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The Richness of Food: A Zooarchaeological Analysis of Huaca Santa Clara and Huaca Gallinazo, North Coast of Peru

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Abstract

This thesis is a zooarchaeological study examining the entangled nature of human-animal relations within processes of food production, preparation, and consumption at Huaca Santa Clara and Huaca Gallinazo in the Virú Valley, North Coast of Peru. It assesses how the consumption of animal products influenced social differentiation and identities during early state development in the Early Intermediate Period (200B.C.E – 800 C.E.). This thesis takes a social zooarchaeological approach and utilizes the framework of relational ontology to emphasize the social and symbolic roles of animals. Faunal remains suggest that individuals at Huaca Santa Clara had comparatively equal access to animal foods in both Administrative and Residential Sectors, while at Huaca Gallinazo differences are visible between the Southern Platform and Architectural Compound 2. Occupants of Huaca Gallinazo were focused more heavily on exploiting marine resources due to the site's coastal location, while those inland at Huaca Santa Clara emphasized terrestrial faunal resources.

Keywords

Peru, zooarchaeology, Virú, Huaca Gallinazo, Huaca Santa Clara, identity, iconography

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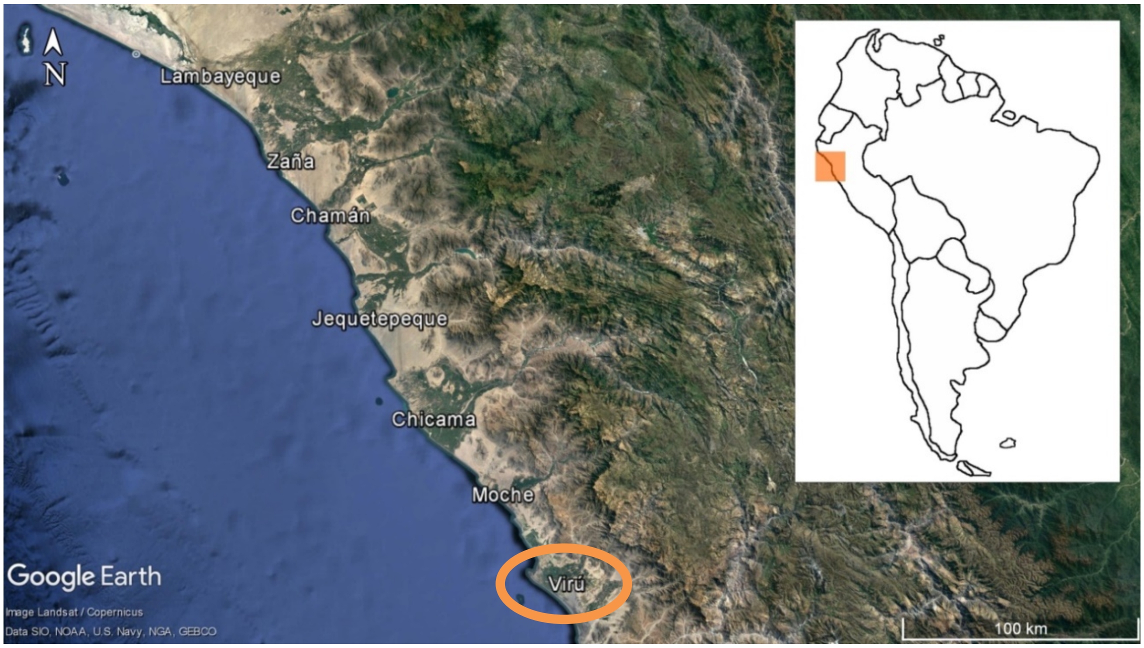
Chapter 1

1 Introduction

This thesis is a zooarchaeological study examining the entangled nature of human-animal relations within processes of food production, preparation, and consumption at two ancient Peruvian sites. It seeks to assess how the consumption of animal products reflected and influenced social differentiation and identities during an important period of early state development on the North Coast of Peru in the Virú Valley dating from 100 B.C.E. The dataset comprises two faunal collections from settlements with different functions within the Virú state system: Huaca Gallinazo (V-59), a large mound site within the Gallinazo Group that served as the Virú capital; and Huaca Santa Clara (V-67), a storage and redistribution center.

Figure 1: Map of the North Coast, Peru



My analysis of faunal remains from Huaca Santa Clara was completed in the summer of 2016 to facilitate the comparison of materials from Administrative and Residential sectors to a previously collected faunal dataset from Huaca Gallinazo that was analyzed by Claire Venet-Rogers. Venet-Rogers' (2013) data was collected as part of her Master's research from two sectors within Huaca Gallinazo: a food preparation area in the residential area Architectural Compound 2, and refuse deposits from a civic-ceremonial mound called the Southern Platform. While undertaking my analysis of faunal remains from Huaca Santa Clara, I returned to the materials from Architectural Compound 2 at Huaca Gallinazo to increase the sample size for this area.

Figure 2: Map of the North Coast of Peru and Relevant Archaeological Sites (Image Courtesy of Jean-François Millaire)

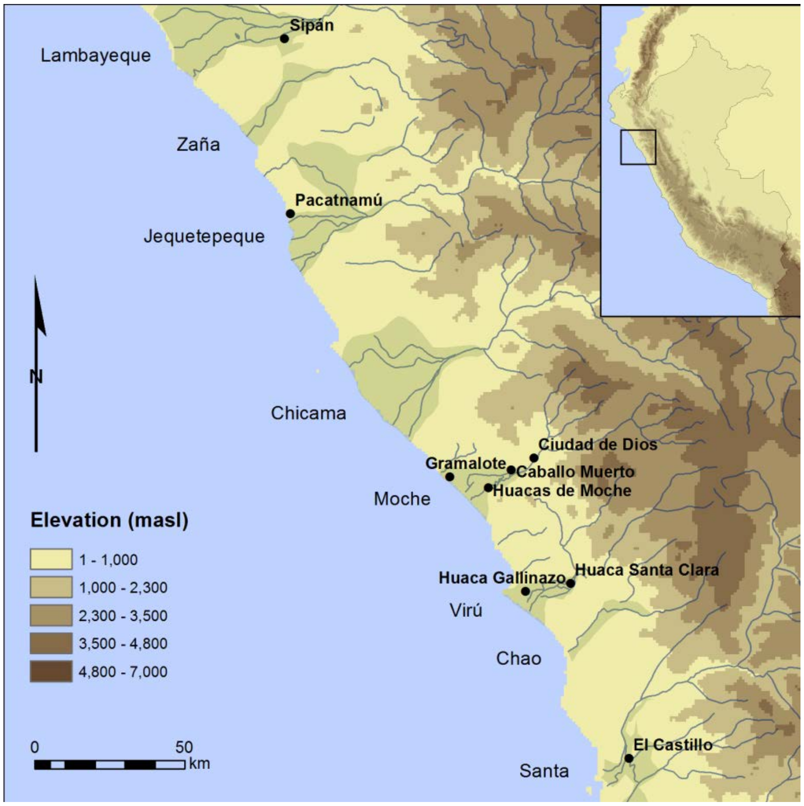


Figure 3: Map of the Virú Valley and the Locations of the Gallinazo Group and Huaca Santa Clara

This study is a small part of Millaire's (Millaire and Eastaugh 2011, 2014; Millaire and La Torre Calvera 2002, 2003, 2011) much larger project focusing on state formation in the Virú Valley. It builds on previous studies (Dillon 2015; Downey 2015; Millaire 2010a; Surette 2015; Szpak et al. 2014; Venet-Rogers 2013) and incorporates original analysis and theorizations of human-animal entanglements in this region and its political context. Zooarchaeological remains have been largely overlooked in examinations of the emergent Virú polity, making the greatest contribution of this study its focus on the social roles of animal foods. By taking a social zooarchaeological approach to analyzing the role of human-animal relations in Virú identity and state formation, this study adds to the growing body of knowledge which situates animals as more than simply protein and calories (Bekoff 2002; Benson 1997; deFrance 2009; Goepfert 2010; Hill 2011; Russell 2011). While this study necessarily involved traditional quantitative zooarchaeological analyses to gain an understanding of how consumption patterns differ at Huaca Santa Clara and Huaca Gallinazo, incorporating qualitative data regarding animal symbolism and food and its role in identity formation will allow me to situate animal products as a source of metaphor and status (Douglas 1975; Farb and Armelagos 1980; Knight 2005). Not only will this analysis of faunal material add to the scope of Millaire's ongoing work in the Virú Valley, it will also be useful on a theoretical level for archaeologists working on human-animal relations with regard to the emergence of early states and the variable identities that develop along with them.

The intimate relations humans share with their food are summed up nicely by Meigs (1997: 104-105): "Food has a distinctive feature, one that sets it off from the rest of material culture: it is ingested, it is eaten, it goes inside." Seen in this light, animal foods and resources take on an even more significant character; foods when eaten become a part of the individual, thus entangling humans and animals in a way not possible with other resources (Twiss 2007: 2). For these reasons, throughout this project food will be viewed as an aspect of identity, marking similarities and differences between individuals and groups, as well as a provider of necessary nutrients. The familiar saying "you are what you eat" takes on new and deeper meaning when we begin to conceptualize animal foods as sources of power and tools for identity formation.

1.1 The Development of Early States and the Culture Chronology of the North Coast

1.1.1 Early State Formation

States are independent political organizations that are generally controlled by specialized leaders who exercise considerable sway over the social, economic, and political activities of the regions under their control. State development in ancient societies was generally associated with population growth and changing power dynamics as labour specialization increased (Trigger 2003). In this context, archaeologists recognize that differential access to food served to create and reinforce social position and status, and that animal resources were central to negotiations of power (Chicoine 2011; DeFrance 2009; Twiss 2007). In Peru, archaeologists have successfully documented how land, people, and resources came under increasingly centralized control during the Early Intermediate Period (~ 200 B.C.E. – 800 C.E.), but animal consumption in state formation processes has received little attention (Arkush and Stanish 2005; Billman 2002; Goldstein 1993; Haas 1987; Isbell 1997; Stanish 2000; Wilson 1988).

The Early Intermediate Period in the Virú Valley saw the emergence of the first pre-Inca states, associated with the rise of polities and local rulers with a strong hold on the land and people under their dominion (Millaire 2010a; Millaire and Eastaugh 2011). This was also a time when new urban social identities were cemented as state administrators increasingly converged in state capitals and administrative towns. Elsewhere in the Andes, similar processes involved shifts in how people acquired and consumed food, with social disparities deepening as elite individuals gained control over particular resources, including food (Hastorf 2003). Different positions within a social hierarchy often manifested themselves through distinct foodways, and in the Andes often involved differential access to luxury foods. Luxury is a highly subjective term, but one that will be of great importance for my analysis, because as Farb and Armelagos (1980) and Goody (1982) note, luxury foods provide fertile ground for theorizing the role of food in identity formation and social differentiation. My usage of the term luxury follows Hastorf's (2003: 545) conception, where luxury foods are so classified because they are "exotic, rare, expensive to procure or restricted from the bulk of the population." That said, luxury goods must be defined at every social level and by context because all subgroups of a population can potentially incorporate luxury into their diet in different highly contextualized ways related to setting, timing, amounts, and accessories, all limited by access to the goods themselves (Hastorf 2003: 455).

On the North Coast, regional lords were highly influential in shaping the political and economic structures of the region. According to Netherly (1978: 125) the geography of the North Coast, with its many variable resource zones in a relatively small region, favored the development of compact political territories, affording local lords access to larger clustered populations, and greater access to human energy and labour. The compact nature of settlements was also necessitated because of the dependence of groups on irrigation systems which shaped the core valley territories. The power structures within the emergent Virú polity would have been co-created by a select few elites on the North Coast responsible for maintaining social, ritual, economic, and political functions, alongside differential consumption of animal foods associated with variable alimentary identities.

D'Altroy and Earle (1985) distinguished between two types of economic systems commonly associated with early states. Systems involving the payment of subsistence goods such as crops or livestock to the state are characterized as “staple finance”, while “wealth finance” systems involve the manufacture and procurement of special goods which are then used as payment (D'Altroy and Earle 1985: 188). Staple finance arrangements are advantageous because of the relative simplicity involved in directly collecting the products needed by households involved in state activities, the main disadvantage being the costs associated with storage and redistribution. Wealth finance structures are beneficial because of the easy storage and transport of financial units, which allows for more centralized control to be maintained by those in power. Wealth finance economies are more effective at integrating elite administrative ranks into the state authority structure because goods are transferred directly to the state to be subsequently redistributed by authorities. A disadvantage, however, is that wealth objects tend to have restricted use values, necessitating that they be converted into subsistence goods through trade to support individuals not involved in agriculture and food production. While these categorizations are useful at a certain level for helping us interpret the functions of state systems, the division between these financial systems is largely heuristic, with many societies developing and utilizing a mixture of both types of organization (D'Altroy and Earle 1985). It is also important to note that the requirements of energy associated with the production and management of goods is generally equal to the importance of the social aspects of labour and exchange in the creation of state economies.

1.1.2 Culture Chronology of the North Coast

In 1946 Wendell Bennet, Junius Bird, Donald Collier, Clifford Evans, James Ford, Allan Holmberg, Webster McBryde, Jorge Muelle, Julian Steward, William Strong, and Gordon Willey formed the Virú Valley Project to research cultural adaptations across the North Coast of Peru (Bennet 1950; Willey 1953). They wove together multiple lines of evidence, including geographic and ethnographic accounts alongside archaeological data including the chronology and location of various sites. The Early Intermediate Period, which saw the development of the first urban nucleations and state structures, can be subdivided further into corresponding phases for the North Coast which are included in Table 1. Rafael Larco Hoyle (1938) was one of the first to study the culture chronology of the coast for this period, focusing on artifacts and architecture to elucidate the spatial and temporal distribution of cultures in the coastal valleys. Salinar (also called Puerto Morin in Virú), Moche, and Virú were key cultural groups that mark the beginnings of early urbanism and state development for this region during the Early Intermediate Period.

Table 1: Andean Chronology and Time Periods for the North Coast, Peru (Dillon 2015; Downey 2015; Millaire 2015)

Time Period	Date Ranges	North Coast Phases
Late Horizon	1470 – 1532 C.E.	Chimú-Inca
Late Intermediate Period	1100 – 1470 C.E.	Chimú
Middle Horizon	800 – 1100 C.E.	Lambayeqye
Early Intermediate Period	100 – 800 C.E.	Moche
	200 B.C.E. – 600 C.E.	Virú
	400 – 200 B.C.E	Salinar
Early Horizon	900 – 400 B.C.E.	Cupisnique
Initial Period	1800 – 900 B.C.E.	Initial Period
Cotton Preceramic	3000 – 1800 B.C.E.	Late Preceramic
Archaic	Pre-3000 B.C.E.	Preceramic

In most previous archaeological studies, the Moche have been framed as the first state to dominate the North Coast from around 100 – 800 C.E. (Bawden 2004; Moseley 1992; Wilson

1988). The Moche state eventually developed to include territories ranging from the Piura Valley in the North to the Huarmey Valley in the South (Stone-Miller 1995), with the wide distribution of artifacts in the more southerly valleys (including Virú) suggesting that a Moche "horizon" developed during this period as the Moche state conquered surrounding groups (Millaire 2010a). The capital of the Moche polity was the site Huacas de Moche in the Moche Valley, which is dominated by two large mound structures, Huaca del Sol and Huaca de la Luna, with housing compounds and workshops filling the space between them. While there is consensus that Huacas de Moche was the capital of an early state, it remains unclear whether this was a case of primary state formation, or whether there was parallel development of multiple states, with multiple sites in the region playing similar roles for other cultural groups.

With regards to Moche expansion into the Virú Valley, Willey (1953) described the valley as previously being under the control of the Gallinazo (Virú) until their system was overridden by incoming Moche groups, as evidenced by increasing quantities of Moche ceramics at Gallinazo sites. More recently, however, the characterization of the Moche as a territorial state has come into question based on new data collected by the Virú Polity Project at Huaca Santa Clara (Millaire 2010b). Millaire suggests that there is no evidence at Huaca Santa Clara of a political shift at the site caused by the Moche, arguing that at most, the local elites shared in a flow of ideas with the Moche resulting in a complex social and economic exchange system (Millaire 2010b: 228). In a context where each coastal valley was slightly different in terms of environment, resources, access to trade routes, etc., the debate should now shift from whether Moche society developed the first state in the Andean region, to how many different incipient states emerged along the Peruvian north coast in the centuries around the turn of the common era.

Table 2: Time Periods and Chronology of the Virú Valley (Millaire 2015; Venet-Rogers 2013)

Time Period	Date Ranges
Tomaval	ca. 750 – 1150 C.E.
Huancaco	ca. 600 – 750 C.E.
Virú	ca. 200 B.C.E – 600 C.E.
Puerto Morín	ca. ? – 200 B.C.E.

Table 2 is a chronological sequence of the major cultural time periods of the Virú Valley. Near the end of the Puerto Morín period, the Virú Valley witnessed the construction of the first monumental mound and irrigation structures as well as an increase in population in expanded villages (Bennett 1950; Downey 2015; Millaire 2010a; Millaire and Eastaugh 2011; Willey 1953). The original investigations into the ruling structure in the Virú Valley during the Early Intermediate Period was conducted by Bennett (1939, 1950), Larco Hoyle (1945), and Willey (1953), with Bennett originally coining the term "Gallinazo." This thesis, however, follows the current usage of the term "Virú" to describe the polity.

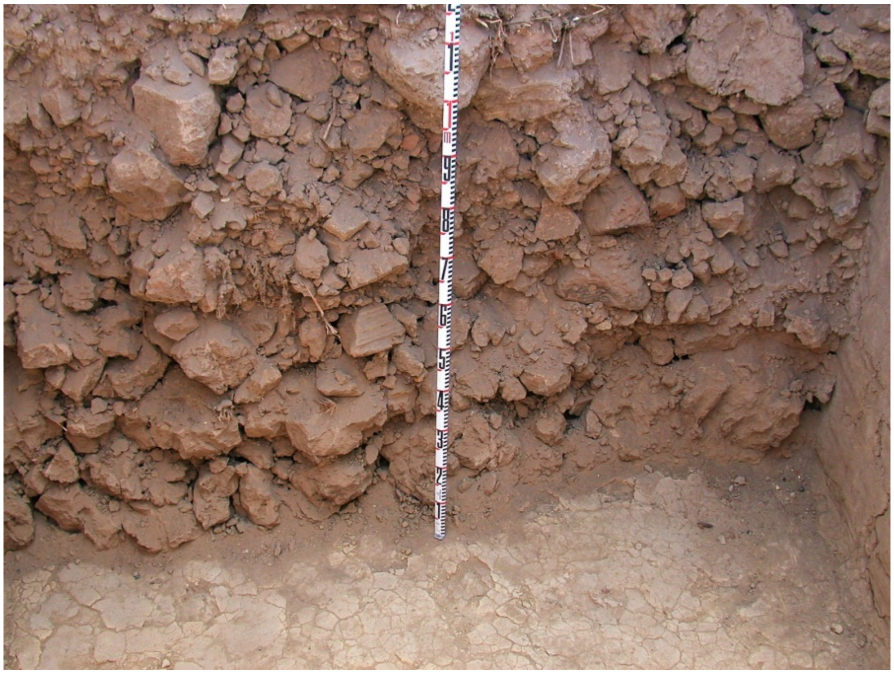
Virú state formation was characterized by the creation of extensive irrigation systems, as well as a four tiered settlement pattern, including a capital (the Gallinazo Group), a storage and redistribution center (Huaca Santa Clara), as well as villages and hamlets (Bennett 1950; Millaire 2016; Millaire and Eastaugh 2011; Willey 1953). As Millaire (2010a) notes, the occupation of the valley by the Virú polity coincided with the development of a distinct pottery type (Gallinazo Negative), characterized by negative painted designs. Larger populations were sustained by extending crops into previously barren sectors, involving the expansion of previously constructed irrigation canals in order to cultivate the areas around the Gallinazo Group. The Gallinazo Group is a massive settlement, with around 600 ha of flatlands being dominated by mound structures, however, it appears that only ~40 ha of the total area were occupied, leading Millaire (2010a: 6188) to suggest that between 10,000 – 14,400 people could have occupied the Virú capital (Millaire and Eastaugh 2011, 2014). Flannery (1998) has proposed a number of characteristics that would support labeling a given society a state, which include: (1) expansion and defence systems, (2) craft production sponsored by the state, (3) elite residences and burials, (4) ceremonial centers and residences, and (5) a four-tiered administrative system, and these features have been documented archaeologically within the Virú Valley (Millaire 2009a; Millaire 2010a; Millaire and Eastaugh 2011).

1.2 Virú Socio-political Landscapes and Structures – A View from Huaca Santa Clara and Huaca Gallinazo

1.2.1 Huaca Santa Clara

Huaca Santa Clara was built upon Cerro Cementerio, a small triangle-based hill in the lower Virú Valley, including a civic building on its apex, which has been excluded from analysis in subsequent chapters due to disturbances caused by modern disruption. This civic structure was comprised of a stepped adobe platform decorated with sculptural clay war maces, a popular ornamentation on the North Coast (Millaire 2016). Small rectangular rooms laid out in a honeycomb pattern and organized on mid-height terraces (20 – 30 meters high) around the mound could be viewed from the uppermost platform. The walls of these chambers were up to two meters tall with access points through the roofs. While the lower areas of the mound were made up of residential sectors, the mid-height terraces also included residences and spaces for public gatherings, and were likely occupied by the local elites based on their more elaborate access patterns and architectural features (Millaire 2016). Based on radiocarbon dates from the site, it appears that this location was occupied for several centuries between 200 B.C.E. – 800 C.E. (Millaire 2010a: 6187).

Figure 4: Rubble-fill and Occupation Floors from Room 110-A from Administrative Sector 6 at Huaca Santa Clara (Image Courtesy of Jean-François Millaire)



According to previous and current research (Larco Hoyle 1945; Millaire 2009a, 2010a: 6187; Willey 1953) Huaca Santa Clara served as an administrative center as well as a defensive barrier along with three other sites at the only entry point from the highlands into the valley. It was surrounded by irrigation canals. Refuse and broken adobe bricks topped by plaster floors acted as foundations for multiple episodes of building across the site, creating layers alternating between rubble-fill and occupation floors. Relatively short occupations of each floor as well as the regular cleaning that would have taken place during occupation, where refuse would have been deposited elsewhere, means that the collections of faunal remains from each level were small, and for the purpose of analysis contexts within the sectors were grouped together. The complexity of the access patterns and general design features, alongside the artefactual evidence, supports its designation as an administrative location. The most compelling evidence, however, is the system of connected storage rooms on the mid-height terraces (Millaire 2009a, 2010a, 2016). Excavation revealed that most of the rooms were empty, but large quantities of organic remains suggest that the rooms had once housed local food crops. The important role of crop storage suggests that Huaca Santa Clara played a role in a state taxation and redistribution system what could be characterized as "staple finance". According to D'Altroy and Earle (1985: 190) storage systems function to mediate fluctuations in the yearly food supply and to synchronize the production and usage of goods. They also play a critical role in the political-economies of early states by encouraging the formation of governmental bureaucracies and socio-political hierarchies. The state's control over centralized storage also corresponds to their control over the people who rely on their redistribution of products.

Figure 5: Map of Administrative, Residential, and Civic-ceremonial Sectors at Huaca Santa Clara

1.2.1.1 Administrative Sectors

Huaca Santa Clara is composed of seven sectors, three of them identified as administrative. Sector 2 had a set of three platforms and likely served as a warehouse. Sector 4 consisted of a terrace, low platform, and numerous rooms with various artifacts, while Sector 6 had no storage facilities and likely served as a space for administrative functions (Millaire and La Torre Calvera 2002, 2003). Sectors 4 and 6 were located near the top of the mound and functioned as civic-ceremonial areas. Room A-102 in Sector 6 was an interesting location featuring niches likely used in ritual and more adjoining rooms including an impressive open gallery offering a panoramic view of the areas east of the settlement and the highlands in the background (Millaire 2016: 5). This gallery would have helped to set the elites occupying it apart from the rest of society, but it also was not nearly as opulent as the architecture found at the Gallinazo Group, suggesting that individuals at Huaca Santa Clara may not have been living as lavishly as those at the capital (Bennett 1950; Millaire 2010a). As noted by Millaire (2009b, 2010a, 2016:5) and Surette (2015), while residents of Huaca Santa Clara had access to fine textiles, the architecture and associated artifacts including ceramics were decidedly utilitarian in comparison to those at the Gallinazo Group.

1.2.1.2 Residential Sectors

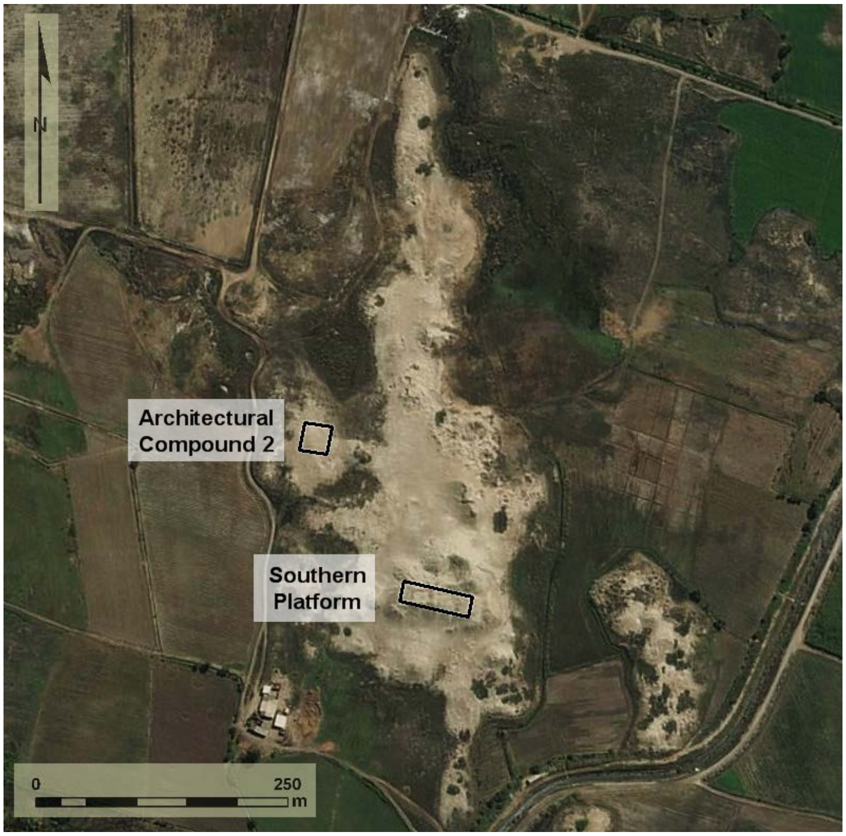
The three residential sectors at Huaca Santa Clara were located at the base of Cerro Cementerio. Thirteen rooms constructed on three terraces were found in Sector 3 where large quantities of refuse suggest that the area may have served a domestic function (Dillon 2015: 5). This sector also likely featured a metal workshop, as indicated by the presences of three kilns. Sectors 5 and 7 are also believed to be residential areas, although it should be noted that materials were only collected in these areas through surface surveying and test pitting. The workshops and domestic areas found at the base of Huaca Santa Clara indicate that these sectors were home to residents of lesser status, while the upper levels of the mound were reserved for individuals with higher social standing that were likely involved in the maintenance of the Virú polity’s storage and redistribution systems.

1.2.2 Huaca Gallinazo

As mentioned in previous sections, the Gallinazo Group was the capital of the Virú polity consisting of a cluster of mounds oriented North by West and situated roughly four kilometers from the Pacific coast. The ceramic style Gallinazo Negative is present at 30 of these mounds, however, only six were found to have civic architecture associated with them (Millaire 2010a; Millaire and Eastaugh 2014). Bennett (1950) was the first to excavate at the site, exposing rooms tightly arranged into the same honeycomb pattern found at Huaca Santa Clara, hinting at a long occupational history. According to Willey (1953) the construction of the Gallinazo Group occurred in concert with the expansion of cultivated areas in the Virú Valley, which would have involved staggering amounts of labour to bolster the existing irrigation system. A number of architectural compounds were located across the site including living, storage, and patio spaces as well as a wide range of architectural forms and quality. Millaire (2010a: 6187) suggests that the architectural design elements and the massive amounts of labour required to create and maintain these structures points to the existence of a program of public architecture.

Huaca Gallinazo is the largest of the mounds in the Gallinazo Group with its civic building measuring around 82,000 m^3 with well-preserved architecture (Millaire 2010a). The adobe platform mound features large platforms at different levels which would have been accessed via ramps. It has decorative elements including painted walls, sculpted friezes, and niches (Millaire and LaTorre 2011). The layout of the rooms and complexes resembles most closely what Smith (2007: 13) describes as “semiorthogonal urban blocks” characterized by residences that connect to one another in common organization. The overall layout results from the choices made by individual builders; in other words there was likely no centralized planning (Milliare and Eastaugh 2011: 295). As was the case at Huaca Santa Clara, the typical construction technique at Huaca Gallinazo involved the layering of multiple fill and occupation floor levels, leading to the small samples from different levels, which I have chosen to group by larger context for analysis. Radiocarbon dates suggest that there were long periods of uninterrupted occupation at Huaca Gallinazo, possibly spanning 100 B.C.E. – 700 C.E. indicating that the site was occupied during the same period as Huaca Santa Clara (Millaire 2010a: 6190).

Figure 6: Map of the Southern Platform and Architectural Compound 2 at Huaca Gallinazo (Image credit: Arc GIS)



1.2.2.1 The Southern Platform

The Southern Platform at Huaca Gallinazo is believed to have been used during elite rituals and ceremonies. The area's importance is highlighted by the quality of the architecture, which far surpasses what is documented for the surrounding residential compounds. While utilitarian ceramics were uncovered during the excavation of the Southern Platform, suggesting that food storage and preparation were also occurring in this elite area (Venet-Rogers 2013: 12), the quantity of fancy ceramics found in this sector set it apart from the residential areas (Millaire and LaTorre 2011). Rooms on the westernmost side of the platform were likely involved in food processing and preparation, with rooms A-7 and A-8 functioning as kitchens serving elite individuals involved in civic systems at the site, as evidenced by the large number of food remains recovered in these contexts along with hearths and blackened ceramics (Venet-Rogers 2013: 13).

1.2.2.2 Architectural Compound 2

Architectural Compound 2 is part of the residential sector at Huaca Gallinazo, with domestic and storage spaces as well as an open patio covering around 90 m^2 (Venet-Rogers 2013: 15). The relatively simple architectural forms and the generally utilitarian artifacts that were recovered suggest that it was a domestic space. A space of 10 x 10 m was excavated in this sector, revealing several rooms, one of which is believed to have functioned as a food preparation area. Room A-2 contained large jars used in food storage as well as architectural elements commonly found in storage areas, along with burnt animal remains and plant materials (Masur 2012).

1.3 Thesis Structure

The second chapter of this thesis provides an overview of the environmental context of Huaca Santa Clara and Huaca Gallinazo, as well as previous zooarchaeological studies and theoretical frameworks of social zooarchaeology and relational ontology. Chapter 2 also discusses the iconographic representations and symbolism associated with species found at both sites, highlighting how this type of information is crucial for understanding the interconnectedness of symbolism, food, identity, and power. Chapter 3 is an overview of the recovery methods and laboratory techniques used during data collection during my study and Venet-Rogers' (2013). The third chapter also discusses the zooarchaeological quantification methods employed, as well as the statistical tests used during analysis. Chapter 4 presents the results and discussion of broad patterns of taxonomic exploitation at Huaca Santa Clara and Huaca Gallinazo, while Chapter 5 examines the exploitation of the main mammal species found on each site, including camelids, white-tailed deer, and sea lions. The sixth and final chapter brings together the results of the faunal analysis, a discussion of animal symbolism on the North Coast, and theoretical conceptions of food and the presentation of self in order to contextualize them within larger regional patterns.

Chapter 2

2 Context and Background

This chapter begins by providing an outline of the environmental context of both Huaca Santa Clara and Huaca Gallinazo. It then reviews previous zooarchaeological studies from the North Coast of Peru during the period in question, as well as broader trends in social zooarchaeological research on consumption, and relational ontology. It discusses animal classes, with a focus on the symbolic value of particular species found on the sites, and how these understandings can help shape zooarchaeological analyses of the interplay between food, identity, and power.

2.1 Situating Consumption within the Environments of the North Coast

The North Coast of Peru is commonly divided into three regions: the Pacific littoral zone, the desert coastal plains, and the slopes of the Andes. As Dillehay (2011) points out however, divisions are largely meaningless to archaeologists because Indigenous cultural contexts appear across all environmental zones. Cross-cutting these landscapes are numerous rivers flowing down from the highlands, across the desert coast, and finally flowing out into the Pacific (Bawden 1996). Even within the desert plains, there are numerous environmental sub-types, including true desert, grasslands, and dry forests, all of which support a wide variety of animal species today as well as in the past. This net environmental diversity was expanded upon as humans modified their environment by employing multiple land management strategies including extensive irrigation farming in certain areas. The transition to canal irrigation began around 6000 B.P. and was foundational to subsequent cultural transformations leading up to primary state formation (Dillehay 2011: 7). It is crucial to highlight the entangled nature of the social and environmental systems on the North Coast because of the unique combination of both marine and terrestrial subsistence economies supporting the development of social complexity and urbanism (Dillehay 2011; Moseley 1975, 1992).

2.1.1 El Niño Events and their Effects on the North Coast

El Niño events are characterized by drastic changes in temperature of the Humboldt Current, which runs along the Pacific coast of Peru. During these climactic events, the usually cold waters of the Humboldt Current are known to warm by as much as 5°C, resulting in reduced phytoplankton biomass, which can completely disrupt the local food web (Cushing 1982). Populations of shellfish, fish, and marine birds and mammals are forced to relocate with the changes in nutrient cycling to avoid mass die offs due to starvation. The stress placed on marine species during El Niño events would have also been felt by the humans occupying the region in the past, as their once reliable food sources depleted or migrated to survive.

2.2 An Overview of Previous Studies

The following is a summary of previous zooarchaeological studies focused on Moche feasting on the North Coast, as well as an overview of social zooarchaeological approaches to consumption and relational ontology. These studies and theoretical frameworks are hugely valuable when considering the analysis of faunal remains as they relate to social complexity at Huaca Santa Clara and Huaca Gallinazo. The entanglements emphasized in relationships between humans and animals in hunting and domestication are also reconsidered.

2.2.1 Previous Zooarchaeological Studies on the North Coast

The Moche cultural group occupied the North Coast of Peru from around 200-800 C.E. during the Early Intermediate Period, which saw increased social, political, and economic development. The hierarchical nature of Moche society was highlighted through the construction of elite monumental architecture at permanent settlements, as well as their specialized craftsmanship of extremely ornate ceramics and metalwork.

Exploring methods of food preparation allows for the formation of better understandings of the purpose and function of Moche feasting. This includes analyzing vessels used in cooking with an eye for material evidence that items were used to cook for groups of people beyond the household, such as large cooking *ollas* and hearths (Gumerman 2010: 112). Gumerman (2010) suggests that Moche feasts took one of two forms: work-party feasts used to mobilize labour of farmers or craftspeople, reinforcing social relations and providing elites with a venue for displaying their power while harnessing further social capital (Dietler and Herbich 2001: 257), or life-cycle feasts, meant to commemorate events such as ascensions of rulers or funerals. Both of these feasting types do not appear to be large, state sponsored events; rather, evidence suggests that they were small scale local occasions.

Small scale work-party feasting is evident at the rural Moche farming site of Ciudad de Dios, where feasting events were held to feed agricultural workers (Gumerman and Briceño 2003). The large number of domestic buildings and artifacts including hoes, and its location near an irrigation canal suggest that this village was involved in agricultural production. Domestic activities also appear to be common in the elite residences at the site, associated with a large number of grinding stones. Llamas (*Lama sp*.) made up the majority of mammalian faunal remains recovered, with 28% of the total faunal assemblage comprised of large mammal remains (Gumerman 2010: 114). Campbell (1998) suggests that local elites were involved in hosting work-party feasts because many large storage jars (*tinajas)* were present in a room with a large 2 metre long hearth within an elite area of Ciudad de Dios. This find supports the interpretations of consumption beyond the household at the site.

The capital of the Moche polity, Huacas de Moche in the Moche Valley, boasts two impressive sites, Huaca del Sol and Huaca de la Luna, where feasting activities have also been documented. The area between the two structures consists of architectural compounds associated with domestic, administrative, and craft-production activities, and while work-party feasts have not been identified, there is evidence suggesting that craftspeople and administrators were being fed at these locations. Compounds were connected via plazas and alleys, with some boasting more than forty internal rooms including kitchens with large hearths and storage features, as well as a variety of vessels and ground stone tools used for food preparation (Chapdelaine 2000; Uceda, Mujica, and Morales, 1997, 1998, 2000). Llamas dominated the faunal assemblage, suggesting that herds were being maintained locally for meat, and likely wool and labour. Guinea pigs (*Cavia porcellus*) were the only other animal consumed on a regular basis (Pozorski 1979: 175). Relative to earlier sites, the faunal remains from Huacas de Moche indicate that there was a de-emphasis of marine products, which Pozorski (1979: 175) suggests could be the result of changing coastal habitats due to isostatic rebound, or the overexploitation of marine resources as populations in the Moche Valley increased. The overexploitation hypothesis is supported by evidence from later coastal sites, where several large clam species such as *C. concholepas*, were documented to have declining populations. The increased emphasis on llama may result from decreased shellfish populations; however, it seems more plausible that inland meat resources were incorporated into the diet in larger proportions even before the decline in marine resource exploitation (Pozorski 1979).

While food preparation and consumption beyond the household were occurring at Huacas de Moche, the evidence for feasting is not overwhelming. However, the presence of more jars and large hearths within the compounds believed to be used for administrative and craft-production activities suggests that food was prepared for individuals working in these areas (Whiteman 2001). According to Gumerman (2010: 117), while this likely does not represent a true work-party feast, because the work being compensated for was skilled and regulated, it is clear that large quantities of food and drink were being provided for people working as administrators or craft producers in the urban zone.

The comparatively small scale nature of Moche feasts suggests that individual communities and households were in control of food preparation and consumption instead of a centralized sociopolitical body. It thus appears that, rather than holding feasts to bolster a consolidated bureaucracy, the small scale Moche feasts served to feed local farmers, administrators, and craftspeople. This is somewhat surprising considering that the Moche are known for their elite and hierarchical ruling system. Compared to the later state-sponsored feasting events of the Inca, Moche feasts likely served to recruit labourers and compensate specialists while defining prestige at the community or lineage level (Gumerman 2010: 117).

Ethnohistorical documents from the colonial period, especially those by Cobo ([1653] 1990), which are seen as relatively reliable accounts of the Inca culture, provide us with some insight into the values placed on meat. While documents from the colonial period are inherently problematic, often reflecting the ethnocentric biases of colonizers, they offer a unique window into the past, which can provide important insights when used with caution. A short overview of Inca luxury cuisine is warranted even though they are separated temporally from the Moche by centuries, because it provides us with an understanding of how animal products and foods are used to create and express social differentiation in complex societies. Cobo ([1653] 1990) states that meat was consumed only on a limited basis among both elites and commoners, although elite individuals had greater access to animal products and generally better cuts of meat.

Inca luxury cuisine appears to be remarkably similar to the baseline diet in terms of items consumed, however the quality, quantity, and variety of foods and their differential preparation, consumption, and eventual disposal were crucial to the demarcation between elite and commoner food ways. The ways in which meat was prepared appears to be limited to methods such as stewing, drying, or roasting in *pachamanca* earth ovens (Cobo [1653] 1990). According to Bray (2003a: 102) meat seems to have been a tightly controlled resource, and this may have also been the case for the Moche based on the standardized ages of consumed animals and the regularity of butchery marks, indicating that there was a degree of control over meat processing to ensure a reliable supply (Pozorski 1979: 175). The idealized Inca luxury cuisine was tied to the concept of variety, and the colonial era recordings of González Holguín ([1608] 1952: 238-239) indicate that the capacity to serve multiple plates with varying ingredients was a key part of luxury Andean cuisine during the period.

2.2.2 Applying Social Zooarchaeological Approaches and Relational Ontology to Studies of Consumption Patterns

While zooarchaeological approaches have become more sophisticated in recent decades, its traditional focus on subsistence means that the idea that animals played any roles in society outside of contributing to the diet and providing raw materials such as skins and wool was long overlooked. While the roles animals play in subsistence economies should by no means be minimized, animals often play important symbolic roles within human societies, and the examination of these symbolic functions provides a more complete perspective on human cultures of the past (deFrance 2009; Hamilakis 2008; Hill 2011; Knight 2005; McNiven 2010; Midgley 1983). While the valorization of meat suggests its significance far beyond nutrition, which is especially relevant to studies focused on feasting and the sharing of animal resources, we must also consider the value that animals would have had before their deaths as sources of secondary products and as markers of wealth (Russell 2011: 8).

