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The Residential Spaces, Social Organization and Dynamics of Isla Cerritos, an Ancient Maya Port Community

A dissertation presented

by

Dylan J. Clark

to

The Department of Anthropology

in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

in the subject of

Anthropology

Harvard University

Cambridge, Massachusetts

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an Ancient Maya Port Community

Abstract

In this study I explore the social archaeology of a Maya coastal port community through household archaeology at the site of Isla Cerritos, a small center for maritime trade on the north coast of Yucatán, Mexico from c.300 BCE to 1250 CE. Known as the principal port for the regional polity of Chichén Itzá during the Terminal Classic Period (800-1100 CE), the island is located at the crossroads of a rich marine resource zone, a major salt production area, and the confluence of sea and overland trade routes that served greater Mesoamerica. While the economic importance of trading enclaves such as Isla Cerritos is often recognized, the domestic contexts of these kinds of settlements remain understudied, so we know less about who actually lived in these communities, how they were organized socially, and how the maritime branch of Maya culture related to and contributed to Mesoamerican civilization.

This goal of this thesis is to combine the recent archaeological excavation of three residential structures and a shared patio space at Isla Cerritos with multiple lines of evidence from both macro-level and micro-level scales of analysis to examine the material expressions of collective identity and social organization at the port during a particularly dynamic historical period in the history of the region from the late 9th through 11th centuries CE (Late to Terminal Classic transition). The results of this analysis provide new insights into the occupational history of the site, the domestic settlement pattern and activities of the port community, labor and

resource investment in port construction and maintenance, the sociocultural and political relationship between the coast and the regional center of Chichén Itzá, and the complexity of collective identity and social inequalities even among the Maya "non-elite." Through this study I also argue that port residents took advantage of the liminality and fluid movement of life along the "edge" of the Maya world for increased social mobility in ways inaccessible to people in inland regions. This motivated coastal communities to actively forge and alter social and political alliances and networks with interior centers, like Chichén Itzá, over the course of the Classic period, obviating the need for urban polities to rapidly colonize the coast.

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The coast was clearly at the edge of the Maya World, and many coastal sites served as outposts of their geographic and spiritual frontiers, as well as gateways to other domains.

-Anthony P. Andrews (1990:162) *The Role of Trading Ports in Maya Civilization*

In ports, the arithmetic and the rules did not apply.

-Greg Dening (1980:159) *Islands and Beaches*

CHAPTER 1:

ISLA CERRITOS AND THE COASTAL MAYA

1.1. Introduction

As a soldier on Francisco Hernández de Cordova's ill-fated voyage from Cuba in 1517, Bernal Díaz del Castillo was one of the first Europeans to sight the northern coast of the Yucatan Peninsula:

> This land had never been discovered before, and no report of it had reached us. From the ships we could see a large town standing back about two leagues from the coast, and as we had never seen such a large town in the Island of Cuba nor in Hispaniola, we named it the Great Cairo (Díaz del Castillo, as cited in Carrasco 2008:3).

The "Gran Cairo" Díaz saw in the distance, the residents of which he would soon come to meet, was most likely the thriving coastal port of Ecab near the northeastern tip of the Peninsula, which would later be re-named Cabo Catoche by the Spanish. In ancient Mesoamerica, hundreds of coastal settlements show evidence of having once been ports and transshipment points along sea trading routes that extended from the present-day state of Veracruz around the Yucatan Peninsula to lower Central America (Ruz Lhuillier 1969; Sabloff and Rathje 1975; Sabloff 1977; Berdan 1978; Eaton 1978; Miller 1982; Andrews 1983, 1990, 1998, 2002, 2008; Andrews and Vail 1990; McKillop and Healy 1989; Vargas Pacheco 1997; Gasco and Berdan 2003; Inurreta Díaz 2004; McKillop 2005b). The port of Ecab was one such node in the Maya lowlands, helping to link people, products, and raw materials from Central Mexico to Maya towns and cities along the Gulf and Caribbean coasts and further inland at the time of Spanish contact (Andrews 2010:372). Whether inland or coastal, ports straddle frontiers—political, cultural, social, linguistic, and economic. They are intentionally located on peripheries, but become centers of mobility and exchange for goods, people, and ideas (Miller 1982; Gasco and Berdan

2003; Heyman 2004) (Figures 1.1 and 1.2). As with nearly all aspects of Mesoamerican history, we have the most information about the Late Postclassic ports that the Spanish encountered in the 16th century, but there can be no doubt that port communities, along with the process of long distance exchange itself, form part of a long tradition in Mesoamerica, extending deep in time to the rise of earliest complex societies of the region.

