apple snails are represented in high quantities in all of the deposits as their supernatural associations with water, the winter solstice, death, and the goddess of fertility and childbirth Ixchel (Burke et al. 2020; Emery 1989).

While there does not appear to be any side preference aside from fragmentation and preservation issues, body portion and element identification proves to be a useful tool in determining edible parts. Even with the presence of some elements and portions with high meat yield, the lack of cultural taphonomic modifications associated with butchery and consumption indicates feasting and midden contexts are not the result of the depositional activity in the Baking Pot deposits. Even the deer in the deposits do not have the taphonomic markers of processing for consumption and, and their presence is therefore likely symbolic in nature and not just as a feasting food of Maya elite.

Conclusions

This thesis explored zooarchaeology as an avenue for understanding the context of peri-abandonment deposits. This process could, however, be applied to other archaeological contexts, such as middens, feasting deposits, or burials, to better understand human behaviors and the intent by which the Maya deposited animal remains. The first question addressed prominent species in the deposits, such as deer, large cats, turkeys, colorful birds like parakeets, heron, turtles, crocodiles, snakes, and apple snails. Answering this question also exhibited a trend of low to non-meat yielding animal parts, combined with very few taphonomic indications of butchery for consumption. The second question addressed the symbolic importance of animals in then deposits. The presence of species that play significant roles in the *Popol Vuh* like deer, jaguar and other large cats, macaws, as well as crocodiles, and turtles, likely represent the supernatural and the beginning and understanding of the Maya world. Jaguar, macaw, and apple snails are representative of deities, and deer, turkey, and fish are common offerings to the gods. Answering the third and final question, with this evidence, peri-abandonment deposits appear ritual in nature, and are interpreted as evidence indicative of ruins as ritual landscapes discussed by (Palka 2014) The deposits are at a Maya site, associated with ruins, which is a pilgrimage landscape away from modern Maya settlements, as described by Palka (2014). Many of the animals in the deposit, turkeys, herons, turtles, crocodiles, snakes, fishes, and shells, have water symbolism. This symbolism may also be tied to the drought events happening in the Terminal Classic period, suggesting the pilgrimage serves the purpose to ask for water and resolution to the issue, common for pilgrimages (Palka 2014).

The third question explored possible symbolic representations of ritual for the animals in the deposits. When understood within the contexts of the Terminal Classic, a period of decline of the Classic Maya socio-political structure, the animals represent peri-abandonment deposits as evidence Baking Pot is a ritual landscape connected to histories, memories, and identities of the Maya (Palka 2014). Discussed previously, many of the animal species present are represented in the *Popol Vuh* as deities and as explanations of the world. Within their world, as evidenced through intensive agricultural practices in the Classic period (Ebert et al. 2014; Hoggarth et al. 2014a; Santley et al. 1986:123), the Maya are farmers, and due to drought conditions in the Terminal Classic, this part of their identity is taken. This demonstrates deposits have been the result of Maya pilgrimage to unoccupied sites to remember their histories, memories, and identities. Animals are symbolic to the Maya, but zooarchaeology provides a framework here for exploring what their symbolic use means.

This research provides a framework through which ancient Maya symbolic animal use can be understood. Middle-Range Theory and the use of analogy allows for an understanding of patterns and a filling in of details lost to the archaeological record. This is achieved through zooarchaeology and an emphasis on taphonomy. What the theory does not do on its own is tease out the nuance paired with ideas surrounding ritual and symbol. For this, Ortner's (1973) concept of key symbols is used to gather what species are important to the Maya and in what ways. It is with this pairing the purpose of peri-abandonment deposits may be explored as ritual by nature, and the rituals may be explored. This research demonstrates, based on the faunal remains, peri-abandonment deposits are the result of ritual pilgrimage to remember community history and reinforce social identities after the decline of Classic Maya socio-political structure.

Future directions

Following the research presented here, it is now necessary to combine the analysis of animal symbolism and faunal remains with the remainder of the artifact classes recovered from peri-abandonment deposits. After other artifact types are analyzed in combination with the fauna, the ritual behaviors creating peri-abandonment deposits may be more definitively explored. It may also be insightful to explore if the animals were obtained locally or if some of them were imported like the marine shells. An understanding of where the faunal remains came from will provide insight on pilgrimage as a cause for the deposits. This could be understood with stable isotope studies.

With regards to field methods, excavations should use less than ¼ inch screens to recover smaller faunal remains and other artifacts that are otherwise lost. Additionally, providing point provenience for artifacts, particularly the faunal remains, would greatly tighten up the information about contextual association. Standardized systems of recording will also aid in these. Finally, fauna associated with human burials could be subject to the same methodological standards. This will improve burial artifact information, as well as out symbolic understandings of the animals in deposits associated with burials in deposits.

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