While social zooarchaeology emphasizes examining animals outside of traditional subsistence frameworks, it also calls for an examination of the roles of women and non-hunting males in creating faunal assemblages. As Gifford-Gonzales (1993: 182) rightfully points out, the lack of zooarchaeological studies that incorporate examinations of cooking and cuisine results from the general devaluation of “women’s work” and the contributions of non-hunting males, impacting research at all levels from initial questions, through to analysis and the formulation of conclusions. Detailed analysis of cooking practices and resulting cuisines should be focused on highlighting the variable roles women, children, men, and animals play at all levels of interactions with foods to help mitigate the androcentric bias that has plagued previous studies and ethnographic accounts.

According to Knight (2005) even studies that consider the symbolic roles and values placed upon animals fall into conceptualizing them as passive objects, acted upon by humans, rather than as subjects in their own right. Subject-object dualism is not a universal feature of all human societies, so equal consideration should be given to ontologies and epistemologies that operate outside of this Western framework to open up new avenues of archaeological interpretation (Herva 2009: 338). Humans often personify and humanize animals (Guthrie 1993), but the motivation for doing so is little understood, although Serpell (1986: 139) argues that it is a natural extension of the empathy that we feel toward other humans. Issues surrounding the recognition of individuality and aspects of personhood in animals by humans often hinge on whether non-human animals are viewed as capable of interacting with humans on the same ontological plain. Knight (2005: 3) argues that individuals involved with animals on a regular and intimate basis are more likely to recognize the individuality of animals, often viewing them outside of abstract categories or stereotypes.

This study uses the framework of relational ontology and follows Herva (2009: 388) in conceptualizing *all* things in the world as in a constant state of flux or coming into being, with identities being co-constructed via the relations between entities. In order to understand how the human-animal divide is navigated in any society, we need to understand their intersections both economically and ontologically (McNiven 2010). As mentioned above, not all societies subscribe to the Western notions of subject-object/organism-environment dualism, and this is especially true of non-Western ontologies (of course subject to variability). Fausto (2007: 497) points out that the relationships between humans and non-humans are situated in wider socio-cosmic interaction spheres where agency and consciousness are not exclusively human traits; in other words in non-Western ontologies subject position is granted to other beings, effectively creating other-than-human-persons. Within these ontologies, humanity and not animality is viewed as the original and natural state of all entities, allowing for connections to be drawn between people and animals that would be impossible without recognizing that subject-position is created via the point of view of the individual (whether human or animal) (Bray 2009: 358; Hill 2011: 117). Boundaries between entities and their environments are erased and subject-object dualisms dismantled within relational ontologies (Ingold 2006). As we exist and move within our environments we constitute our sense of self in relation to the things/entities/non-human-persons that surround us (McNiven 2010), learning the effects they have on us and vice versa, leading Neisser (1976) to suggest that this is how we become aware of our "ecological self". We are constantly creating intersubjectivities between ourselves and others when, as Neisser and Winograd (1988: 41) state, "the nature, direction, timing, and intensity of one person's actions mesh appropriately with those of the other's."

New perspectives on politics, ritual, and power may be revealed via relational ontological perspectives as well, because ritual in many non-Western worldviews was predicated on the idea of reciprocity among all classes of entities, with communication between beings of supposedly different ontological standing (at least in Western thought) existing at the heart of ritual interactions (Angelo 2014). Ritual involves the standardization of repetitive actions, usually with a conscious aspect of performance. Butler (1990) relates the notion of performativity to how human sexuality and gender are enacted through a myriad of practices, where our identities are something we do, not what we are. If Butler's (1990: 33) performativity is repetitions consolidated over time, then clearly humans' interactions with animals are performative in all their reiterations and relative standardization (Birke et al. 2004: 175). Both humans and animals must learn to coexist in a co-constructed and conjoined world, participating in repeated acts where according to Birke et al. (2004: 175) the performative aspect is threefold with the performance of humanity, animality, and the connection between the two.

2.2.3 Reconsidering Human-Animal Relations in Domestication and Hunting

The close relationship between humans and domesticated animals can be described as mutualistic, because ideally both parties benefit from their continued interactions. One of the many consequences of domestication is the establishment of the designation "wild" and its associated rich symbolism, which is usually seen in diametric opposition to domestication. Russell (2011: 170) notes that in pastoral societies, hunting is inextricably entangled with conceptions of the wild, relating back to how nature and culture are jointly constructed. The wild, and consequently wild animals, are often viewed as dangerous; however, it is possible to bring these animals under human control through perceived nature-culture transformations associated with processing and cooking, which turn wild game into food (Douglas 1988: 127; Falk 1994: 76; Fausto 2007: 503).

According to Cartmill (1993: 29-30) in the Western tradition only a particular type of killing counts as hunting, with the stipulation that the animals must be wild, meaning they may not be docile or part of the human domain. Others, like Hamilakis (2008), would add that the hunted animal must be able to potentially flee or revolt against any humans in pursuit, and that the violence directed at the animal must be premeditated and direct. Clearly these two conceptualizations of hunting are rather restrictive, and emphasize traditionally male interactions with animals, since hunting is widely gendered as male. As a result Szuter (2001) attempted to come to a definition of hunting that was more inclusive to all genders and age groups by including activities like raising small animals in the household, the butchery and distribution of animals, as well as cooking. Hunting can be a ritual in itself; however, as noted by Russell (2011: 163), most cases of ritualized hunting occur within societies that possess domesticated animals and staple crops, necessitating that hunting be a secondary method of procuring meat for it to be considered ritual. Hunting becomes no longer necessary to provide meat when individuals have access to domesticated animals, so game is bestowed special value as hunting commonly becomes a privileged elite activity. The slaughter of a large animal often brings prestige to the person who brought them down because wild animals are thought of less as obstacles, and more as if they are opponents with human-like characteristics, allowing individuals to garner an inflated sense of achievement by killing them (Midgley 1983: 16; Russell 2011). This however, assumes that all individuals had access to herds of domesticated animals, or at least means of accessing their products, which may not have been the case in many instances. For individuals with little or no access to herd animals, hunting small game like birds would have served to supplement the diet during periods when access to domesticated meat sources was limited or nonexistent.

Ingold (2000) has argued that because of their worldviews which value human-animal connectedness, hunter-gatherers view hunting as an essentially non-violent act because the relationship of mutuality between hunter and prey results in a relationship centered on trust and relative equality or even animal superiority (Serpell 1986: 142). This is supposedly in contrast to the relationships humans have with domesticated animals which are characterized by domination. I agree with Knight (2005: 4) and Oma (2010: 177) that perhaps Ingold is making an overstatement, because while hunters may get to know people intimately, many only get to know prey animals in general, viewing them only in terms of broader categories and classes. Oma (2010) takes things a step further by questioning whether intimacy with prey animals is achievable at all since encounters between humans and wild animals are ephemeral and singular, in contrast to the sustained oft repeated interactions between humans and domesticates.

Definitions of domestication are highly variable, but here I will focus on the social definition which emphasizes the bringing of animals into the human social sphere (Russell 2011: 212). Within the patterned interactions between humans and domestic animals a high level of familiarity, trust, and even caring are developed as humans trust animals to be cooperative, while animals trust humans to care for them within these mutualistic but unequal arrangements (Oma 2010; Reitz and Wing 1999). This would have been the case for particular members of the Virú population involved in camelid herd management and the keeping of small animals in the household, such as guinea pigs. It is necessary to exercise caution when considering the process and outcome of domestication, because the focus on the final slaughter of a domesticated animal can at times overshadow the nurturing and care that come before it. As noted by Knight (2005: 6) the initial relationship between humans and domesticates may be utilitarian, but with increasing time, familiarity, and care, animals eventually become part of the moral sphere of the household. Some scholars find that the obligations between humans and domesticated animals are best viewed in terms of a contract, where humans take on the obligations of caring for the animal in order to reap the benefits keeping animals provides. Situating human-animal relations as contract allows for animals' roles in both economics and cosmology to be discussed together and animals to be considered as both subsistence and symbol outside of problematic dichotomies, accounting for the totality of the animals' social roles in communities. Nowhere within this contract is it necessitated that humans and animals must be equal partners; although it does suggest that communication can occur across species boundaries via informational and emotional exchanges understood by both actors (Larrere and Larrere 2000: 56; Midgley 1983; Oma 2010: 179).

The concept of animal wealth is crucial for the formulation of pastoral and agricultural societies which deal, in part, in the medium of animals, as was the case for the Virú. For animals to be considered wealth at all is suggestive of some gradation of social inequality, because as Russell (2011: 320) states: "those with more animals are richer than those with few, and those with none are shut out of the primary exchange system". While animal wealth may be a source of inequality among humans, it is also well suited for maintaining relationships because of the productive and reproductive capacities of livestock. Brotherson (1989) argues that the Inca, and likely earlier states, incorporated some of the social aspects of herding into state models, resulting in more hierarchical societies, with metaphors featuring the ruler as shepherd and worshippers as the flock. Animals which provide their labour or products are afforded moral consideration by their human care givers, who enter into a subject-subject interaction through their utilitarian-plus relationship (Knight 2005: 6).

2.3 Marine and Terrestrial Faunal Resources and Symbolism on the North Coast

The many ancient cultures on the North Coast of Peru have produced a rich corpus of iconography that archaeologists can use to aid their interpretations, and for this study in particular, the examination of animal representations is especially important. The social and symbolic importance of animals is comparatively amplified because of their animation and ubiquity in the human experience and the fact that they are at once similar to, and yet quite different from us (Galatay and Johnson 1990). We also place a great amount of value on animals, and yet it could be argued that we exploit them, and the resulting ambiguity associated with this juxtaposition contributes to the sense of guilt that can permeate the acts of confining and killing animals, which only intensifies our feelings towards them (Russell 2011; Serpell 1986). The various symbolic meanings that animals can express, including numerous social, political, and economic relationships, as well as associated taboos, help define social boundaries (Lernau et al. 1996), and these connections reflect human ideals about animals and their relations to us (Levy 1995; Reitz and Wing 1999: 275). As Tilley (1999: 49-50) reflects:

> …the construction of principles of metaphoric analogy between the domains of humans and the domains of animals forms a fundamental basis for self-understanding and the construction of meaning in all known societies. Animals are key source domains and target domains of metaphors through which culture is constituted.

Iconography is also capable of demarcating social boundaries, and zooarchaeologists have previously incorporated art into their analyses. Changes in social and political arenas may be reflected in iconographic change, and at a practical level images may also be used to facilitate species identifications, aid the search for evidence of domestication, and more. Due to the often stylized nature of these depictions, interpretations may be more or less difficult and there will never be a simple relationship between art and subsistence. However, it is possible to examine iconography for clues about the relative symbolic potency of particular animals (Russell 2011: 11). While the frequency of representations of a particular animal may be telling of their relative symbolic importance, this importance is often not reflected in faunal assemblages (Reitz and Wing 1999: 276). Cross culturally, meat and hunting are often valued as symbols of prestige and plenty, with large communal consumption events often holding meat as their centerpiece, even if normally its relative contribution to the diet is negligible. This is the case in Moche iconography, where symbolic species such as sea lions (*Otaria sp.*) and white-tailed deer (*Odocoileus virginianus*) are common in representations, but far less abundant in the archaeological record than camelid species, which contribute significantly to the diet, but are not regularly depicted in Moche art. Another example of the discrepancy between imagery and the faunal remains on sites can be seen in Early Horizon Chavín art, which is dominated by depictions of tropical forest animals while camelids were the main meat resource (Miller and Burger 1995), leading some to suggest that these images represent the animals hunters most wanted to procure, be it for their size or to gain prestige (Russell 2011: 11).

2.3.1 Utilizing Moche Iconography to Aid Zooarchaeological Interpretations

This study uses Moche iconography as a proxy for discussing the symbolic importance of animal species consumed by members of the Virú polity because Virú ceramic representations are relatively understudied. This comparison is appropriate not only because Moche iconography has been thoroughly documented and interpreted, but because the two groups were culturally related. They were just two of several North Coast societies that thrived in similar environments, settlement systems, and socio-political structures, while producing material culture indicative of their coeval cultural development. Millaire (2009: 3) labels this the *tradición norcosteña*, evidenced by the similarities in architectural elements at platform mounds commissioned by Vicús, Salinar, Moche, and Virú leaders, as well as Virú textiles which are stylistically similar to those recovered from Huacas de Moche, Pacatnamú, Sipán, and El Castillo (Conklin 1978). Further similarities were noted by Bawden (1995: 260) regarding subsistence and food preparation/storage practices as well as metallurgy. In this context the ceramic representations of Moche and Virú can be viewed as related in a cultural-evolutionary perspective, while also serving as a means (like food) to emphasise their difference (Millaire 2009). If people from different valleys and polities shared that much in terms of techniques and symbolism, it is also likely that they shared similar views regarding animals, making Moche an ideal point of reference when discussing Virú animal symbolism.

The use of art history methods to analyze Moche culture and its iconography began in 1938 when Rafael Larco Hoyle conducted his first iconographic analysis, and many more studies followed that have enhanced and expanded our conceptions of Moche art (Benson 1997, 2012; Donnan 1976; Earle 2010; Hocquenghem 1987). The Moche are best known for their sculptural and fineline painted ceramic vessels which feature a wide variety of activities and actors, with animals being portrayed as both interacting with, and separate from humans. They are depicted naturalistically at times, anthropomorphized at others. Milton (2005: 255) defines anthropomorphism as the attribution of human characteristics to non-humans. However, according to Bekoff (2002: 48) this should not be all that surprising since by necessity we have a human view of the world, and as a result we have a relatively limited repertoire with which to explain and describe the behaviours of other animals. Anthropomorphism allows people admission into to the worlds of animals by fostering a sense of understanding about the feelings of animals, making their point of view more accessible. As Milton (2005: 255) suggests however, anthropomorphism as a concept is not without its problems, one being that anthropomorphism implies that people are attributing characteristics to animals that are in fact exclusive to humans, centering the human experience as the only point of reference to understand the non-human world around us. This observation led Milton (2005) to argue that “egomorphism” is perhaps a more suitable term because instead of centering “humanness” as the primary basis from which our perceptions of animals arise, it is more the fact that they are “like us” that is significant. The following sections summarize relevant information from Moche iconography for the taxa that are represented in the assemblages analyzed in this thesis.

2.3.2 Mammals

The representation of guinea pigs in the Moche Valley began around 1400 B.C.E. suggesting that they were kept by households on the coast from that time (Morales 1994). They are often viewed as a special source of meat (Chicoine 2011: 436). Llamas and guinea pigs are always depicted realistically in Moche iconography in comparison to wild species (see Figure 7), which highlights the interesting conceptual divisions between domestic and wild realms (Benson 1997: 30). This division was also examined by Flores Ochoa (1974: 256) who studied modern populations of llama herders, noting that people divide the world into two distinct categories: domesticated animals which belong to humans, and wild animals belonging to the *Apus* (mountain spirits). According to Flores Ochoa (1974), wild and domestic animals serve as representatives of two opposing but complementary worlds, especially in the case of deer, which are considered the wild equivalent of llamas. Moche iconography becomes a source of information to examine the place occupied by deer in their worldview. The best known portrayal is of “the deer hunt” which is represented on various Moche vessels from different sites (Donnan 1982).

Figure 7: Moche Representation of a Camelid (Drawing by Donna McClelland 2007)

Figure 8: The Moche Deer Hunt (Drawing by Donna McClelland 2007)

These scenes typically involve ornately dressed elite individuals or deities using spears, javelins, and maces to drive deer into netted areas for slaughter. Hocquenghem (1983: 78) like Flores Ochoa (1974) argues that deer served as a critical linkage between people and their ancestors. Deer lived at the margins between cultivated and wild areas, appearing and disappearing with the seasons, and symbolically passing between the realms of the living and the dead. Deer are relatively rare in Moche faunal assemblages, leading Donnan (1982) and Benson (1997) to propose that the hunt was likely ritual in nature, perhaps not occurring on a regular basis. That deer have special symbolic and ritual associations is evidenced further because they are shown in variable ways, including anthropomorphized (see Figure 9) and interacting with many different human and animal figures. This representation is in contrast with the camelids, which are always shown naturalistically and with a high degree of realism.

Figure 9: Bean Warriors Confronting Stag Warriors (Drawing by Donna McClelland 2007)

These data not only suggest a real dichotomy between deer and llama, but they also indicate dualisms between domestic and wild and the realms of the living and the dead. Goepfert (2010: 41) argues that these distinctions are why it is so uncommon to find deer remains in offerings made to the ancestors, because as ethnographic evidence demonstrates, deer already belong to the supernatural entities of the wild. As agriculture and sedentism developed deer began to be associated with agricultural symbolism because of their occupation of the lands around irrigation canals and crops, with their antlers shedding and re-growing with the seasons, linking them to agricultural cycles of regrowth (Benson 1997: 35). This connection was apparently not lost on past peoples as deer in Moche iconography are commonly shown with vegetation incorporated into their anatomy, with leaf-like ears and tails. Deer were also commonly depicted as anthropomorphized warriors or ritual runners, leading Benson (1997: 36) to argue that deer had qualities associated with good warriors because of their keen senses and speed. Their antlers could also be compared to weapons in combat.

Figure 10: Moche Sea Lion Hunt (Drawing by Donna McClelland 2007)

The elaborately dressed individuals depicted driving deer in hunting scenes are the same as those shown in representations of sea lion hunts, with the same ear spools and ritual clothing and club-like weapons that are commonly associated with elite individuals as markers of status, highlighting the connection between hunting and warfare in the Moche worldview (Bourget 2016). Sea lions were hunted for various reasons, because they served as a source of meat, fat, and hide. Modern curers that utilize traditional healing methods are known to use sea lion teeth and bones in ceremonies, so it is possible Moche curers may also have utilized their remains in their work (Benson 2012: 113). Benson (2012) has posited that Moche representations of sea lions being clubbed as stones come out of their mouths may indicate that the rocks sea lions swallow to aid digestion and add weight for diving, were seen as possessing special properties and were thus valued. This interpretation is supported by the fact these stones have been found in burial contexts.

2.3.3 Fish

Coastal fishing on the North Coast of Peru has very ancient roots, and is viewed as a major contributing factor in the development of social complexity among Andean groups (Benson 1997; deFrance 2009; Moseley 1975). Many coastal societies had origin myths related to the sea. Chimú Empire myths for example, told of a stranger arriving in the Moche Valley via a balsa log raft, proclaiming that he was sent by a great lord from over the sea, who went on to conquer the local people (Moore and Mackey 2008: 783). Vast quantities of different fish species are attracted to this region because of the nutrient rich waters of the Humboldt Current. Many Moche iconographic narratives take place either at sea or along the coast. Supernatural elite figures are often shown battling human-fish hybrid creatures which are usually shown with knives, leading Benson (1997: 117) to argue that these figures may personify the dangers of the ocean, such as sharks, that would have been faced by Moche fisher-people (see Figure 11). Shark bones are present at both Huaca Santa Clara and Huaca Gallinazo, including species such as requiem sharks (*Carcharhinus sp.*), school sharks (*Galeorhinus sp.*), shortfin makos (*Isurus oxyrinchus*), smooth hounds (*Mustelus sp.*), and smooth hammer head sharks (*Sphyrna zygaena*). Bourget (1994) suggests that the fish monster is a borracho (*Scartichthys gigas*), arguing that the psychoactive toxin found in the heads of these fish would have made it significant in shamanic rituals, while the body of the fish could be consumed without effect. However, the morphological features of the monster represented in Moche iconography do not match well with this species (Benson 2012: 111). One specimen (a thoracic vertebra) from a borracho was found in the Architectural Compound 2 at Huaca Gallinazo.

Figure 11: Moche Human-Fish Hybrid (Drawing by Donna McClelland 2007)

Stingrays are another common motif in Moche art, and as bottom feeders they likely possessed underworld connotations, although it is possible that angel sharks, which resemble rays may also be represented in the iconography (see Figure 12). Eagle rays (*Myliobatis sp.*), angel sharks (*Squatina armata*), and Pacific guitarfishes (*Rhinobatos planiceps*) were found at Huaca Santa Clara and Huaca Gallinazo and may have been associated with the same underworld symbolism. While these fish species are relatively rare in comparison to Peruvian banded croakers (*Paralonchurus peruanus*), and Lorna drum (*Sciaena deliciosa*) for example, they are significant for their symbolic potency (for a discussion of the most common fish species at both Huaca Santa Clara and Huaca Gallinazo see Chapter 4 section 4.2.2).

Figure 12: Moche Representation of a Rayed Fish and Reed Raft (Drawing by Donna McClelland 2007)

2.3.4 Birds

Birds and winged figures more generally, are an interesting category within Moche iconography because they are capable of flight and occupy many places within the landscape (Earle 2010). The importance of birds to Moche mythologies is evidenced by their numerous and variable representations in their art, with many of the roles assigned to birds reflecting actual aspects of their behaviour in the natural world. More than any other creatures, birds appear to be afforded especially complex symbolism, even when portrayed realistically.

Birds were used not only as a food source in early Andean societies, but particular species were also especially valued for their vibrantly coloured plumage. Across the North Coast feathers have been incorporated into garments and artifacts as decorative elements. Benson (1997: 73) reports that numerous feather colours have corresponding symbolic meanings: yellow signifying the sun, energy, and fertility; red coding for power, blood, and sacrifice; blue symbolizing the sky and water; green representing vegetation; and finally black, which was associated with high rank and power, but also capable of conveying negative elements. Song birds were also kept as novelties and pets by some ancient peoples, and species such as Peruvian meadow larks (*Sturnella bellicosa*), which are found at both Huaca Santa Clara and Huaca Gallinazo, may have served this purpose.

Coastal agriculturalists are known to have used bird guano to fertilize their fields, with offerings found buried on guano islands off the coast providing further evidence supporting that birds were not only important resources in themselves, but also capable of producing secondary products that were highly valued by humans (Kubler 1948; Szpak et al. 2014a). Pelicans (*Pelecanus sp.*), guanay cormorants (*Phalacrocorax bougainvillii*), and boobies (*Sula sp.*) are referred to as the “Peruvian guano trio” because they are some of the largest guano producers along the coast (Benson 2012: 113), and the cormorants and boobies were also some of the most commonly consumed birds at both Huaca Santa Clara and Huaca Gallinazo. Cormorants and other seabirds are often depicted in scenes featuring the fish-human ocean monster, and because of their diving abilities they were commonly associated with the fertility of ocean fishes as well as the underworld (see Figure 13) (Benson 1997: 68; Earle 2010: 17).

Figure 13: Moche Representation of Marine Birds (Drawing by Donna McClelland 2007)

Many birds of prey including hawks, kestrels, eagles, and falcons are shown both realistically and anthropomorphically in Moche art. There are various species of the Falconidae family, including the American kestrel (*Falco sparverius peruvianus*) which was found at Huaca Gallinazo, that could be represented in Moche iconography, although it appears that the Moche grouped them together because they so often are shown with identical symbolic associations (Earle 2010: 21). Falcons are very capable hunters, leading Earle (2010: 27) to suggest that this is why they are so commonly represented flying with warriors in scenes of combat, perhaps functioning as markers for agility and speed. This may also explain why they are commonly included in Moche motifs centered on prisoner capture and blood. Falcons are also often represented anthropomorphically acting as warriors and ritual runners like white-tailed deer (see Figure 14) (Benson 1997: 77; Earle 2010: 28).

Figure 14: Moche Hawk Runner (Drawing by Donna McClelland 2007)

Owls, like falcons, are often shown anthropomorphized and naturalistically in scenes of warfare, although owls appear to have much richer symbolism associated with them, which is significant because small quantities of great horned owl (*Bubo virginianus*) remains were found at Huaca Santa Clara in Administrative Sector 2 and Residential Sector 7. While falcons appear to take on warrior or ritual running roles in the iconography, owls are more often shown as leaders or in roles associated with sacrifice. However, the similarities between certain representations may result because the birds are relatively similar in appearance and display many of the same behaviours in the wild (see Figure 15) (Benson 1997: 84; Earle 2010: 22). One distinction is that many species of owl are nocturnal hunters, characterized by their nearly silent flight. Owls may be more commonly depicted as sacrificial decapitators because of their natural behaviours in response to growing rodent populations during particular periods in the agricultural cycle. During seasons when rodents are more abundant, some owls will swoop down on their prey and decapitate them before letting the blood drain and storing their bodies for later consumption (Earle 2010: 31). In Moche art, owls in particular appear to have connections to shamanism based on their periodic representations as healers, shown with the same ritual paraphernalia that would have been used by human curers (Benson 1997: 74).

Figure 15: Moche Anthropomorphic Owls (Drawing by Donna McClelland 2007)

2.3.5 Reptiles and Amphibians

Lizard hunting in Northern Peru, focusing on species such as desert tegus (*Dicrodon sp.*) is still an important social activity among younger and older men. According to Gálves Mora et al. (1999) modern lizard hunts are less about procuring food resources, and more about developing social relations between generations of males. Since desert tegus are found at both Huaca Santa Clara and Huaca Gallinazo it is possible in the past that these activities fostered the same cooperative patterns between small groups. Green iguanas (*Iguana iguana*) are also found at both sites, and are known in the wild to occupy tree limbs, burrows, and coastal environments, leading them to be associated with all levels of the world (Benson 1997). Many lizard species boast impressive camouflage abilities which is a highly symbolic characteristic, and an iguana character is common in Moche iconography (see Figure 16), often depicted as a close companion to the supernatural figure "Wrinkle Face."

Figure 16: Moche Iguana Figure (Drawing by Donna McClelland 2007)

Cross culturally, frogs and toads are related to agriculture because their behaviours, like agricultural crops, are tied to changes in temperature and water availability (Benson 1977: 93; McClelland 2011: 31). Remains of toads (*Bufo sp.*) were found at both Huaca Santa Clara and Huaca Gallinazo. Certain tuber crops are also associated with frogs and toads in Moche iconography because both tubers and amphibians are protected in the ground during the dry months of the year to prevent loss of fluids (McClelland 2011: 35).

2.3.6 Crustaceans

Also linked to Moche sea iconography are numerous crustaceans including crabs, lobsters, and shrimp. A Moche deity also commonly takes the form of a crab, which Benson (1997) suggests may either be a marine god, or one of the major gods taking the form of a crab for battle, using the crab's characteristic hard shell as a form of armor (see Figure 17). This deity is also depicted engaged in combat with the previously mentioned human-fish hybrid. Fresh water crabs (*Hypolobocera sp.*) and purple stone crabs (*Platyxanthus orbignyi*) were found at Huaca Santa Clara, while indeterminate crab species were also located at Huaca Gallinazo.

Figure 17: Moche Crab Deity (Drawing by Donna McClelland 2007)

2.4 Food, Identity, and Power

2.4.1 The Richness of Food

Eating is a special type of consumption because it fulfills biological necessities while lying at the core of social relations, impacting us at a physiological as well as behavioural and cultural level. Individual and group identities cannot be understood in their entirety outside of meals large and small that serve to constitute our bodies as well as our minds by enmeshing humans and the people with whom we eat, as well as the animals we consume, in a tangled web of "eating-induced unity" (Anderson 2014; Bray 2003b; Corr 2002; Counihan 1999, Farb and Armelagos 1980; Smith 2006). Much like other animals, humans' environmental niches are determined by behaviours surrounding eating. The process of consuming plant and animal foods brings humans into closer interactions with the physical environments they occupy as well as social, political, and economic landscapes in which their actions are embedded (Douglas and Isherwood 1979; Farb and Armelagos 1980; Meigs 1988). The nuances of power dynamics and sex/gender relations can be revealed through the analysis of the foodways associated with particular groups, with food serving as a creative and reflective force within the organization of societies (Counihan 1999: 6; Counihan and Van Esterik 1997).

Distinguishing between nutrition, menus, diet, and cuisine is important, because while all these elements are related, they have distinct meanings. Nutrition refers to the adequacy of a particular food at a physiological level, although nutritional needs may be met by a wide variety of foods which may be emphasized or ignored in different contexts. Menus refer to the plethora of foods available regardless of whether or not they are deemed fit for consumption (Armelagos 1994). Diets are composed of the foods that are actually consumed, although there will be variability in terms of access depending on the status, age, and sex of individuals (Reitz and Wing 1999: 239, Twiss 2007: 50). The choices surrounding how foods are accessed, prepared, and consumed result in the formation of culturally distinctive cuisines that are generally governed by social rules related to how, when, and by whom particular foods may be eaten (Atalay and Hastorf 2006; deFrance 2009; Farb and Armelagos 1980: 190; Gumerman and Briceño 1997; Reitz and Wing 1999: 239). It should be noted however, that these elements of food systems are tightly integrated, and attempts to consider them separately are not entirely productive, with any noted divisions being generally artificial.

Social differentiation in terms of class, ethnicity, and gender is often constructed and maintained via the control of access to food, with group and individual identity being coded for by what, when, and with whom one eats, allowing the differences between different cuisines to be capable of both highlighting and masking the variability between groups (Counihan 1999: 8; Reitz and Wing 1999: 273). Archaeologically, differential access to food can be accounted for partly by examining the contextual distributions of particular food remains across sites. Identities are more ephemeral however, and can only be examined by accounting for how space and elements of material culture were utilized, as well as the symbolic aspects that accompany them. Food as a system of communication is highly effective because foodways are often organized in parallel to other systems and processes. According to Douglas (1975: 61) when food is treated as code, messages about relative social status, boundaries, and inclusions, will be found in the patterned social relations expressed. Patterns of consumption resulting in the creation of diverse foodways are effective at conveying meaning because eating is a necessary and repetitive activity; essentially food is a language accessible to all.

For one's status to be viewed as valid, the necessary markers must be displayed appropriately, and this can involve adhering to sumptuary rules concerning how particular foods should be consumed in terms of methods of preparation and appropriate presentation, with elite cuisines resulting as a product of social differentiation (Anderson 2014: 180; Goody 1982). It can be difficult to distinguish which foods are afforded special value or importance because the concept of what constitutes a luxury food needs to be defined at every social level and cannot be understood fully outside of the total social sphere. Douglas and Isherwood (1979: 144-145) argue that there are two points which need to be considered concerning luxury goods: first is that within diverse societies the demand for specific, contextually defined luxury products will be equally diverse in order to reflect the appropriate meanings within each social field. Second, they have paradoxical tendency to be standardized to prevent the transmission of the inappropriate signal. In relation to animal foods specifically, Fiddes (1991: 5) suggests that because they are generally so rich in social meaning, our attitudes towards meat can be thought of as a reflection of worldview, with changes in meat consumption reflecting changes in how we view the environments we inhabit. Iconography can be a useful tool when attempting to determine which foods were considered especially important symbolically, which is why this thesis considers Moche representations of animals alongside zooarchaeological data.

2.4.2 Presentation of Self and Group Affiliation

As mentioned above, the values of food go beyond their nutritional contributions, as they are imbued with sentiments about the self and the world one lives in, making food an especially fertile avenue for archaeological investigations into the lives of past peoples (Bray 2003b; Farb and Armelagos 1980: 97). Identity is not an inherent aspect of individuals and populations and is most productively thought of as a multi-faceted and co-constructed process of negotiation, allowing for greater focus on the internal and external meanings of group interaction (Keller Brown and Mussell 2001: 5). People are constantly made aware of dominant social structures and modify their actions to maintain congruity with the hierarchies therein. No element of material culture is useless as a prop for dramatizing our presentation of self and the various roles we play. In other words, symbolism is inherent within every object (in this case food), and nothing is lost on the audience (Anderson 2014: 180; Douglas 1998: 100). Elites may attempt to define their status visibly via consumption of prestige foods, and those individuals in society that may seek to improve their social standing may try to emulate elite consumption, often leading elites to develop sumptuary laws as a means of controlling access to preserve their rank (Turkon 2007). Sumptuary laws and distinctions between social classes become visible in the archaeological record during the analysis of differential quantities of particular luxury foods across sites, such as meat, which can reflect differential access not only to foods themselves, but the spaces in which they are consumed. Stronger groups tend to possess increased abilities to accumulate goods and oversee their distribution, thus protecting themselves and their members from the potential development of envy that may threaten their position (Douglas and Isherwood 1979: 36). Feasts function to assuage the development of such envy that can develop between groups by bringing people of different rank together in celebration, even if these events also have the potential to highlight social differentiation. Feasting offers an arena within which to develop new recursive, class-based behaviours (Gero 2003: 286; Gifford-Gonzales and Sunseri 2007).

Catherine Bell (1992) uses a practice theory approach to integrate the process of ritualization, situating social actions at all levels as rituals, with ritualization achieved through structured formality, governance, and symbolism. Bourdieu's definition of practice refers to the relationship between structured environments and structured characteristics of individuals which lead them to reproduce the environment in a cycle of mutual-constitution. According to Dietler and Herbich (1998: 246), utilizing Bourdieu's (1977, 1980) theoretical works allows us to situate material culture and corresponding *chaînes opératoires* alongside the actors responsible for their creation in such a way that reconciles structure and agency. The ceramics and food processing tools used during cooking and food presentation, as well as the animal foods being consumed within the Virú polity, would all have associated *chaînes opératoires*, potentially leading to the creation of diverse and highly contextualized foodways. Dispositions developed by individuals and groups influence their material environment, and when these systems of dispositions become cemented and social activities patterned, the result is habitus. Habitus according to Bourdieu (1977) are the habitual dispositions that people use to shape social conventions and the principles by which individuals and groups are produced. Atalay and Hastorf (2006: 283) argue that eating is the ultimate habitus practice, with meals structuring the lives of people who prepare and consume them (Roddick and Hastorf 2010: 159). Practices do not need to be defined by static social structures because habitus is a flexible relational occurrence between humans and the animals being consumed.

Techniques, in this case related to food procurement, preparation, and consumption, can be recognized as more than just a secondary product of social actions and more productively conceptualized as the dispositions that create actions through practice (Dietler and Herbich 1998: 247). This allows for analyses of foodways to move beyond seeing particular styles as conscious additions in order to better demonstrate group identity, and to focus on the processes through which group identities are formed and transformed alongside techniques. Individuals at Huaca Santa Clara and Huaca Gallinazo would have learned the foodways associated with their social positions in the Virú state, as well as more locally defined patterns of consumption, expressing variable identities via equally diverse techniques. Sutton (2001: 127) suggests that the motions of cooking mobilize bodily and mental resources because food preparation requires doing and planning, calling on bodily rhythms and necessitating proficiency with materials that can only be achieved by accessing memories. Lessons of social relations are learned with the body, and at events such as feasts where maintaining and creating positive “face” is a goal of all participants, there is a sensuality involved in the body getting to know and feel one’s social position through consumption (Gero 2003: 287). The dramatization of one’s work associated with food procurement, preparation, and consumption, takes place at different levels depending on the nature of the consumption event, with costs associated with labour and material goods being made visible to express the desired meaning (for example connoting luxury). This requires the expenditure of significant amounts of energy towards effective communication, which may differ from the energetic costs associated with the work being dramatized (Goffman 1990: 42). This can result in incongruities between expression and action, which can be mediated when the dramatic function, in this case the hosting of a communal consumption event, is placed under the control of one or a few specialists who express the meaning of the tasks of food procurement and preparation without participating directly in those activities. Elites involved in hosting local level feasts within the Virú Valley would likely not have been the same individuals preparing food for events, instead relying on servants. However, they, and their social standing, would have dictated which foods, preparation techniques, and aspects of material culture (such as ceramic serving vessels) would be used to dramatize consumption in order to maintain and bolster symbolic associations that could be manipulated for their own means, especially to express unity between groups or highlight variability of communities.

Taste preference is never determined exclusively based on the sensory-physiological properties of foods, and is instead often influenced by symbolic principles or what is considered edible versus inedible based on taboos and ritual-alimentary rules, and as such cultural categorizations of food should be viewed as central to the generation of taste preferences (Falk 1994: 68). The uses of specific foods and their symbolic associations within the Virú polity would have aided in the construction and maintenance of the cultural system, radiating social messages that consumers embodied through repetition, further reinforcing the cultural tradition (Hastorf 1994: 135). As Gero (2003: 287) reminds us, creating or modifying social relations is not done in the mind alone, it is a process undertaken in the flesh and experienced in the body. Consumption more generally uses goods to materialize value judgements and classifications, and the material objects associated with particular foodways develop our understanding of the social and symbolic significance of food in group identity, with the maintenance of unique ingredients and equipment facilitating the ability of populations to enjoy their own foods in the manners deemed most appropriate (Abrahams 2001; Douglas and Isherwood 1979: 67; Keller Brown and Mussell 2001: 9).

Feasts provide the social context in which people learn to behave with the manners appropriate for their position within social hierarchies (even if people within groups behaved similarly before the crystallization of the state), with individuals learning to embody their role through the repetitive performance of their rank during consumption activities, with feasts effectively producing the social realities that facilitate their existence. This memorization of contextually specific postures, according to Connerton (1991: 73) is an example of an incorporating practice, which may be standardized and predictable even though it is not explicitly articulated and taught. Social status is effectively demonstrated through relative posturing, and based on the postures and faces maintained by participants in social situations it is possible to determine the amount of authority commanded by each person. Connerton (1991: 84) also argues that appetites must be satisfied in appropriate ways to maintain decorum, with meals providing the occasions to demonstrate taste and celebrate artistic refinement and value through a distinct commitment to stylization. Feasts in the emerging Virú state would have been unique settings where a sense of commonality could be maintained in concert with the assertions of social identity and differentiation, creating nodes within which people experienced amplified versions of the socioeconomic and political complexity that individuals needed to adopt and adapt to during intensifying power dynamics and social complexity (Gero 2003: 287).

2.4.3 Feasting

Within studies of emerging social differentiation and negotiations of power, food and feasting are increasingly being recognized as having played a prominent role, especially since foods are such potent symbols of class, status, and ethnicity, and cuisines function as materialized political-ideological dialogue (Bray 2003c). Dietler (2001) argues that through ritualized ceremonial practices, feasts transform symbolic and economic capital into political advantage. This gives culinary concerns relevance outside of the domestic sphere which is still commonly viewed as outside of the active political sphere, which can potentially minimalize the contributions of food presentation and consumption in statecraft (Douglas 1975, 1988; Twiss 2007: 51). Feasting here refers to communal consumption events that are differentiated from “everyday” practice, serving as a social arena in which humans utilize animals and other goods to negotiate social transformations (Bray 2003b; Chicoine 2011).

Numerous archaeological and zooarchaeological correlates are believed to evidence feasting activity in the archaeological record. Commonly, the relative abundance of particular species is found to differ in instances when feasting has occurred, often weighting towards more symbolically significant taxa. The presence of more adult animals can also be used to argue for the presence of feasting remains because adult animals are commonly larger and able to provide amounts of meat far surpassing what could be consumed by a single household in a reasonable amount of time (Russell 2011: 387). At the same time however, young animals are also associated with elite consumption because of the quality of young meat. Feasts may also be distinguished by special cooking methods used to facilitate particular stylized methods of presentation that differ from quotidian meals, and architectural elements such as open areas and plazas at elite settlements, like those found at Huaca Santa Clara and Huaca Gallinazo, are often also associated with feasting remains, as well as fancy ceramic containers. Even with all of these archaeological and zooarchaeological correlates to look for, evidence of feasting will not be visible at every site, especially since food remains are more likely than other artifacts to be found outside of the contexts in which they were consumed (Twiss 2007: 53).

Even when evidence of feasting can be located archaeologically, their function may not always be clear, leading scholars like Dietler and Hayden (2001) to emphasize three categories of feast: empowering, patron-role, and diacritical feasts. Empowering feasts are meant to bolster the host's prestige and even wealth in some instances, while patron-role feasts serve redistributive functions where there is no expectation of reciprocity, at the same time as legitimizing existing hierarchical structures. Diacritical feasts are meant to demarcate elite groups by emphasizing the use of special cooking methods and culinary paraphernalia, although it should be noted that aspects of all three kinds of feasts can be present in a single event. Hamilakis (2008: 16) and I question the usefulness of these categories however, suggesting that the diversity of experiences and social effects during feasting events renders feasting typologies irrelevant.

While feasts can clearly be conceptualized and categorized in various ways, they are all similar in that they involve the consumption of food and numerous types of display which add to their exclusivity (van der Veen 2007: 112). The consumption of feasting foods is a means to display one's social status by garnering prestige as an individual host at the same time that communal solidarity is celebrated and unequal power relations are emphasized (Chicoine 2011; van der Veen 2003, 2007). Douglas and Isherwood (1979: 137) suggest that low frequency events characterized by high rank and the involvement of sizable social units, like feasts, are more advantageous to projecting and engaging with symbolic messages as compared to activities occurring at a high frequency and associated with smaller groups of lower social standing, which are not conducive to controlling information. Luxury foods, such as meat (especially from large bodied taxa), are usually hard to obtain and not necessary for nutrition, and often include exotic foods which are difficult to procure, representing an indulgence at special occasions. As van der Veen (2003: 407) points out though, luxury foods are not defined based solely on their desirability, they are set apart because they are "desired by many but attained by few." The concept of variety was also an important part of Andean haute cuisine (Gonzalez Holguin [1608] 1952: 238-239). The identification of these types of foods makes it possible in some cases to differentiate status between individuals and across communities because of the messages that prestige foods send to those who do not have access to particular goods (Appadurai 1981; Douglas and Isherwood 1979).