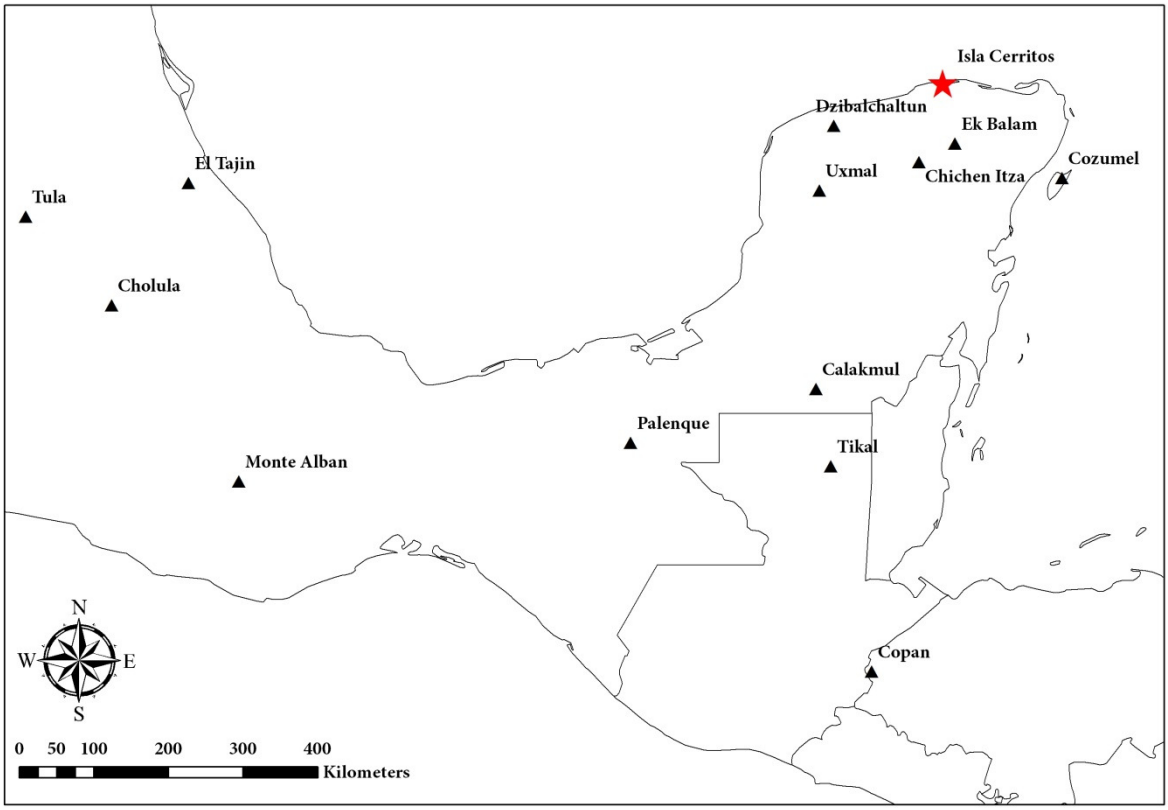


Figure 1.1: Map of Mesoamerica with principal sites of the Epiclassic period.

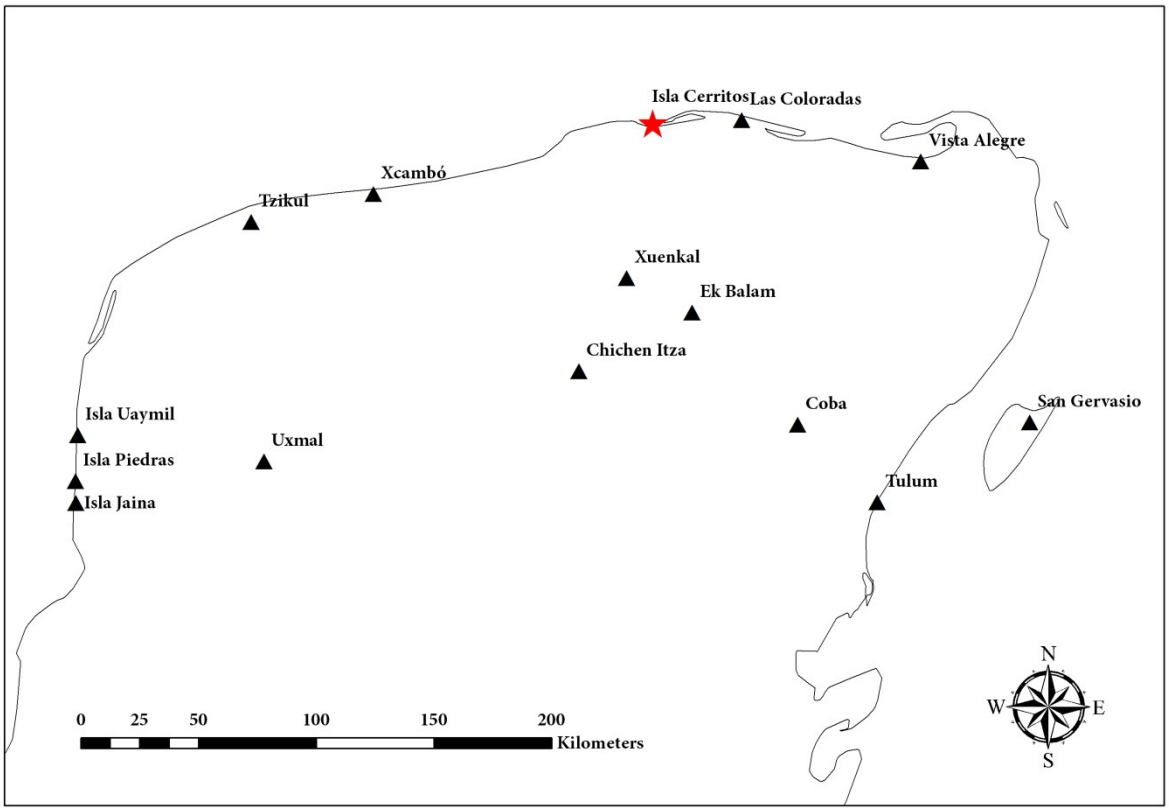


Figure 1.2: Map of the Northern Maya lowlands with Isla Cerritos and contemporaneous sites.

While human exploitation of coastal areas in the northern Maya lowlands extends back to the Late Pleistocene prior to 12,000 BP (Chatters et al. 2014), archaeological surveys of the north coast of Yucatán, Mexico have documented formal settlement along the marine littoral from the Middle Formative period (c. 400 BCE) with a significant increase in the size, complexity, and number of sites after around 600 CE during the Late Classic, Terminal Classic, and Postclassic periods (Andrews IV 1965a:290; Ruz Lhuillier 1969; Sabloff and Rathje 1975; Eaton 1978; Andrews 1984, 1988, 1990, 1998; Andrews and Vail 1990; McKillop 1989, 1995, 1996, 2002, 2005; Robles Castellanos and Andrews 2003) (Appendix A, Table A.1). In previous archaeological studies of ports, especially in Mesoamerica, there has been an overwhelming

emphasis placed on restricted survey and syntheses; that is, what exotic or non-local artifact patterns and the location of sites indicate about the structure and function of ancient political economies, long distance trade and exchange systems, and the spread of mercantile capitalism in colonial contexts (Blanton and Feinman 1984; Chapman 1957; Kepecs 2007; McKillop 2005a; Polanyi 1963; Sabloff and Rathje 1975; Wallerstein 1974, 1979). There is an apparent disconnect between the theoretical recognition of the centrality of coastal environments, maritime societies, and sea-faring in shaping human history and complex society worldwide and the lack of detailed archaeological investigation aimed at a more holistic examination of the coastal (sub)cultures themselves--how they were organized, developed, and changed over time--by way of the material remains of the settlements they built and occupied (cf. Broodbank 2014).

While ports and trading centers are by definition the settings for varied forms of exchange, they are also *communities* that are socially constituted, organized, and structured by social interaction. As the Spanish nickname "Gran Cairo" implies, Maya ports like the one Hernández de Córdova's crew saw were complex settlements with permanent populations, multiple architectural groups, and functioning sociocultural and political institutions. Yet, as of 1990 when Anthony Andrews (1990:160) published his seminal synthesis of data on Maya coastal ports, "less than 0.5% of all known coastal sites [had] been subjected to extensive excavation." With few exceptions, reliance on survey, surface collections, and limited test excavations for the interpretation of Maya coastal trade and seafarers has continued to be the trend until very recently. Island and coastal populations are still often incorrectly interpreted as circumscribed and insular, dependent on interactions with mainland institutions and larger, nucleated populations (Evans 1973; Fitzpatrick et al. 2015:14; Hau'ofa 1993; Renfrew 2004), or as anthropological case studies that demonstrate the passive, systemic reaction of human groups

to ecological pressure or evolving inland politics. In some archaeological interpretations of ports-of-trade, the people are wholly absent, and the trade appears silent. The harbors and emporia could be replaced by icons for products, raw materials, or sea-faring technology that follow arrows moving in and out of the model. Even when the focus of the study is the economic system, by not engaging in the study of the larger social questions of the port settlement, its architecture, domestic contexts, rituals, production, port facilities, social organization, etc., important evidence for the institutions and mechanisms that structure the economy is obscured, or the very issues that social scientists are seeking to elucidate in studies of political economy (Sabloff and Freidel 1975:384).

Fortunately, scholars are now beginning to recognize the potential that more nuanced studies of island and coastal sites, among them port communities, have to contribute to understanding marine adaptations, lifeways, symbolism, and human social, political, economic, and cultural interactions (Fitzpatrick et al. 2015). Recent studies by coastal archaeologists working in western European contexts, such as Cyprian Broodbank (2000, 2014) and Christopher Loveluck (2007, 2013), examine ancient ports not only in terms of their roles within wider maritime trade networks, but also as complex settlements that provide insights into coastal lifestyles, social organization, and the role of these communities as catalysts for social change. I want to situate this study as part of this increasing trend, also beginning in Mesoamerican studies, toward peopling ports through archaeological investigations that explore the complex interplay between the economic role of these centers of exchange and the residential communities and societies that develop in and around them (Andrews 2010; Benavides 2012; Cobos et al. 2004; Cobos et al. 2006, 2010; Inurreta Díaz 2004; Johnson 2014; Marquez Morfín et al. 2006; Morehart 2012; Patel 2009; Sierra Sosa et al. 2014).

The subject of this dissertation is the Maya port settlement of Isla Cerritos, located on a small island just 500 meters off the northern Gulf coast of Yucatán in Mexico. Combining new archaeological data from recent excavations I conducted in domestic structures on the island in 2007 and 2010 with a synthesis of relevant data from previous field seasons in 2006, 1985, and 1984, I discuss the port settlement and its wider historical and socioeconomic context, social organization and mobility, coastal lifestyles, and inland-coastal relationships between 600 and 1250 CE. Particular emphasis is placed on the period 800-1100 CE when the population and human investment in this port was at its height.