Across the Virú state extensive time would have been devoted to the preparation of food for larger consumption events, highlighting the gendered aspect of food production that likely saw women providing the bulk of the labour, while males acted as hosts and recipients of prestige (Corr 2002: 10; Counihan 1998: 7; Hastorf 1994: 113). As noted by Turkon (2007: 154) archaeologists and zooarchaeologists should always make an effort to be attuned to the status differences within households, because often the power that is afforded to men of a particular social standing is not extended to the women of the same household. The tasks performed by women in high status contexts were likely similar to those performed in lower class households, with a distinction perhaps being the differential access to high value material goods and the use of servants.

Douglas and Isherwood (1979: 65) suggest that the most effective rituals are characterized by their use of material things, and the more costly these ritual accoutrements are, the stronger the desire to cement fixed meanings to them. Material goods, in this case animal foods and their associated production and serving utensils, are ritual aids in a ceremonial consumption process where the goal is to bring order to the social universe by demarcating intervals of time over the calendar year and even the life cycle (Sutton 2001). The repetitive and ritualized highly symbolic act of eating connects to the act of remembering, which like food, is intimately tied to identity (Sutton 2001). Hamilakis (2008: 16) argues that feasts create strong mnemonic effects by disrupting daily routines, serving as acts of incorporation where the body is equated with the body politic (Corr 2002: 6; Gero 2003: 286). Foods, especially those served at feasts, are capable of evoking multi-sensory memories (Roddick and Hastorf 2010: 167-168); however, this is not the habitual memory of everyday consumption that produces identity and subjectivity as embodied routine. Memories associated with feasting foods are heightened because of their power to punctuate time with distinctive remembrances of performances, participants, and the sensory effects produced by killing and consuming animals (Hamilakis 2008: 16). The process of creating embodied memories that occurs through communal consumption is crucial for the formation of subjectivities.

Politically, memory is also an important resource because what is remembered about a particular feasting event can make or break the reputation of hosts. For Virú elites controlling mnemonic effects would have served as a powerful tool for cementing social statuses, giving hosts control over producing and reaffirming collectives. As Falk (1994: 15) notes, the ritualized sharing of food and its incorporation into individuals creates oral bi-directionality where foods are consumed by individuals who are then “eaten into communities” while simultaneously having their position defined within them. The evocative experiences of meals and the memories of recipes passed down through generations maintains not only the memory of the family, but also of the commensal events that bring people together into larger communities (Atalay and Hastorf 2006: 284). Food is the social glue that binds together the individual, family, and community, and as Farb and Armelagos (1980) argue, food is dually corporeal because it creates not only the physical person, but the social person as well. The results of these social actions are held within the body, altering memories of relational identities of both food and people. The acts of food procurement, preparation, and consumption are inscribed on bodies at a cellular level, highlighting the plethora of connections between food, nutrition, symbolism, and human interactions with the landscape, animals, and each other.

2.5 Chapter Summary

This chapter began with an overview of the environmental context and site formation processes at Huaca Santa Clara and Huaca Gallinazo. It highlighted the environmental variability across the three regions of the North Coast (the Pacific littoral zone, desert coastal plains, and the slopes of the Andes mountains), as well as the importance of marine and terrestrial resources contributing to the development of social complexity in this area. The next section discussed previous zooarchaeological studies on the North Coast, specifically focusing on examples of rural and urban feasting in the Moche polity. Social zooarchaeological and relational ontological approaches were also detailed along with reconsidering the nature of human-animal relations in domestication and hunting. A justification of utilizing Moche ceramic iconography to aid analysis of Virú faunal assemblages from Huaca Santa Clara and Huaca Gallinazo followed, coupled with an overview of Moche animal symbolism for the main animal classes discussed in the following chapter. This chapter concluded with an overview of how studies of foodways provide fertile ground for theorizing community formation and the presentation of self and group identity, closing with a discussion of how feasting served to both incorporate and divide populations via the expression and embodiment of one’s social position through manners associated with particular classes.

Chapter 3

3 Methodology

This chapter provides an overview of the recovery methods used at Huaca Santa Clara and Huaca Gallinazo, as well as the laboratory techniques employed and the methods of data collection used during the faunal analysis conducted by myself, and previously by Claire Venet-Rogers (2013). It also outlines the quantification methods and statistical tests used during analysis. Taphonomic factors and the depositional practices of people in the past can have deleterious effects on faunal remains, with particular bones being better suited for preservation. The bones of smaller animals and juveniles are much less likely to preserve in any given assemblage because of their comparative compositional fragility versus larger or adult animals, just as bones that have been broken and cooked by various means will be less likely to survive (Davis 1987). The loss of faunal materials over time impacts the level of confidence with which we can comment on trends in the data; as a result this chapter will be structured in such a way as to highlight the rationales of particular methods to account for taphonomic biases in the data. Every quantification method in zooarchaeology also carries inherent biases that can affect how we approach and interpret faunal datasets by over/underrepresenting certain kinds of bones (Grayson 1979), so justifications for the methods selected are detailed in the subsequent sections.

3.1 Recovery

While it is possible that fish and birds are underrepresented at both sites in comparison to mammals because of their comparative fragility and susceptibility to diagenesis once deposited into the archaeological record (Guiry et al. 2016; Serjeantson 2009), environmental factors are unlikely to have had detrimental effects of assemblages at either Huaca Santa Clara or Huaca Gallinazo. The aridity of the North Coast environment promotes excellent faunal preservation, among other archaeological materials such as cotton and wool textiles and plant remains. Therefore, the observed differences between classes likely reflect real differences in abundance, rather than the effects of taphonomy on the assemblages. Differing recovery methods are also known to impact the retention of particular bones in collections, and as variable recovery strategies were employed at both Huaca Santa Clara and Huaca Gallinazo, these differences and their effects are discussed below.

3.1.1 Recovery of Faunal Materials from Huaca Santa Clara

The faunal remains analyzed from Huaca Santa Clara were excavated during the summer field seasons of 2002 and 2003 from Administrative Sectors 2, 4, 6, and Residential Sectors 3, 5, 7. Construction fill and rubble deposits from all sectors were screened through 1/8-inch mesh. A small proportion of the non-rubble/fill occupational deposits from the Administrative Sectors and almost all occupational deposits from the Residential Sectors were screened through 1/16-inch mesh. During survey, materials were also handpicked from the surface, and in many instances details regarding excavation were unrecorded (units 6, 24, 26, 28, 31, 49, 51, 54, 55, 68, 70, 85112, 132, 152, and 163 had unrecorded volumes). Table 3 summarizes which units were unscreened, or processed through 1/8th and 1/16-inch mesh.

These differing recovery strategies impact analysis because they affect our ability to compare the representations of different classes of animals and elements across sectors and sites. Samples that were handpicked from the surface or processed through larger mesh sizes are biased towards bones that are larger and thus easier to identify, excluding small fragmentary remains from being recovered. It is possible for many of the remains of fish, birds, and small mammals to be overlooked during surface collection, with specimens also being lost when deposits are screened, depending on the mesh size. Small elements of larger taxa may also be lost depending on the recovery method employed, potentially biasing against particular elements (such as the phalanges) during analysis of skeletal part representation. For samples screened through 1/8-inch mesh, the retention of most faunal materials is possible, while screening through 1-16-inch mesh will further improve recovery capabilities.

Table 3: Summary of Screening for Analyzed Units in Administrative and Residential Sectors at Huaca Santa Clara

	Administrative Sectors			**Residential Sectors**		
	Unscreened	*1/8-inch*	*1/16-inch*	*Unscreened*	*1/8-inch*	*1/16-inch*
Unit #	6, 8, 10, 22, 25, 27-29, 33, 49, 51, 74, 75, 77, 81, 108, 112, 114, 125, 127, 130, 132, 134, 152, 153, 163, 164, 187, 192	7, 11, 34, 36, 137-139, 141, 142, 145, 148, 149	19, 24, 26, 31, 170	54, 55, 68, 70, 85	86	57-61, 64, 65, 90, 95-98, 100, 171, 173-175, 176, 178, 183

3.1.2 Recovery of Faunal Materials from Huaca Gallinazo

The faunal remains Venet-Rogers (2013) and I analyzed from Huaca Gallinazo were collected during the summer field seasons between 2008 and 2011 from Architectural Compound 2 and the Southern Platform. 1/8-inch screens were used to sift materials from most units with the exception of sterile layers of construction fill and rubble from which faunal material was usually absent (anything of interest was handpicked and bagged).

1/16-inch mesh was used to screen approximately 10 liters of deposit from each unit, with remains being handpicked and bagged together, although proportions of sifted dirt differed by context. Some materials were also handpicked from the surface during survey, but in some cases details regarding excavation were unrecorded (units 67, 69, 70, 71, 73, 84, 85, 90, 97, 101, and 105 had unrecorded volumes). The information in Table 4 summarizes which units were unscreened or sieved through 1/8th and 1/16th inch mesh.

Table 4: Summary of Screening for Analyzed Units in Administrative and Residential Sectors at Huaca Santa Clara

	The Southern Platform			**Architectural Compound 2**		
	Unscreened	*1/8-inch*	*1/16-inch*	*Unscreened*	*1/8-inch*	*1/16-inch*
Unit #	105	71, 80, 85, 88, 97, 101, 103, 106	71, 77, 80, 84, 85, 88, 97, 101, 103, 106	67, 69, 70, 71, 73, 90	65, 75, 76, 79, 81, 82, 83, 86, 87, 89, 91, 99, 100, 102, 104	66, 74, 79, 81, 82, 83, 87, 89, 91, 99, 100, 102, 104

3.2 Identification

Venet-Rogers (2013) identified faunal material from Huaca Gallinazo in the summer of 2012, and I identified material from Huaca Santa Clara and additional material from Huaca Gallinazo in the summer of 2016. We completed these identifications using the skeletal reference collection at the Universidad Nacional de Trujillo's ARQUEOBIOS Laboratory, under the supervision of Dr. Teresa Rosales Tham and Dr. Víctor F. Vásquez Sánchez. Once my data collection period in Trujillo was completed, I synthesized my newly collected faunal data from Architectural Compound 2 at Huaca Gallinazo with the previously collected dataset created by Venet-Rodgers for the current analysis. Both studies identified specimens to the most precise taxonomic level possible using various osteological guides and manuals (Altamirano Enciso

1983; Cohen and Serjeantson 1996; Casper 1980; Hillson 2003; Miller 2013; Pacheco Torres et al. 1979; Post 2004) to supplement the reference collection. When we could not confidently establish the taxon or element of a particular specimen, we labelled it indeterminate.

3.3 Recording

In both studies, the software Microsoft Access was used to record information about each specimen in a database. The types of data recorded are as follows, and were collected during both studies unless otherwise indicated.

SPECIMEN NUMBER

Numbers were assigned sequentially to unique specimens, starting at one. During data collection, when particular bones were found to be identical, they would be combined under a single specimen number with the quantity reflected in the number of identified specimens number (NISP). An example of this would be if three mammal rib fragments were found in the same context, from the same side, all measuring 3 cm, etc.

SITE NUMBER

All specimens originating from Huaca Gallinazo were recorded as coming from “V-59”, while all material from Huaca Santa Clara was recorded with “V-67”. These site designations were assigned to site during the original investigations into settlements in the Virú Valley, and their usage is continued today.

SECTOR

Sector designations identify which area of a site a particular bone was collected from during excavation. The materials analyzed from Administrative Sectors at Huaca Santa Clara came from sectors 2, 4, and 6, while faunal remains from the Residential Sectors were located in sectors 3, 5, and 7. For Huaca Gallinazo, remains coming from the Southern Platform were located in Sector A, while Architectural Compound 2 was located in Sector H.

ROOM

Room numbers indicate in which room in a particular sector a bone was collected from. At Huaca Santa Clara, materials from Administrative Sectors came from rooms 1, 2, 3, 4, 5, 8, 17, 19, 20, 22, 23, 24, 30, 31, 64, 66, 97, 99, 100, 102, 104, 105, 106, 107, 108, 110, 112, 116, 117, 121, 122, 123, as well as northern and southern extensions, while remains from Residential Sectors came from rooms 1, 2, 19, 43, 98, 103, and 114. At Huaca Gallinazo material from rooms 1, 2, 3, 4, 5, 6 and 44 were analyzed from Architectural Compound 2, as well as rooms 7 and 8 from the Southern Platform.

UNIT

The unit number identifies which unit faunal materials were excavated from, referring to a unique deposit.

NISP

The number of identified specimens was usually recorded for a single specimen with a distinct specimen number and unique characteristics, but as mentioned above, specimens with the same characteristics could be recorded together under one specimen number.

TAXON

Taxon is the most precise taxonomic category to which a specimen can be identified. See Table 7 and 8 in Chapter 4 for the number of identified specimens per taxon and Appendix A for a breakdown of all taxonomic information for both sites.

ELEMENT

The element category records the skeletal element represented, for example ulna or tibia.

SIDE

For both Huaca Gallinazo and Huaca Santa Clara, whenever possible, paired elements were identified as coming from the right or the left side of the body. When side could not be determined, a specimen was classified as “indeterminate”. For my analysis of Huaca Santa Clara and my return to the materials from Architectural Compound 2, I included an “axial” category to account for those elements on the mid-line of the skeleton, such as vertebrae.

ZONE

Zones are used to record which portion of an element is present, with each element conceived of in terms of unique and non-overlapping zones correlating to distinct morphological features. A particular zone was recorded when 50% of more was present. The zones used by Venet-Rogers and myself follow a simplified version of the zones detailed in Dobney and Rielly (1988) which was successfully applied to multiple assemblages to better account for recording fragmentation and the position of taphonomic markers (see Appendix B). Watson (1979) and Rackham (1986) developed similar systems for recording bones based on diagnostic zones throughout their zooarchaeological research. Diagnostic zones work from the assumption that bones can be divided into morphologically distinct regions that are non-repetitive for a given element, allowing us to record accurately which parts are represented by fragments (Dobney and Rielly 1988). Zones are also used as part of particular zooarchaeological quantification methods, which will be discussed further in this chapter.

FUSION

We used two letter codes to record fusion, with the first representing the level of fusion of the proximal or anterior epiphysis, and the second letter designating the distal or posterior epiphysis.

Table 5: Letter Codes Used to Record Fusion at Huaca Santa Clara and Huaca Gallinazo

Letter Codes	Corresponding State of Fusion
B	baby (unfused shaft, plus size and texture of bone indicate foetal/neonatal bone)
U	unfused shaft and epiphysis
S	unfused shaft
E	unfused epiphysis
G	fusing (fusion line is still visible)
F	fused
N	unknown (for example if a long bone was missing the proximal or distal end, making it impossible to determine the level of fusion)

MEASUREMENTS

For my analysis of the materials from Huaca Santa Clara and Architectural Compound 2 the greatest length of each specimen was recorded to the nearest centimetre, while Venet-Rogers recorded lengths to the nearest millimetre. We also collected a selection of measurements (all defined by von den Driesch 1979) for particular elements. Appendix B contains measurement diagrams for each element for ungulates (in this case it is used for camelids and deer).

MODIFICATION

We also recorded modifications to the bone through natural processes or human activities.

Table 6: Natural and Human Bone Modifications Recorded for Huaca Santa Clara and Huaca Gallinazo

Natural Modification	Human Modification
Pathology	Cut marks (fine marks)
Root etching	Butchery marks (large deep marks)
Carnivore gnawing	Burnt black
Rodent gnawing	Calcined (burnt white/blueish)
Weathering	Perforation
Digestive corrosion	Worked

For materials analyzed from Huaca Santa Clara, fractures which occurred as part of secondary processing to gain access to bone marrow were recorded in a “comments” column. Fracture type was only recorded for bones that were clearly fractured when fresh, rather than when dry in order to separate bones that were modified by human actions, especially those related to butchery and secondary processing, from those that were broken after deposition. Fresh bone displays smooth break surfaces, while dry bone breaks have a more jagged and flaky appearance (Morlan 1984; Outram 2001).

3.4 Quantification

3.4.1 NISP

The number of identified specimens, or NISP, is the count of the number of specimens identified to each taxonomic category (“indeterminate” specimens are also counted). NISP is especially useful because of its ease of calculation, and the fact that it is recorded the same way by all investigators, making it particularly well suited to situations when more than one person is working on a collection over time, or for use in comparative projects. However, NISP calculations are problematic in that heavily fragmented bones may be over represented (assuming fragments are still identifiable), leading particular species to appear falsely more prominent. NISP calculations are also influenced by butchery practices, giving larger values for taxa that are kept whole on sites. Despite its problems, this study used NISP calculations to analyze the relative abundance of taxa at Huaca Santa Clara and Huaca Gallinazo because of its ease of application in comparative projects, and the fact that it was calculated by Venet-Rogers (2013) in the same manner. NISP is commonly converted into a percentage to facilitate easier comparison of relative abundances within and between sites.

Minimum Number of Individuals (MNI) is a commonly used quantification method; however, it will not be used in this study. MNI is not well suited to comparative projects because there are numerous methods of calculation, which are often not specified in studies, making comparing the data collected from Huaca Santa Clara and Huaca Gallinazo to other datasets difficult in some cases. Furthermore, MNI has been found to be problematic when confronted with un-sided elements or parts of the axial skeleton (Grayson 1979; Ringrose 1993), and it is not additive like NISP, necessitating recalculation when collections are returned to for further analysis. Another reason that MNI is not used in this study is its tendency to over-estimate the relative importance of taxa with low NISP values, which is especially relevant since both Huaca Santa Clara and Huaca Gallinazo have some species represented only by a single specimen.

3.4.2 MNE and MAU

Both minimum number of elements (MNE) and minimum animal units (MAU) are quantifications used to investigate butchery and transport of large bodied animals, in this case the camelids and sea lions recovered at Huaca Santa Clara and Huaca Gallinazo. MNE is the minimum number of an element able to account for the specimens from a particular taxon, eliminating the chance of counting an individual element more than once. For this study, MNE was calculated by totaling the most frequently occurring zones of each element while taking into account their states of fusion to ensure non-overlapping zones from individuals of different ages were not being counted as though they were part of the same element. MNE calculations over-represent elements that are naturally more abundant in a complete skeleton (for example, there are 24 ribs in a camelid skeleton and only 2 femora). To circumvent this issue, MNE values are converted into MAU. MAU values are calculated by dividing MNE values by the number of a particular element in a complete skeleton. In order to compare MAU values of multiple assemblages of different sizes, I converted MAU values to %MAU to create standardized values. %MAU sets the highest MAU value within an assemblage at 100% and expresses all other MAU values as a percentage of the highest value. An example of this is at Huaca Santa Clara the radius-ulna had an MAU of 30.5, which was the highest value and thus set as 100%, while the MAU for tibias was 23.5; to standardize to %MAU for tibias I divided 23.5 by 30.5 and multiplied by 100 to arrive at a 77%.

3.4.3 Statistical Tests

I used Pearson's Chi-Square and Fisher's exact test to measure for statistically significant differences between Huaca Santa Clara and Huaca Gallinazo, as well as between Administrative and Residential Sectors, and the Southern Platform and Architectural Compound 2. These tests were applied to data regarding taxonomic abundance and the types and quantities of burning. Chi-Square test evaluates if two categorical variables are associated by trying to refute the null hypothesis that the two variables are independent. The test also produces only approximate p-values, which then have correction factors applied; however, this is only effective when sample sizes are large enough. When contingency table cells have expected values of < 5 the use of Fisher's exact test is recommended. Fisher's exact tests also provide exact p-values. P-values of 0.05, which are a commonly used level of significance in zooarchaeology, were selected as the cut off during analysis involving Chi-Squared and Fisher's exact test. A significance level of 0.05 indicates a 5% chance that, assuming the truth of the null hypothesis, the observation may have occurred by chance. A p-value of greater than 0.05 means we cannot conclude that significant differences exist.

Spearman's rho tests measure the statistical dependence between two variables, allowing for comment on the relationships between such variables. Positive and negative associations between two variables based on deviations from zero are categorized as follows:

.00 – .19	.20 – .39	.40 – .59	.60 – .79	.80 – 1.0
Very weak	Weak	Moderate	Strong	Very strong

When the correlation coefficient has a value of 0, it indicates that there is no relationship between the variables being measured, while a value of 1 indicates a perfect correlation. This test assumes that variables are measured on an ordinal, interval or ratio scale, and that there is a monotonic relationship between the variables where either variables increase in value together, or one decreases while the other increases. This test was completed for taxonomic abundances across sectors within Huaca Santa Clara and Huaca Gallinazo, and between the two sites, and to evaluate relationships between body units as defined by MAU for camelids and sea lions.

Chapter 4

4 Broad Patterns of Taxonomic Exploitation at Huaca Santa Clara and Huaca Gallinazo

This chapter examines taxonomic abundance within the Administrative and Residential Sectors at Huaca Santa Clara, and from the Southern Platform and Architectural Compound 2 at Huaca Gallinazo. It also contextualizes these results alongside information about the behaviour and environmental adaptations, as well as the symbolic associations of the main species of mammals, fish, and birds. Analyzing relative taxonomic abundances alongside animal symbolism for both sites and their respective sectors allows for the examination of consumption practices within and between the sites. The results of the following zooarchaeological quantifications were tested using Spearman's rho, Pearson's Chi-Square, and the Fisher's exact test (used in cases when sample sizes were small) to determine whether statistically significant differences exist in terms of animal exploitation between Huaca Santa Clara and Huaca Gallinazo, and between sectors on each site.

Table 7 and 8 present the number of identified specimens (NISP) counts for Huaca Santa Clara and Huaca Gallinazo organized by sector. Appendix A which presents photos, Latin names, and common names (English and Spanish) for all species found at each site can be used in conjunction with these tables. Molluscs were identified by Venet-Rogers (2013) for the Southern Platform and Architectural Compound 2 at Huaca Gallinazo, but they have been excluded from the present analysis because no mollusc samples were identified for Huaca Santa Clara (see Appendix C for a chart presenting the NISP for molluscs from Huaca Gallinazo).

Table 7: Number of Individual Specimens per Taxon for Administrative and Residential Sectors at Huaca Santa Clara

Taxa	Administrative Sectors		Residential Sectors	
	NISP	% of total NISP	NISP	% of total NISP
Mammal, indeterminate	557	15.69	255	25.35
Camelidae, indeterminate	2170	61.11	553	54.97
Canis lupus familiaris	143*	4.03	1	0.10
Canis sp.	5	0.14	0	0.00
Carnivora, indeterminate	3	0.08	0	0.00
Cavia porcellus	199	5.60	68	6.76

Ctenomys peruanus	30	0.84	3	0.30
Lagidium peruanum	4	0.11	0	0.00
Lama sp.	27	0.76	6	0.60
Odocoileus virginianus	109	3.07	22	2.19
Otaria sp.	10	0.28	5	0.50
Mammal, Total:	**3257**	**91.72**	**913**	**90.76**
Fish, indeterminate	21	0.59	12	1.19
Acanthistius sp.	1	0.03	0	0.00
Anisotremus scapularis	23	0.65	3	0.30
Cachema, indeterminate	1	0.03	0	0.00
Carangidae, indeterminate	1	0.03	0	0.00
Carcharhinus sp.	0	0.00	1	0.10
Cheilodactylus variegatus	1	0.03	0	0.00
Cynoscion sp.	0	0.00	2	0.20
Galeichthys peruvianus	26	0.73	0	0.00
Galeorhinus sp.	2	0.06	0	0.00
Merluccius sp.	0	0.00	1	0.10
Mugil cephalus	1	0.03	4	0.40
Mustelus sp.	2	0.06	0	0.00
Myliobatis sp.	4	0.11	0	0.00
Paralabrax sp.	1	0.03	0	0.00
Paralichthys sp.	5	0.14	0	0.00
Paralonchurus peruanus	80	2.25	12	1.19
Rhinobatos planiceps	2	0.06	0	0.00
Sarda chiliensis	1	0.03	5	0.50
Sardinops sagax	6	0.17	1	0.10
Sciaena deliciosa	23	0.65	11	1.09
Sciaena gilberti	1	0.03	0	0.00
Sciaena sp.	1	0.03	5	0.50
Sciaena starski	12	0.34	1	0.10
Sciaenidae, indeterminate	5	0.14	6	0.60
Scorpaena sp.	2	0.06	0	0.00
Sphyrna sp.	4	0.11	3	0.30
Stromateidae, indeterminate	3	0.08	0	0.00
Trachurus symmetricus murphyi	10	0.28	0	0.00
Fish, Total:	**239**	**6.73**	**67**	**6.66**
Bird, indeterminate	22	0.62	7	0.70
Bubo virginianus	1	0.03	1	0.10
Charadrius sp.	2	0.06	0	0.00
Diomedea sp.	0	0.00	1	0.10

Larus sp.	3	0.08	1	0.10
Pelicanus sp.	1	0.03	1	0.10
Phalacrocoracidae, indeterminate	0	0.00	1	0.10
Phalacrocorax bougainvillii	2	0.06	1	0.10
Podiceps sp.	0	0.00	1	0.10
Spheniscus humboldti	1	0.03	0	0.00
Sturnella bellicosa	0	0.00	2	0.20
Sula sp.	12	0.34	7	0.70
Sula variegata	1	0.03	1	0.10
Sulidae, indeterminate	0	0.00	1	0.10
Zenaida asiatica meloda	1	0.03	0	0.00
Bird, Total:	**46**	**1.30**	**25**	**2.49**
Bufo sp.	1	0.03	0	0.00
Amphibian, Total:	**1**	**0.03**	**0**	**0.00**
Hypolobocera sp.	3	0.08	1	0.10
Platyxanthus orbignyi	5	0.14	0	0.00
Crustacean, Total:	**8**	**0.23**	**1**	**0.10**
Combined Total: 4557	**3551**	**100**	**1006**	**100**

*The NISP for *Canis lupus familiaris* in the Administrative Sectors at Huaca Santa Clara is inflated because it includes a complete skeleton of a dog that was buried alongside a human in a grave.

Table 8: The Combined Number of Individual Specimens per Taxon for the Southern Platform and Architectural Compound 2 at Huaca Gallinazo

Taxa	**Southern Platform**		**Architectural Compound 2**	
	NISP	**% of Total NISP**	**NISP**	**% of Total NISP**
Mammal, indeterminate	1465	41.30	716	31.09
Artiodactyl, indeterminate	161	4.54	22	0.96
Camelidae, indeterminate	3	0.08	131	5.69
Canidae, indeterminate	21	0.59	2	0.09
Canis lupus familiaris	0	0.00	22	0.96
Canis sp.	0	0.00	2	0.09
Carnivora, indeterminate	1	0.03	2	0.09
Cavia porcellus	45	0.01	61	2.65
Lagidium peruanum	2	0.06	5	0.22
Lama sp.	929	26.19	82	3.56
Odocoileus virginianus	15	0.42	5	0.22
Otaria sp.	174	4.91	127	5.51
Vicugna vicugna	1	0.03	0	0.00

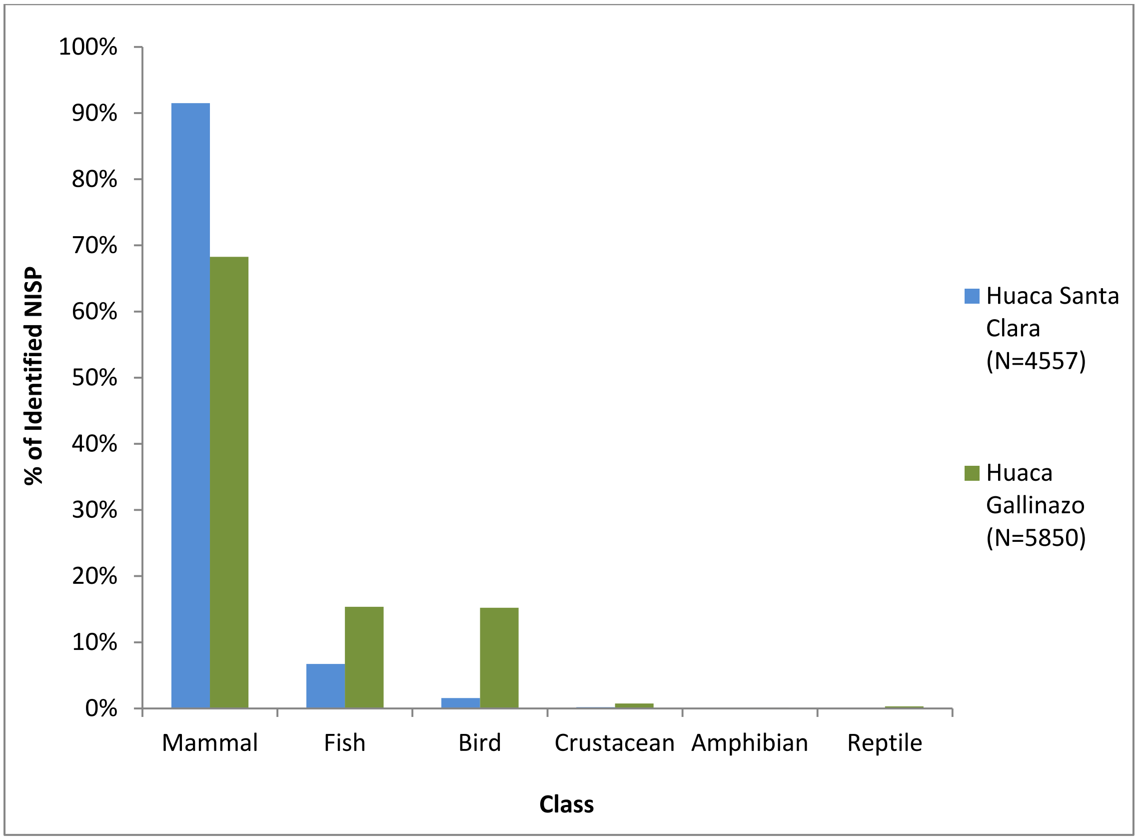
Mammal, Total:	**2817**	**78.16**	**1177**	**51.11**
Fish, indeterminate	92	2.59	344	14.94
Anchoa sp.	0	0.00	1	0.04
Anisotremus scapularis	6	0.17	10	0.43
Ariidae, indeterminate	0	0.00	1	0.04
Carcharhinus sp.	1	0.03	3	0.13
Cynoscion sp.	0	0.00	1	0.04
Ethmidium maculatum	0	0.00	5	0.22
Galeichthys peruvianus	3	0.08	7	0.30
Isurus oxyrinchus	1	0.03	0	0.00
Labrisomus philippii	0	0.00	2	0.09
Menticirrhus sp.	0	0.00	1	0.04
Merluccius gayi	0	0.00	1	0.04
Mugil cephalus	1	0.03	1	0.04
Mustelus sp.	0	0.00	4	0.17
Myliobatis sp.	0	0.00	1	0.04
Paralabrax sp.	1	0.03	2	0.09
Paralichthys adpersus	1	0.03	0	0.00
Paralichthys sp.	1	0.03	2	0.09
Paralonchurus peruanus	40	1.13	189	8.21
Rhinobatos planiceps	0	0.00	1	0.04
Sarda chiliensis chiliensis	2	0.06	8	0.35
Sardinops sagax	11	0.31	24	1.04
Scartichthys sp.	0	0.00	1	0.04
Sciaena deliciosa	10	0.28	27	1.17
Sciaena fasciata	3	0.08	0	0.00
Sciaena gilberti	0	0.00	1	0.04
Sciaena sp.	2	0.06	11	0.48
Sciaena starski	5	0.14	2	0.09
Sciaenidae, indeterminate	1	0.03	1	0.04
Serranidae, indeterminate	0	0.00	4	0.17
Sicyases sanguineus	1	0.03	0	0.00
Sphyrna sp.	1	0.03	4	0.17
Sphyrna zygaena	4	0.11	0	0.00
Squatina armata	1	0.03	11	0.48
Stellifer minor	0	0.00	1	0.04
Trachurus symmetricus murphyi	2	0.06	38	1.65
Fish, Total:	**190**	**5.36**	**709**	**30.79**
Bird, indeterminate	196	5.53	151	6.56
Anas sp.	7	0.20	0	0.00
Anatidae, indeterminate	1	0.03	0	0.00

Calidris sp.	0	0.00	1	0.04
Charadriiformes, indeterminate	1	0.03	0	0.00
Columbina sp.	0	0.00	1	0.04
Falco sparverius peruvianus	0	0.00	5	0.22
Gallinula chloropus pauxila	1	0.03	0	0.00
Gallus gallus domesticus	4	0.11	0	0.00
Icteridae, indeterminate	3	0.08	0	0.00
Laridae, indeterminate	2	0.06	5	0.22
Larus sp.	19	0.54	11	0.48
Passeriformes, indeterminate	3	0.08	0	0.00
Pelicanus thagus	1	0.03	2	0.09
Phalacrocoracidae, indeterminate	0	0.00	1	0.04
Phalacrocorax bougainvillii	90	2.54	45	1.95
Procellariidae, indeterminate	1	0.03	0	0.00
Rallidae, indeterminate	0	0.00	4	0.17
Rallus sanguinolentus	2	0.06	0	0.00
Spheniscus humboldti	25	0.70	12	0.52
Sturnella bellicosa	3	0.08	0	0.00
Sula sp.	142	4.00	141	6.12
Sula variegata	0	0.00	3	0.13
Zenaida asiatica meloda	3	0.08	0	0.00
Zenaida auriculata	0	0.00	1	0.04
Zenaidura sp.	3	0.08	0	0.00
Bird, Total:	**507**	**14.29**	**383**	**16.63**
Reptile, indeterminate	7	0.20	2	0.09
Dicrodon sp.	1	0.03	3	0.13
Iguana iguana	5	0.14	0	0.00
Reptile, Total:	**13**	**0.37**	**5**	**0.22**
Amphibian, indeterminate	0	0.00	1	0.04
Bufo sp.	2	0.06	2	0.09
Amphibian, Total:	**2**	**0.06**	**3**	**0.13**
Crustacean, indeterminate	6	0.17	6	0.26
Crab, indeterminate	12	0.34	11	0.48
Platyxanthus orbignyi	0	0.00	8	0.35
Portunidae, indeterminate	0	0.00	1	0.04
Crustacean, Total:	**18**	**0.51**	**26**	**1.13**
Combined Total: 5850	**3547**	**100**	**2303**	**100**

4.1 Relative Abundances of Animal Classes at Huaca Santa Clara and Huaca Gallinazo

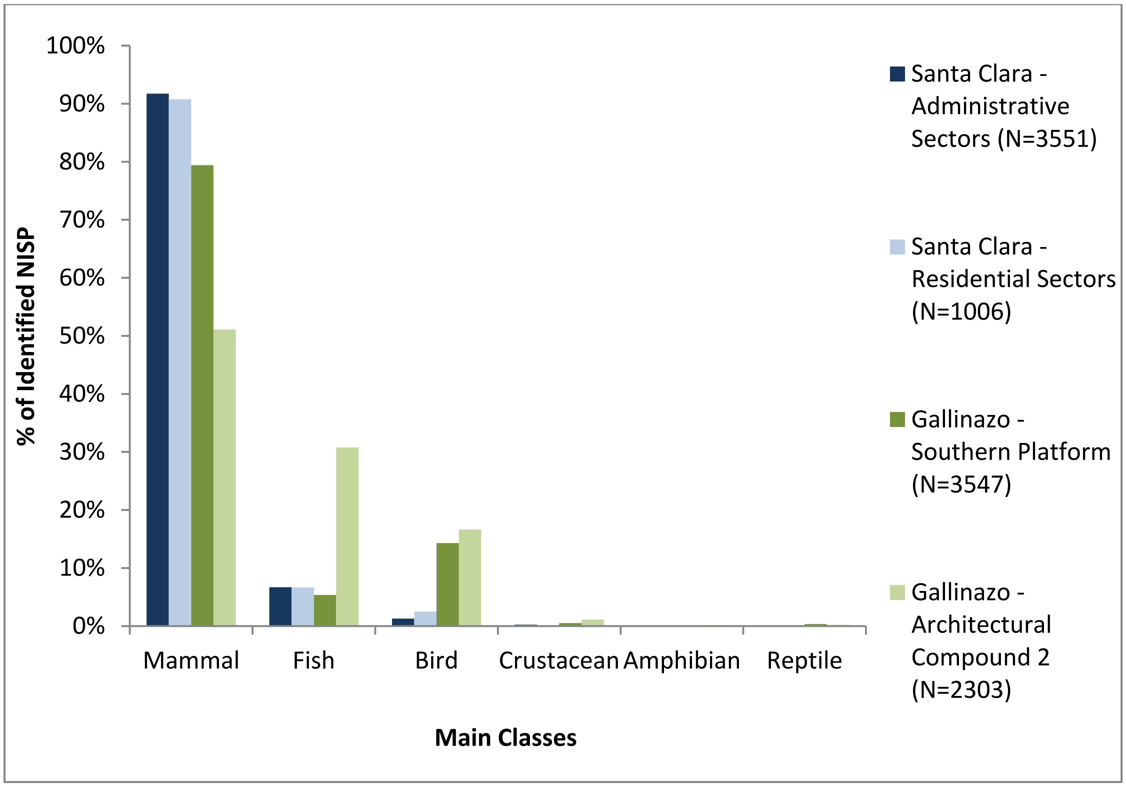
Figure 18 represents the relative abundance of the main animal classes recovered from Huaca Santa Clara and Huaca Gallinazo as percentages of the total identified NISP from each site.

Figure 18: Relative Abundance of the Main Classes at Huaca Santa Clara and Huaca Gallinazo



Mammals were the most abundant class at both Huaca Santa Clara and Huaca Gallinazo; however, they represent a higher proportion of the fauna at Santa Clara. At both sites, fish is the next most abundant class, followed by birds, although both are more important at Huaca Gallinazo than at Huaca Santa Clara. Spearman's rho indicates a very strong positive correlation between the ranked importance of faunal classes at both sites (r_s= 0.943, p = 0.005), while Fisher's exact test indicates that there are statistically significant differences between the two settlements in terms of the relative abundances of animal classes (X^2 (890.5), $p < 0.001$). While there are broad similarities between the two sites in the relative importance of the classes, the greater proportion of mammals at Huaca Santa Clara and the larger proportions of fish and birds at Huaca Gallinazo, are suggestive of differing dietary focuses.

Figure 19: Relative Abundance of the Main Classes at between Sectors at Huaca Santa Clara and Huaca Gallinazo



There is a perfect positive correlation between the Administrative and Residential Sectors at Huaca Santa Clara in terms of class representation (Figure 19; $r_s = 1.000$, $p < 0.001$). In both cases, fish are second in abundance after mammals, followed closely by birds, with small numbers of crustaceans and amphibians. The Fisher's exact test indicates that differences between class representations in these contexts are not statistically significant (X^2 (8.119), $p = 0.873$). It appears that individuals in these areas had nearly identical access to all types of animals.

There are likewise strong similarities in class representation between the Southern Platform and Architectural Compound 2 at Huaca Gallinazo. Spearman's rho indicates a very strong (nearly identical) positive correlation in the rank order of animal classes across both sectors at Huaca Gallinazo ($r_s = 0.964$, $p < 0.001$). In both cases, fish and birds are the next most abundant classes after mammals, with crustaceans, amphibians, and reptiles present in lower quantities. While birds are equally well represented in both sectors at Huaca Gallinazo, fish are represented in greater abundance in Architectural Compound 2. Fisher's exact test indicates that differences between class representations in the sectors at Huaca Gallinazo are statistically significant (X^2 (765.6), $p < 0.001$). The greater abundance of mammals on the Southern Platform, and the larger proportions of fish in Architectural Compound 2, suggest different dietary focuses in the civic-ceremonial context of the former versus the domestic context of the latter.

It is clear that mammals were the focus of animal consumption in all examined sectors at Huaca Santa Clara and Huaca Gallinazo. The heavier reliance on fish and birds at Huaca Gallinazo likely relates to the complex's proximity to the Pacific coast, providing occupants with easier access to marine species, which were found by Venet-Rogers' (2013) to make up the majority of the fish and birds. While at Huaca Santa Clara fish and birds are represented in the Administrative and Residential Sectors in roughly similar proportions, fish are much more abundant in Architectural Compound 2 at Huaca Gallinazo than on the Southern Platform, perhaps pointing to variability in terms of consumption practices and preferences between residential areas and civic-ceremonial sectors. The small number of crustaceans, amphibians, and reptiles at both sites suggests that these animals were consumed on a more opportunistic basis and were likely not preferred food sources because of their low meat values or perceived undesirable traits. It is also possible that the presence of some animals, such as the reptiles is not related to consumption at all because they may have died of natural causes at the sites during or after their occupation.