Ports like Isla Cerritos are fascinating places for social archaeology because of their specialized nature, the variety of different activities associated with the communities that grow up around them, and the people that visit them. Economic activities are intertwined with social practice through the multifaceted ties linking kinship, economic wealth, and social power (McAnany 1989:69). Understanding ancient Maya social organization, whether this involves identifying social groups and stratification, kinship and descent, residence patterns, sociocultural identity or daily practice is a challenging undertaking due to the variation in and dynamic nature of Maya social life (Sharer 1989:93). The information we have comes from a variety of sources, including ethnohistorical sources from the early colonial period, ethnographic analogy, prehispanic texts and images, and archaeological evidence, and it is important to use multiple lines of evidence as there are significant problems of bias with the direct historical approach (1989:95).

We know, for example, that Maya society was ranked with elites and non-elites, but from beyond the royal lineages and high-ranking priests and other elites, it becomes increasingly difficult to identify social groups, especially among non-elites. From the Classic period

inscriptions and imagery we know of elite titles, royal courts, the use of patron deities for some kin groups, and patrilineal descent systems operating within these groups, but these sources provide no information about non-elites or whether social ranking was always involuntary based on kinship or voluntary based on achieved status or occupation (1989:94). From the ethnohistorical record, we learn more details about social organization and even non-elite groups, but as Sharer (1989:95) points out, by the mid-16th century much of the pre-Columbian social system had been altered or dismantled significantly, and even late prehispanic sources are often far removed—hundreds of years—from the era we are most interested in. Thus, we must tread carefully, combining whenever possible archaeological evidence, preferably from broad horizontal excavations that generate a significant amount of data, with applicable information from other sources.

In terms of archaeological evidence, domestic contexts, including artifact assemblages and architecture, and burials (often these are related features in the Maya region) have been demonstrated to be valuable sources of information about social organization and daily life, as well as change over time (Carmean 1990; Fash 1994; Haviland 1988; Hendon 1987, 1992; Hutson 2005; Joyce and Gillespie 2000; McAnany 1989, 1995; Nalda y Balanzario 1997; Ashmore and Wilk 1988). This is, in part, because Maya household compounds are dynamic centers for a variety of economic and social activities—like small communities—that grow and develop over time with specialized producers becoming attached to the house through fictive kinship ties, as in the heterogeneous household McAnany (1989) describes. Since typically Maya coastal ports are smaller sites (Rank III-V), a greater percentage of household structures, groups (and the archaeological record as a whole) can be excavated in a shorter amount of time to provide the data sample. Despite their tremendous research value for studying social

organization and collective identity, domestic contexts remain severely understudied at coastal sites.

This study seeks to remedy this imbalance by focusing on how households were organized in Maya coastal ports, what social groups comprised these compounds, and what was the significance of living in a coastal port setting compared to a contemporaneous inland residence. In the case of port communities, we are dealing with a setting designed to facilitate and promote the local and long distance exchange and the movement of raw materials and exotic, elite sumptuary materials of "prime intrinsic value" (McAnany 1989:74, 2008), the former a kind of economic currency that fuels production and facilitates the accumulation of wealth, the latter a material expression of social status imbued with sacred power. There is a tendency in Maya studies to view the non-elite masses as mostly rural farmers positioned at an increasing distance from urban centers, and center-periphery thinking is a fundamental framework for theorizing the social and political relationships within and between polities. This emphasis is not entirely inaccurate, but it does provide an incomplete picture of the complexity of Maya society. The Mesoamerican coastline may be considered "peripheral" from the position of some inland administrative centers of city-states or agricultural production zones, but the Maya world is peninsular, and therefore the coast is central to the circuits of the seas, marine production and transportation that encompass this region on four sides. Marine resources included subsistence products, but also luxury goods and ritual paraphernalia, which were equally as important for elites to maintain their power base, solidify social relations and alliances, and ensure access to supernatural knowledge and protection through ritual. North coast salt was not only a subsistence good, but also a luxury item, favored for its white color and taste (Kepecs 2003:129). Cacao was also grown and distributed from this region. This situation is similar to that documented by

Rowan Flad and Pochan Chen (2013) in Bronze Age Central China where areas outside the political centers were extremely important axes of production and interregional exchange networks.

Historian Amino Yoshihiko (2012:20-25), has pointed out the difficulty of moving past "agrarian fundamentalism" in medieval Japanese historiography to acknowledge the social importance of maritime shipping and commerce, coastal and riverine ports, and merchants/pirates in the Japanese archipelago, which is made up of over 3,000 islands and 28,000 kilometers of coastline. Rather than being enclosed by bodies of water, islands and ports are more open to the flow of people, ideas, portable wealth and technology from abroad and, in this way, connected, not disconnected (Clark 2012; Hau'ofa 1993; Yoshihiko 2012:31). Cases from Classic and Postclassic Mesoamerica share many parallels, albeit significant scalar differences. Moreover, in Classic Maya society, with few exceptions, coastal ports lay outside the immediate purview of royal courts governing the city-states. As will be discussed more below, the reasons for this are not only geographical (and there is variation over time and space), but I argue that these are milieu in which social norms, as well as legal codes are relaxed, providing opportunities for social mobility, interethnic interaction, even social transgression (from the perspective of urban elites) that benefit non-elites.

From the perspective of ancient ports along the east coast of England, Loveluck (2013) refers to these kinds of environments as "catalysts for social change" because the production and movement of portable wealth, travelers, porters, boatmen, fishmongers, merchants and their patrons, etc. have wider effects on social and political relationships within hinterland communities and between those settlements and maritime ports. Thus, it is worth exploring what it means to reside in such a setting in terms of social rank and relationships along the coast and

inland and how members of the maritime branch of Maya culture fit in and, perhaps, even impact broader Maya society at the end of the Classic period (particularly after 900 CE). Before proceeding with a more detailed explanation of the specific research questions and structure of this thesis, however, it is important to explain the use, as well as omission, of particular chronological terminology.

1.2. Chronological Considerations

Over the past three decades, the traditional chronology employed in the northern Maya lowlands vis-à-vis the southern lowlands has been challenged in terms of its applicability to sequences documented through a plethora of survey and large-scale excavation projects that have been undertaken in the states of Campeche, Yucatán, and Quintana Roo, Mexico. The broad chronology employed in the Maya region of Mesoamerica consists of three main periods, the Formative or Preclassic (2000 BCE-300 CE), the Classic (300-900 CE), and the Postclassic (900-1542 CE) that are further divided into early, middle, and/or late sub-periods. The Formative period in the north corresponds strongly to the overall scheme of the Mesoamerican culture area (Table 1.1), being divided into the Early (2000-1200 BCE), Middle (1200-300 BCE), and Late (300 BCE-250/300 CE) sub-periods. The Classic period is a point in history where the cultural trajectories of the northern and southern Maya lowlands diverge somewhat. Much of the early chronology of the northern lowlands was based on a combination of archaeology at a few principal sites, namely Komchen, Dzibilchaltún, Cobá, Uxmal, Chichén Itzá, Mayapán, and Tulum and ethnohistoric sources from the early Colonial Period, such as the *Chilam Balams* and Landa's *Relación de las Cosas de Yucatán*, that discuss mythological and historical events using calendrical dates. Until relatively recently, the pervasive view was that although there was some

occupation of the northwestern portion of the northern lowlands late in the Formative period, real cultural development did not emerge until the Late Classic period after 700 CE when the powerful Maya kingdoms in the southern lowlands began to decline and large northern cities developed in the Puuc hills region, Dzibilchaltún, and Cobá. These would be followed in the Early Postclassic Period (900-1200 CE) by the rise of Chichén Itzá as the capital of a powerful regional polity, proceeded by Mayapán and, in the Late Postclassic, the east coast fluorescence typified by Tulum.

Many scholars interpreted the rise of the large northern centers at the end of the Classic period as the sociocultural apogee of complex society in the north that was largely the result of population diasporas and cultural influences from the waning southern lowlands, rather than the outgrowth of millennia of cultural development and change in the north, as well as full participation in the wider social spheres of Formative and Classic Maya civilization throughout eastern Mesoamerica (Bey 2006:16). Recent research in the northern lowlands has demonstrated the oversimplification of this traditional perspective, and we now know that complex settlements and exchange networks, along with monumental art and architecture was well established in this region by the Middle Formative period (by c.1000-800 BCE) (Anderson 2012; E. Andrews V 2003; A. Andrews and Robles Castellanos 2003; Stanton and Ardren 2005; Volta and Braswell 2014:6). Settlements in the Puuc hills and Northwestern lowlands, such as Kiuic and Komchen, contain ceramic groups that pre-date Nabanché pottery (Volta and Braswell 2014:7). The Late Formative and Early Classic periods were times of significant occupation at complex sites in the north, some of which demonstrate participation in broader Mesoamerican interaction spheres and the Chicanel and Mamon ceramic horizons (Anderson 2012; E. Andrews IV and E. Andrews V 1980; Bey 2006; Bey et al. 1998; Kepecs 1998; Mathews and Maldonado Cárdenas 2006; Sierra

Sosa 2004; Smyth and Ortegón Zapata 2006) and others increasing regionalism. Thus, a complex regional Maya cultural tradition developed in the north from the Formative period through Spanish contact that was both linked to and significantly distinct from historical processes in the southern lowlands in multiple ways (Bey 2006).

The earlier chronologies, however, strongly emphasize Late Classic and Postclassic developments, and the terms employed suggest that northern traditions were "reactions to southern political and historical events" (Bey 2006:36). Early Period I and Early Period II, for example, were terms used to refer to northern expressions of the Early and Late Classic periods of southern Maya history, or 300-600 CE and 600-800 CE respectively (E. Andrews IV 1965a, 1965b; Eaton 1978). The so-called Pure Florescent period in the north corresponded to the period of decline of the Maya cities of the southern lowlands and the rise of Chichén Itzá (800-1000 CE). The Modified Florescent period (1000-1200 CE) referred to the later "Toltec" phase of Chichén Itzá and its decline, while the Decadent period (1200-1542) encompassed the history of Mayapán and the east coast ports, such as Tulum, during the Late Postclassic, a period characterized as reflecting the decline, or last gasp, of a Maya civilization that had culminated in the Classic period kingdoms of the southern lowlands (e.g., Thompson 1966).