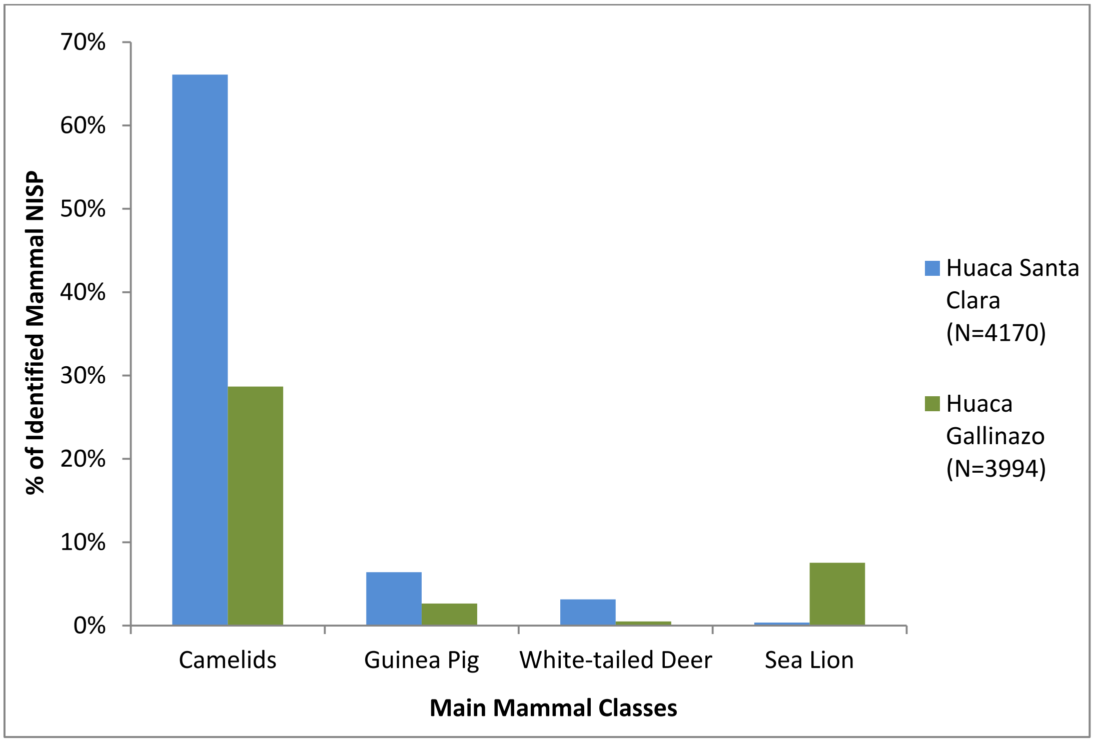
4.2 Comparisons of the Main Mammal, Fish, and Bird Species between and within Huaca Santa Clara and Huaca Gallinazo

At Huaca Santa Clara, mammals, fish, and birds account for 99.8% of the identified specimens from the Administrative Sectors, and 99.9% from Residential Sectors. At Huaca Gallinazo, mammals, fish, and birds account for 99.1% and 98.5% of the identified specimens from the Southern Platform and Architectural Compound 2. At both sites the residential sectors are characterized by smaller sample sizes, so to mitigate issues that can arise when dealing with smaller assemblages, the Fisher's exact test was conducted in place of Pearson's Chi-Square because of its ability to provide more accurate p-values in instances where expected values are below 5 in the contingency table.

4.2.1 Representation of Main Mammal Taxa

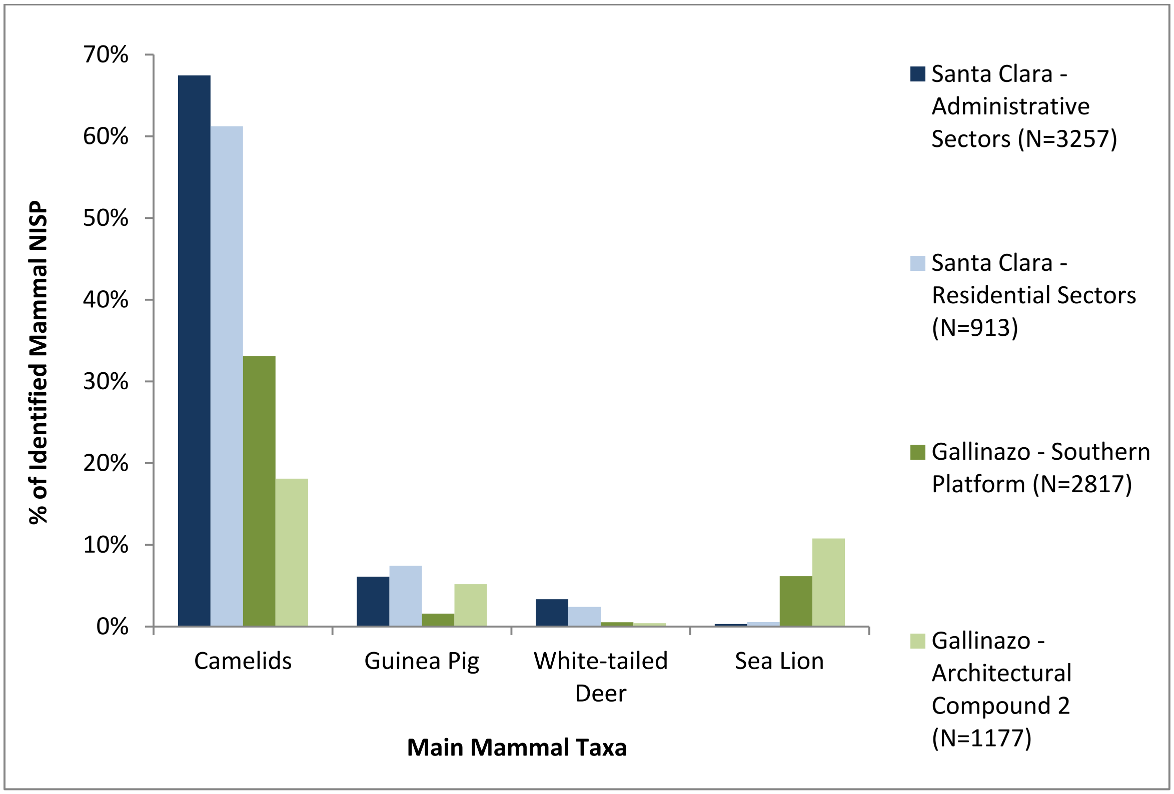
Figure 20 represents the four most abundant mammal taxa recovered from Huaca Santa Clara and Huaca Gallinazo as percentages of the identified NISP for mammals from those areas (for a full list of the NISPs for all taxa see Table 7 and 8 at the beginning of this chapter).

Figure 20: Representation of the Four Main Mammal Taxa from Huaca Santa Clara and Huaca Gallinazo



The relative abundances of the four main mammal taxa are quite similar at both sites, with the camelids being the most common, followed by guinea pig (*Cavia porcellus*), white-tailed deer (*Odocoileus virginianus*), and sea lions (*Otaria sp.*). Spearman's rho indicates a moderate positive correlation in the rank order of these taxa between the two sites (r_s= 0.400, p = 0.600). The main differences are the larger proportions of camelids and white-tailed deer at Huaca Santa Clara, and sea lions at Huaca Gallinazo. Pearson's Chi-Square indicates statistically significant differences in the proportions of these taxa at the two sites (X^2 (602.261), $p < 0.001$).

Figure 21: Relative Abundance of the Main Mammal Taxa between Sectors at Huaca Santa Clara and Huaca Gallinazo



At Huaca Santa Clara, as for Class, there are strong similarities between the distribution of the main mammal species in both the Administrative and Residential Sectors (Figure 21). Spearman's rho indicates a perfect positive correlation in the relative abundance of these species in both contexts ($r_s = 1.000$, $p < 0.001$). In both cases, camelids make up the bulk of the mammal assemblage. Guinea pigs are the next most abundant, followed by white-tailed deer and sea lions in both sectors. The Pearson's Chi-Square indicates that differences between the sectors in terms of the main mammals are not statistically significant (X^2 (6.6734), $p = 0.083$). The similar representations of the main mammal species and the identical rank order are more suggestive of all residents at Huaca Santa Clara having comparatively equal access to mammal foods.

At Huaca Gallinazo, the rank importance of the main mammal species is likewise identical in the Southern Platform and Architectural Compound 2 ($r_s = 1.000$, $p < 0.001$). Pearson's Chi-Square, however, indicates significant differences between the sectors at Huaca Gallinazo in terms of the representations of main mammals (X^2 (129.1818), $p < 0.001$). While camelids are the most abundant mammal taxon in both contexts, the Southern Platform has a significantly larger proportion. Within the residential sector, guinea pigs and sea lions were more abundant than in the Southern Platform. The statistically significant results of the Pearson's Chi-Square test as well as the differing proportional abundances of the camelids, guinea pigs, and sea lions at Huaca Gallinazo suggest that the occupants of different sectors had different access to mammal foods.

Domesticated mammals are the most abundant at both Huaca Santa Clara and Huaca Gallinazo, where camelids dominate, followed by guinea pigs. Camelids are perhaps the most important Andean domesticates. Llamas and alpacas were domesticated by 6,000 B.P. in the Central Andes to be kept for meat and wool, and to aid in the transportation of goods (Reitz and Wing 1999; Russell 2011). That camelids were the most abundant at both sites is unsurprising because local herds were likely being kept on the coast, allowing for continuous access (evidence supporting this is discussed in the following chapter), and because they were a significant feasting food (Szpak et al. 2014b). Camelids, along with the other main mammal taxa, were represented in similar proportions in Administrative and Residential Sectors at Huaca Santa Clara, suggesting that individuals at the site had relatively equal access to the same mammal food sources. This is not the case at Huaca Gallinazo, however, where camelids were more abundant on the Southern Platform. This result may indicate that larger scale consumption activities focused on camelids were occurring in this civic-ceremonial area. This interpretation aligns the previous interpretations from Venet-Rogers (2013) suggesting that individuals occupying the different sectors at Huaca Gallinazo had differential access to animal foods.

Evidence of guinea pig domestication can be found as early as 7,000 B.P. and they are known to have served a wide variety of purposes in the past in healing rituals, divination, sacrifice, and as a food source (Cobo 1990; Morales 1995; Reitz and Wing 1999: 286; Rofes 2002: 95). Morales (1994) suggests that guinea pigs were incorporated into the diet to provide an additional source of fat when carbohydrates and proteins were in limited supply. Occupants at Huaca Santa Clara appear to have had equal access to guinea pigs, as demonstrated by the comparable proportions of their remains in both sectors, while at Huaca Gallinazo guinea pigs were better represented in Architectural Compound 2. Guinea pigs in the past, as well as in the present, are often kept in household kitchens, being fed the scraps from food preparation. The greater representation of guinea pigs in Architectural Compound 2 at Huaca Gallinazo may be related to this tradition of keeping these animals in kitchen spaces, since this residential sector contained food preparation spaces associated with domestic activities. Guinea pigs, because of their small size, may also have been viewed as a more appropriate food for smaller scale consumption.

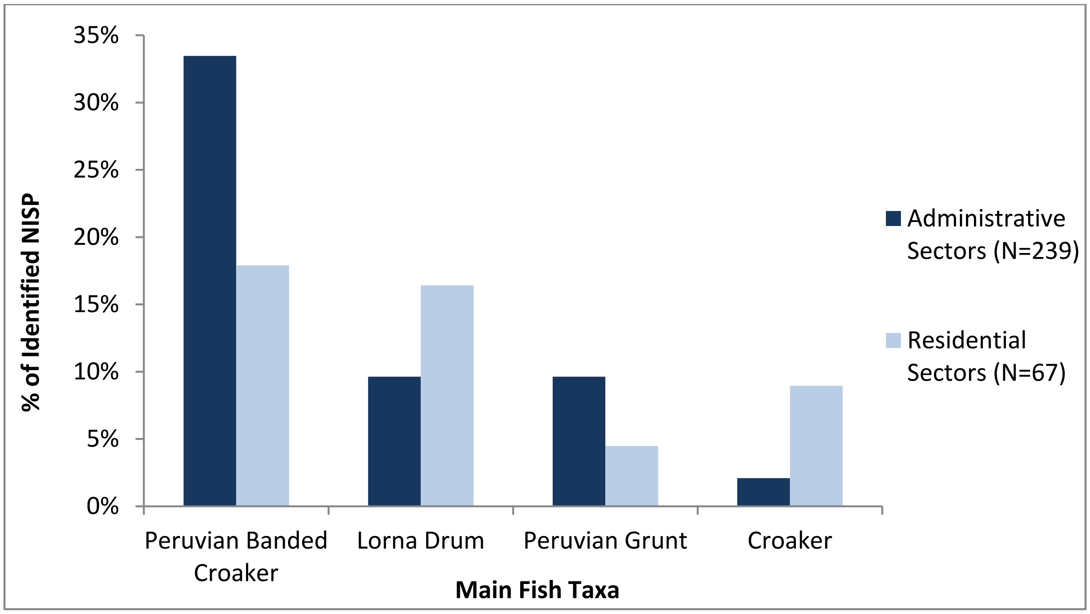
White-tailed deer were more abundant at Huaca Santa Clara, with slightly larger proportions in the Administrative Sectors, while at Huaca Gallinazo, deer were found in smaller but more equal proportions in both sectors. As mentioned in Section 2.4.2, deer were symbolically important animals for groups occupying the North Coast, often being associated with the realm of the ancestors, as well as with agriculture due to their presence in the irrigated cultivation areas around sites (Benson 1997; Goepfert 2010). Residents of Huaca Santa Clara may have been more likely to encounter deer in the areas around the site because of its location further inland in the Virú Valley, providing them with easier access to these animals on a more opportunistic basis than would have been possible for those occupying Huaca Gallinazo in a more coastal desert environment. For the Moche, deer hunting was an elite, highly ritualized activity and it may have been the same for individuals of high social standing in the Virú polity carrying out administrative duties at Huaca Santa Clara, as well as for those at Huaca Gallinazo, if perhaps less frequently. Deer are often shown as anthropomorphized warriors in North Coast iconography because of their speed and heightened senses, which would have been valued traits for those involved in combat (Benson 1997: 36). This symbolic association with warfare and combat may have been important to individuals occupying Huaca Santa Clara because the site is known to have served a defensive function within the Virú Valley, along with other sites, with individuals perhaps seen as ingesting these desirable traits as they consumed the deer.

Sea lions were found in much larger proportions at Huaca Gallinazo compared to Huaca Santa Clara, and this could be related to the proximity of the site to the Pacific coast, providing them with easier access to these large marine mammals. Sea lions share some of the same associations with ritual warfare that white-tailed deer do, with the same elite individuals with ornate dress being represented hunting both animals in Moche iconography. Sea lions were likely not just valued as sources of meat, and may have had different body parts utilized in curing ceremonies, as is the case in modern rituals today (Benson 2012). It is interesting that this especially symbolically potent animal is found in larger proportions in Architectural Compound 2, rather than in the civic-ceremonial area on the Southern Platform. This difference may be related to the fact that marine species in general, especially fish, were more abundant in the residential areas of Huaca Gallinazo, so it is possible that individuals involved in procuring marine fish would have come into contact with sea lions on a more regular basis.

4.2.2 Representation of Main Fish Taxa

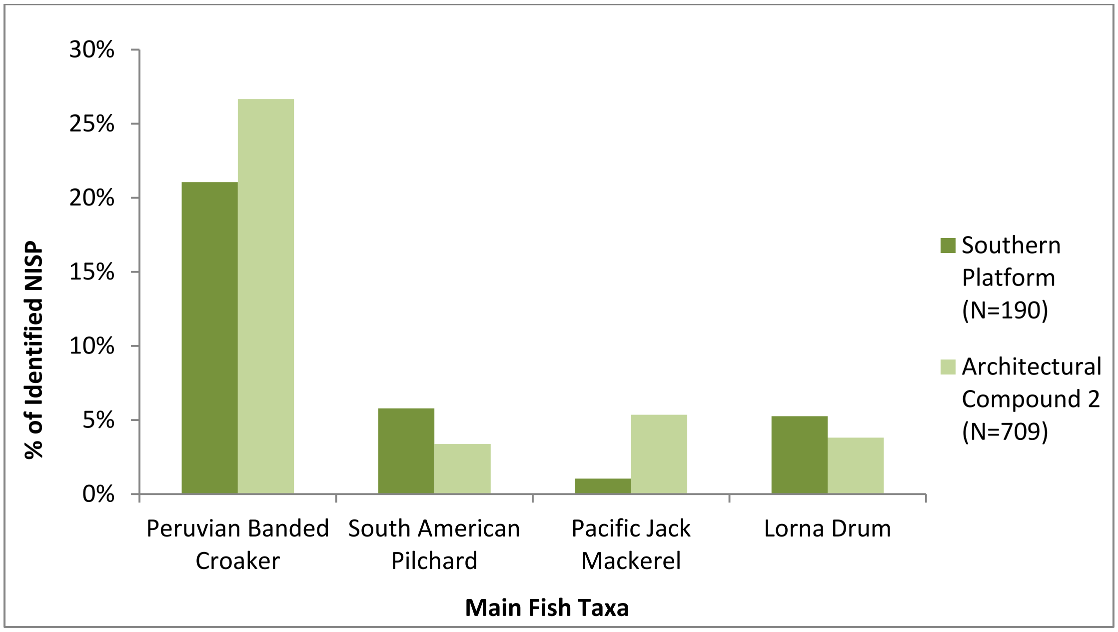
The relative abundance of the four main fish taxa is where the most notable differences between the two sites and their respective sectors lie. Figure 22 represents the relative abundance of the main fish taxa recovered in both the Administrative and Residential areas at Huaca Santa Clara, while Figure 23 shows the relative abundances from the Southern Platform and Architectural Compound 2 at Huaca Gallinazo as percentages of the total identified NISP for fish for those areas. Peruvian banded croaker (*Paralonchurus peruanus*) was the most abundant fish species across both sites and all sectors.

Figure 22: Relative Abundance of the Main Fish Taxa between Sectors at Huaca Santa Clara



Small samples for both sectors at Huaca Santa Clara mean that the data may not be entirely representative. Nonetheless, Peruvian banded croaker was the most abundant fish species at the site, especially within the Administrative Sectors. Lorna drum (*Sciaena deliciosa*), Peruvian grunt (*Anisotremus scapularis*), and croaker (*Sciaena sp.*) followed in significantly smaller quantities, with a great deal of variability between the sectors at Huaca Santa Clara in terms of the proportion of each of the main species. Spearman’s rho indicates a relatively strong positive correlation between the Administrative and Residential sectors in terms of the ranked importance of fish species that is not statistically significant ($r_s = 0.632$, $p = 0.368$). However, Fisher's exact test indicates statistically significant differences between the sectors in terms of the proportions of the main fish species (X^2 (18.393), $p < 0.001$).

Figure 23: Relative Abundance of the Main Fish Taxa between Sectors at Huaca Gallinazo



Samples for fish at Huaca Gallinazo are likewise relatively small, although they are significantly larger within Architectural Compound 2 than for the Southern Platform. Pacific jack mackerel (*Trachurus symmetricus*) is also more abundant in Architectural Compound 2, while South American pilchard (*Sardinops sagax*) and Lorna drum were present in higher quantities in the Southern Platform. Spearman's rho indicates only a weak positive correlation between the Southern Platform and Architectural Compound 2 at Huaca Gallinazo in terms of the ranked importance of fish species ($r_s = 0.200$, $p = 0.800$). The Fisher's exact test indicates that the differences between the sectors in the proportions of the main fish taxa between the sectors is statistically significant (X^2 (10.672), $p = 0.013$).

The following is an overview of relevant characteristics of the main fish species from Huaca Santa Clara and Huaca Gallinazo. In all sectors at both sites, the Peruvian banded croaker was the most abundant fish taxon. This species is found in bays and along sandy coasts at a depth of 1-30 meters (Chao 1995), and grows to an average length of 30 centimetres (Jiménez and Béarez 2004). Lorna drum is the second most common fish species at Huaca Santa Clara and is also present in smaller proportions at Huaca Gallinazo. This is a demersal species (bottom feeders), preferring to inhabit sea floors and lake beds, usually near continental slopes or in coastal waters at a depth of between 1-50 meters (McAllister 1990). They reach an average adult length of around 50 centimeters. The next most abundant fish at Huaca Santa Clara is the Peruvian grunt, occupying depths of 3-12 meters in open water above rocky slopes of reefs and reaching a maximum length of 40 centimeters (Humann and Deloach 1993). Croakers, a category that could include multiple fish species, which are small to medium sized bottom feeding fish occupying bays and muddy river banks, were also present.

At Huaca Gallinazo the second most common fish species was the South American pilchard. These are schooling fish occupying pelagic-neritic ocean zones off the Pacific coast above the drop-off of the continental shelf with a depth range of 1-200 meters, and reaching an average length of around 20 centimeters (Whitehead 1985). Also recovered from Huaca Gallinazo are Pacific jack mackerel, occupying both coastal pelagic, as well as deeper ocean zones, with a depth range of 1-400 meters, at times even being found 500 miles offshore (Riede 2004). They reach an average size of around 50 centimetres (Smith-Vaniz 1995). In general Huaca Gallinazo has a greater abundance and variety of fish species than Huaca Santa Clara, and the list of all species at each site can be found in Tables 7 and 8.

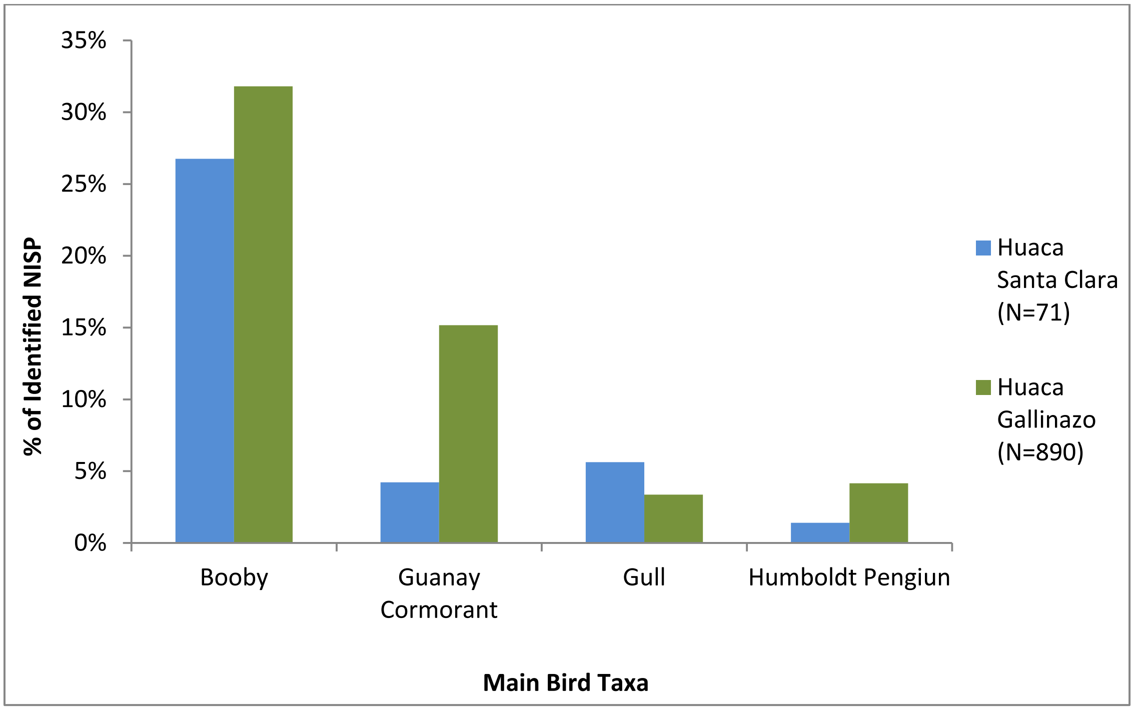
It is interesting to note that fish species occupying deeper ocean zones were more common at Huaca Gallinazo, while fish preferring shallower habitats predominated at Huaca Santa Clara. This observation provides insight into how occupants at the two sites were acquiring their fish. Fishing is often represented in Moche iconography, with fisher-people depicted casting lines and nets from rafts (Donnan 1978). These methods would have been most appropriate for catching many of the main fish taxon at Huaca Gallinazo, preferring deeper ocean depths, while species preferring shallower habitats like those found at Huaca Santa Clara, could have been caught by setting nets near the beach. Residents at Huaca Gallinazo not only would have had better access to ocean resources because of their proximity to the coast, but their location also would have allowed for easier storage and utilization of the watercraft necessary for catching the fish species inhabiting deeper ocean zones. Colonial records documented the use on the coast of rafts made of bundled and tied reeds that were paddled with long canes, allowing men to go out and lay nets (Benson 2012). Moche fisher-people used similar watercraft to modern *caballito* or *totora* reed rafts that are used today in the fishing-tourist town Huanchaco in the Moche Valley (Bawden 1996, Benson 2012). It is possible, however, as demonstrated by modern fishing groups, to catch large fish such as corvina and bonito without the use of rafts by extending nets into the water perpendicular to shore (Benson 2012: 110). Benson (1997: 117) argues that the fish-monsters represented in Moche iconography may represent the personification of the dangers of the sea, which is commonly associated with conceptions of the underworld. Individuals occupying Huaca Gallinazo may have felt closer connections than those occupying Huaca Santa Clara with the underworld realms that the fish species they focused on would have been associated with due to their preference for deeper ocean habitats. This highlights the trend of residents of Huaca Gallinazo possessing greater connections to, and abundances of, marine resources including a variety of fish species, sea lions, and marine birds, as is discussed in the subsequent section. The incorporation into the body of the supernatural symbolism via the consumption of deep water fish would have been a powerful means to create linkages between individuals at Huaca Gallinazo and the forces of the underworld.

It should be noted however, that because the Virú state practiced resource redistribution, it is possible that fishing groups supplied both Huaca Santa Clara and Huaca Gallinazo with their fish. If this were the case, the differences in the assemblages at both sites would be more reflective of differential trade and resource redistribution, rather than variable fishing strategies practiced by residents.

4.2.3 Representation of Main Bird Taxa

Figure 24 represents the relative abundance of the four most abundant bird taxa recovered from Huaca Santa Clara and Huaca Gallinazo as percentage of the total identified NISP in those areas.

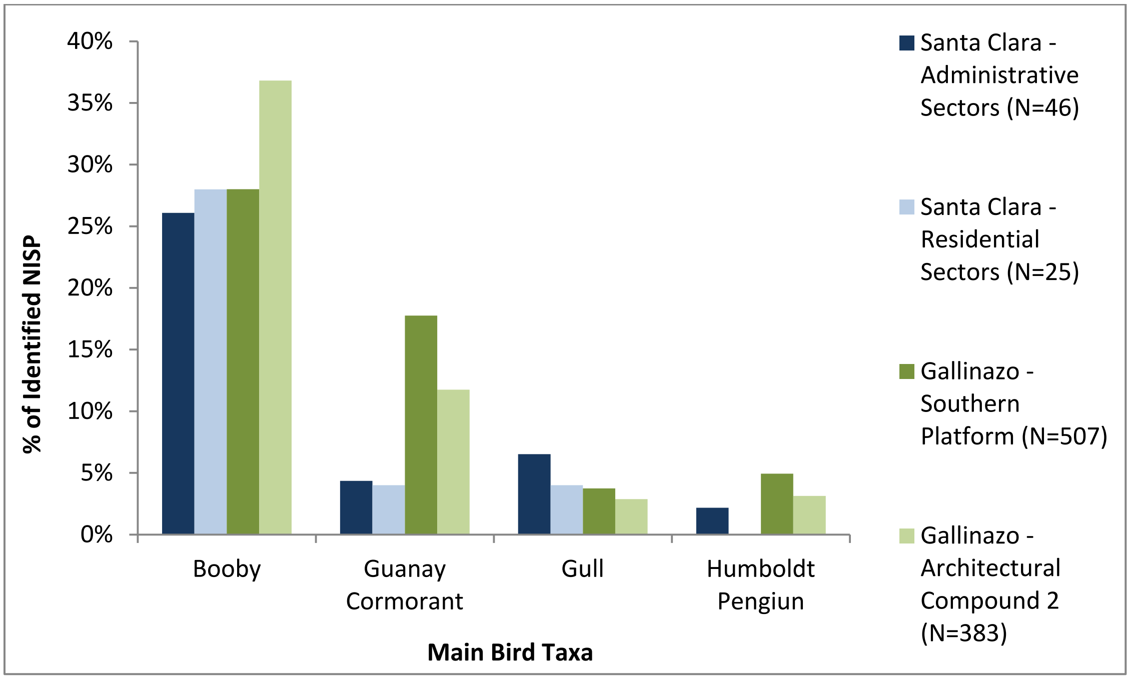
Figure 24: Representation of the Four Main Bird Taxa from Huaca Santa Clara and Huaca Gallinazo



The main bird taxon present at both Huaca Santa Clara and Huaca Gallinazo were boobies (*Sula sp.*), followed by Guanay cormorants (*Phalacrocorax bougainvillii*), gulls (*Larus sp.*), and Humboldt penguins (*Spheniscus humboldti*). In every case but the gulls, Huaca Gallinazo was found to have proportionally more of each bird than Huaca Santa Clara. The most significant difference in species abundance can be seen with the Guanay cormorants, which are much better represented at Huaca Gallinazo. Spearman's rho test indicates that there is a very strong positive correlation between bird assemblages at both sites ($r_s = 0.800$, $p = 0.200$) and the Fisher's exact test indicates that there are no statistically significant differences in their proportions (X^2 (6.679), $p = 0.083$).

Figure 25 breaks down the representation of main bird species at both sites by sector. The very small sample sizes at Huaca Santa Clara mean that those numbers may not be representative, so they will not be discussed further except to note that the main bird species were represented in both sectors in roughly similar proportions.

Figure 25: Relative Abundance of the Main Bird Taxa between Sectors at Huaca Santa Clara and Huaca Gallinazo



At Huaca Gallinazo, the rank importance of the main bird species was identical in both sectors ($r_s = 1.000$, $p < 0.001$), with boobies the most abundant. However, Pearson's Chi-Square indicates there was a statistically significant difference between the proportions of these species in the two sectors (X^2 (12.691), $p = 0.005$). Boobies comprise a considerably larger proportion of the assemblage at Architectural Compound 2 than on the Southern Platform. In contrast, Guanay cormorants, and to a lesser degree gulls, and Humboldt penguins, are less well represented in Architectural Compound 2 than on the Southern Platform.

Boobies are strictly marine birds and were the most common bird species at both Huaca Santa Clara and Huaca Gallinazo. Boobies inhabit areas around the resource rich Humboldt Current where they plunge dive for fish in groups of 30-40 individuals, preferring flat areas along the coast for their loosely seasonal breeding in the spring and summer months. Guanay cormorants, another marine species, were present at both sites but decidedly more important at Huaca Gallinazo. They breed year round with a peak in November and December on offshore islands and, like boobies, are attracted to the schooling fish present in the cold shallower waters of the Humboldt Current (Zavalaga and Paredes 1999). Gulls were also common at both Huaca Santa Clara and Huaca Gallinazo, and are generally medium to large birds inhabiting marine and coastal environments. Humboldt penguins, while distinctly more abundant at Huaca Gallinazo, were also present at Huaca Santa Clara. These medium-sized penguins breed in monogamous pairs throughout the year, although their main breeding seasons are from March to April and September to October on sandy coasts or guano cliffs (Paredes and Zavalaga 2001). Humboldt penguins typically dive to depths of 60 meters to feed on fish and krill, but they are known to dive to 150 meters, and may have been captured opportunistically if they became ensnared in the nets dropped for fishing. It is not surprising that the most common bird species at both Huaca Santa Clara and Huaca Gallinazo are marine species because the relatively close proximity to the coast would have made these birds especially abundant in the local area and easily accessible for consumption. The loose seasonal birthing cycles of these species also would have meant they were spending time on land for laying at multiple points during the year, providing local residents of both sites with the opportunity to take both birds and eggs for food.

The fact that Humboldt penguins were far more abundant at Huaca Gallinazo may suggest that residents of this site were focused more heavily on the exploitation of this species because of their closer proximity to the coast than residents from Huaca Santa Clara. Venet-Rogers (2013: 60) noted that the remains of the Humboldt penguins were found to have more visible indications of processing such as cut marks and evidence of cooking, suggesting that these birds were being hunted and consumed. Venet-Rogers (2013: 60) also highlights that smaller bird species such as the boobies and gulls may not have been used as a food source, and perhaps were valued for their small bones that could be transformed into polished beads. In Moche iconography cormorants and other marine bird species are often shown in scenes with other marine animals, including fish, and because their presence along the coast and their behaviour is so tied to the movements of variable schooling fishes, they would have been commonly associated with the fertility of ocean fishes as well as the underworld (Benson 1997: 68; Earle 2010: 17).

4.3 Chapter Summary

At both Huaca Santa Clara and Huaca Gallinazo, mammals were the most abundant class, although they were represented in larger proportions at Santa Clara. Mammals were followed by fish and birds at both sites, although both of these classes were more common at Huaca Gallinazo. This fact, coupled with the greater proportions of mammals at Huaca Santa Clara suggests that while there are broad similarities between the sites in terms of the representations of animal classes, occupants of the sites had different dietary focuses possibly related to their proximity to the coast and ease of access to marine species. The similar proportions of classes in both Administrative and Residential Sectors at Huaca Santa Clara is indicative of individuals at the site having relatively equal access to all animal types for consumption. In contrast, at Huaca Gallinazo fish were more abundant in domestic areas than civic-ceremonial sectors.

Camelids were the most abundant mammals at both sites, followed by guinea pigs, white-tailed deer, and sea lions. Camelids and white-tailed deer were present in larger proportions at Huaca Santa Clara, while sea lions were found in greater quantities at Huaca Gallinazo, also likely related to the site's more coastal location. At Huaca Santa Clara the camelids were comparably represented in both the Administrative and Residential Sectors, however, at Huaca Gallinazo they were present in larger quantities in the Southern Platform, while guinea pigs and sea lions were more abundant in Architectural Compound 2. These differences between the sectors at Huaca Gallinazo are likely related to the functions of these spaces, with camelid remains being more common in civic-ceremonial areas associated with larger consumption events, while small household domesticates like guinea pigs were kept and consumed in domestic areas because of their small size.

The most notable differences between the sites and sectors are between the relative proportions of fish species in these locations. Peruvian banded croaker was the most abundant fish species at both sites. At Huaca Santa Clara Peruvian banded croakers were followed by Lorna drum, Peruvian grunt, and croakers, most of which are fish that inhabit shallower coastal waters. The sample sizes for fish are larger at Huaca Gallinazo, especially in Architectural Compound 2, and represent a wider variety of species than at Huaca Santa Clara. Pacific jack mackerel were present in higher quantities in domestic areas, while South American pilchards and Lorna drum were more abundant in the Southern Platform. The species found at each site are known to occupy different ocean zones, with many of the main fish species at Huaca Gallinazo occupying greater depths than species found at Huaca Santa Clara. This evidence suggests that the occupants of the sites were practicing differing fishing strategies, with individuals at Huaca Gallinazo likely net fishing in open water, while those at Santa Clara focused on species closer to the shore that could be caught directly from the beaches.

At both Huaca Santa Clara and Huaca Gallinazo boobies were the most abundant bird species, followed by Guanay cormorants, gulls, and Humboldt penguins. With the exception of the gulls, Huaca Gallinazo had proportionally more of each of the main bird species than Huaca Santa Clara, especially in the case of the Guanay cormorants. At Huaca Gallinazo the cormorants, gulls, and Humboldt penguins were better represented in the Southern Platform. The higher proportions of marine bird species at Huaca Gallinazo is likely related to the coastal location of the site, allowing for easier hunting and more frequent consumption of these bird species. As noted by Venet-Rogers (2013: 60), however, smaller birds such as the boobies and gulls may not have been consumed, and perhaps were valued for their small bones which could be used in bead making.

In summary, it appears that all occupants at Huaca Santa Clara had relatively equal access to all animal foods in both Administrative and Residential Sectors, while at Huaca Gallinazo the evidence suggests that individuals in the Southern Platform and Architectural Compound 2 would have been eating foods in different proportions, likely as a result of the functions of these spaces. Meatier mammals such as the camelids are better represented in the civic-ceremonial area of the site, likely because their larger size made them more appropriate for large scale consumption events, while fish were more commonly consumed on a more every day, small scale basis in the domestic spaces.

Chapter 5

5 Exploitation of Key Species – Herd Management and Prey Selection

This chapter provides a more in depth analysis and discussion of the camelid, white-tailed deer, and sea lion exploitation practices and patterns at Huaca Santa Clara and Huaca Gallinazo. I discuss the representation and distribution of camelid skeletal parts for both sites along with information regarding the skeletal part representation of sea lions at Huaca Gallinazo in order to examine practices of butchery, transport, and consumption for these important species. Dental wear and epiphyseal fusion data are presented for the camelids to highlight patterns of herd management. Fusion data is also presented for the white-tailed deer at Huaca Santa Clara, as well as the sea lions from Huaca Gallinazo to examine hunting practices and preferences for these symbolically significant wild species. I also document the nature and proportion of burnt bones within each assemblage to facilitate the analysis of food preparation practices at both sites. Spearman's rho was used to test the rank correlations between skeletal part representations for camelids and sea lions, and Pearson's Chi-Square and Fisher's exact test (again used here in cases where sample sizes were small) were employed to test for statistically significant differences between Huaca Santa Clara and Huaca Gallinazo, and between sectors on each site.

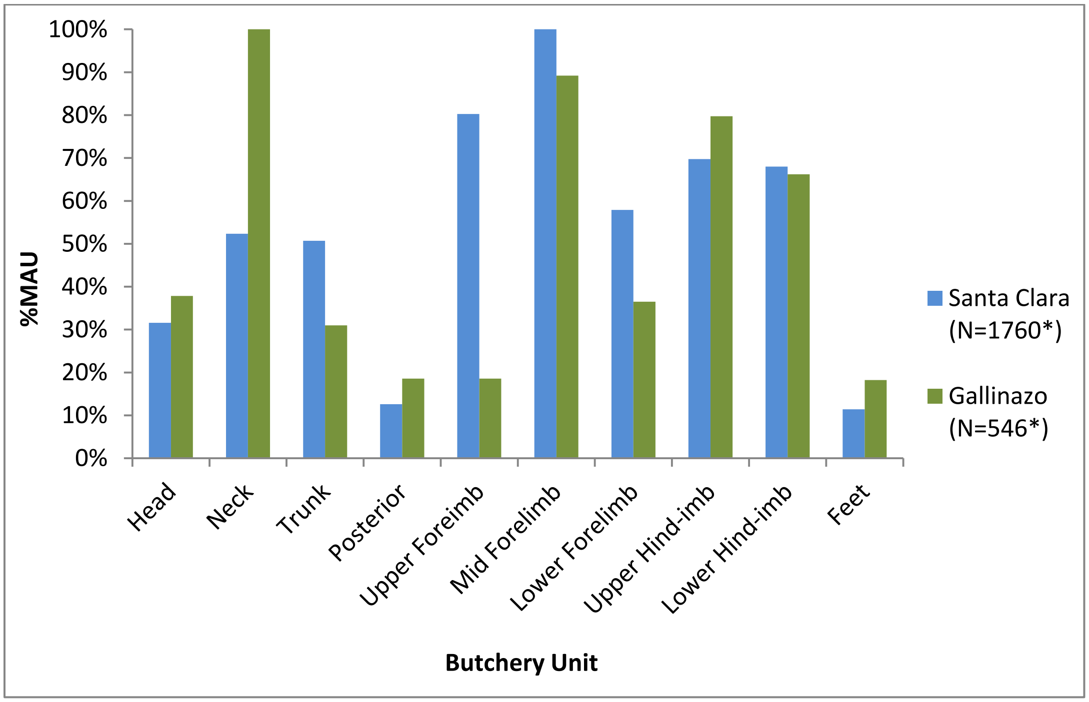
5.1 Camelid Populations and Utilization at Huaca Santa Clara and Huaca Gallinazo

5.1.1 Representation of Camelid Skeletal Parts

Camelid butchery units were defined based on the analysis of cut mark locations at Huaca Santa Clara. During analysis, I plotted the location and quantity of cut marks for each skeletal element on a diagram of a camelid skeleton. Visual inspection of these diagrams indicated clusters of cut marks, facilitating identification of probable butchery units (see Appendices D and E for cut mark diagrams and charts for assemblages from Huaca Santa Clara and Huaca Gallinazo). These butchery units are as follows: head (cranium, mandible), neck (atlas, axis, cervical vertebrae), trunk (thoracic vertebrae, ribs, lumbar vertebrae), posterior (pelvis, sacrum, caudal vertebrae), upper forelimb (scapula, humerus), mid forelimb (radius-ulna), lower forelimb (metacarpal), upper hind-limb (femur, patella, tibia), lower hind-limb (metatarsal, astragalus, calcaneus), and feet (phalanges 1-3). The following discussion of camelid skeletal part representation at both Huaca Santa Clara and Huaca Gallinazo utilized these butchery units.