These cultural periods have been thoroughly critiqued over the years and not often used, but it is important to note that they were based on early surveys and ceramic chronologies at just a few sites like Chichén Itzá and Mayapán that had been subjected to extensive excavations by the Carnegie Institution of Washington in the first half of the 20th century, along with dates that appear in Colonial period ethnohistorical sources (Sharer 2006:157; García Moll and Cobos 2009). Still, there is no question that the material record indicates that, just as in earlier periods of transition, significant social, cultural, political, and economic changes did take place in the

northern lowlands over the course of the centuries straddling the end of the Maya Classic and into the Postclassic periods, and archaeologists working in the region frequently employ the terms Terminal Classic period (800-1100 CE) or Early Postclassic period (900-1200 CE) to refer to the cultural shifts associated with the rise and apogee of the Itzá state during the Late Classic – Postclassic transition in Maya cultural history. I prefer the term "Terminal Classic" and will use it here, not out of "southernocentrism," as George Bey argues it might represent (Bey 2006:17), but rather because more recent excavations and reassessments of the ceramic chronology from Chichén Itzá, the coastal port of Isla Cerritos, along with other contemporaneous sites from the region over the past twenty-five years support the cultural validity of a widely understood (and used) temporal concept that brackets the complex transitions in the material record that we are documenting and striving to better understand at various sites throughout the northern Maya lowlands at this time (Andrews 2010; Andrews et al. 2003; Bey and Ringle 2007; Cobos et al. 2006, 2007; Jiménez Álvarez 2009; Robles Castellanos 2006; Volta and Braswell 2014).

For the purposes of this thesis, I employ the following chronological terms (Table 1.1): Late Formative (300 BCE-300 CE), Early Classic (300-600 CE), Late Classic (600-800 CE), Terminal Classic (800-1100 CE), with an early phase corresponding 800-950 CE and a late phase 950-1100 CE. The Postclassic period (1100-1542 CE) is divided into an Early Phase (1100-1400/1450 CE) and Late Phase (1400/1450-1542 CE). I use the year 1450 CE as a transitional point, corresponding to the decline of Mayapán according to the ethnohistorical sources. The ceramic complexes utilized at Isla Cerritos fit well into this chronological framework as well, with overlap in the Chacpel (Cehpech and Canbalam ceramic spheres) and Jotuto (Cehpech-Sotuta ceramic sphere) at 800-900 CE. Within the Terminal Classic period, corresponding to the Jotuto Ceramic Complex, there is a significant increase in Kukula Cream,

or Peto Cream, ware (part of the Hocaba phase of the Sotuta sphere) after 900/950 CE. Other shifts in the material, architectural, and stratigraphic record documented in the 2010 excavations of the island also support distinguishing an early (800-950) from late (950-1100) Terminal Classic in this study. This parallels a cultural transition noted in a recent reassessment of the chronology at Chichén Itzá that combines architecture, hieroglyphic inscriptions, ceramic analysis, chronometric and relative dates published by Beniamino Volta and Geoffrey Braswell (2014) that will, no doubt, be further refined by forthcoming reports by Cobos et al. While my colleagues argue in favor of using the term Early Postclassic to refer to the period after 950 CE when Chichén Itzá reached an new pinnacle of regional power, I prefer to use "late Terminal Classic" in this study and follow Anthony Andrews (2010) and Fernando Robles Castellanos (2010) in their reservation of the use of "Postclassic" to after the decline of Chichén Itzá and rise of Mayapán, which represents a cultural-historical transition of greater regional significance in the Northern Lowlands. This is primarily a semantic preference, but it does prevent some confusion with the "Early Postclassic (900-1200 CE)" that has been previously published.

Table 1.1: Chronological chart showing the time periods referred to in this thesis, along with the ceramic chronologies developed for the north coast of Yucatán and the Isla Cerritos Archaeological Project. *From J.D. Eaton's survey data (1978) and J. W. Ball's ceramic analyses (1977, 1978). **From Cobos, et al. (2007) based on Robles Castellanos' ceramic analysis (1987, 1988) and those of Jiménez Álvarez (2009), Soldevila Illingworth (2007), and the author in 2011.

<table>
<tr><th>Years</th><th>Mesoamerica</th><th>Northern Maya Lowlands</th><th>Yucatan North & West Coast Ceramic Chronology*</th><th>Isla Cerritos Ceramic Complexes**</th></tr>
<tr><td>1542</td><td rowspan="2">Colonial</td><td rowspan="2">Postclassic
(Late Phase)</td><td rowspan="4">Mercante</td><td rowspan="4">Tomburro</td></tr>
<tr><td>1519</td></tr>
<tr><td>1400</td><td rowspan="3">Postclassic</td><td rowspan="3">Postclassic
(Early Phase)</td></tr>
<tr><td>1300</td></tr>
<tr><td>1200</td></tr>
<tr><td>1100</td><td rowspan="3">Epi-Classic</td><td rowspan="3">Terminal Classic</td><td>Guarnición</td><td rowspan="2">Jotuto</td></tr>
<tr><td>1000</td><td rowspan="3">Recogida</td></tr>
<tr><td>900</td><td rowspan="2">Chacpel</td></tr>
<tr><td>800</td><td rowspan="2">Late Classic</td><td rowspan="2">Late Classic</td><td rowspan="2">Trompillo</td></tr>
<tr><td>700</td><td rowspan="2">Vacio</td></tr>
<tr><td>600</td><td rowspan="3">Classic</td><td rowspan="3">Early Classic</td></tr>
<tr><td>500</td><td rowspan="2">Salitre 3</td></tr>
<tr><td>400</td><td rowspan="2">Salitre 2</td><td rowspan="5">Xaumito</td></tr>
<tr><td>300</td><td rowspan="2">Terminal Formative /
"Proto-Classic"</td><td rowspan="5">Late Formative /
Preclassic</td></tr>
<tr><td>200</td><td>Salitre 1</td></tr>
<tr><td>100 CE</td><td rowspan="3">Late Formative</td><td rowspan="2">Nizuc</td></tr>
<tr><td>0</td></tr>
<tr><td>100 BCE</td><td rowspan="2">Ciénaga</td></tr>
<tr><td>200</td></tr>
</table>

Table 1.1 (Continued)

300	Middle Formative	Middle Formative / Preclassic	Ciénaga	Middle Preclassic
400				
500				
600				
700				
800				
900				
1000				
1100	Early Formative	Early Formative / Preclassic		
1200				
1300				
1400				
2000-1500BCE				

1.3 Maya Port Complexes and Isla Cerritos

Anthony Andrews (1990, 2008) has provided us with the most comprehensive overviews to date of the archaeological data relevant to Maya ports from the Gulf Coast all the way around the peninsula to the Caribbean sea. He emphasizes variety in the type and functions of coastal ports and port facilities as demonstrated through survey data and the ways in which these (and consequently Maya exchange networks) changed through time. Andrews (1990:162-166) discusses seven types of Maya island and coastal ports that may have had specific functions associated with them, none of which are mutually exclusive. They overlap significantly because each port site is simultaneously engaged in various activities from agricultural and craft production to marine resource acquisition to local and long distance trade. Importantly, Andrews (1990:162) notes that all coastal ports fit under the general category of "coastal communities" in that at their most basic level they represent settlements of various sizes in which people regularly exploit marine resources, including salt, marine fauna, and volcanic pumice for basic subsistence

needs and also trade with inland communities for agricultural staples, lithic raw materials and tools, pottery, and other products. This is a subtle, yet important distinction from other port of trade analyses that underscore the *lack* of local resources and connections (i.e., marginality), while emphasizing the roles ports play in long-distance exchange activities within broader "international" economic systems as their foundational *raison d'etre* (cf. Sabloff and Rathje 1976). In addition to being coastal communities, Maya ports have been identified as religious coastal centers, island necropoli, and specialized trading ports of four kinds: ports of embarkation, "ports-of-trade," coastal transshipment ports, and seaports of inland polities (Andrews 1990:162-166). These proposed types will be discussed in more detail in Chapter 2.

Many coastal sites have religious or ceremonial architecture, including Isla Cerritos, and Andrews (1990:162) notes that coastal sites located at the edge of the Maya world, or the geographical extent of a territory, were also "spiritual frontiers, as well as gateways to other domains." In Maya cosmology, the sea was associated with fertility, birth, death, and the watery underworld, and just as sea products were important ceremonial and prestige items for inland peoples, it is not surprising that coastal shrines of various types and the sites they were associated with became centers for pilgrimage and local veneration (Sabloff 1977; Miller 1982; Houston 2010; Taube 2010). Andrews (1990:163) notes that the discovery of numerous human burials with precious offerings on island sites such as Jaina, Isla Cerritos, Uaymil, Isla Piedras, and Isla Tamalcab in combination with the cosmological importance of the sea and its associations with the underworld has led some scholars to believe that the Maya may have constructed island necropoli as burial grounds for elites from inland centers. Isla Cerritos, for example, contains a large mortuary population, and Andrews (1990:163) mentions local legends today along the coast that rulers from Chichén Itzá were buried there. While technically

possible, there is no strong evidence that these sites functioned solely as island necropoli, and it is just as likely that over the course of thousands of years of human occupation the dead from these communities were interred within monuments and households on the islands as part of the sanctification of these spaces and veneration of ancestors (Andrews 1990:163; Clark 2012; McAnany 1995). The presence of religious structures, as well as human burials at coastal ports, speaks to the existence of lineages or households at many of these sites that had established deep roots and connections to place.

In describing specialized trading ports, Andrews (1990:165) prefers a more general description of common characteristics to the rigorous definitions, such as "ports-of-trade," proposed by earlier studies (Chapman 1957; Polanyi 1963; Sabloff and Rathje 1976; Berdan 1978). The archaeological data from sites like those on Cozumel (Freidel and Sabloff 1984), Tulum (Miller 1982), and Xelhá (Robles Castellanos 1981) simply do not fit the more specific models. Despite problems inherent in the models themselves, he argues that this is also due to the lack of detailed historical information available about Maya political and economic structures (Andrews 1990:165), and I would add that the lack of broad, horizontal excavations at coastal sites that have been only generally surveyed also inhibits a more full understanding of Maya ports and their functions. For example, Andrews (1990:165) defines costal transshipment ports, or way stations, as "regularly spaced nodes located up and down the peninsula designed to facilitate the movement of bulk products along coastal exchange routes," citing Isla Cerritos as one of the more prominent examples. Armando Inurreta Díaz (2004), following Andrews, argues that the island site of Uaymil in coastal Campeche also fits into this category. However, practically any coastal site would fit within this broad definition, as the only criteria are site

location and the presence of long distance exchange goods—archaeological signatures of ports in general that are visible through survey.