Figure 26: Representation of Camelid Skeletal Parts at Huaca Santa Clara and Huaca Gallinazo

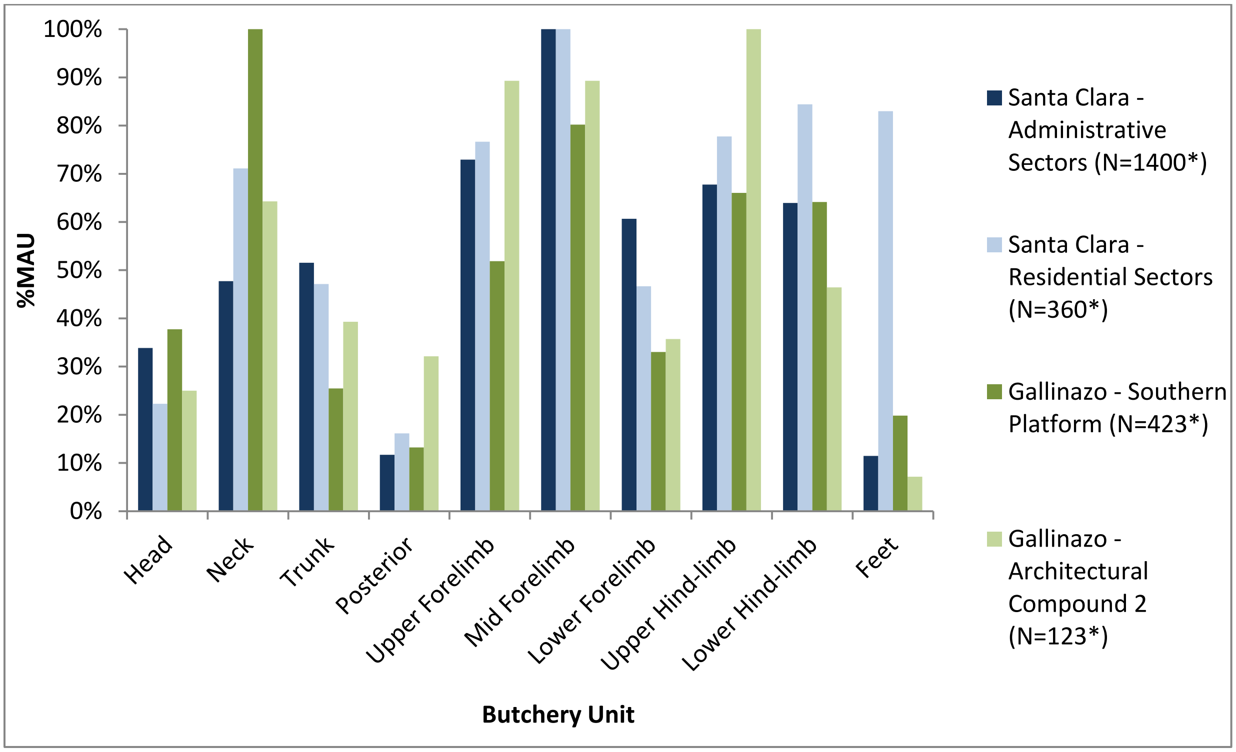
*N values representing the NISP for elements included in camelid butchery units



Representations of the different camelid skeletal parts are relatively similar between Huaca Santa Clara and Huaca Gallinazo. However, necks are substantially better represented at Huaca Gallinazo, and upper forelimbs are far more abundant at Huaca Santa Clara. At both sites the mid forelimb butchery unit was important in terms of its comparative abundance. Spearman's rho indicates that there is a nearly identical positive correlation between rank importance of skeletal parts at Huaca Santa Clara and Huaca Gallinazo ($r_s = 0.924$, $p < 0.001$).

Figure 27: Representation of Camelid Skeletal Parts across Sectors at Huaca Santa Clara and Huaca Gallinazo

*N values representing the NISP for elements included in camelid butchery units

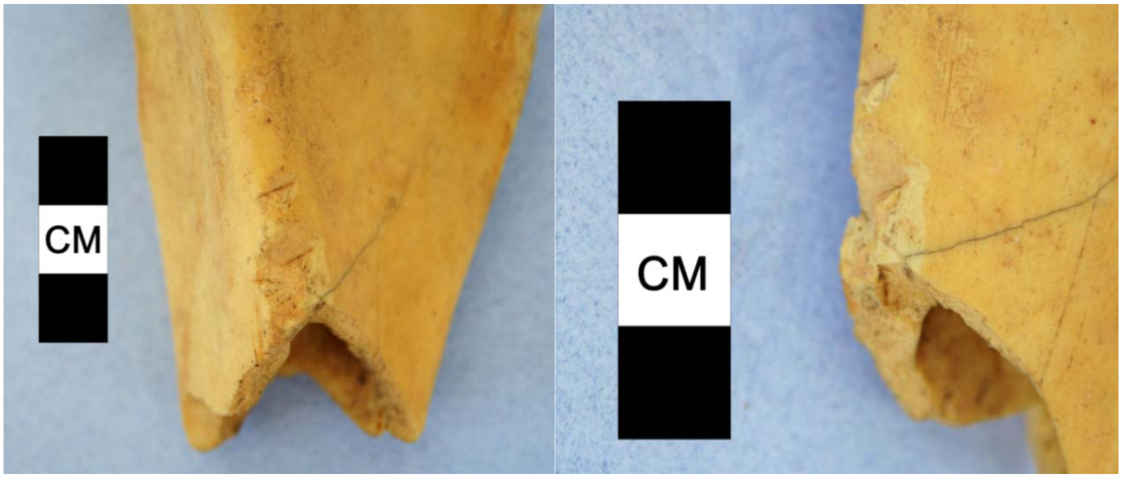


At Huaca Santa Clara, representations of body units are quite consistent across the Administrative and Residential Sectors, with mid forelimbs present in the high quantity across both areas of the site. Neck and lower hind-limb butchery units were slightly better represented in Residential Sectors, with the most significant difference being the comparatively high representation of feet in these areas compared to the Administrative Sectors. Spearman's rho indicates that there is a very strong positive correlation between sectors at Huaca Santa Clara in terms of the rank importance of camelid butchery units ($r_s = 0.819$, $p < 0.001$).

At Huaca Gallinazo, there was more variability between sectors in terms of camelid skeletal part representations. The most significant differences are seen with the neck unit, which was found in larger quantities on the Southern Platform, while upper forelimbs and upper hind-limbs were found to be better represented in Architectural Compound 2. Spearman's rho indicates that there is a moderate positive correlation between the rank importance of camelid butchery units in the sectors at Huaca Gallinazo ($r_s = 0.450$, $p = 0.018$).

In general, the camelid butchery units which were the most abundant in both assemblages are those associated with meatier areas of the body. These regions of the body are also comprised of the long bones containing nutrient rich marrow, which would have been exploited during the secondary processing of bones. Analysis of fresh bone fractures at Huaca Santa Clara indicates that the most abundant butchery units are also those most commonly processed for marrow (see Figure 28 for an example of the type of butchery and secondary processing observed). These elements include the humerus and radius-ulna, as well as the femur and tibia (see Appendix F for charts of butchery and secondary processing at Huaca Santa Clara). The preference for marrow-bearing bones can reflect mass processing events and not just incidental marrow consumption with the preparation of meat (Enloe, 1993: 86). Enloe (1993) suggests that mass processing events would leave distinct signatures archaeologically in terms of the spatial distribution of faunal remains as well as their level of fragmentation. Due to the nature of deposition practices at both Huaca Santa Clara and Huaca Gallinazo, where remains were deposited into floor fills over time and capped, discrete deposits from singular processing activities (large or small) are indistinguishable, making it difficult to comment with confidence on whether residents of these sites were processing camelid remains for marrow in mass extraction events.

Figure 28: A Camelid Tibia with Two Chop Marks above a Fracture Mid-shaft from Room A-108 in an Administrative Sector at Huaca Santa Clara



Along with the meat and marrow rich bones, the presence of the cranium and phalanges at both sites, which are considered low food utility elements, supports the contention that domesticated herds of camelids were being kept around these more coastal locations (Szpak, et al. 2014b; Topic, McGreevy, and Topic 1987). We would not expect to see all butchery units present at the sites if portions of camelids were being traded down from the highlands. While the use of these lower meat utility elements would likely not have been emphasized in consumption, certain elements would have served as appropriate materials for tool making, or as decorative or symbolic pieces. Figure 29 and 30 provide examples of low utility elements which were transformed for these other uses.

Figure 29: A Camelid Phalanx Drilled on Three Sides from Room A-3 in an Administrative Sector at Huaca Santa Clara

Figure 30: A Worked Camelid Metacarpal from Room A-110 in an Administrative Sector at Huaca Santa Clara

5.1.2 Documenting Animal Age Distributions at Huaca Santa Clara and Huaca Gallinazo

Analyzing the age structure of particular animal populations is useful in zooarchaeology because it allows for the documentation of herd management strategies in the case of domesticated animals, as well as hunting practices for wild species. Epiphyseal fusion and dental eruption and wear (Payne 1973) allow for the determination of age categories of exploited animals. In the bone development of young animals, longitudinal bone growth takes place within cartilaginous zones between the epiphysis (articular surfaces of bone) and diaphysis (long-bone shafts) where cells divide and form columns, which are eventually mineralized. This zone, where newly formed bone replaces cartilage, is called the metaphysis. As ossification progresses and most of the epiphyseal cartilage is replaced by bone, the epiphyseal plate, a thin disk of cartilage, is all that is left separating the epiphysis and diaphysis. The epiphysis is considered fused when the epiphyseal plate is completely replaced by bone and longitudinal growth of the bone ceases (Davis 1987: 51, Reitz and Wing 1999: 75). When the stages of development and fusion of individual elements are known for a given species, we can estimate the age at death of the animal based on the state of fusion of the skeletal element. This method provides the most precise age estimates for young individuals, since once a skeletal element is completely fused, all we can say is that an individual is over a certain age.

Tooth eruption and wear are other means to estimate age at death. Most mammals acquire their deciduous teeth and then have them replaced with permanent teeth in a particular sequence and at particular ages. When these sequences have been well documented, it is possible to use tooth eruption to estimate age at death, however, it must be recognized that the timing of eruption can be influenced by the animal’s environment and diet (Kubo and Yamada 2014). Tooth wear can also be used to estimate age. For herbivores, such as camelids, enamel is worn away as teeth are used over the lifespan, exposing progressively more dentin over time. We can therefore use the amount of exposed dentin to estimate the age at death of a given animal (Wheeler 1982).

5.1.2.1 Camelid Epiphyseal Fusion at Huaca Santa Clara and Huaca Gallinazo

Table 9 summarizes Kent's fusion sequence for alpacas, which I used to estimate the age of the camelid remains from Huaca Santa Clara and Huaca Gallinazo. While there can be some minor differences in the fusion sequences of closely related species, and even between domestic and wild animals of the same species, they are generally broadly similar. Applying the alpaca fusion sequence to the camelid category, which could potentially include all four South American camelids (llama, alpaca, guanaco, and vicuna), is unlikely to introduce any major errors, given that they are all closely related (Davis 1987: 39). Epiphyseal fusion data was collected from disarticulated elements at both sites, and thus only provides us with rough age estimates.

Kent's (1982) alpaca fusion sequence was derived from 61 individuals from Tierra del Fuego, all with known ages between 10 days and 16 years. The age classes therein indicate the age range in months during which a particular element typically becomes completely fused.

Table 9: Epiphyseal Fusion Sequence for Alpaca Summarized from Kent (1982)

Age Class in Months	Skeletal Age Group	Elements Completely Fused
0-12	1	• Pelvis (ischium to pubis)
12-24	2	• Scapula (coracoids) • Humerus (distal) • Pelvis (ilium to ischium and pubis) • Tibia (distal) • Phalanges (proximal)
24-36	3	• Humerus (proximal) • Radius-ulna (distal) • Femur (distal) • Tibia (proximal) • Metapodials (distal) • Calcaneus
36-48	4	• Femur (proximal)
48-60	5	• Radius-ulna (proximal) • Tibia (proximal)
60+	6	

Tables 10 and 11 display the number of unfused epiphyses attributed to each skeletal age group at Huaca Santa Clara and Huaca Gallinazo. Due to the relatively small sample sizes, the following statistical results should be viewed with some caution. Table 10 (as well as Table 11, and those documenting fusion for white-tailed deer and sea lions in subsequent sections) can be better understood with the following example using data from the Administrative Sectors at Huaca Santa Clara. Skeletal Age Group 2 (12-24 months) has 183 fused skeletal elements and 32 unfused. The 183 fused elements correspond to bones associated with ages of 12+ months (which could conceivably encompass Skeletal Age Groups 2-6), while the 32 unfused bones correspond to elements less than 24 months of age (potentially also including Skeletal Age Group 1 which ranges from 0-12 months). All other fusion charts for camelids at Huaca Gallinazo, white-tailed deer, and sea lions can be interpreted in the same manner with the appropriate fusion sequences. It should be noted that the lack of representation of Skeletal Age Group 1 (0-12 months) at both sites does not mean that camelids of this age were not present at Huaca Santa Clara and Huaca Gallinazo, it simply means that the element(s) and corresponding locations of fusion used to record this age group, in this case the innominate, were not recovered. Three foetal/neonatal camelid bones, including two patella and an unidentified metapodial, were recovered from test pits 1 and 2 in Residential Sector 7 at Huaca Santa Clara, while no foetal/neonatal bone was recovered for camelids at Huaca Gallinazo.

Tables 10 and 11 demonstrate that a wide range of skeletal age groups, from yearlings to older adults are present at Huaca Santa Clara and Huaca Gallinazo. The representation of individuals at a wide range of stages of development suggests that residents of both sites had access to local herds, which is further supported by the presence of all camelid body portions at both sites (see Section 5.1.1 in this chapter for discussion of camelid body part representations).

Table 10: Minimum Number of Epiphyses Attributed to Camelid Age Classes in Administrative and Residential Sectors at Huaca Santa Clara

Skeletal Age Group	Administrative Sectors			Residential Sectors		
	Fused (NISP=413)	Unfused (NISP=169)	% Unfused	Fused (NISP=94)	Unfused (NISP=69)	% Unfused
1	0	0	0%	0	0	0%
2	183	32	14.9%	31	22	41.5%
3	190	85	30.9%	49	36	42.4%
4	17	23	57.5%	4	9	69.2%
5	23	29	55.8%	10	2	16.7%

At Huaca Santa Clara, it appears that the majority of camelids were over a year old at their time of death. In the Residential Sectors a smaller percentage of elements in Skeletal Age

Group 5 were unfused (corresponding to ages of less than 60 months) when compared to Administrative Sectors.

Table 11: Minimum Number of Epiphyses Attributed to Camelid Age Classes in the Southern Platform and Architectural Compound 2 at Huaca Gallinazo

Skeletal Age Group	Southern Platform			Architectural Compound 2		
	Fused (NISP=129)	Unfused (NISP=25)	% Unfused	Fused (NISP=30)	Unfused (NISP=16)	% Unfused
1	0	0	0%	0	0	0%
2	76	4	5%	14	1	7.1%
3	39	12	23.5%	12	9	42.9%
4	5	5	50%	2	4	66.7%
5	9	4	30.8%	2	2	50%

At Huaca Gallinazo also, the camelid remains suggest that the majority of individuals were likewise slaughtered after reaching at least 12 months in age. This is what we would expect in a domestic population being raised for meat, or used as beasts of burden.

5.1.2.2 Camelid Tooth Eruption and Wear at Huaca Santa Clara and Huaca Gallinazo

Table 12 summarizes the llama and alpaca tooth eruption sequences and corresponding dental age classes based on Wheeler (1982) which are used here to estimate the age of camelids from Huaca Santa Clara and Huaca Gallinazo. The very small numbers of teeth at both sites means that we must view the results of this analysis with caution as they may not be representative. Wheeler developed her system based on data collected from 253 mandibles from llama, alpaca, and alpaca-vicuna crosses with known ages from Peru. She established tooth wear sequences using llama and alpaca mandible collections of known-age individuals housed at the National Center for South American Camelids. Individuals in the collection ranged in age from birth to 14 years. Her ageing system based on tooth wear utilizes the following teeth: third premolars (deciduous and permanent), fourth premolars (deciduous and permanent), and the permanent first, second, and third molars. I used Wheeler's system for analyzing camelid tooth wear on permanent and deciduous teeth still intact in mandibles, as well as when examining loose teeth. Dental wear analyses are often subjective and results should be considered with caution, especially when dealing with loose teeth.

Table 12: Mandible Tooth Eruption Sequences for Llamas and Alpacas Summarized from Wheeler (1982)

Age Class in Months	Dental Age Class	Erupted Teeth
0-12	1	• Normally all three deciduous incisors are erupted at birth • Around 9 months deciduous canines erupt • Deciduous lower third premolars • Deciduous lower fourth premolars • Lower first permanent molar
24-36	2	• Lower first permanent incisors • Lower second permanent molars • Lower third permanent molars
24-84	3	• Lower first permanent canines
36-48	4	• Lower second permanent incisors
36-60	5	• Lower third permanent premolars • Lower fourth permanent premolars
60+	6	• Must use wear analysis to determine age since all teeth have erupted

Table 13: Dental Age Distribution for Camelids Based on Mandibular Tooth Eruption at Huaca Santa Clara and Huaca Gallinazo

Dental Age Class in Months	Huaca Santa Clara Frequency (NISP)	Frequency (%)	Huaca Gallinazo Frequency (NISP)	Frequency (%)
0-12	1	12.5%	1	9.09%
24-36	3	37.5%	7	63.64%
24-84	0	0%	1	9.09%
36-48	0	0%	2	18.18%
36-60	0	0%	0	0%
60+	4	50%	0	0%
Total:	**8**	**100%**	**11**	**100%**

All specimens from Huaca Santa Clara originated from the Administrative Sectors (see Figure 13), where older individuals appear to be most abundant according to dental data (60+ months). Eight loose teeth from the Administrative Sectors were also aged using Wheeler's (1982) dental wear sequence. Seven teeth were aged to the 24-84 month age class, while a single tooth was aged to the 60+ month age group. At Huaca Gallinazo all teeth originated from the Southern Platform, where most individuals belong to the 24-36 month age class. Five loose teeth from the Southern Platform were also aged using dental wear analysis. These teeth correspond to camelids aged 24-36 month and 60+ month age classes. Fisher's exact test indicates that there are not statistically significant differences in terms of the proportions of dental age groups for camelids at both sites (X^2 (8.334), $p = 0.080079$). Larger samples might help to clarify this relationship.

5.1.3 Discussion of Trends in Camelid Utilization at Huaca Santa Clara and Huaca Gallinazo

While the previous chapter (Section 4.2.1) highlights the fact that camelids were more abundant at Huaca Santa Clara than at Huaca Gallinazo, analysis of camelid body part representation, epiphyseal fusion, and tooth eruption and wear data suggest broadly similar patterns of camelid exploitation at both sites. All body portions were accounted for during analysis of camelid butchery units, supporting earlier suggestions that camelid herds were being maintained in this region of the North Coast during the Early Intermediate Period (~ 200 B.C.E. – 800 C.E.) (Shimada and Shimada 1985; Szpak et al. 2014b). While the data regarding epiphyseal fusion did not document any individuals belonging to Skeletal Age Group 1 (0-12 months), analysis of dental eruption and wear did account for young individuals at both sites. The presence of all age groups (ranging from less than a year old to over 60+ months), alongside the presence of all body portions, offers solid evidence that camelids were maintained in these coastal regions, and not just brought down from the highlands or traded for as already processed butchery units.

At both Huaca Santa Clara and Huaca Gallinazo the butchery unit mid forelimb (comprised of the radius-ulna) was present in large quantities. This and other bones, including the humerus, femur, and tibia, were some of the most abundant elements and also had the highest instances of butchery and secondary processing in order to extract nutrient rich marrow. While it is not clear if marrow extraction occurred in mass processing events, or intermittently alongside everyday butchery and food preparation, marrow was clearly a valued resource and significant source of fat from camelids, which otherwise offer comparatively lean meat. Lower meat utility elements, such as the cranium, metapodials, and phalanges, were present at each site, and while they may not have offered as much nutritionally as other meatier elements, they were used by residents of both Huaca Santa Clara and Huaca Gallinazo as worked bone tools, or as decorative/symbolic pieces (see Figures 29 and 30 for examples).

Both epiphyseal fusion data and dental eruption and wear analyses suggest that most camelids reached at least a year old before they were slaughtered. According to dental eruption and wear data the age group 24-36 months was the most abundant age group at both sites. Llamas reach physical maturity around 36 months, however females in modern populations can be impregnated as early as 10 months. By killing camelids around 36 months of age, herders could ensure that the animals could provide the maximum nutritional pay off, while still providing more tender meat than would be harvested from older individuals. This strategy would also have restricted the time period during which food had to be provided for the animals, doubtless a challenging task on the arid coast. Not all camelids would have been slaughtered at around the 36 month age range, however, as some animals would have been kept as sources of wool and dung, as breeding stock, and to be used in the transportation of goods well into old age, while young individuals could be removed from the population for consumption and to maintain herd stability.

5.2 White-tailed Deer Epiphyseal Fusion at Huaca Santa Clara

Table 14 summarizes the epiphyseal fusion sequence for white-tailed deer developed by Purdue (1983). He derived this sequence using 600 deer skeletons from Illinois, Missouri, and South Carolina, as well as 65 complete skeletons from the Illinois State Museum, and 11 from the Illinois Center for American Archaeology. The fact that the deer used in Purdue's study were from the United States may introduce a small margin of error since their fusion rates are being compared to South American deer, however, these effects should be minimal since fusion sequences are generally consistent within species.

Table 14: Epiphyseal Fusion Sequence for White-Tailed Deer Summarized from Purdue (1983)

Age Class in Months	Skeletal Element Fusion
0-12	• Cervical vertebra (centrums) • Thoracic vertebra (centrums) • Lumbar vertebra (centrums) • Radius (proximal) • Innominate (acetabulum)
12-24	• Atlas (neural arch) • Humerus (distal)

	• Tibia (distal) • Phalanx 2 (proximal, distal) • Phalanx 1 (proximal, distal)
24-36	• Ulna (proximal, distal) • Radius (distal) • Metacarpal • Femur (distal) • Tibia (proximal) • Metatarsal (proximal, distal) • Calcaneus
36+	• Humerus (proximal) • Innominate (pubic symphysis) • Femur (proximal)

Table 15: Age Distribution for White-tailed Deer at Huaca Santa Clara

Age Class in Months	Fused (NISP=45)	Unfused (NISP=28)	% Unfused
0-12	17	15	46.9%
12-24	15	7	31.8%
24-36	7	5	41.6%
36+	6	1	14.3%

Table 15 presents the age distribution of white-tailed deer at Huaca Santa Clara based on epiphyseal fusion (specimens from Administrative and Residential Sectors were lumped in this case because of the small sample sizes). The white-tailed deer sample from Huaca Gallinazo was too small to warrant such investigation. All of the different age classes are represented at Huaca Santa Clara, suggesting that a broad based hunting strategy was employed, perhaps with emphasis on procuring adult white-tailed deer. Most of the white-tailed deer specimens were found in Administrative Sectors, especially within Sector 6 (believed to be used exclusively for administrative purposes) in rooms A-108 and A-97. The presence of bone from all age categories across the site suggests that people were hunting white-tailed deer from a wide age range, and in Administrative Sector 2, room A-64 north, a foetal metapodial was also recovered.

Two pieces of antler were also discovered in Administrative Sector 4, room A-121. One specimen was determined by Dr. Víctor F. Vásquez Sánchez (who supervised my identifications) to belong to a larger, more mature white-tailed deer, with the other belonging to a younger individual. Males grow and shed their antlers annually, usually dropping them between February and March in southern populations, so it is possible that antlers could have been scavenged and opportunistically recovered after being naturally shed, and not just procured through hunting. Neither specimen showed any evidence of processing and no antler tools were found at Huaca Santa Clara. While antler may not have been used as a material in tool making, it may have been valued for its symbolic significance. As discussed in Chapter 2 (Section 2.3.2) deer may have represented a link between people and their ancestors because of their presence on the margins of cultivated areas, which placed them symbolically between the realms of the living (domesticated spaces) and the dead (the wild areas surrounding settlements) (Flores Ochoa 1974). Benson (1997: 35) also noted that the yearly patterns of antler growth of deer were likely related symbolically to changing agricultural cycles, as the deer shed and regrew their antlers with the seasons, making them especially symbolically potent parts of an animal already associated with ritual hunting and the supernatural (Donnan 1982).

5.2.1 Discussion of Trends in White-tailed Deer Utilization at Huaca Santa Clara

Female white-tailed deer usually give birth to between one and three fawns between May and June. While residents of Huaca Santa Clara could have hunted white-tailed deer year round, it is possible that they would have been easier to procure during the dry season from May through to October, which corresponds to the birthing period of the deer. During these dry periods deer would have likely been more abundant around the irrigated agricultural lands surrounding the site, in search of reliable water and food sources. Their presence in cultivated areas would have also symbolically linked the presence of deer with seasonal fluctuations and agricultural cycles, as mentioned in the previous section. White-tailed deer are ubiquitous in Moche art, and judging by the representation of antlers and testicles on most examples, it appears that individuals involved in the ritual hunting of deer preferred to target adult males. White-tailed deer reach sexual maturity at around 12 months, and this fact, alongside the fusion data, indicates that individuals at Huaca Santa Clara appear to have been preferentially targeting adult white-tailed deer. The discrepancy between the symbolic value placed on white-tailed deer and their fairly minor role in subsistence compared to camelids is likely related to the prestige afforded to the hunting of large game and the consumption of wild meat. The size, potential aggressiveness, and physical capabilities of male white-tailed deer would have made them fairly formidable opponents, as well as symbols associated with warriors. An air of danger may have permeated the close encounters between these animals and people, especially if the Virú hunted deer in the manner depicted in Moche ceramic iconography, by driving them into netted areas with clubs, making adult deer a particularly symbolically potent food resource. The relatively large number of elements corresponding to the youngest age category (less than a year old) could be indicative of hunters were also selecting more docile fawns as prey, and it is possible that young deer held symbolic significance that is not reflected in Moche iconography.

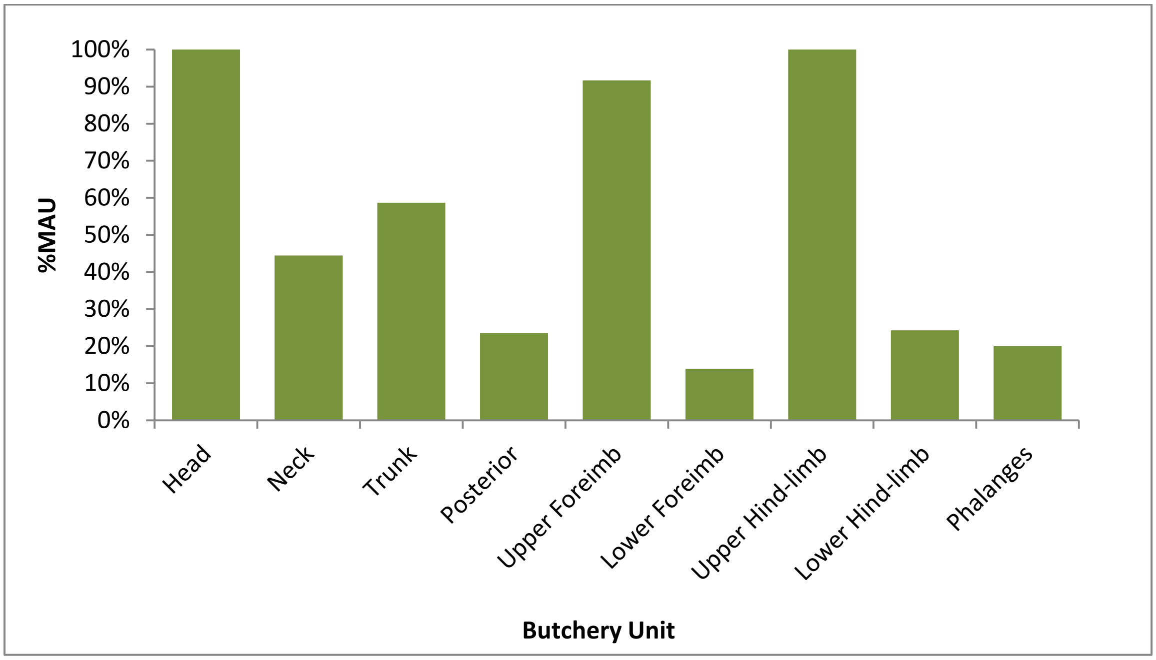
5.3 Sea Lion Populations and Utilization at Huaca Gallinazo

5.3.1 Representation of Sea Lion Skeletal Parts

The sea lion assemblage at Huaca Santa Clara (N = 15) was too small to examine skeletal part representation. Figure 31 presents sea lion skeletal part abundance from Huaca Gallinazo. It is still a relatively small assemblage and as such the analysis presented here may not reflect true trends in the data. The skeletal units for sea lions, as laid out by Venet-Rogers (2013) in her study, are as follows: head (cranium, mandible), neck (atlas, axis, cervical vertebrae), trunk (thoracic vertebrae, ribs, lumbar vertebrae), posterior (pelvis, sacrum, caudal vertebrae), upper forelimb (scapula, humerus), lower forelimb (radius, ulna, metacarpals), upper hind-limb (femur), lower hind-limb (tibia, metatarsals), and phalanges (all phalanges).

Figure 31: Representation of Sea Lion Skeletal Parts at Huaca Gallinazo (N=188*)

*N values representing the NISP for elements included in sea lion butchery units



In terms of sea lion skeletal part representation at Huaca Gallinazo the butchery units that are best represented are the head, upper forelimb, and upper hind-limb. As with the camelids, it appears that the most abundant portions of the skeleton for sea lions were the meatier sections of the body, with the exception of the well represented cranial elements. The fact that less meaty areas of the skeleton such as the head and phalanges are represented at the site suggests that sea lions were transported to Huaca Gallinazo whole. It is also possible that these portions of the body, especially the head, were valued for their utility in curing rituals. As mentioned in Chapter 2 (Section 2.3.2), modern curers are known to use sea lion teeth and bones in their rituals, and it is possible that past peoples such as the Virú and Moche would have utilized their remains in similar ways (Benson 2012: 113). In Moche iconography, key features of animals were often exaggerated. For example, the large eyes of birds of prey and emphasized fangs of feline creatures. It is possible that the phalanges of sea lions held symbolic value because they are so often accentuated in Moche representations (see Figure 10 for an example of sea lions in Moche ceramic iconography).

5.3.2 Sea Lion Epiphyseal Fusion at Huaca Gallinazo

Table 16 details the epiphyseal fusion sequence developed by Borella et al. (2013) for species of eared seals such as *Otaria flavescens*. They derived this sequence using 96 skeletons from both male and female individuals of known age from Patagonia.

Table 16: Epiphyseal Fusion Sequence for Sea Lion Summarized from Borella et al. (2013)

Age Class in Years	Skeletal Age Group	Skeletal Element Fusion
Yearling (0-1 year)	1	• Unfused atlas
Juvenile (1-4 years)	2	• Atlas (hemibodies and ventral arch) • Cervicals (vertebral body to neural arch) • Thoracics (vertebral body to neural arch) • Lumbar (vertebral body to neural arch)
Young Adult (3-9 years)	3	• Axis (odontoid apophyses to vertebral body) • Humerus (proximal, head, greater tubercle, and lesser tubercle) • Humerus (distal, capitulum and medial epicondyle)

		• Pelvis (ilium, intermediate, and ischium-pubis) • Fibula (caput fibulae and proximal epiphysis)
Medium Adult (7-16 years)	4	• Axis (posterior epiphysis to vertebral body) • Cervicals (anterior and posterior epiphyses to vertebral body) • Lumbars (anterior and posterior epiphyses to vertebral body) • Humerus (diaphysis to capitulum and lesser tubercle) • Sacral vertebra • Fibula (proximal epiphysis to diaphysis) • Calcaneus
Old Adult (over 16 years)	5	• Thoracics (anterior and posterior epiphyses) • Caudals (anterior and posterior epiphyses) • Ribs (head to body) • Scapula (glenoid cavity) • Humerus (diaphysis to head and greater tubercle) • Ulna (proximal and distal epiphyses) • Radius (proximal and distal epiphysis to diaphysis) • Femur (proximal and distal epiphyses to diaphysis) • Tibia (proximal and distal epiphyses to diaphysis)

Table 17: Age Distribution for Sea Lions at Huaca Gallinazo

Skeletal Age Group	Fused (NISP=26)	Unfused (NISP=29)	% Unfused
1	0	0	0%
2	3	0	0%
3	2	5	71.4%
4	1	3	75%
5	20	21	51.2%

While no elements were found to correspond to Skeletal Age Group 1, that does not necessarily mean that young sea lions were completely absent at Huaca Gallinazo. As was the case with the youngest age category of camelids, sea lion Skeletal Age Group 1 is only measured based on one element (the atlas), of which no specimens were recovered. It should be noted, however, that no specimens of sea lion foetal/neonatal bone were recovered from Huaca

Gallinazo. While the bones of juvenile individuals do not preserve as well as adult bones, it is unlikely that differential preservation is responsible for the observed trends in the data because the arid coastal environment offers exceptional preservation of organic materials. All recovered specimens were from individuals at least 3 years of age, suggesting that hunters were targeting adult sea lions and avoiding juveniles. Residents of Huaca Gallinazo may have been focusing on adult sea lions for their larger body size (adult males can grow to 2.75 meters long and weigh up to 360 kilograms).

5.3.3 Discussion of Trends in Sea Lion Utilization at Huaca Gallinazo

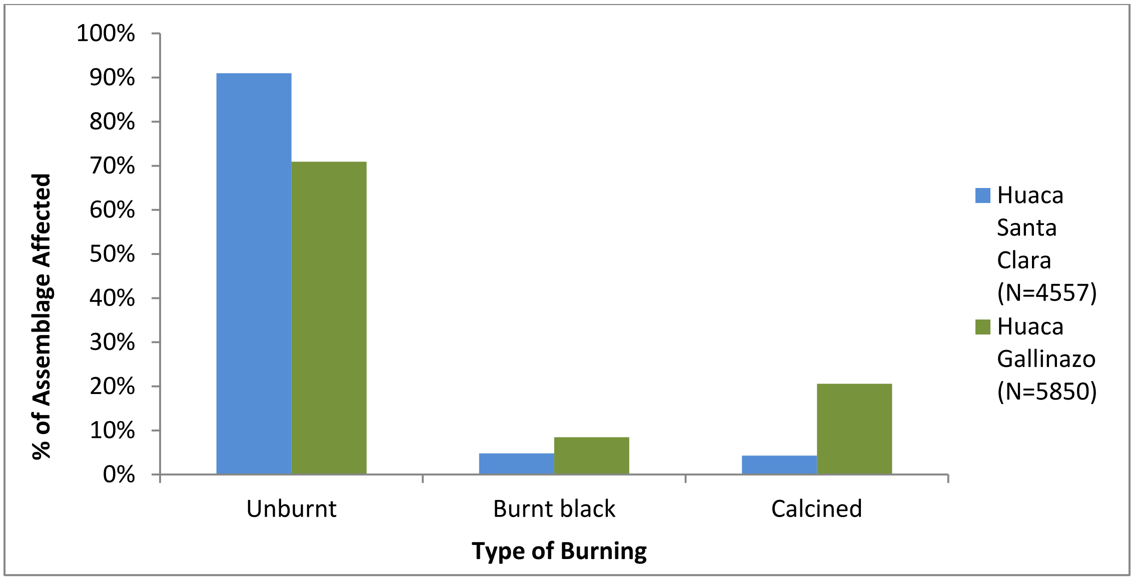
At Huaca Gallinazo the head, upper forelimb, and upper hind-limb were the most abundant sea lion butchery units, corresponding to the meatiest areas of the body, with the exception of the cranial elements. The presence of lower meat utility butchery units suggests that sea lions were being transported back to the site whole. The retention of the head, however, is significant because it suggests that it was valued for secondary products such as teeth, which were used in curing rituals (Benson 2012).

Residents of Huaca Gallinazo likely were specifically targeting larger adult sea lions because of their larger body size and correspondingly large yield of meat, fat, and skin. Sea lions feed mostly on schooling fish such as anchovies and hakes, and are known to hunt for food as far as 8 kilometers offshore, making it possible that some animals became ensnared in the nets laid by fishermen in deeper ocean zones, as well as close to the coast. However, this was likely not how most of the sea lions at Huaca Gallinazo were captured. Moche iconography shows well dressed, club wielding individuals hunting sea lions on what appear to be coastal beaches and on small offshore islands where they would have come together in groups. Sea lions would be far less agile on land, making them easier to hunt for individuals preferring to take larger, potentially aggressive adult animals.

5.4 Burnt and Unburnt Bone Proportions from Huaca Santa Clara and Huaca Gallinazo

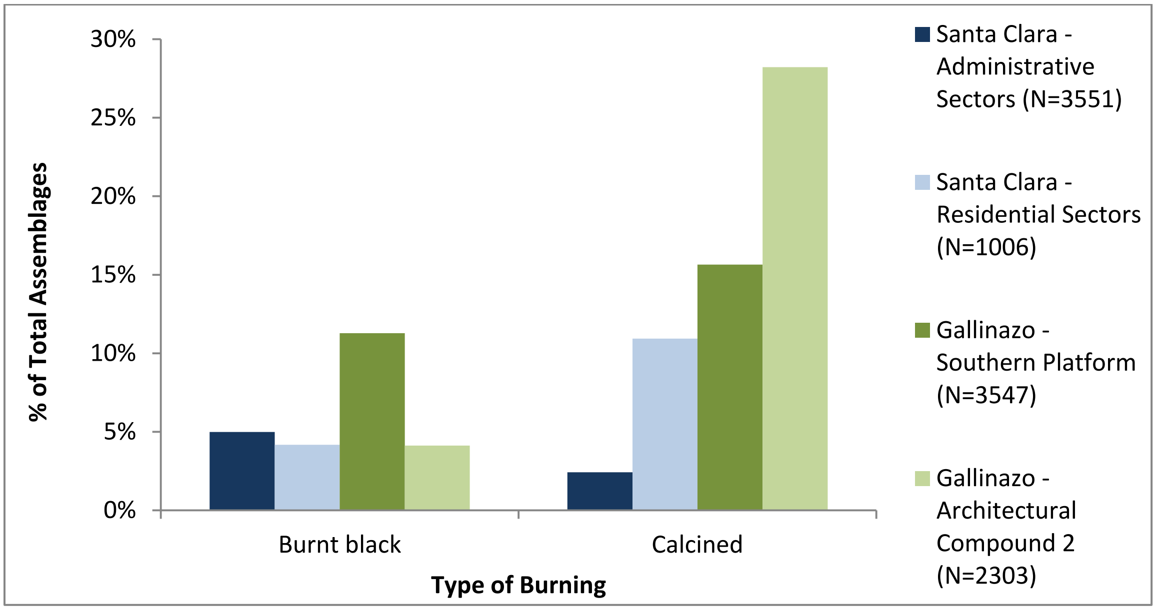
The degree and prevalence of burnt bone was recorded for comparison between Huaca Santa Clara and Huaca Gallinazo to facilitate investigation into whether residents of the sites were practicing differing food processing and disposal methods. Figure 32 illustrates the type and abundance of bones affected by burning at both sites. Different burning temperatures result in different chemical changes in bone, corresponding to variations in colour and texture as the organic components of bone are destroyed. The designation of "burnt black" refers to bones with a blackened colour resulting from lower temperature burning, while "calcined" refers to bone with a chalky white or blueish hue, characteristic of burning at higher temperatures.

Figure 32: Burnt Black and Calcined Bone Proportions from Huaca Santa Clara and Huaca Gallinazo



At both sites, the majority of bones were unburnt, with 90.98% of the faunal remains from Huaca Santa Clara remaining unaffected, while at Huaca Gallinazo 70.94% were unburnt. Overall, the assemblage at Huaca Gallinazo appears to be more affected by both kinds of burning, with calcined bone being the most common. Faunal remain from Huaca Santa Cara were equally impacted by both types of burning. The Pearson's Chi-Squared test suggests that the differences in the proportions of burnt bone types between the sites are statistically significant (X^2 (83.4564), $p < 0.001$).

Figure 33: Burnt Black and Calcined Bone Proportions across Sectors at Huaca Santa Clara and Huaca Gallinazo



Burning was also compared between sectors within Huaca Santa Clara and Huaca Gallinazo (see Figure 33). At Huaca Santa Clara across both the Administrative and Residential Sectors, bones that were burnt black were equally abundant (around 5% of each assemblage). A major difference was noted between abundances of calcined bone in each sector, however, with around 3% of the assemblage affected in Administrative Sectors, while around 11% were calcined in the Residential Sectors. The Pearson's Chi-Squared test suggests that the differences between the sectors in terms of the proportions of burn bone are statistically significant (X^2 (60.8199), $p < 0.001$).

At Huaca Gallinazo burnt black bone accounted for 11% of the assemblage from the Southern Platform, while calcined bone comprised around 15%. In Architectural Compound 2, 4% of the faunal remains were burnt black, while a much larger proportion (28%) were calcined. The Pearson's Chi-Squared test indicates that the differences in representations of burnt black and calcined bone are statistically significant (X^2 (172.104), $p < 0.001$).

5.4.1 Discussion of Patterns of Bone Burning at Huaca Santa Clara and Huaca Gallinazo

At Huaca Santa Clara and Huaca Gallinazo, residential sectors displayed significantly higher proportions of calcined bone than elsewhere, suggesting people were cooking foods in different ways than in Administrative Sectors and the Southern Platform. It is also possible that the observed differences in burning are related to differing disposal methods, with bone being more commonly disposed of in hearths in residential areas before being incorporated into architectural fill. The fact that cooking activities occurred with greater frequency in these domestic spaces may also account in part for the larger proportions of burnt bone. The generally fragmentary remains of burnt bone make it difficult to comment on the methods of cooking employed. However, Venet-Rogers' (2013) previous study noted that more fragmentary remains were found in residential areas at Huaca Gallinazo, suggesting that individuals utilizing the different sectors at the site were preparing food in different ways. The same may be true at Huaca Santa Clara, where individuals in residential sectors may have broken their food down into smaller units for stewing, while larger, less fragmented and burnt remains were more common in administrative areas where larger food units would be preferred to provide for larger groups of people. It is likely that food was prepared elsewhere before consumption in Administrative Sectors at Huaca Santa Clara, especially in the large plaza in Sector 6 which would have been used in elite gatherings.

5.5 Chapter Summary

The analysis of camelid body part representation, epiphyseal fusion, and tooth eruption at Huaca Santa Clara and Huaca Gallinazo suggest that residents within all sectors at each site were utilizing camelids in similar ways. Groups would have had access to nearby camelid herds on the coast, as evidenced by the representation of all butchery units and age categories at both of the sites. The most abundant butchery units were associated with the meatiest and most marrow rich skeletal elements, especially the mid forelimb. Elements with lower meat utilities, such as the cranium, metapodials, and phalanges were present at Huaca Santa Clara and Huaca Gallinazo, offering further support that herds were maintained locally, as well as suggesting that they may have been retained for tool manufacture or for use as symbolic or decorative pieces, being consumed only occasionally.

At both sites camelids were slaughtered after at least one year of age, with dental eruption and wear data suggesting that the most common age at death for camelids was around 36 months. This is the age where camelids commonly reach physical maturity so it seems likely that individuals at both sites were slaughtering camelids around this point to maximize quality meat yields, while also limiting the length of time during which the animals would have had to be fed and maintained in the arid vegetation-poor region. The presence of older and younger age categories indicates that not all animals were killed around 36 months of age, with some animals likely being kept for wool, dung, and to maintain the breeding stock, while others were removed from the population at a younger age to maintain herd stability.

Unlike camelids, which were relatively equally represented across the sites and their sectors, the majority of white-tailed deer specimens were found in the Administrative Sectors at Huaca Santa Clara. This may be related to the symbolic potency of deer in comparison to camelids, making their consumption more restricted to Administrative areas associated with civic-ceremonial and bureaucratic activities. As noted above, the presence of deer at the margins of agricultural areas may have linked them in Virú ideology with the realm of the ancestors and the supernatural as well as agriculture.

Hunters at Huaca Santa Clara appear to have preferentially selected adult white-tailed deer, which reach sexual maturity around 12 months, which aligns with Moche ceramic narratives featuring the deer hunt. Depending on the time of year, adult male deer could have been increasingly aggressive, especially during rutting season where males compete to mate females, making hunting with clubs and nets a dangerous activity, which would have increased the prestige associated with this activity. Young deer may also have been hunted because of their docile nature or symbolic power that is not reflected in Moche iconography. Two antler specimens were present in an Administrative Sector at Huaca Santa Clara, but neither showed evidence of being worked nor were antler tools were found at the site, suggesting that antler was perhaps valued for its symbolism and associations with agriculture and seasonal cycles.

As with the camelids, the most common sea lion butchery units were those associated with the meatiest areas of the body at Huaca Gallinazo. The presence of low meat utility elements at the site suggests that sea lions were transported back to the site whole. Cranial elements were well represented, and likely retained for their teeth which were used in curing rituals. It is likely that residents from Huaca Gallinazo were specifically targeting larger adult individuals as they gathered on the beaches and small offshore islands, where they would have been easier to hunt on land, providing large meat units.

Analysis of the burnt bone at Huaca Santa Clara and Huaca Gallinazo indicates that individuals in the residential sectors at both sites were preparing food differently or practicing differential disposal methods. At both sites, higher proportions of calcined bone were found in residential areas suggesting that cooking rubbish was being disposed of in hearths before being incorporated into the architectural fill or that higher temperature cooking methods were practiced in these areas. The presence of more burnt bone in domestic areas at both sites may also be a product of the greater frequency with which cooking would be occurring in these sectors, with burnt bone therefore comprising a larger proportion of the assemblage.

Chapter 6

6 Discussion

This zooarchaeological analysis of faunal remains from Huaca Santa Clara and Huaca Gallinazo sought to examine how the entanglements between humans and animals, which were enacted and embodied through consumption, served as critical interactions through which social differentiation and identities were constructed in the Virú state. My objective in the last two chapters was to assess if, and to what extent, individuals involved in state activities at Huaca Santa Clara and Huaca Gallinazo were utilizing animal resources in different ways during an important period of early state development. This chapter will contextualize the results through the theoretical lenses and orientations outlined in Chapter 2. This study emphasizes the variable parts that animals played outside their purely nutritional role, allowing for analysis of their prominent positions in wider human socio-cosmic spheres.

6.1 To Eat and Be Eaten – Human-Animal Entanglements in Virú State Formation

Throughout this thesis, the framework of relational ontology was particularly relevant for theorizing humans and animals as existing in states of fluid and co-constituted becoming, where categories and identities are created via the inter-subjectivities and interactions between entities (Herva 2009). Ontologies operating outside of Westernized systems of thought allow for the creation of other-than-human-persons by viewing other categories of beings (animals in this case) as capable of possessing consciousness and agency (Fausto 2007). As archaeologists, it is necessary to account for this recognition of other-than-human-persons by ancient groups like the Virú when possible, because as McNiven (2010) notes, it is through the multitude of relations we have with our environment and its occupants that we constitute our sense of self. To ignore animals as actors in the past and present is to ignore a category of beings crucial to the formation of our sense of what it means to be human, as well as individual and group identities. Neisser's (1976) concept of the "ecological self" puts into perspective the roles that other-than-human-persons play in shaping humans' connections to the mental and physical worlds they occupy. The act of eating animals for food deepens the sense of interconnectedness we share with them because they are incorporated into our bodies via consumption, producing an “eating-induced unity”, far surpassing in intimacy the level of connection we feel to other materials and goods (Anderson 2014; Bray 2003b; Corr 2002; Counihan 1999, Farb and Armelagos 1980; Smith 2006); we literally and figuratively are what we eat.

During state formation processes in the Virú Valley, the mobilization of animal resources would have been crucial to the formulation of new symbolic, subsistence, and economic systems, which would have been controlled by administrators and religious specialists (Chicoine 2011; DeFrance 2009; Twiss 2007). As populations grew and power dynamics shifted within the Virú polity during the Early Intermediate Period (~ 200 B.C.E. – 800 C.E.), differential access to food would have been used to create and reinforce social position and status (Hastorf 2003). Variable access to foods that were viewed as particularly luxurious or symbolically potent, such as white-tailed deer (*Odocoileus virginianus*) and sea lions (*Otaria sp.*) found at both Huaca Santa Clara and Huaca Gallinazo, would have aided the creation of new urban social identities. Regional lords on the North Coast would have been hugely influential in shaping not only the political-economic structures of the region, but also in shaping and defining social hierarchies through distinct foodways, by varying alimentary traditions and restricting access to certain foods.

Within the Virú state, domestic animals would have served as a form of wealth, which in and of itself is suggestive of larger processes of social inequality, because not all individuals within the emerging polity would have had equal access to the products provided by camelids (the main domesticates in the region). That said, however, animal wealth also could have served unifying functions because domesticates like camelids and their products would have traded hands, producing reoccurring and reciprocal relations between people within the context of animal domestication and herd management (Knight 2005). As mentioned in Chapter 2, it has been argued that the Inca and earlier states combined some of the social features of herding into their socio-political models, resulting in the creation of more hierarchical societies where rulers functioned as metaphorical shepherds to their “flocks” (Brotherson 1989). The symbolic values placed on particular animal foods would have been bolstered further through the creation of iconographic canons, such as those found on elite Moche ceramics. While we will never know with any certainty what it meant to individuals in the past to consume certain species with particular symbolic associations, the examination of ceramic motifs and scenes allows us to make some cautiously stated inferences. In Moche art, camelids and guinea pigs were always shown realistically, and do not appear to have the powerful symbolic associations that other, especially wild, species have. It is possible, however, that herds of camelids may have been linked to processes of state formation and the development of social hierarchies in the minds of the new and powerful Virú elite because of the nature of the social relations between herders and their flocks.

Camelids were found to be more abundant at Huaca Santa Clara than Huaca Gallinazo; however, the data regarding body part representation and age at death suggest that occupants of both sites were exploiting similarly managed camelid herds in similar ways (see Chapters 4 and 5 for detailed discussion of these analyses). The fact that all camelid butchery units and age categories were accounted for at both sites supports other findings suggesting that camelids were being raised and maintained on the coast during the Early Intermediate Period (Shimada and Shimada 1985; Szpak et al. 2014b). Results accounting for epiphyseal fusion suggest that the majority of camelids at both Huaca Santa Clara and Huaca Gallinazo were slaughtered after reaching at least a year in age, while dental eruption and wear indicate that the majority of camelids at both Huaca Santa Clara and Huaca Gallinazo were slaughtered around 36 months, which is when llamas reach physical maturity. This evidence suggests that herders within the Virú polity were likely slaughtering camelids once they reached their adult size to maximise meat yields, although older individuals could have been maintained for breeding, to facilitate the production of secondary products such as wool and dung, and for use in the transportation of goods. Younger camelids could have also been selected for slaughter to maintain herd stability.

The care and management of camelid herds would have brought particular individuals within the Virú state into sustained and intimate interactions with these animals, creating heightened levels of trust and familiarity between people and their animals. The definition of domestication that this study employs is a social one, focused on the processes and resulting relationships that develop as animals are brought into the human social sphere (Russell 2011: 212). These mutualistic but unequal arrangements can most productively be thought of as a contract, where Virú herders took on the responsibility of caring for domesticated animals, in return gaining access to the benefits that keeping animals provide (Larrere and Larrere 2000: 56; Midgley 1983; Oma 2010; Reitz and Wing 1999). Inherent within this conception of domestication is the assumption that humans and animals within the Virú polity could communicate across the species divide, and that their interactions were understood by both actors. Effectively, domestication is a subject-subject interaction, and cannot be theorized as such, outside of relational ontologies that elevate the positions of animals to other-than-human-persons.

Cross-culturally, with the creation of the designation "domesticated" came the formulation of the category of "wild" and its comparatively rich body of symbolism, serving as a reminder that notions of nature and culture are constructed jointly, much like conceptions of humans and animals (Russell 2011: 170). Within Moche iconography, these different perceptions of human-animal interaction spheres become apparent, with comparatively more dangerous wild animals, such as white-tailed deer and sea lions, often shown in scenes of ritualized hunting (in the case of the deer, also as anthropomorphized warriors), while marine birds and fish carry underworld associations. This is in stark contrast to representations of domesticated animals which are shown in correspondingly domesticated interactions, such as depictions of camelids with packs and leads in the company of humans. Only through practices related to the processing and cooking of food would wild animals be transformed from perceived adversaries into neutralized goods appropriate for consumption, even if eating symbolically significant creatures still carried enhanced meaning for residents of Huaca Santa Clara and Huaca Gallinazo (Douglas 1988: 127; Falk 1994: 76; Fausto 2007: 503).

Meat in general, and especially meat procured through hunting, is cross culturally treated as an indicator of prestige, both for those who kill the animals and those who consume them. The communal consumption events that would have held meat as their centerpiece, would have served as the stage for numerous actors in Virú state administration to negotiate social boundaries, and both assign and be assigned positions in society, related to individual and group identities. Regardless of meat's glorified dietary and symbolic position, its actual contribution to the regular meal structure may have been much smaller than expected in light of its valorization, because animals not only are good to eat, but also good to think (Lévi-Strauss 1962). The quantity and type of representations of animals such as white-tailed deer and sea lions in Moche iconography are proof of this seemingly contradictory relationship between dietary and symbolic importance. These species are commonly depicted in ceramic narratives while their contribution to the total diet of individuals at Huaca Santa Clara and Huaca Gallinazo were minimal. This is perhaps related to the comparative difficulty with which wild animals were obtained for consumption, versus immediately available domesticates like camelids and guinea pigs, with which humans' relationships could be characterized as more familiar, if not intimate. The element of danger (real or symbolic) associated with wild animals may be reflected in the hunting strategies employed by residents of both sites and in the value placed on wild meat.

At Huaca Santa Clara all age classes for white-tailed deer were present, suggesting that residents were targeting deer of variable ages, although perhaps with an emphasis on procuring adult animals. While white-tailed deer remains were present in both Residential and Administrative Sectors, they were more abundant in areas of the site associated with administrative activities, especially Sector 6, which is believed to have been used primarily for administrative purposes. While individuals at Huaca Santa Clara appear to have had relatively equal access to animal foods across all sectors, the higher proportions of white tailed-deer found in Sector 6 suggests that this symbolically significant species was more commonly consumed in areas of the site associated with elite administrative activities. This would have set certain occupants of Huaca Santa Clara apart in terms of access to physical spaces as well as symbolically potent foods even if the diet of individuals living in the Administrative and Residential Sectors at the site was largely the same. In Moche iconography, deer hunting is often shown as a ritual activity for elites (Donnan 1982), and this may have been the case at Huaca Santa Clara and Huaca Gallinazo. Flores Ochoa (1974) noted that deer tended to represent links between people, their ancestors, and the supernatural because of their presence at the periphery of settlements and agricultural lands. Deer effectively occupy a middle region between the domesticated spaces associated with the living and wild areas surrounding sites, which would have been associated with the "otherworld" of the dead. Benson (1997: 35) also noted that deer carried agricultural symbolism because of their yearly seasonal cycles of antler growth as well as their presence at the margins of cultivated areas.

The presence of all skeletal age categories for deer at Huaca Santa Clara, suggests that hunters may have preferred to target adult deer, while hunting a wide range of age categories. During the dry season deer would have been drawn closer to settlements and their associated irrigation systems and crops. The dry season also corresponds with the birthing period for white-tailed deer in the region, meaning that young individuals would have been present around the site during those months and especially vulnerable to predation by humans. That Moche representations of adult male deer with antlers and testicles are so common in ritual hunting scenes highlights the valorization of hunting (and subsequently consuming) large bodied animals. It is possible though, that the hunting and consumption of young deer may also have been symbolic, even if this was not reflected in Moche iconography. Adult male white-tailed deer would have been difficult and potentially dangerous to procure because of their agility, size, and more or less aggressive behaviour depending on the season, adding to the heightened sense of accomplishment for hunters. These above mentioned traits are the characteristics that resulted in deer being commonly shown in Moche iconography as anthropomorphized warriors, embodying the traits that human warriors would have found desirable such as speed and agility. The associations of hunting and warfare may have been particularly salient for individuals occupying Huaca Santa Clara because the site functioned as part of a network of defensive sites within the Virú Valley, making the consumption of symbolically potent deer meat an especially significant act of incorporation. The close encounters and confrontations between deer and humans in the confines of netted areas, as shown in Moche iconography, would have added to the prestige attached to their killing and consumption.

Sea lions are another wild species that appear to have been ritually hunted and associated with warfare based on the similarities between representations of sea lions and deer hunts on Moche ceramics, which show the same individuals dressed in elite costumes pursuing animals with spears and clubs (Bourget 2016). The upper forelimb and hind-limb were the most abundant butchery units for sea lions at Huaca Gallinazo, both of which correspond with meaty areas of the body. All recovered elements were from individuals of at least 3 years of age, suggesting that residents were specifically targeting older individuals for their large size and meat yield. Moche iconography shows elite individuals hunting sea lions along the coast as well as on offshore islands, and it is possible that this strategy of hunting sea lions along coastal beaches would have made targeting potentially aggressive larger bodied adults easier for individuals from Huaca Gallinazo, since sea lions are far less maneuverable on land.

The differential representations of these species in Moche iconography highlight the apparent dichotomy between interactions with, and conceptions of, wild and domesticated species on the North Coast of Peru. Evidence from animal burials also suggests that there were differing meanings attached to these species. Camelids were commonly sacrificed and included with human burials from numerous cultural groups on the coast (Donnan and McClelland 1979; Strong and Evans 1952), while human burials including white-tailed deer and sea lions are far rarer. Goepfert (2010: 41) suggests that the conceptual division between the realms of the domesticated and the wild account for these differences in abundance in burials. This is because wild animals were already viewed as belonging to the "otherworld" of the ancestors, making them an inappropriate sacrificial gift, whereas camelids, which are associated with the human realm, would be more valued by supernatural beings.

That domesticated animals like camelids were more closely associated with the human realm on the North Coast is reasonable within the context of human-animal relations in domestication that would have brought herders into intimate and sustained interactions with particular animals. Wild animals, with which interactions were more fleeting, would have remained set apart from the human social sphere (Knight 2005; Oma 2010). In terms of interactions with domesticated and wild prey animals, ritualized elements would have been consolidated over time, leading to some standardization of the types and forms of exchanges that could occur between individuals in the Virú polity and the other-than-human-persons that they shared their environment with. This standardization is demonstrated within depictions of the ritualized hunting of white-tailed deer and sea lions, where individuals in elite costumes are shown hunting these animals in canonized narratives.

In Moche iconography, marine fish and birds are believed to have held special symbolic significance related to the underworld. The Pacific Ocean and Humboldt Current, while attracting numerous plentiful fish and bird species to the North Coast, would have been a key ecological zone in terms of providing sustenance for the Virú and past peoples (Benson 1997; deFrance 2009; Moseley 1975), but also a realm associated with much mystery and danger. According to Benson (1997: 117), the Moche personified the dangers of the marine world in representations of human-fish hybrid creatures that are commonly shown in combat with fishermen in different scenes. It is possible that some residents of Huaca Gallinazo, who were exploiting fish species occupying different ocean zones than individuals at Huaca Santa Clara, saw themselves as more connected to the dangerous underworld realms of the ocean because of their focus on fish preferring deeper marine habitats. However, the fact that the Virú polity had a system of storage and resource redistribution could mean that only select factions of the population was fishing, supplying both locales with their marine food resources. If this was the case, then the differences observed between the two sites in terms of the relative abundances of the main fish species may be more indicative of variable trade relations and avenues of resource distribution. The differing proximities to the coast may have also influenced the means by which residents of both sites came by the fish they consumed.

The Virú cultural system would have been sustained, in part, by the contextually specific uses of particular foods and their associated symbolism, which when consumed acted as social messages that were embodied within individuals, both reifying dietary customs and the cultural traditions within which they originated (Hastorf 1994). Developments and changes to social relations do not occur only in the mind; as Gero (2003: 287) notes, social processes are embodied by the individuals who experience them in the flesh. Within the Virú polity, animals would have been implicated in the development of early states because they are literally incorporated during consumption into the human bodies that constitute the body-politic. The idea of what "desirable" animal foods were for factions of the population would have been based not only on nutrition, but also on the food's ability to act as indicators of prestige and luxury. For example, the symbolic traits of animals, such as the speed and agility of deer often associated with warriors, could have been embodied through consumption. The consumption of particular animal foods in specific ways would have led to the creation and maintenance of social differentiation within the Virú state, with communal consumption events such as feasts, serving as the arenas in which group affiliation and individual identities could be put on display.

6.2 Contextualizing Consumption at Huaca Santa Clara and Huaca Gallinazo

The faunal assemblages at Huaca Santa Clara and Huaca Gallinazo were dominated by mammals, suggesting that they were the main focus of animal consumption at both sites. Fish and birds were more abundant at Huaca Gallinazo, with the more coastal location of the site affording residents comparatively easy access to marine species relative to those at Huaca Santa Clara. Fish and birds appear to be equally well represented in the Administrative and Residential Sectors at Huaca Santa Clara. However, this is not the case at Huaca Gallinazo, where fish were far more abundant in Architectural Compound 2. This difference between the sectors is suggestive of variability in terms of the consumption focuses between residential and civic-ceremonial areas at Huaca Gallinazo. This trend of individuals having relatively equal access to animal foods across all sectors at Huaca Santa Clara, while sectors at Huaca Gallinazo display clear differences in terms of the foods consumed, is continued in terms of the relative abundances of the main mammals, fish, and birds found at each site. This variability is indicative of the level of social differentiation developed at each site as well as across settlements in the Virú polity.

The main mammal taxa including camelids, guinea pigs, white-tailed deer, and sea lions, were present in similar abundances across the sectors at Huaca Santa Clara (although slightly more deer remains were found in Administrative Sectors), indicating that residents of the site had relatively equal access to mammal foods. At Huaca Gallinazo, however, camelids were more abundant in the Southern Platform than in Architectural Compound 2. Camelids were a significant feasting food and would have been the centerpieces at consumption events taking place beyond the household level, so their presence in higher quantities in the Southern Platform may be related to the elite ceremonial function of this sector, where larger scale feasting events were likely held. During the Early Horizon, sites like Gramalote and Caballo Muerto demonstrated focuses on fishing, while white-tailed deer dominated mammalian assemblages, however during the Early Intermediate Period emphasis shifted to the consumption of camelids. Pozorski (1979) suggests that this change corresponded to a dual shift in consumption practices as individuals in the region began to focus on terrestrial resources instead of fishing, while also emphasizing the consumption of domesticated camelids over wild deer. This trend is reflected in the faunal assemblages from both Huaca Santa Clara and Huaca Gallinazo.

At Huaca Santa Clara, camelids and white-tailed deer were present in higher quantities, in keeping with the site's more inland location and focus on terrestrial species, while at Huaca Gallinazo, sea lions, which would have been easier to access from the coast, were present in larger abundances. The coastal location of Huaca Gallinazo may have also impacted the fish species that were most commonly exploited when compared to Huaca Santa Clara. While at both sites Peruvian banded croakers (*Paralonchurus peruanus*) were the most abundant fish species, there was considerable variability represented within the main fish taxa at both locations. At Huaca Gallinazo, fish species preferring deeper ocean zones were more common, including Pacific jack mackerel (*Trachurus symmetricus*) and South American pilchard (*Sardinops sagax*), while at Huaca Santa Clara marine fish preferring shallower habitats were more abundant including Lorna drum (*Sciaena deliciosa*) and Peruvian grunt (*Anisotremus scapularis*). The exploitation of fish species from differing habitats at Huaca Santa Clara and

Huaca Gallinazo is suggestive of individuals at each location practicing differing fishing methods. The fish species most abundant at Huaca Gallinazo would have required boats to set nets offshore, while the species focused on at Huaca Santa Clara could be caught by casting nets from the beach. As mentioned above, however, it is possible fishing groups provided residents with their fish via trade and redistribution networks, perhaps resulting in the differences observed for the main fish taxon at each location. If this were the case it is possible that the differences are related to the preferences of fisher people and which species they were willing to trade to inland locations.

Huaca Gallinazo had proportionally more of each of the main bird species than Huaca Santa Clara, especially in the case of Humboldt penguins (*Spheniscus humboldti*), likely once again because of their proximity and access to the coast. At Huaca Santa Clara, boobies (*Sula sp.*), followed by Guanay cormorants (*Phalacrocorax bougainvillii*), gulls (*Larus sp.*), and Humboldt penguins were represented across Administrative and Residential Sectors in roughly equal proportions. At Huaca Gallinazo, however, the trend of different species representation between the sectors is present again, with Guanay cormorants, gulls, and Humboldt penguins all being present in larger abundances in the Southern Platform.

Clearly, the environmental context of each of the sites impacted the availability of resources to a certain extent, with individuals situated more inland at Huaca Santa Clara focusing more on terrestrial resources, while those at Huaca Gallinazo had greater access to marine resources because of their proximity to the coast. It is possible that residents at Huaca Santa Clara and Huaca Gallinazo viewed themselves as members of the same political system, while also occupying different “food-scapes” based on the animal resources available to them. Social differentiation is often constructed via differential access to food, with individual and group identities being coded for within alimentary traditions which can both minimize and emphasize differences between factions of populations (Counihan 1999: 8; Reitz and Wing 1999: 273). Within the Virú polity the differences in consumption at Huaca Santa Clara and Huaca Gallinazo would have highlighted the variability between the groups occupying the sites, even if they were part of the same elite administrative structure, creating dual forces of unity and division. Divisions were highlighted further within Huaca Gallinazo, where differences in consumption were reflected between the Southern Platform, which would have been utilized by elites for ceremonial purposes, and the Architectural Compound 2, which served a more domestic function. It appears that within Huaca Gallinazo, social differentiation is reflected in the variable access to animal foods between the sectors at the site, while at Huaca Santa Clara, evidence suggests that occupants had relatively equal access to foods in both the Administrative and Residential Sectors.

The codes and systems of communication associated with foods would have developed in concert with Virú state structures and processes, with the status of individuals and groups and corresponding social boundaries being developed and expressed within the repetitions and context of new state food systems (Douglas 1975). Identities, just like states, are constructed through processes of (re)negotiation where people alter their actions towards one another, as well as animals, to either defend or dismantle dominant social structures and the hierarchies therein. Goods such as animal foods, and elements of material culture, like ceramics, that facilitate their processing, presentation, and consumption, would have all been props used by individuals within the Virú polity to dramatize their presentation of self (Anderson 2014: 180; Douglas 1998: 100). Events that incorporate consumption beyond the household, such as feasts, would have provided the arenas within which players of ritualised sociopolitical games could bolster their position within social hierarchies, presenting themselves as either members or outsiders of particular groups based on their consumption choices made in a more public setting.

Moche work-party and life-cycle feasting as outlined by Gumerman (2010), do not appear to be large consumption events sponsored by the state, and were instead local and small scale occasions. This was likely the case within the Virú state as well, with elites at Huaca Santa Clara and Huaca Gallinazo hosting smaller localized events. The differential focus on animal foods across both sites, and within Huaca Gallinazo, suggest that small scale feasts would have been similar in form and function, but also capable of expressing differences between the occupants within and between the sites. Huaca Santa Clara and Huaca Gallinazo do not provide abundant evidence of feasting, but artifacts and features including large storage jars and hearths, as well as the presence of large open plazas in civic-ceremonial and administrative sectors that are often associated with special consumption events, suggest that food was being prepared for sizable groups. This evidence is very similar to that found at Moche sites, such as Huacas de Moche and Ciudad de Dios, where food was being provided as compensation for skilled and unskilled labour, as well as for state administrators (Gumerman 2010). For the Moche, it appears that food preparation and consumption was controlled at the community and household level, and this was likely the same within the Virú state. While those in the Virú polity were united under the same centralized sociopolitical body, the bodies of individuals occupying Huaca Santa Clara and Huaca Gallinazo would have been constituted with contextually meaningful animal foods, with occupants of each site exploiting variable environmental zones in different manners (or gaining indirect access to food resources via trade and redistribution systems). This, in turn, could have led to the creation of different alimentary traditions at the site level within a single state system. As differing communities of practice developed related to the exploitation and consumption of particular animals within specific environmental contexts at both sites, variable group and individual identities would have been developed across sites within the Virú state. An example of such variability could have been the differing focuses on, and emphasis of, particular coastal or terrestrial resources at each location.

Consumption at feasting events large and small would have provided members of the Virú elite with the opportunity to advertise their social status and potentially act in manners beyond their usual rank, at once promoting unity and celebrating social hierarchies (Chicoine 2011; van der Veen 2003, 2007). The uses of material goods such as fancy ceramics and bodily ornamentation would have served to emphasize the position of individuals that were embodied through consumption. However, feasts were also powerful tools with which to demarcate time because eating, and remembrances of past consumption events, are both inextricably tied to identity (Sutton 2001). Feasts at Huaca Santa Clara and Huaca Gallinazo would have disrupted daily routines of consumption, creating new, and recalling previous, distinct multi-sensory memories of participants, performances, and shared meals (Hamilakis 2008; Roddick and Hastorf 2010). Memory would have been an influential political tool for those in power within the Virú state because it could be manipulated to gain favor for those hosting feasts; a good feast creates good memories, which can be used to bolster the position of hosts and cement social statuses. The position of individuals would have been defined as they were “eaten into communities” via the ritualized sharing of food (Falk 1994). “Everyday” and special consumption events all serve to connect individuals to their families and communities, with food strengthening the physical bodies of individuals, but their social identities as well (Farb and Armelagos 1980).

Sociologist Irving Goffman’s work is especially helpful for developing an understanding of how social interactions are crucial to the development of a sense of self, and as such, his work will be given detailed consideration here. The verbal and non-verbal acts that would have been performed at feasts form “lines” that would have been acted out by individuals at Huaca Santa Clara and Huaca Gallinazo in social situations, while “face” can be thought of as the social value a person claims by taking a particular line of social action (Goffman 1967: 7). “Face” is not located in the body of an individual, it is made manifest for interpretation by other actors within the flows of encounters that follow a limited set of “lines”, resulting in the relative standardization of various types of encounters, especially in ritually charged feasting. With regard to their own treatment, it would have been in the interest of elite individuals within the Virú polity to control the conduct of others at larger social events, and this control could have been achieved by influencing the definition of various social situations to correspond to the type of impression they were trying to formulate, partly by allowing or restricting access to certain foods or cuts to certain attendees (Goffman 1990: 15). This strategy could be done consciously to achieve a particular impression, or it may have happened unconsciously as individuals expressed themselves in the tradition of their group (in this case alimentary traditions), or as their social status dictated their behaviour.

Goffman (1967: 31) situates individuals as players in a “ritual game”, either coping honorably and diplomatically, or dishonorably and undiplomatically, as they try to piece together their image of self, and just as with other sacred ritual objects, people are subjected to slights and profanation. For individuals in the Virú state, as well as within modern populations, appropriate actions would be determined by the individual through the constant analysis of the potential symbolic meaning of their own actions weighted against the self-images of others that are attempting to be sustained (Goffman 1967: 38). In this way, behaviours are moulded to the dominant expressive order to facilitate the neatness and ease of flow of messages. Meaning need not be conveyed through grand gestures, because very often social worth is demonstrated by minor things, and nothing is lost on the audience who bears witness. The types of food consumed, and their manner of consumption, would have been subtle indications of individuals’ position within the social hierarchy of the Virú polity at Huaca Santa Clara and Huaca Gallinazo, and when actors played particular roles in social situations it was implied that other observers and participants take them seriously. Essentially they are implored to buy into the character they see presented before them as actually in possession of the attributes they are claiming, in this case things like power and prestige (Goffman 1990: 28).

Just as all meaning is not expressed through overt actions, not all communications of meaning need to be verbal in nature. Different types of non-verbal communication can be achieved through bodily movement and gestures, as well as dress and ornamentation, which would have all been key elements at larger consumption events in the Virú state. Goffman (1967: 64) views these forms of non-verbal communication as capable of forming a bodily symbolism, or an idiom of individual appearances, which ideally will be responded to harmoniously by other actors. Bodily symbolism would have been created in part via differential consumption practices, involving individuals embodying the social values placed on particular animal foods, as well as their symbolic associations. This bodily idiom serves as conventionalized discourse, because while individuals can silence themselves linguistically, silencing the communication of messages that occurs through bodily idiom is much more difficult. As Goffman (1963: 35) states: "…they must say either the right thing or the wrong thing, they cannot say nothing."

Small scale local feasts at Huaca Santa Clara and Huaca Gallinazo would have allowed individuals to express their individual identities as well as their membership to particular factions of the population, while being at once unified as participants within the same state system, but also practicing differential consumption patterns and focuses. At Huaca Santa Clara, alimentary communities were defined by their focus on terrestrial species, such as camelids and white-tailed deer, in comparison to Huaca Gallinazo the exploitation of coastal resources was a defining element of their foodways. Occupants of the Administrative and Residential Sectors at Huaca Santa Clara appear to have had relatively equal access to all classes of animal foods, while individuals at Huaca Gallinazo saw social differentiation expressed at the site level based on differential uses of food between the Southern Platform and Architectural Compound 2 (possibly by the same groups or individuals utilizing both areas).

6.3 Contributions and Further Research

This project is a small part of the larger Virú Polity Project led by Dr. Jean-François Millaire, focused on early state development on the North Coast. Within this context, food would have been an important social and economic tool for the emerging Virú elite who would have used differential access to goods as a means to control the growing populations under their dominion. This research is a step towards incorporating more zooarchaeological evidence into current understandings of the processes involved in the consolidation of the Virú polity. Perhaps the greatest contribution of this study is its focus on the social roles of animal foods, which have been largely understudied. By adopting theoretical orientations such as social zooarchaeology and relational ontology that situate animals as more than just protein and calories, this study seeks to broaden our conceptions of animals by viewing them as actors alongside humans in sociopolitical processes. A major part of this analysis was also highlighting the entangled nature of the relations humans share not only with animals, but their shared environments.

With the development and expansion of state systems came expansions of populations into their surrounding environments as irrigation canals and crops would have changed the net environmental diversity within the already variable environmental zones of the North Coast. Interactions with the environment and the other animals and humans therein, would have been equally as diverse as they would be intense for individuals within the Virú state leading to the formulation of new symbolic systems. By focusing on the symbolic associations of particular animals in Moche iconography this study attempted to bring to the foreground the fact that consuming an animal is never a simple matter, it is always an act of incorporation of the animal, as well as its associated symbolism into the human body, creating embodied and performative interactions between other-than-human-persons and humans. The richness of food lies in its ability to not only unify and divide, as well as constitute the physical and social person, but also its power to enmesh people in deep relations with the animals they share their lives and landscapes with.

Future research into the Virú polity could benefit from further zooarchaeological analysis of faunal remains from Huaca Santa Clara in order to increase sample sizes, and the same can be said for materials from Huaca Gallinazo. Expanding excavation and analysis into more sectors at Huaca Gallinazo, as well as other mound structures within the Gallinazo Group would be important for further unpacking the nature of social differentiation within the Virú capital. With further excavation it is possible that residences belonging to higher and lower social classes may be uncovered, providing us with a better rounded picture of the potentially differing consumption practices across domestic spaces, and not just between domestic areas and civic-ceremonial sectors. The excavation and analysis of materials from other sites will also be hugely informative and provide us with a better rounded understanding of how food was used to negotiate social boundaries across sites in the Virú state system

Increased faunal samples could also help shed light on the age structures of camelid populations kept by the Virú on the North Coast. With more data collection patterns of exploitation for white-tailed deer and sea lions may also become clearer. The fact that the environmental context of both Huaca Santa Clara and Huaca Gallinazo played a role in shaping local food availability and dietary focuses means that further investigations into the effects of El Niño could shed light on how these climactic events affected individuals at these sites and their interactions with their environments.

References Cited

Abrahams, R.

2001 “Equal opportunity eating: A structural excursus on things of the mouth.” In L. Keller Brown and K. Mussell (eds.) *Ethic and regional foodways in the United States: The performance of group identity*. Knoxville: The University of Tennessee Press, pp. 19-36.

Altamirana Enciso, A. J.

1983 *Guia osteologica de cervidos Andinos.* Lima: Universidad Nacional Mayor San Marcos, Departamento Academico de Ciencias Historico-Sociales, Gabinete de Arqueologia Colegio Real. Serie Investigaciones N. 6.

Anderson, E.N.

2014 *Everyone eats: Understanding food and culture*. New York: New York University Press.

Angelo, D.

2014 Assembling ritual, the burden of the everyday: An exercise in relational ontology in Quebrada de Humahuaca, Argentina. *World Archaeology* 46 (2): 1-18.

Appadurai, A.

1981 Gastro-politics in Hindu South Asia. *American Ethnologist* 8:494-511.

Arkush, E. and C. Stanish

2005 Interpreting conflict in the ancient Andes: Implications for the archaeology of warfare. *Current Anthropology* 46(1):3-28.

Armelagos, G.J.

1994 “You are what you eat.” In K.D. Sobolik (ed.) *Paleonutrition: The diet and health of prehistoric Americans.* Carbondale: Southern Illinois University at Carbondale Center for Archaeological Investigations Occasional Paper 22, pp. 235-244.

Atalay, S. and C.A. Hastorf

2006 Food, Meals, and Daily Activities: Food Habitus at Neolithic Çatalhöyük. *American Antiquity* 71 (2): 283-319.

Bawden, G.

1995 The structural paradox: Moche culture as political ideology. *Latin American Antiquity* 6(3): 255-273.

1996 *The Moche*. Blackwell, Cambridge.

2004 “The art of Moche politics”. In H. Silverman (ed.) *Andean Archaeology*. Oxford: Blackwell Publishing, pp. 116-129.

Bekoff, M.

2002 *Minding animals: Awareness, emotions, and heart*. Oxford: Oxford University Press.

Bell, C.

1992 *Ritual theory ritual practice.* New York: Oxford University Press.

Bennett, W.C.

1950 *The Gallinazo Group: Virú Valley, Peru*. New Haven: Yale University Press.

Benson, E.P.

1997 *Birds and beasts of ancient Latin America.* Gainesville: University Press of Florida.

2012 *The worlds of the Moche on the North Coast of Peru.* Austin: University of Texas Press.

Billman, B.

2002 Irrigation and the origins of the Southern Moche state on the north coast of Peru. *Latin American Antiquity* 13:371-400.

Birke, L. et al.

2004 Animal performances: an exploration of intersections between feminist science studies and studies of human/animal relationships. *Feminist Theory* 5 (2): 167-183.

Borella, F. et al.

2013 Esquema preliminar de fusion epifisaria en huesos de lobos larinos (Arctocephalus australis y Otaria flavescens), su contribución en los análisis zooarqueológicos.

Bourdieu, P.

1977 Sur le pouvoir symbolique. *Annales (ESC)* 32: 405-11.

1980 *The Logic of Practice.* Stanford: Stanford University Press.

Bourget, S.

1994 “El mar y la muerte en la iconografía moche”. In S. Uceda and E. Mujica (eds.) *Moche: Propuestas y Perspectivas*. Lima: Travaux de l'Institut Français d'Études Andines, No. 79, pp. 427-447.

2016 *Sacrifice, violence, and ideology among the Moche: The Rise of social complexity in ancient Peru*. Austin: University of Texas Press.

Bray, T.

2003a “To dine splendidly: Imperial pottery, commensal politics, and the Inca state.” In T. Bray (ed.) *The archaeology and politics of food and feasting in early states and empires*. New York: Kluwer Academic/Plenum Publishers, pp. 93-142.

2003b “The commensal politics of early states and empires “. In T. Bray (ed.) *The archaeology and politics of food and feasting in early states and empires*. New York: Kluwer Academic/Plenum Publishers, pp. 1-16.

2003c Inka pottery as culinary equipment: Food, feasting, and gender in imperial state design. *Latin American Antiquity* 14 (1): 3-28.

2009 An archaeological perspective on the Andean concept of Camaquen: Thinking through Late Pre-Columbian ofrendas and huacas. *Cambridge Archaeological Journal* 19 (3): 357-366.

Brotherson, G.

1989 “Andean pastoralism and Inca ideology.” In J. Clutton-Brock (ed.) *The walking larder: Patterns of domestication, pastoralism, and predation.* London: Unwin Hyman, pp. 240-255.

Butler, J.

1990 *Gender trouble: Feminism and the subversion of identity*. London: Routledge.

Campbell, C.

1998 *Residential architecture and social stratification: A comparison of two sites in the Moche Valley, Peru*. M.A. thesis, Department of Anthropology, Northern Arizona University, Flagstaff.

Cartmill, M.

1993 *A view to a death in the morning: Hunting and nature through history*. Cambridge: Harvard University Press.

Chao, L.N.

1995 Sciaenidae: Corvinas, barbiches, bombaches, corvinatas, corvinetas, corvinillas, lambes, pescadillas, roncachos, verrugatos. In W. Fischer, F. Krupp, W. Schneider, C. Sommer, K.E. Carpenter and V. Niem (eds.) *Guia FAO para identificacion de especies para los fines de la pesca. Pacifico Centro-oriental*. 3 volumes, pp. 1427-1518.

Chapdelaine, C.

2000 "La ciudad Moche: urbanismo y estado." In S. Uceda and E. Mujica (eds.) *Moche, hacia el final del milenio*. Lima: UNT y Fono editorial PUCP, pp. 247-286.

Chicoine, D.

2011 Feasting landscapes and political economy at the Early Horizon center of Huambacho, Nepeña Valley, Peru. *Journal of Anthropological Archaeology* 30 (3): 432-453.

Cobo, B.

1990 [1653] *Inca religion and customs*. Translated an edited by R. Hamilton. Austin: University of Texas Press.

Cohen, A. and D. Serjeantson.

1996 *A manual for the identification of bird bones from archaeological sites*. Revised Edition. London: Archetype Publications Ltd.

Conklin,W.J.

1978 "Estructura de los tejidos Moche". In R. Ravines (ed.) *Tecnología Andina*. Lima: Instituto de Estudios Peruanos, pp. 299–332.

Connerton, P.

1991 *How societies remember*. Cambridge: Cambridge University Press.

Corr, R.

2002 Reciprocity, communion, and sacrifice: Food in Andean ritual and social life. *Food and Foodways* 10: 1-10.

Counihan, C.

1998 “Food and gender: Identity and power.” In C. Counihan and S. Kaplan (eds.) *Food and gender: Identity and power*. Amsteldijk: Harwood Academic Publishers, pp. 1-10.

1999 “Food, culture, and gender.” In C. Counihan (ed.) *The anthropology of food and body: Gender, meaning, and power*. London: Routledge, pp. 6-24.

Counihan, C. and P. Van Esterik

1997 “Introduction.” In C. Counihan and P. Van Esterik (eds.) *Food and culture*. New York: Routeledge, pp 1-8.

Cushing, D.H.

1982 *Climate and fisheries.* London: Academic Press.

D’Altroy, T. and T. Earle

1985 Staple finance, wealth finance, and storage in the Inka political economy. *Current Anthropology* 26 (2): 187-206.

Davis, S.J.M.

1987 *The archaeology of animals*. Yale University Press: New Haven and London.

deFrance, Susan D.

2009 Zooarchaeology in complex societies: Political economy, status, and ideology. *Journal of Archaeological Research* 17 (2): 105-168.

Dietler, M.

2001 “Theorizing the feast: Rituals of consumption, commensal politics, and power in African contexts.” In M. Dietler and B. Hayden (eds.) *Feasts: Archaeological and ethnographic perspectives on food, politics, and power*. Washington DC.: Smithsonian Institute Press, pp. 65-114.

Dietler, M. and I. Herbich

1998 “Habitus, techniques, style: An integrated approach to the social understanding of material culture and boundaries.” In M.T. Stark (ed.) *The archaeology of social boundaries*. New York: Library of Congress Cataloging-in-Publication Data, pp. 232-263.

2001 “Feasts and labour mobilization: Dissecting a fundamental economic practice.” In M. Dietler and B. Hayden (eds.) *Feasts: Archaeological and ethnographic perspectives on food, politics, and power*. Washington DC.: Smithsonian Institute Press, pp. 240-266.

Dillehay, T.

2011 *From foraging to farming in the Andes: New perspectives on food production and social organization.* New York: Cambridge University Press.

Dillon, R.

2015 *Ritual violence and times of transition: A bioarchaeological analysis of burials from Huaca Santa Clara and Huaca Gallinazo in the Virú Valley, Peru*. M.A. thesis, Department of Anthropology, The University of Western Ontario, London.

Dobney, K. and K. Rielly

1988 A method for recording archaeological animal bones: The use of diagnostic zones. *Circaea* 5(2): 79-96.

Donnan, C.

1976 *Moche art and iconography*. Los Angeles: UCLA Latin American Center Publications.

1982 Lacazadel venado en el arte Mochica. *Revista del Museo Nacional* 16: 235-251.

Donnan, C.B. and D. McClelland.

1979 "The Burial Theme in Moche Iconography". In *Studies in Pre-Columbian Art and Archaeology* (21), Harvard University: Washington, D.C., pp. 5-46.

Douglas, M.

1975 "Deciphering a meal". In M. Douglas (ed.), *Implicit meanings: Essays in anthropology*. Boston: Routledge and Kegan Paul, pp. 249-275.

1988 *Purity and danger: An analysis of the concepts of pollution and taboo.* London: Ark Paperbacks.

Douglas, M. and B. Isherwood

1979 *The world of goods: Towards an anthropology of consumption*. London: Allen Lane.

Downey, J.

2015 *Statecraft in the Viru Valley, Peru, in the First Millenium A.D.* Ph.D. dissertation, Department of Anthropology, The University of Western Ontario, London.

Earle, W.R.

2010 *The iconography of Moche winged figures.* M.A. Thesis, Art History, The University of Texas at Austin, Austin.

Enloe, J.G.

1993 "Ethnoarchaeology of marrow cracking: Implications for the recognition of prehistoric subsistence organization." In J. Hudson (ed.) *From bones to behaviour: Ethnoarchaeological and experimental contributions to the interpretation of faunal remains*. Carbondale: Center for Archeological Investigations Southern Illinois University at Carbondale, Occasional Paper No. 21, pp. 82-100.

Falk, P.

1994 *The Consuming Body*. London: SAGE Publications.

Farb, P. and G. Armelagos

1980 *Consuming passions: The Anthropology of Eating*. New York: Washington Square Press.

Fausto, C.

2007 Eating animals and humans in Amazonia. *Current Anthropology* 48 (4): 497-530.

Fiddes, N.

1991 *Meat: A natural symbol*. London: Routledge.

Flannery, K.

1998 “The Ground Plans of Archaic States.” In G.N. Feinman and J. Marcus (eds.) *Archaic* States. Santa Fe: School of American Research Press, pp. 15-57.

Flores Ochoa J.A.

1974 Enqa, Enqaychu, Illa y Khuya Rumi: Aspectos mágicos-religiosos entre pastores. *Journal de la Sociétédes Américanistes* 83: 245-262

Galaty, J. and D. Johnson

1990 “Introduction: Pastoral systems in global perspective”. In J.G. Galaty and D.L. Johnson (eds.) *The world of pastoralism: Herding systems in comparative perspective*. New York: Guilford, pp. 1-31.

Gálves Mora et al.

1999 “11,000 años de consumo de reptiles en la costa norte del Perú: El caso del Cáñan (Dicrodon sp.)”. In A. Garido Aranda (ed.) *Los sabores de España y América: Cultura y alimentación*. Córdoba: La Val de Onsera, Disputación Provincial de Córdoba, pp. 141-164.

Gero, J.

2003 “Feasting and the practice of stately manners.” In T. Bray (ed.) *The archaeology and politics of food and feasting in early states and empire*s. New York: Kluwer Academic/Plenum Publishers, pp. 285-288.

Gifford-Gonzales, D.

1993 “Gaps in zooarchaeological analyses of butchery: Is gender an issue?.” In J. Hudson (ed.) *From bones to behaviour: Ethnoarchaeological and experimental contributions to the interpretation of faunal remains*. Carbondale: Center for Archeological Investigations Southern Illinois University at Carbondale, Occasional Paper No. 21, pp. 181-199.

Gifford-Gonzalez, D. and K.U. Sunseri Kojun

2007 “Foodways on the frontier: Animal use and identity in early colonial New Mexico.” In K.C. Twiss (ed.) *The archaeology of food and identity*. Carbondale: Center for Archaeological Investigations, Southern Illinois University Carbondale, Occasional Paper No. 24, pp. 260-287.

Goepfert, N.

2010 The llama and the deer: Dietary and symbolic dualism in the central Andes. *Anthropozoologica* 45 (1): 25-45.

Goffman, E.

1963 *Behaviour in public places: Notes on the social organization of gatherings*. New York: The Free Press.

1967 *Interaction ritual.* New York: Anchor Books.

1990 *The presentation of self in everyday life.* London: Penguin Books.

Goldstein, P.S.

1993 “House, community, and state in the earliest Tiwanaku colony: Domestic patterns and state integration at Omo M12, Moquegua.” In M. Aldenderfer (ed.) *Domestic architecture, ethnicity, and complementarity in the South-Central Andes*. Iowa City: University of Iowa Press, pp. 25-41.

González Holguín, D.

1952 [1608] *Vocabulario de la lengua general de todo el Perú*. Universidad Nacional Mayor de San Marcos, Instituto de Historia, Lima.

Goody, J.

1982 *Cooking, cuisine, and class: A study in comparative sociology*. Cambridge: Cambridge University Press.

Grayson, D.K.

1979 On the quantification of archaeofaunas. *Advances in Archaeological Method and Theory* 2: 199-237.

Guiry, E.J. et al.

2016 Effects of lipid extraction and ultrafiltration on stable carbon and nitrogen isotopic compositions of fish bone collagen. *Rapid Communications in Mass Spectrometry* 30: 1591-1600.

Gumerman, G.

2010 “Big hearths and big pots: Moche feasting on the North Coast of Peru.” In E.A. Klarich (ed.) *Inside ancient kitchens: New directions in the study of daily meals and feasts*. Boulder: University Press of Colorado, pp. 111-132.

Gumerman, G. and J. Briceño

1997 Food and complex societies. *Journal of Archaeological Method and Theory* 4 (2): 105-139.

2003 Santa Rosa – Quirihuac y Ciudad de Dios: Asentamientos rurales en la parte media del Valle de Moche. In S. Uceda and E. Mujica (eds.) *Moche: Hacia el final del milenio, vol. 1.* Trujillo: Universidad Nacional de Trujillo y Pontificia Universidad del Peru, pp. 217-244.

Guthrie, S. E.

1993 *Faces in the clouds.* New York and Oxford: Oxford University Press.

Haas, J.

1987 “The exercise of power in early Andean state development.” In J. Haas, S. Pozorksi and T. Pozorski (eds.) *The origins and development of the Andean state.* New York: Cambridge University Press, pp. 15-30.

Hamilakis, Y.

2008 “Time, performance, and the production of a mnemonic record: From feasting to an archaeology of eating and drinking”. In L. Hitchcock, R. Laffineur, and J. Crowley (eds.) *DAIS: The Aegean Feast*. Austin: University of Texas Press, pp. 3–17.

Hastorf, C.

1994 “Gender, space, and food in prehistory.” In J.M. Gero and M.W. Conkey (eds.) *Engendering archaeology: Women and prehistory*. Cambridge: Blackwell Publishers pp. 132-162.

Herva, V.P.

2009 Living (with) things: Relational ontology and material culture in Early Modern Northern Finland. *Cambridge Archaeological Journal* 19 (3): 388-397.

Hill, E.

2011 Animals as agents: Hunting ritual and relational ontologies in prehistoric Alaska and Chukotka. *Cambridge Archaeological Journal* 21 (3): 407-426.

Hillson, Simon

2003 *Mammal bones and teeth: An introductory guide to methods of identification*. London: Institute of Archaeology, University College London.

Hocquenghem, A.M.

1983 Les cerfs et les morts dans l'iconographie mochica. *Journal de la Société des Américanistes* 69: 71-84.

1987 *Iconografia Mochica.* San Miguel, Perú: Pontificia Universidad Católica del Perú, Fondo Editorial.

Humann, P. and N. Deloach

1993 *Reef fish identification: Galápagos*. Florida: New World Publications, Inc.

Ingold, T.

2000 *The Perception of the Environment: Essays in Livelihood, Dwelling and Skill.* London: Routledge.

2006 Rethinking the animate, re-animating thought. *Ethnos* 71(1), 9–20.

Isbell, W.H.

1997 "Reconstructing Huari: A cultural chronology from the capital city." In L. Manzanilla (ed.), *Emergence and change in early urban societies*. Plenum Publishers: New York: Plenum Publishers, pp. 181-227.

Jiménez Prado, P. and P. Béarez,

2004 *Peces marinos del Ecuador continental*. Tomo 2: Guía de Especies. SIMBIOE/NAZCA/IFEA.

Keller Brown, L. and K. Mussell

2001 “Introduction.” In L. Keller Brown and K. Mussell (eds.) *Ethic and regional foodways in the United States: The performance of group identity*. Knoxville: The University of Tennessee Press, pp. 3-18.

Kent, J.D.

1982 *The domestication and exploitation of South American camelids: Methods of analysis and their application to circum-lacustrine archaeological sites in Bolivia and Peru*. PhD. Dissertation: Washington University.

Knight, J.

2005 “Introduction.” In J. Knight (ed.) *Animals in person: Cultural perspectives on human-animal intimacies*. Oxford: Berg Publishers, pp. 1-14.

Kubler, G.

1948 Towards absolute time: Guano archaeology. *Memoirs of the Society for American Archaeology* No. 4, A Reappraisal of Peruvian Archaeology, pp. 29-50.

Kubo, M.O. and E. Yamada

2014 The inter-relationship between dietary and environmental properties and tooth wear: Comparisons of mesowear, molar wear rate, and hypsodonty index of extant sika deer populations. *PLoS One* 9 3 (3): 1-13.

Larco Hoyle, R.

1938 *Lós Mochicas*. Lima: Casa editora "La Crónica" y "Variedades".

1945 *The Virú culture.* Buenos Aires: Sociedad Geografica Americana.

Larrere, C. and R. Larrere

2000 Animal rearing as a contract? *Journal of Agricultural and Environmental Ethics* 12: 51-58.

Lernau, O. et al.

1996 Salted fish and fish sauces from Masada: A preliminary report. *Archaeofauna* 5: 35-41.

Lévi-Strauss, C.

1962 The savage mind. Chicago: University of Chicago Press.

Levy, J.E.

1995 “Animals good to think: Bronze Age Scandinavia and Ohio Hopewell”. In K. Ryan and P.J. Crabtree (eds.) *The symbolic role of animals in archaeology*. Philadelphia: University of Pennsylvania, Museum of Archaeology and Anthropology Research Papers in Science and Archaeology, MASCA 12.

McAllister, D.E.

1990 *A working list of fishes of the world*. Ottawa: Canadian Museum of Nature.

McClelland, D.

2011 The Moche botanical frog. *Arqueologia Iberoamericana* 10: 30-42.

McClelland, D., D. McClelland, and C. Donnan

2007 *Moche Fineline Painting from San José de Moro*. Los Angeles: Cotsen Institute of Archaeology at UCLA.

McNiven, I.J.

2010 Navigating the human-animal divide: Marine mammal hunters and rituals of sensory allurement. *World Archaeology* 42 (2): 215-230.

Meigs, A.

1988 Food as a cultural construction. *Food and Foodways* 2: 341-357.

1997 “Food as cultural construction.” In C. Counihan and P. Van Esterik (eds.) *Food and culture: A reader*. New York: Routledge, pp. 95–106.

Midgley, M.

1983 *Animals and why they matter.* Markham: Penguin Books Canada Ltd.

Millaire, J.F.

2009 “Gallinazo and the tradición norcosteña.” In J.F. Millaire and M. Morlion (eds.) *Gallinazo: An early cultural tradition on the Peruvian North Coast*. Los Angeles: University of California Cotsen Institute of Archaeology Press, pp. 1-16.

2010a Primary State Formation in the Virú Valley, North Coast of Peru. *Proceedings of the National Academy of Sciences* 107(14):6186-6191.

2010b “Moche political expansionism as viewed from Virú: Recent archaeological work in the close periphery of a hegemonic city-state system”. In J. Quilter and L.J. Castillo B. (eds.) *New perspectives on Moche political organization*. Washington D.C.: Dumbarton Oaks, pp. 223-251.

2015a Recent radiocarbon dating in the Virú Valley, Peru. Manuscript on file, The University of Western Ontario, London, Canada.

2016 “Posts and pots: Propitiatory ritual at Huaca Santa Clara in the Virú Valley, Peru.” In K.D. Haagen and M.J. Toyne (eds.) *Ritual violence in the ancient Andes: Reconstructing sacrifice on the North Coast of Peru*. Austin: University of Texas Press, pp. 342-358.

Millaire, J.F. and E. Eastaugh

2011 Ancient urban morphology in the Virú Valley, Peru: Remote sensing work at the Gallinazo Group (100 B.C.– A.D. 700). *Journal of Field Archaeology* 36(4):289–297.

2014 Geophysical survey on the coast of Peru: The early Prehispanic city of Gallinazo Group in the Virú Valley. *Latin American Antiquity* 25(3): 239-255.

Millaire, J.F. and E. La Torre Calvera

2002 Proyecto Huaca Santa Clara Temporada 2002. Instituto Nacional de Cultura, Trujillo.

2003 Proyecto Huaca Santa Clara Temporada 2003. Instituto Nacional de Cultura, Trujillo.

2011 Proyecto Arqueologico Virú, Temporada 2011. Informe Final Presentado a la Comision Nacional Tecnica de Arqueologia del Ministerio de Cultura. Lima, December 2011.

Miller, G.R.

2013 *Guia osteologica para la identification de los hueso de tres especies de roedores Andinos*. Hayward, California State University, East Bay.

Miller, G.R. and R.L. Burger

1995 Our father the cayman, our dinner the llama: Animal utilization at Chavín de Huántar, Peru. *American Antiquity* 60(3): 421-458.

Milton, K.

2005 “Anthropomorphism or egomorphism? The perception of non-human persons by human ones.” In J. Knight (ed.) *Animals in person: Cultural perspectives on human-animal intimacies*. Oxford: Berg Publishers, pp. 255-271.

Moore, J.D. and C.J. Mackey

2008 “The Chimú Empire.” In H. Silverman and W. Isbell (eds.) *Handbook of South American archaeology*. New York: Springer Science+Business Media, LLC, pp. 783-808.

Morales, E.

1994 The guinea pig in the Andean economy: From household animal to market commodity. *Latin American Research Review* 29 (3): 129-142.

1995 *The guinea pig: Healing, food and ritual in the Andes*. Tucson: University of Arizona Press.

Morlan, R.E.

1984 Toward the definition of criteria for the recognition of artificial bone alterations. *Quaternary Research* 22: 160-171.

Moseley, M.E.

1975 *The maritime foundations of Andean civilization.* Menlo Park, CA: Cummings Press.

1992 *The Incas and their ancestors.* New York: Thames and Hudson.

Neisser, U.

1976 *Cognition and reality: Principles and implications of cognitive psychology*. San Francisco: W.H. Freeman.

Neisser, U. and E. Winograd

1988 *Remembering reconsidered: Ecological and traditional approaches to the study of memory*. New York: Cambridge University Press.

Netherly, P.

1978 *Local level lords of the North Coast of Peru.* Ann Arbor: University Microfilms.

Oma, K.A.

2010 Between trust and domination: Social contracts between humans and animals. *World Archaeology* 42 (2): 175-187.

Outram, A.K.

2001 A new approach to identifying bone marrow and grease exploitation: Why the “indeterminate” fragments should not be ignored. *Journal of Archaeological Science* 28: 401-410.

Pacheco Torres, V.R., A.J. Altimirano Enciso, and E. S. Guerra Porras

1979 *Guia osteologica de camelidos Sudamericanos.* Lima, Universidad Nacional Mayor de San Marcos: Gabinete de Arqueologia Colegio Real. Serie Investigaciones No. 4.

Paredes, R. and C.B. Zavalaga

2001 Nesting sites and nest types as important factors for the conservation of Humboldt Penguins (Spheniscus humboldti). *Biological Conservation* 100:199-205.

Payne, S.

1973 Kill-off patterns in sheep and goats: The mandibles from Asvan Kal. *Anatolian Studies* 23: 281-303.

Post, L.

2004 *Pinniped projects: Articulating seal and sea lion skeletons*. Volume 4, Bone Building Books.

Pozorski, S.G.

1979 Prehistoric diet and subsistence of the Moche Valley, Peru. *World Archaeology* 11 (2): 163-184.

Purdue, J.R.

1983 Epiphyseal closure in white-tailed deer. *The Journal of Wildlife Management* 47(4): 1207-1213.

Rackham, D.J.

1986 “Assessing the relative frequency of species by the application of a stochastic model to a zooarchaeological database”. In L.H. van Wijngaarden-Bakker (ed.) *Database management and zooarchaeology: Journal of the European Study Group of Physical, Chemical, Biological and Mathematical Techniques applied to Archaeology*. Research volume 40.

Reitz, E. and E. Wing

1999 *Zooarchaeology*. Cambridge: Cambridge University Press.

Riede, K.

2004 *Global register of migratory species - from global to regional scales. Final Report of the R&D-Projekt 808 05 081*. Bonn, Germany: Federal Agency for Nature Conservation.

Ringrose, T.J.

1993 Bone counts and statistics: A critique. *Journal of Archaeological Science* 20: 121-157.

Roddick, A.P. and C.A. Hastorf

2010 Tradition brought to the surface: Continuity, innovation and change in the Late Formative Period, Taraco Peninsula, Bolivia. *Cambridge Archaeological Journal* 20 (2): 157-178.

Rofes, J.

2002 “Prehispanic guinea pig sacrifices in southern Perú: The case of El Yaral.” In S.J. O’Day et al. (eds.) *Behaviour behind bones: The zooarchaeology of ritual, religion, status and identity*. Oxford: Oxbow Books, pp. 95-100.

Russell, N.

2011 *Social zooarchaeology: Humans and animals in prehistory*. Cambridge: Cambridge University Press.

Serjeantson, D.

2009 *Birds*. Cambridge: Cambridge University Press.

Serpell, J.

1986 *In the company of animals: A study of human-animal relationships*. Oxford: Basil Blackwell.

Shimada, M. and I. Shimada

1985 Prehistoric llama breeding and herding on the North Coast of Peru. *American Antiquity* 50(1): 3-26.

Smith, M. E.

2007 Form and meaning in the earliest cities: A new approach to ancient urban planning. *Journal of Planning History* 6: 3–47.

Smith, M.L.

2006 The archaeology of food preference. *American Anthropologist* 108 (3): 480-493.

Smith-Vaniz, W.F.

1995 “Carangidae: Jureles, pámpanos, cojinúas, zapateros, cocineros, casabes, macarelas, chicharros, jorobados, medregales, pez pilota”. In W. Fischer, F. Krupp, W. Schneider, C. Sommer, K.E. Carpenter and V. Niem (eds.) *Guia FAO para identification de especies para lo fines de la pesca*. Pacifico Centro-Oriental. 3 Vols, p. 940-986.

Stanish, C.

2000 “Negotiating rank in an imperial state: Lake Titicaca Basin elite under Inca and Spanish Control.” In M. Diel (ed.) *Hierarchies in Action*. Carbondale: Southern Illinois University Center for Archaeological Investigations, Occasional Paper 27.

Stone-Miller, R.

1995 *Art of the Andes.* New York: Thames and Hudson.

Strong, W.D. and C. Evans.

1952 *Cultural Stratigraphy in the Virú Valley, Northern Peru: The Formative and Florescent Epochs*. Volume 4. New York: Columbia University Press.

Surette, F.

2015 *Virú and Moche textiles on the north coast of Peru during the Early Intermediate Period: Material culture, domestic traditions and elite fashions*. Ph.D. dissertation, Department of Anthropology, The University of Western Ontario, London, ON.

Sutton, D.E.

2001 *Remembrance of repasts: An anthropology of food and memory*. New York: Berg Publishers.

Szpak, P. et al.

2014a Large variation in nitrogen isotopic composition of a fertilized legume. *Journal of Archaeological Science* 45: 72-79.

2014b Small scale camelid husbandry on the north coast of Peru (Virú Valley): Insight from stable isotope analysis. *Journal of Anthropological Archaeology* 36: 110-129.

Szuter, C.R.

2001 “Gender and animals: Hunting technology, ritual, and subsistence in the greater Southwest”. In P.L. Crown (ed.) *Women and men in the Prehispanic Southwest: Labour, power, and prestige*. Santa Fe: School of American Research Press, pp. 197-220.

Tilley, C.

1999 *Metaphor and material culture*. Oxford: Blackwell.

Topic, T.L., T.H. McGreevy, and J.R. Topic

1987 A comment on the breeding and herding of llamas and alpacas on the North Coast of Peru. *American Antiquity* 52(4): 832-835.

Trigger, B.G.

2003 *Understanding early civilizations: A comparative study*. New York: Cambridge University Press.

Turkon, P.

2007 “Food preparation and status in Mesoamerica” In K.C. Twiss (ed.) *The archaeology of food and identity*. Carbondale: Center for Archaeological Investigations, Southern Illinois University Carbondale, Occasional Paper No. 24, pp. 152-170.

Twiss, K.C.

2007 “Home is where the hearth is: Food and identity in the Neolithic Levant.” In Katheryn C. Twiss (ed.) *The archaeology of food and identity*. Carbondale: Center for Archaeological Investigations, Southern Illinois University Carbondale, Occasional Paper No. 24, pp. 50-68.

Uceda, S., E. Mujica, and R. Morales (eds.)

1997 *Investigaciones en la Huaca de la Luna 1995*. Trujillo: Universidad Nacional de Trujillo, Facultad de Ciencias Sociales.

1998 *Investigaciones en la Huaca de la Luna 1996*. Trujillo: Universidad Nacional de Trujillo, Facultad de Ciencias Sociales.

2000 *Investigaciones en la Huaca de la Luna 1997*. Trujillo: Universidad Nacional de Trujillo, Facultad de Ciencias Sociales.

van der Veen, M.

2003 When is food a luxury? *World Archaeology* 34 (3): 405-427.

2007 “Food as an instrument of social change: Feasting in Iron Age and Early Roman Southern Britain.” In K.C. Twiss (ed.) *The archaeology of food and identity*. Carbondale: Center for Archaeological Investigations, Southern Illinois University Carbondale, Occasional Paper No. 24, pp. 112-129.

Venet-Rogers, C.

2013 *A study of faunal consumption at the Gallinazo Group Site, Northern Coast of Peru*. M.A. thesis, Department of Anthropology, University of Western Ontario, London.

von den Driesch, A.

1976 *A guide to the measurement of animal bones from archaeological sites*. Cambridge: Peabody Museum of Archaeology and Ethnology, Harvard University.

Watson, J.P.N.

1979 The estimation of the relative frequencies of mammalian species: Khirokitia 1972. *Journal of Archaeological Science* 6: 127-137.

Wheeler, J. C.

1982 Ageing llamas and alpacas by their teeth. *Llama World* (1): 12-17.

Whitehead, P.J.P.

1985 *FAO Species Catalogue: Clupeoid fishes of the world (suborder Clupeioidei).* An annotated and illustrated catalogue of the herrings, sardines, pilchards, sprats, shads, anchovies and wolf-herrings. FAO Fish. Synop. 125(7/1):1-303. Rome: FAO.

Whiteman, E.

2001 *Storage and Moche political organization: An analysis of storage systems.* M.A. thesis, Department of Anthropology, Northern Arizona University, Flagstaff.

Willey, Gordon R.

1953 *Prehistoric settlement patterns in the Virú Valley, Peru*. Bulletin 155, Smithsonian Institution Bureau of American Ethnology. United States Government Printing Office, Washington, D.C.

Wilson, David J.
1988 *Prehispanic settlement patterns in the Lower Santa Valley, Peru: A regional perspective on the origins and development of complex North Coast society*. Washington DC: Smithsonian Institution Press.

Zavalaga, C.B. and R. Paredes

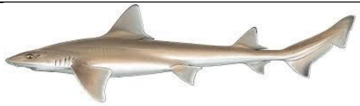
1999 Foraging behaviour and diet of the Guanay Cormorant. *South African Journal of Marine Science* 21:251-258.

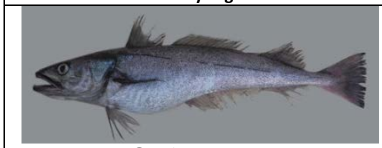
Appendices

Appendix A: Chart of Photos, Scientific Names, and Common Names (English and Spanish) for Taxa from Huaca Santa Clara and Huaca Gallinazo

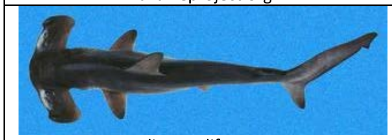
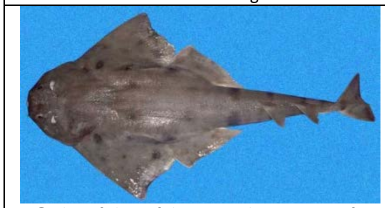
Photo Foto	**Scientific Name Nombre Sientífico**	**Common Name (English)**	**Nombre Común (Español)**
Mammals / Mamíferos			
	Order *Artiodactyla*	Even-toed ungulate	Artiodactyla
	Order *Carnivora*	Carnivores	Carnívoros
	Family *Camelidae*	Camelids	Camélidos
	Family *Canidae*	Canines	Cánidos
	Canis lupus familiaris	Domestic dog	Perro doméstico
	Canis sp.	Dog	Perro
 Bat-rodents.eu	*Cavia porcellus*	Guinea pig	Cuy
 wikimedia.org	*Ctenomys peruanus*	Tucu-tucu	Tucu-tucu
 s-media-cache-ak0.pinimg.com	*Lagidium peruanum*	Mountain viscacha	Viscacha
 divyamanthri.github.io	*Lama sp.*	Llama or guanaco	Llama y guanaco

 northrup.org	*Odocoileus virginianus*	White-tailed deer	Venado cola blanca
 Photo by Natalie Tapson	*Otaria sp.*	Sea lion	Lobo marino
 kuna.com.pe	*Vicugna vicugna*	Vicuña	Vicuña
Fish / Pez			
	Family *Ariidae*	Ariid catfish	Bagres marinos
	Family *Cachema*	Weakfishes	Corvina
	Family *Carangidae*	Jacks and pompanos	Jureles y pámpanos
	Family *Sciaenidae*	Drums or croakers	Corvinas y berrugatas
	Family *Serranidae*	Sea basses and groupers	Cabrillas y meros
	Family *Stromateidae*	Butterfish	Palometas
 © Shorefishes of the tropical eastern Pacific online information system	*Acanthistius sp.*	Grouper	Cherlo
 © Shorefishes of the tropical eastern Pacific online information system	*Anchoa sp.*	Anchovy	Anchoa

 © Shorefishes of the tropical eastern Pacific online information system	*Anisotremus scapularis*	Peruvian grunt	Sargo
 Photo by Honeycutt, K.	*Carcharhinus sp.*	Requiem shark	Tiburon
 Photo by Rubén Guzmán Pittman	*Cheilodactylus variegatus*	Peruvian morwong	Pintadilla
 SEFSC Pascagoula Laboratory; Collection of Brandi Noble, NOAA/NMFS/SEFSC	*Cynoscion sp.*	Weakfish	Cachema
 © Shorefishes of the tropical eastern Pacific online information system	*Ethmidium maculatum*	Pacific menhaden	Machuelo
 **© Shorefishes of the tropical eastern Pacific online information system**	*Galeichthys peruvianus*	Peruvian sea catfish	Bagre
 **© Shark Trust 2009**	*Galeorhinus sp.*	School shark	Tollo
 **Photo by ZipcodeZoo**	*Isurus oxyrinchus*	Shortfin mako shark	Tiburon diamante
 **© Shorefishes of the tropical eastern Pacific online information system**	*Labrisomus philippii*	Chalapo clinid	Trambollo boca amarilla

 **© Robertson Ross**	*Menticirrhus sp.*	Weakfish	Misho
 **Photo by frigolab**	*Merluccius gayi*	South Pacific hake	Merluza
 © Robertson Ross	*Merluccius sp.*	Hake	Merluza
 © Randall, J.E.	*Mugil cephalus*	Flathead grey mullet	Lisa
 arkive.org	*Mustelus sp.*	Smooth hound	Tollo
 zivapriroda.sk	*Myliobatis sp.*	Eagle rays	Raya
 © Shorefishes of the tropical eastern Pacific online information system.	*Paralabrax sp.*	Sea basses	Cabrilla
 © Shorefishes of the tropical eastern Pacific online information system.	*Paralichthys adpersus*	Fine flounder	Lenguado
 © Robertson & Van Tassell D. & J.	*Paralichthys sp.*	Southern flounders	Lenguado

 © Copyright Ross Robertson.	*Paralonchurus peruanus*	Peruvian banded croaker	Coco
 © Shorefishes of the tropical eastern Pacific online information system.	*Rhinobatos planiceps*	Pacific guitarfish	Guitarra
 © Shorefishes of the tropical eastern Pacific online information system.	*Sarda chiliensis chiliensis*	Pacific bonito	Bonito del Pacifico oriental
 discoverlife.org	*Sardinops sagax*	South American pilchard	Sardina
 © Shorefishes of the tropical eastern Pacific online information system.	*Scartichthys sp.*	Comb tooth blenny	Borracho
 © Shorefishes of the tropical eastern Pacific online information system.	*Sciaena deliciosa*	Lorna drum	Cholo
 © Shorefishes of the tropical eastern Pacific online information system.	*Sciaena fasciata*	Drum	Roncacho
 © Copyright Photographer/SFTEP	*Sciaena gilberti*	Black drum	Corvina
 © Copyright Photographer/SFTEP	*Sciaena sp.*	Lorna drum	Lorna
	Sciaena starski	Croaker	Robalo

 discoverlife.org	*Scorpaena sp.*	Scorpion fish	Pez diablo
 Photo by C. Haas	*Sicyases sanguineus*	Pejesapo	Pejesapo
 nakaweproject.org	*Sphyrna sp.*	Hammer head shark	Pez martillo
 discoverlife.org	*Sphyrna zygaena*	Smooth hammer head shark	Pez martillo
 © Shorefishes of the tropical eastern Pacific online information system.	*Squatina armata*	Angel shark	Angelote
 discoverlife.org	*Stellifer minor*	Minor star drum	Corvinilla chica
 © Shorefishes of the tropical eastern Pacific online information system.	*Trachurus symmetricus murphyi*	Inca scad	Jurel
Birds / Aves			
	Order *Charadriiformes*	Gulls, sandpipers, and plovers	Gaviotas y gaiteros de la arena
	Order *Passeriformes*	Finches, sparrows, and swallows	Pinzones y gorriones
	Family *Anatidae*	Ducks, geese, and swans	Patos, gansos y cisnes
	Family *Icteridae*	New World blackbirds	Mirlos

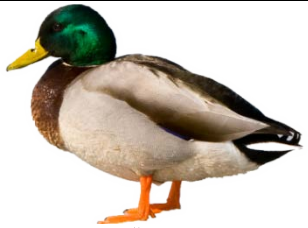
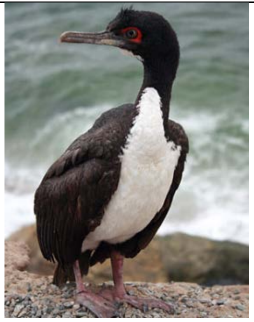
	Family *Laridae*	Gulls	Gaviotas
	Family *Phalacrocoracidae*	Cormorants	Cormoranes
	Family *Procellariidae*	Petrels and allies	Petreles
	Family *Rallidae*	Rails, crakes, gallinules, moorhens and coots	Gallineta
	Family *Sulidae*	Boobies	Piquero
 eternalbeauty.com	*Anas sp.*	Duck	Pato
 audubon.org	*Bubo virginianus*	Great horned owl	Búho cornudo
 © Cláudio Dias Timm	*Calidris sp.*	Stints	Playero
 birdwatchireland.ie	*Charadrius sp.*	Ringed plovers	Chorlito
 allaboutbirds.org	*Columbina sp.*	Ground dove	Tortolita

 Photo by JJ Harrison	*Diomedea sp.*	Great albatross	Albatros
 es.pinterest.com	*Falco sparverius peruvianus*	American kestrel	Cernícalo Americano
 rootsmagazine.nl	*Gallinula chloropus pauxila*	Common moorhen	Gallineta común
 kauaibirds.com	*Gallus gallus*	Red junglefowl	Gallo bankiva
 Photo by BaS91641	*Larus sp.*	Gull	Gaviota
 Allaboutbirds.org	*Pelicanus thagus*	Peruvian pelican	Pelícano Peruano

 Photo by Max Daigre-Valdés	*Pelicanus sp.*	Pelican	Pelícano
 Go2peru.com	*Phalacrocorax bougainvillii*	Guanay cormorant	Cormorán guanay
 hbw.com	*Podiceps sp.*	Grebes	Zambullidor
 Photo by Hernan Tolosa	*Rallus sanguinolentus*	Plumbeous rail	Rascón plomizo
 penguins-world.com	*Spheniscus humboldti*	Humboldt penguin	Pingüino de Humboldt

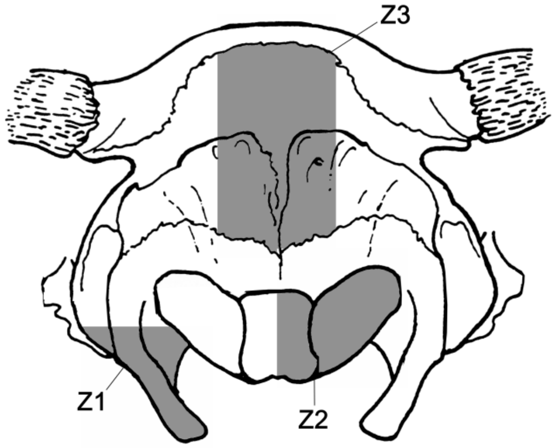
 Hbw.com	*Sturnella bellicosa*	Peruvian red-breasted meadow lark	Pecho colorado Peruano
 Photo by Andreas Trepte	*Sula sp.*	Booby	Piquero
 Hbw.com	*Sula variegata*	Peruvian booby	Piquero Peruano
 focusingonwildlife.com	*Zenaida asiatica meloda*	Pacific dove	Tórtola melódica
 Photo by Arthur Chapman	*Zenaida auriculata*	Eared dove	Torcaza
 naturespicsonline.com	*Zenaidura sp.*	Mourning dove	Paloma huilota

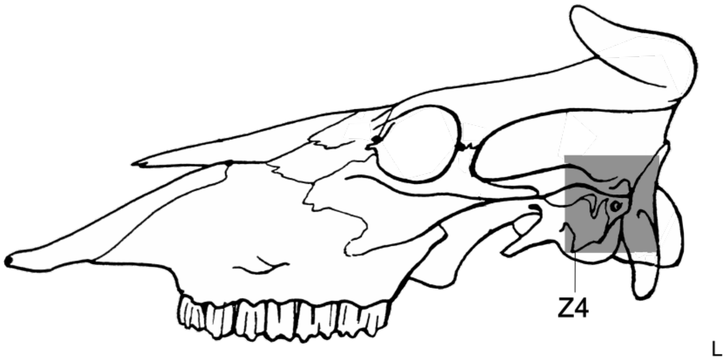
<table>
<tr><th colspan="4">Reptiles</th></tr>
<tr><td>
Buzzle.com</td><td><i>Dicrodon sp.</i></td><td>Desert tegus</td><td>Cañan</td></tr>
<tr><td>
rtpi.org</td><td><i>Iguana iguana</i></td><td>Green iguana</td><td>Lacerta</td></tr>
<tr><th colspan="4">Amphibians / Anfibios</th></tr>
<tr><td>
Photo by Stanislav Krejčík</td><td><i>Bufo sp.</i></td><td>Toad</td><td>Sapo</td></tr>
<tr><th colspan="4">Crustaceans / Crustáceos</th></tr>
<tr><td></td><td>Family <i>Portunidae</i></td><td></td><td></td></tr>
<tr><td>
fihu-diagnostico.org.pe</td><td><i>Hypolobocera sp.</i></td><td>Fresh water crab</td><td>Cangrejo de rio</td></tr>
<tr><td>
boldsystems.org</td><td><i>Platyxanthus orbignyi</i></td><td>Purple stone crab</td><td>Cangrejo violaceo</td></tr>
</table>

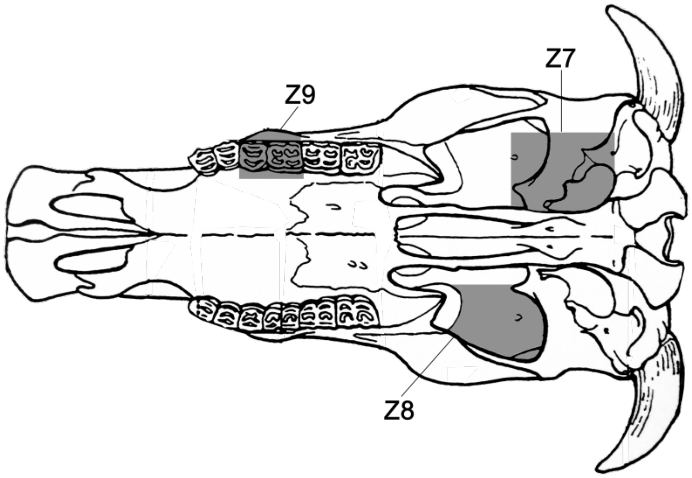
Appendix B: Bone Recording Zones and Measurements by Element

Zones for the Cranium:

Images edited from von den Driesch 1976.

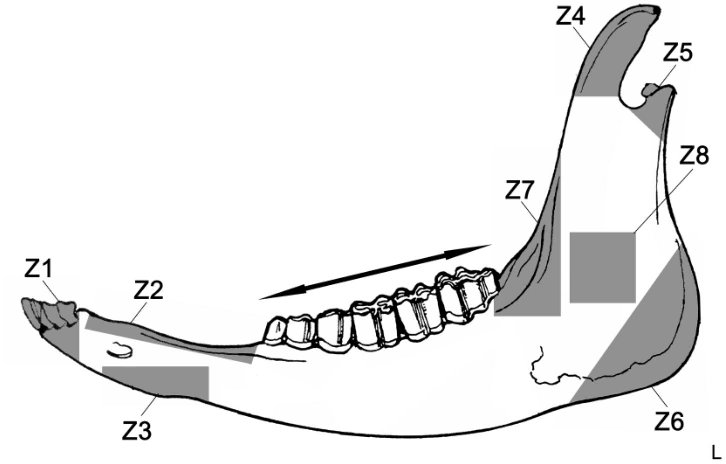






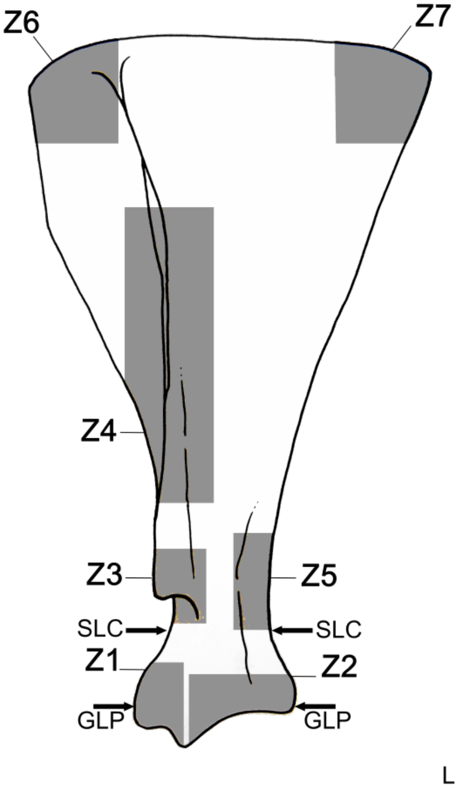
Zones and Measurement for the Mandible:

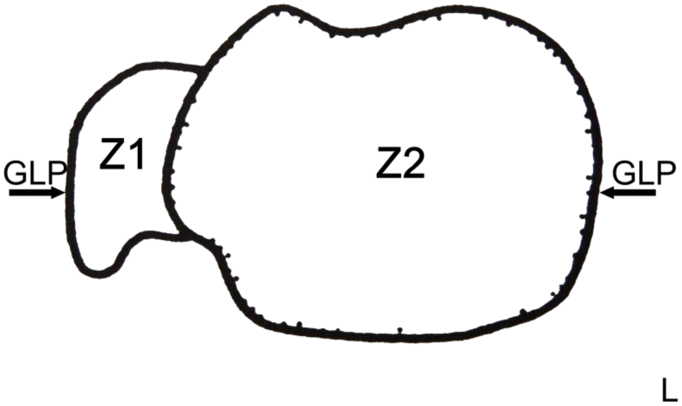
Image edited from von den Driesch 1976.



Zones and Measurements for the Scapula:

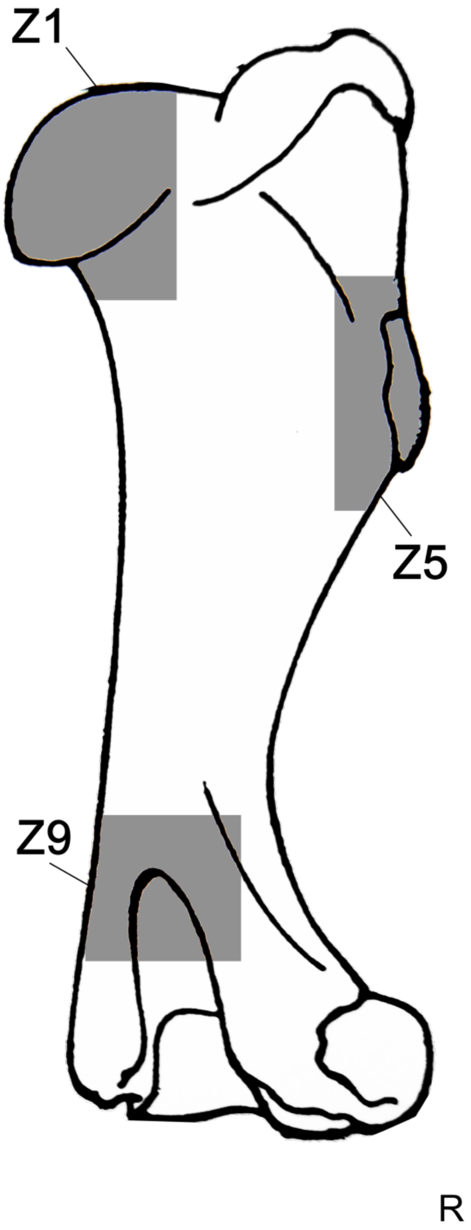
Image edited from Hillson 1996.

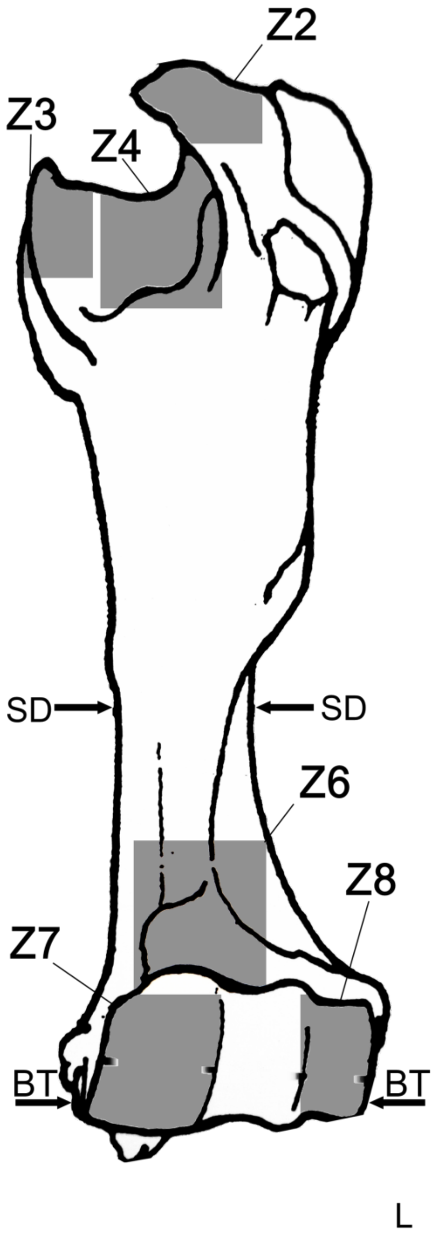




Zones and Measurements for the Humerus:

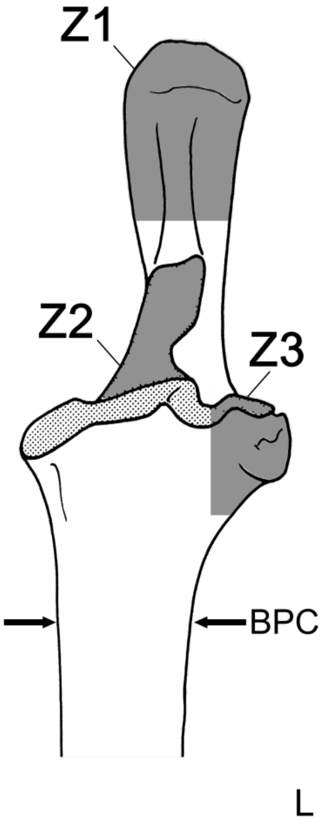
Image edited from von den Driesch 1976.

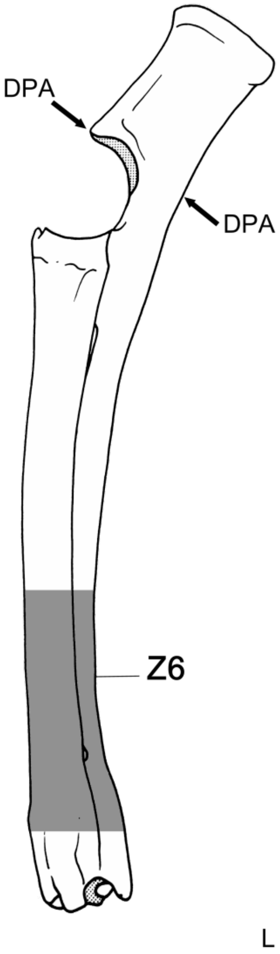


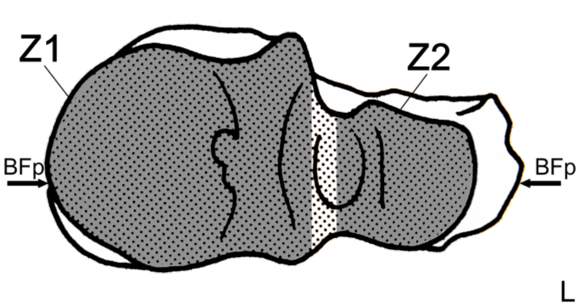


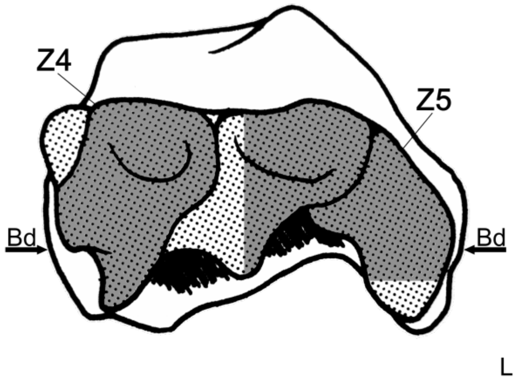
Zones and Measurements for the Radius-Ulna:

Image edited from Hillson 1996.



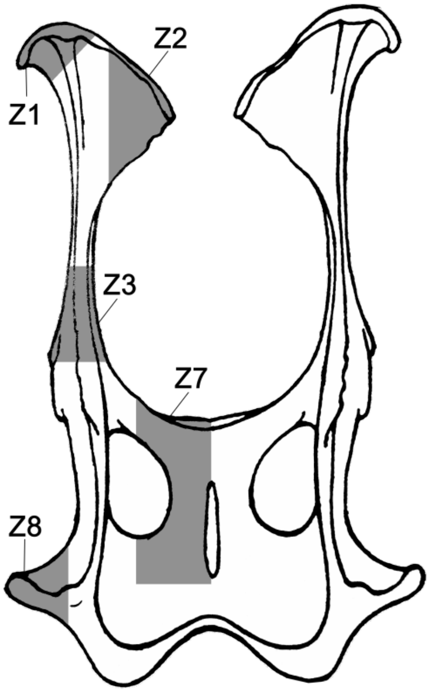


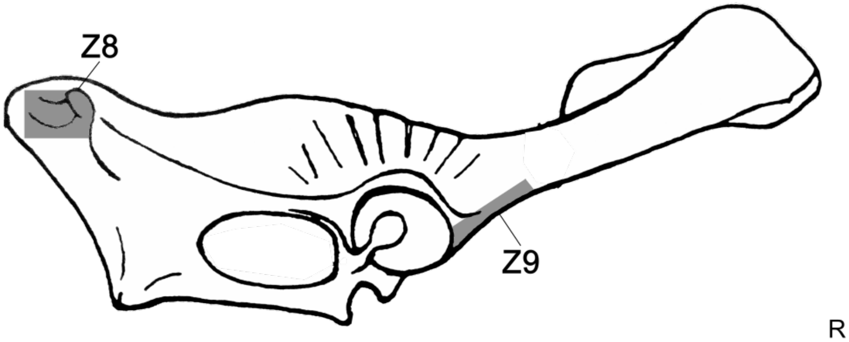


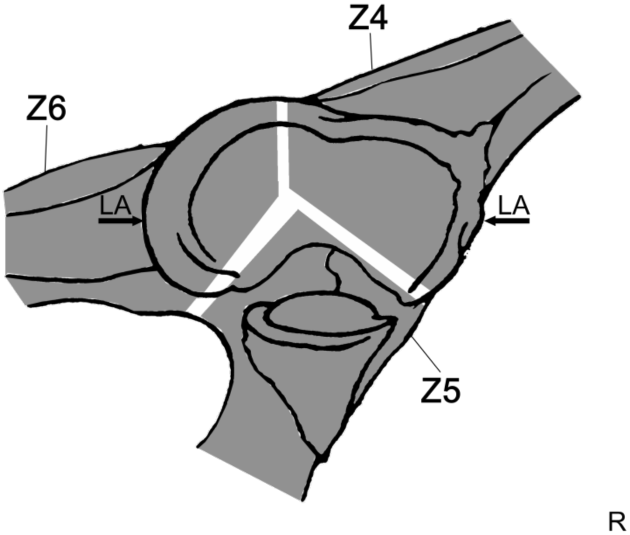


Zones and Measurements for the Pelvis:

Image edited from von den Driesch 1976.

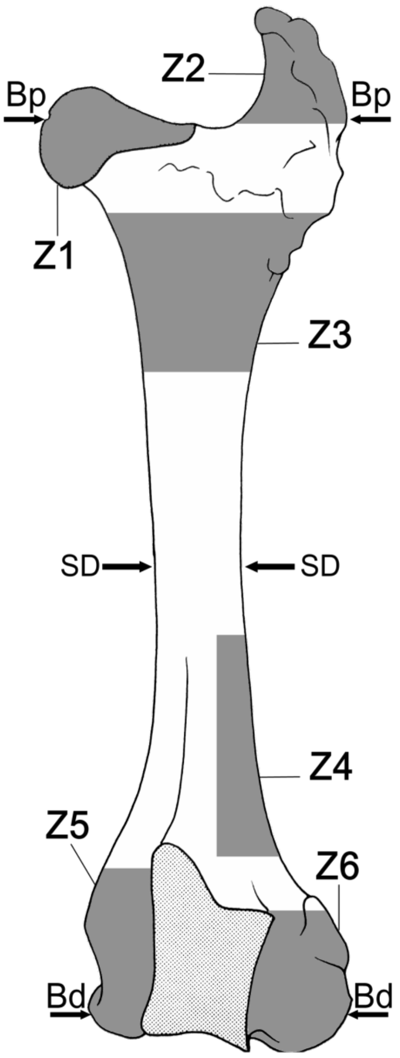


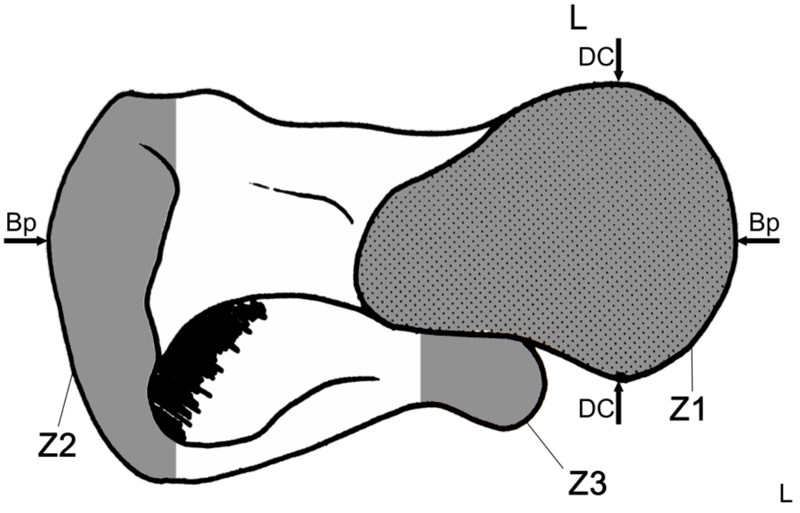




Zones and Measurements for the Femur:

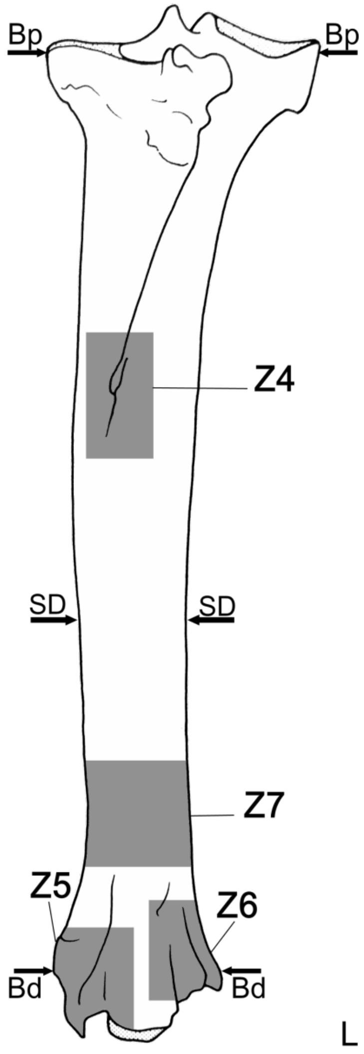
Image edited from Hillson 1996.

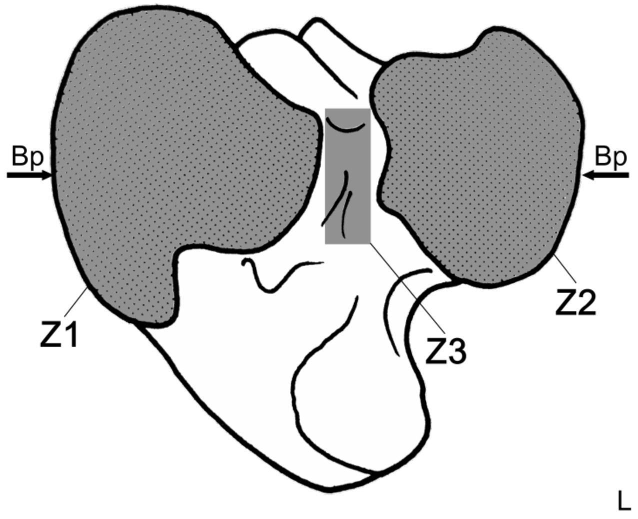




Zones and Measurements for the Tibia:

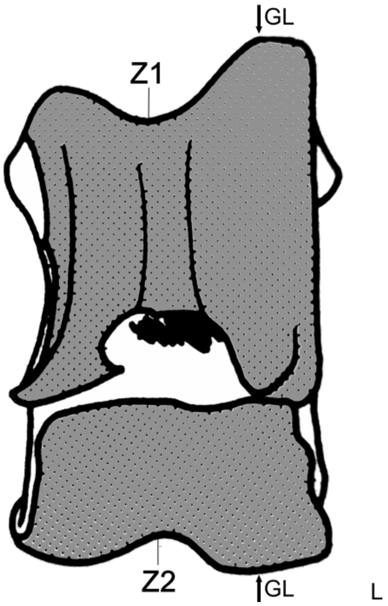
Image edited from Hillson 1996.





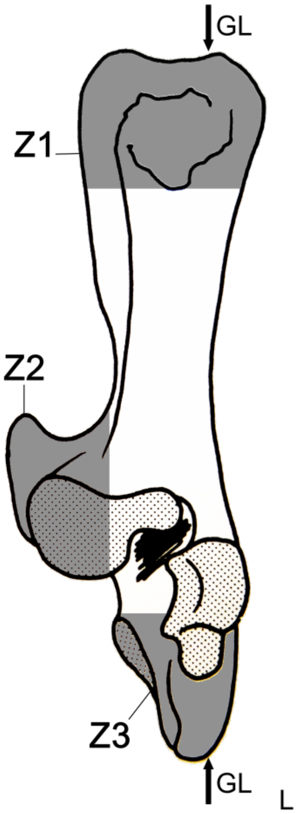
Zones and Measurements for the Astragalus:

Image edited from Hillson 1996.



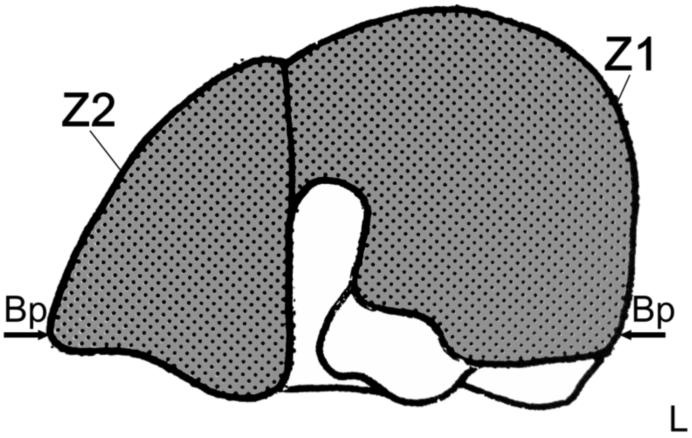
Zones and Measurements for the Calcaneus:

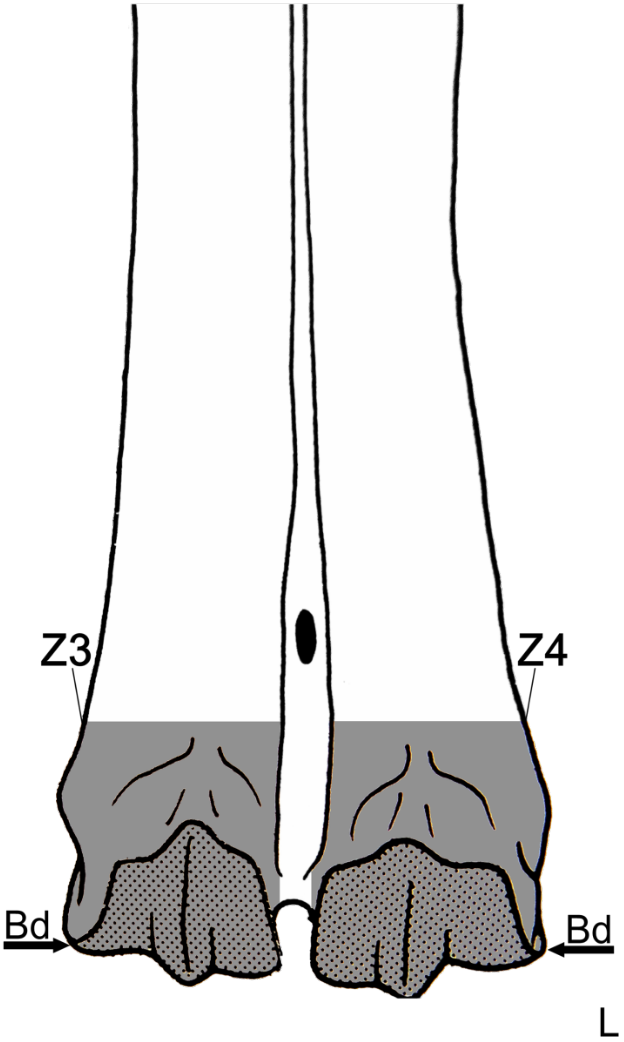
Image edited from Hillson 1996.



Zones and Measurements for the Metacarpus/Metatarsus:

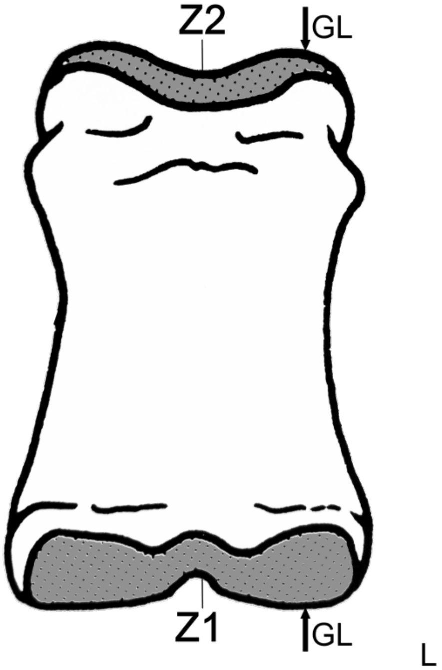
Image edited from Hillson 1996.





Zones and Measurements for Phalanges 1 and 2:

Image edited from Hillson 1996.



Zones and Measurements for Phalanx 3:

Image edited from Hillson 1996.

Appendix C: NISP for Molluscs from Huaca Gallinazo

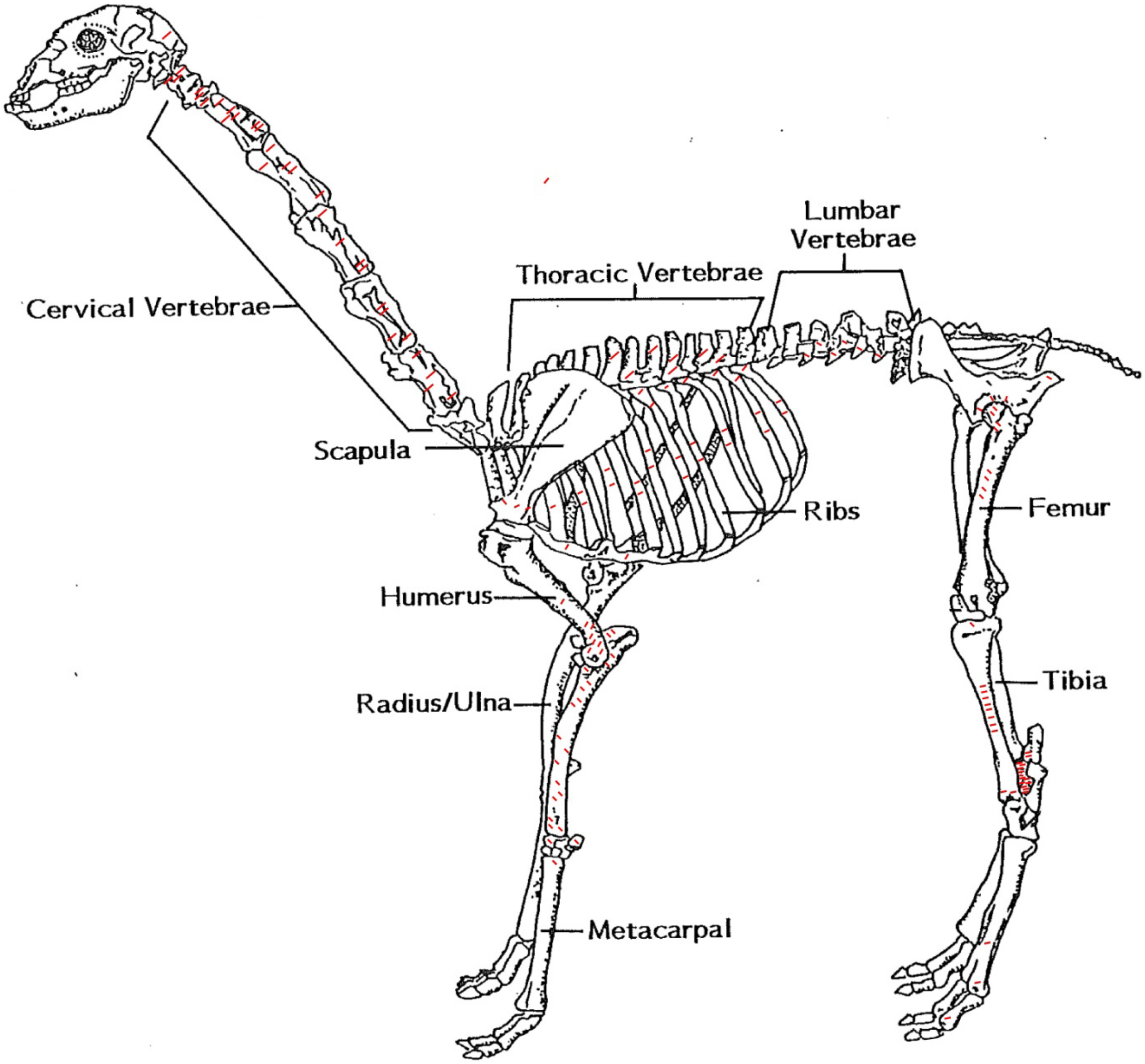
Analyzed by Venet-Rogers (2013).

Taxa	**NISP from the Southern Platform (N=67)**	**NISP from Architectural Compound 2 (N=84)**
***Mollusc*, indeterminate**	15	29
Donax obesulus	10	21
Enoplochiton niger	1	0
Fissurella maxima	2	0
Fissurella sp.	1	0
***Fissurellidae,* indeterminate**	3	0
Fisurella latimarginata	1	0
Fisurella limbata	2	2
Mesodesma donacum	0	3
Perumytilis purpuratus	1	0
Polinices uber	0	1
Prisogaster niger	0	1
Scutalus sp.	9	0
***Semelidae*, indeterminate**	1	0
Semimytilus algosus	15	8
Sinum cymba	0	3
Tegula atra	0	2
Tetrapigus niger	0	1
Thais chocolata	4	3
Thais haemastoma	1	8
Thais sp.	1	0
Transennella pannosa	0	1
Xanthochorus buxea	0	1

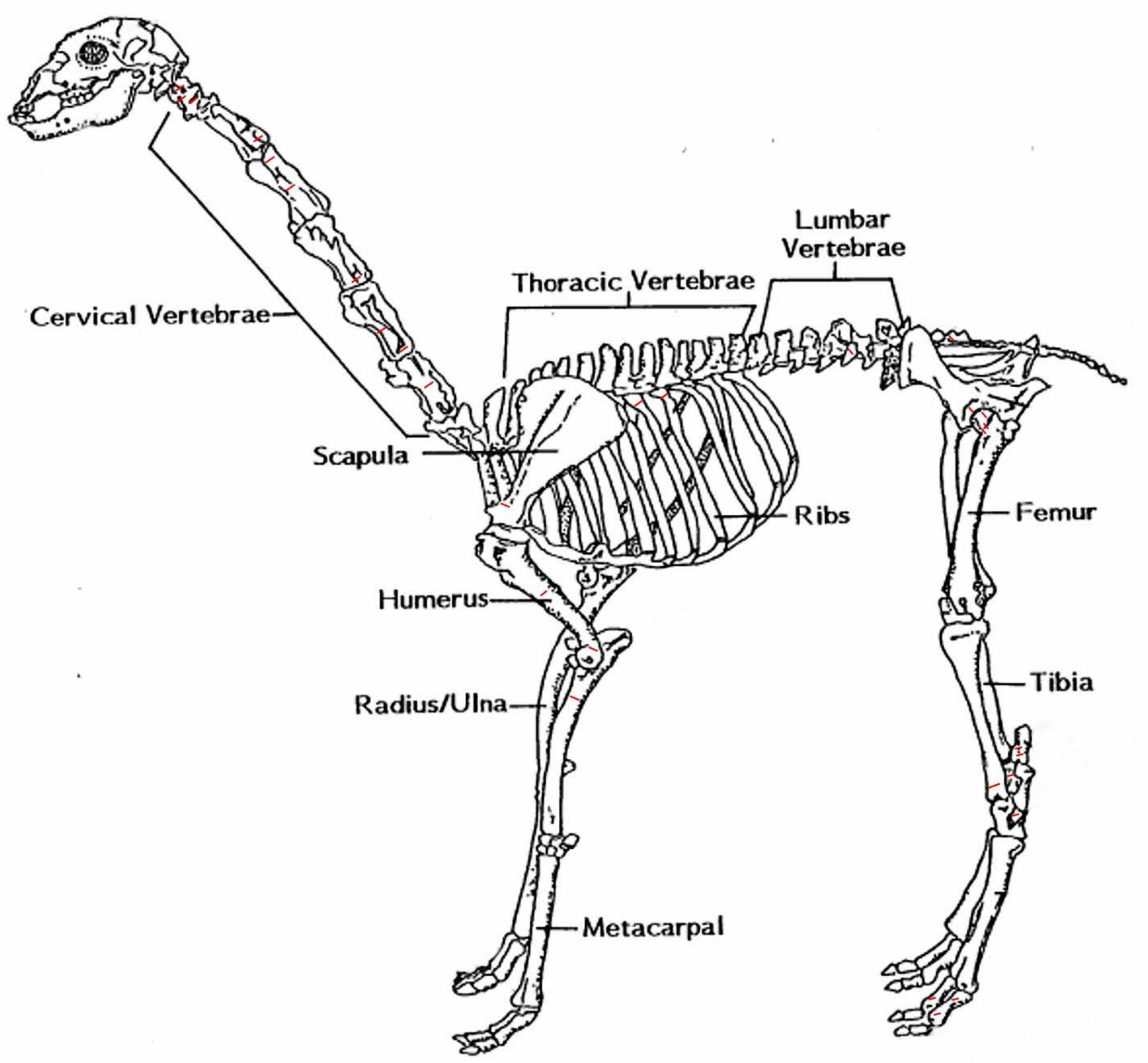
Appendix D: Diagrams of Cut Marks on Camelid Elements from Huaca Santa Clara

Image edited from Pacheco Torres, Altimirano Enciso, and Guerra Porras 1979.

Visual Representation of the Combined Number of Cut Marks on Camelid Bones from Administrative Sectors at Huaca Santa Clara:



Visual Representation of the Combined Number of Cut Marks on Camelid Bones from Administrative Sectors at Huaca Santa Clara:



Appendix E: Charts Documenting Cut Marks on Camelid Elements from Sectors at Huaca Santa Clara and Huaca Gallinazo

Huaca Santa Clara:

Element	Location of Cut Marks	% with Cut Marks from Administrative Sectors	% without Cut Marks in Administrative Sectors	N from Administrative Sectors
Cranium	Left occipital	3.6%	96.4%	28
Atlas	Anterior end	15.0%	85.0%	20
Axis	Anterior end	15.4%	76.9%	13
	Posterior end	7.7%		
Cervical	Anterior end	2.9%	83.5%	139
	Centrum	2.9%		
	Posterior end	5.0%		
	Not recorded	5.8%		
Thoracic	Neural spine	1.2%	95.8%	166
	Not recorded	3.0%		
Rib	Head	1.0%	95.0%	524
	Neck	0.4%		
	Mid-shaft	3.6%		
Sternum	Not recorded	10.0%	90.0%	20
Innominate	Ischium	1.9%	92.3%	52
	Acetabulum	5.8%		
Lumbar	Transverse process	4.8%	92.8%	83
	Not recorded	2.4%		
Scapula	Neck	3.7%	96.3%	82
Humerus	Mid-shaft	1.2%	90.6%	85
	Distal end	8.2%		
Radius-ulna	Proximal end	4.8%	82.7%	104
	Distal end	2.9%		
	Not recorded	9.6%		
Metacarpal	Proximal end	1.6%	98.4%	62
Carpal	Not recorded	3.9%	96.1%	51
Femur	Proximal end	3.6%	92.9%	112
	Mid-shaft	3.6%		
Tibia	Proximal end	1.1%	87.6%	89
	Mid-shaft	9.0%		
	Distal end	2.2%		
Metatarsal	Distal end	2.2%	95.7%	46
	Not recorded	2.2%		
Astragalus	Across center width	35.3%	64.7%	34
Calcaneus	Not recorded	3.6%	96.4%	56

Phalanx 1	Not recorded	2.3%	97.7%	44

Element	Location of Cut Marks	% with Cut Marks from Residential Sectors	% without Cut Marks from Residential Sectors	N from Residential Sectors
Atlas	Anterior end	20.0%	40.0%	5
	Centrum	20.0%		
	Posterior end	20.0%		
Axis	Posterior end	16.7%	83.3%	6
Cervical	Anterior end	7.7%	53.8%	56
	Centrum	7.7%		
	Posterior end	15.4%		
	Not recorded	15.4%		
Rib	Neck	5.1%	94.9%	99
Innominate	Acetabulum	5.9%	94.1%	17
Lumbar	Not recorded	4.2%	95.8%	24
Vertebra	Neural spine	20.0%	60.0%	5
	Centrum	20.0%		
Sacrum	Not recorded	33.3%	66.7%	3
Scapula	Neck	8.3%	91.7%	12
Humerus	Mid-shaft	4.0%	92.0%	25
	Distal end	4.0%		
Radius-ulna	Not recorded	4.2%	95.8%	24
Femur	Proximal end	8.3%	91.7%	36
Tibia	Distal end	3.6%	96.4%	28
Astragalus	Across center width-wise	7.7%	92.3%	13
Calcaneus	Distal end	5.6%	88.9%	18
	Not recorded	5.6%		
Tarsal	Not recorded	7.7%	8.3%	13
Phalanx 1	Not recorded	18.8%	81.3%	16

Huaca Gallinazo:

Element	Location of Cut Marks	% with Cut Marks from the Southern Platform	% without Cut Marks from the Southern Platform	N from the Southern Platform
Cranium	Not recorded	2.3%	97.7%	44
Mandible	Not recorded	5.0%	95.0%	20
Atlas	Not recorded	50.0%	50.0%	4
Cervical	Body	1.0%	94.0%	100
	Not recorded	5.0%		
Thoracic	Not recorded	2.7%	97.3%	37
Rib	Not recorded	9.5%	90.5%	168
Innominate	Not recorded	7.4%	92.6%	27
Lumbar	Vertebral facet	3.0%	93.9%	33
	Not recorded	3.0%		
Caudal	Not recorded	12.5%	87.5%	8
Scapula	Not recorded	5.9%	94.1%	34
Humerus	Not recorded	14.3%	85.7%	28
Radius-ulna	Distal end	2.5%	80.0%	40
	Not recorded	17.5%		
Metacarpal	Not recorded	13.3%	86.7%	15
Carpal	Not recorded	11.1%	88.9%	18
Femur	Not recorded	21.4%	78.6%	28
Patella	Not recorded	14.3%	85.7%	14
Tibia	Not recorded	21.6%	78.4%	51
Metatarsal	Not recorded	5.9%	94.1%	17
Astragalus	Not recorded	6.3%	93.8%	16
Tarsal	Not recorded	5.9%	94.1%	17
Phalanx 1	Distal end	2.7%	97.3%	37

Element	Location of Cut Marks	% with Cut Marks from Architectural Compound 2	% without Cut Marks from Architectural Compound 2	N from Architectural Compound 2
Rib	Mid-shaft	8.8%	88.2%	34
	Not recorded	2.9%		
Innominate	Not recorded	12.5%	87.5%	8
Scapula	Not recorded	9.1%	90.9%	11
Humerus	Not recorded	5.9%	94.1%	17
Femur	Proximal end	5.6%	77.8%	18
	Not recorded	11.1%		
Tibia	Mid-shaft	7.1%	85.7%	14
	Not recorded	7.1%		
Astragalus	Across center width-wise	20.0%	80.0%	5
Phalanx 1	Distal end	50.0%	50.0%	2

Appendix F: Charts Documenting Butchery and Secondary Processing on Camelid Elements from Sectors at Huaca Santa Clara

Element	Type of Butchery or Secondary Processing	% with Butchery or Secondary Processing from Administrative Sectors	% without Butchery or Secondary Processing from Administrative Sectors	N from Administrative Sectors
Thoracic	Cut through centrum length-wise	0.6%	98.2%	166
	Not recorded	1.2%		
Rib	Cut through mid-shaft	13.4%	86.6%	524
Innominate	Chop marks around acetabulum	1.9%	98.1%	52
Humerus	Comminuted fracture	4.7%	37.6%	85
	Oblique fracture	27.1%		
	Spiral fracture	10.6%		
	Transverse fracture	7.1%		
	Not recorded	12.9%		
Radius-ulna	Comminuted fracture	8.7%	39.4%	104
	Oblique fracture	20.2%		
	Spiral fracture	9.6%		
	Transverse fracture	13.5%		
	Not recorded	8.7%		
Metacarpal	Comminuted fracture	9.7%	50.0%	62
	Oblique fracture	3.2%		
	Spiral fracture	1.6%		
	Transverse fracture	9.7%		
	Not recorded	25.8%		
Femur	Comminuted fracture	11.6%	45.5%	112
	Oblique fracture	17.0%		
	Spiral fracture	9.8%		
	Transverse fracture	8.0%		
	Not recorded	8.0%		
Tibia	Comminuted fracture	14.6%	38.2%	89
	Oblique fracture	16.9%		
	Spiral fracture	6.7%		
	Transverse fracture	10.1%		
	Not recorded	13.5%		
Metatarsal	Comminuted fracture	4.3%	54.3%	46
	Oblique fracture	10.9%		
	Transverse fracture	4.3%		
	Not recorded	26.1%		
Metapodial	Transverse fracture	8.7%	91.3%	23

Element	Type of Butchery or Secondary Processing	% with Butchery or Secondary Processing from Residential Sectors	% without Butchery or Secondary Processing from Residential Sectors	N from Residential Sectors
Rib	Cut through mid-shaft	17.2%	82.8%	99
Humerus	Comminuted fracture	4.0%	76.0%	25
	Oblique fracture	8.0%		
	Spiral fracture	8.0%		
	Not recorded	4.0%		
Radius-ulna	Comminuted fracture	12.5%	58.3%	24
	Oblique fracture	20.8%		
	Transverse fracture	8.3%		
Metacarpal	Comminuted fracture	8.3%	58.3%	12
	Oblique fracture	25.0%		
	Transverse fracture	8.3%		
Femur	Comminuted fracture	5.6%	58.3%	36
	Oblique fracture	25.0%		
	Spiral fracture	8.3%		
	Not recorded	2.8%		
Tibia	Comminuted fracture	14.3%	64.3%	28
	Oblique fracture	10.7%		
	Transverse fracture	3.6%		
	Not recorded	7.1%		
Metatarsal	Comminuted fracture	10.0%	40.0%	10
	Oblique fracture	20.0%		
	Transverse fracture	10.0%		
	Not recorded	20.0%		

Curriculum Vitae

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