As of the 1990 study, only two Maya ports had been archaeologically linked via architectural and ceramic ties to large, inland centers that they served as seaports, Isla Cerritos (to Chichén Itzá) and Xelhá (to Cobá). Today, the island of Uaymil has been thoroughly documented archaeologically and appears to have been connected strongly to both Uxmal and Chichén Itzá (Inurreta Díaz 2004; Cobos et al. 2005; Cobos 2010), and there is compelling circumstantial evidence that the port of Punta Canbalam served Chunchucmil (Dahlin et al. 1998). Major inland centers in the northern Maya lowlands, such as Chunchucmil and San Fernando Aké, needed a coastal presence in order to access vital resources to support their large populations and control regional and extra-regional exchange routes (Dahlin et al. 1998; Dahlin and Ardren 2002; Kepecs 2007). More archaeological research is needed to clarify the nature of the relationship between numerous coastal sites that have been linked chronologically and spatially to inland centers, such as Punta Canbalam to Chunchucmil, Tulum to Cobá, Emal to San Fernando Aké, Marlowe Cay to Altun Ha, Xcambó to Dzibilchaltún, etc. What is clear is that Maya ports were not all politically or administratively neutral vis-à-vis important inland polities and certainly not insular. At the same time, there is also no convincing reason to *a priori* separate ports allied with inland centers from either local exchange or other large-scale networks involving marine and subsistence resources, locally produced goods, or markets because coastal people always needed access to inland products and inland communities needed marine resources (McKillop 1995; Finamore and Houston 2010).

The data we have for Maya coastal ports show that while there are significant changes that take place along the coast in terms of a dramatic increase in the size and number of sites

with Itzá expansion in the Yucatan Peninsula during the Late and Terminal Classic periods, most maritime trade communities do not appear suddenly at this time, but rather have a long history going back into the Formative period (Andrews and Vail 1990:39; see Appendix A, Table A.1). Often coastal ports, sea circuits, maritime networks, and local exchange long predate and/or postdate the rise and fall of inland polities, and while these kingdoms do affect all of these aspects of port life and political economy, some of the established coastal practices and systems exceed state control. As nails continue to be driven into the coffin of the old "Classic = southern lowlands / Postclassic = northern lowlands" dichotomy in Maya archaeology, it is clear that more archaeological research into the Classic period occupation and activities in the north needs to be undertaken, not just at coastal ports like Isla Cerritos, but across the entire region (Bey 2006:36). One of the goals of this study is to contribute to our understanding of the significant transformations that took place at the end of this period.

Survey and preliminary testing of island and coastal sites in Mesoamerica have achieved their initial goals of providing "sketch[es] of the history of the occupation of the coasts and outlin[ing] the major features of the growth of a maritime economy through time" (Andrews 1990:160, 2008). These kinds of studies have contributed significantly to reinterpreting how resources were acquired and exchanged (both exotic and utilitarian), exposing the various roles exchange plays in the development and evolution of complex societies (Rathje 1971; Andrews and Vail 1990; Fash 1994:185). Now that survey data have given us a sense of the important roles coastal sites played in these larger processes, it is time to investigate the communities themselves to get a better sense of their social organization, practices, and relationships. This has already begun at a number of sites on the north coast of Yucatán and the Caribbean, including Xcambó (Sierra Sosa 2004; Sierra Sosa et al. 2014), Uaymil (Cobos et al. 2006), Jaina

(Benavides 2002a, 2002b, 2012b), Vista Alegre (Glover et al. 2011), Chac Mool (Marquéz Morfín et al. 2006), and Isla Cerritos (Cobos et al. 2007, 2010). These studies are contributing to a shift in focus in Maya archaeology from an inland-centered perspective to what one coastal archaeologist who works in Oceania, Paul Rainbird (2007:49), has characterized as "an archaeology of the sea" that centers on the material culture expressions of cross-cultural interaction, maritime subsistence, daily life, transportation, and coastal peoples' multiple relationships, interactions, and social practices.

1.4 Orienting the Present Study: Research Questions

Isla Cerritos is site 16Q-d(3):1 in the *Atlas Arqueológico del Estado de Yucatán* (Garza T. de González and Kurjack 1980) and is one of the northernmost Maya archaeological sites located on a small island 500 meters off the coast of Yucatán in the Gulf of Mexico. Along with two nearby Rank IV sites, Paso del Cerro [16Q-d(3):2] and Chinalco [16Q-d(3):5], the island forms the northern node of a series of sites between the large inland center of Chichén Itzá and the western extent of the Río Lagartos estuary (Andrews et al. 1984, 1988, 1989, 1995; Andrews and Gallareta Negrón 1986; Cobos et al. 2007, 2010; Gallareta Negrón 1998). Bernal Díaz del Castillo provides one of the earliest descriptions of the European "Christening" of the estuary region, which today provides safe harbor for the ports of San Felipe and Río Lagartos on the north coast of Yucatán:

> At the end of three days we found a bay where there appeared to be a creek which we thought might hold fresh water…but the water of the creek was salt, so they dug holes on the beach, but there also the water was as salt and bitter as that in the creek….there were so many large alligators in that creek that it has always been known as the éstero de los Lagartos…(Díaz del Castillo 2008 [1632]:11).

Even this early description of the mangrove coast between the Bocas de Dzilam and Emal stresses the presence of salt, the most valuable resource available in this region today and likely also for the coastal communities of the late prehispanic period. The island is located just 15 kilometers west of the largest salt beds in all of Mexico (Andrews 1983; Andrews et al. 1984; Kepecs 2007:138; McKillop 2002) and has been described as "one of the richest trade enclaves on the Maya coast" (Andrews 1990:166).

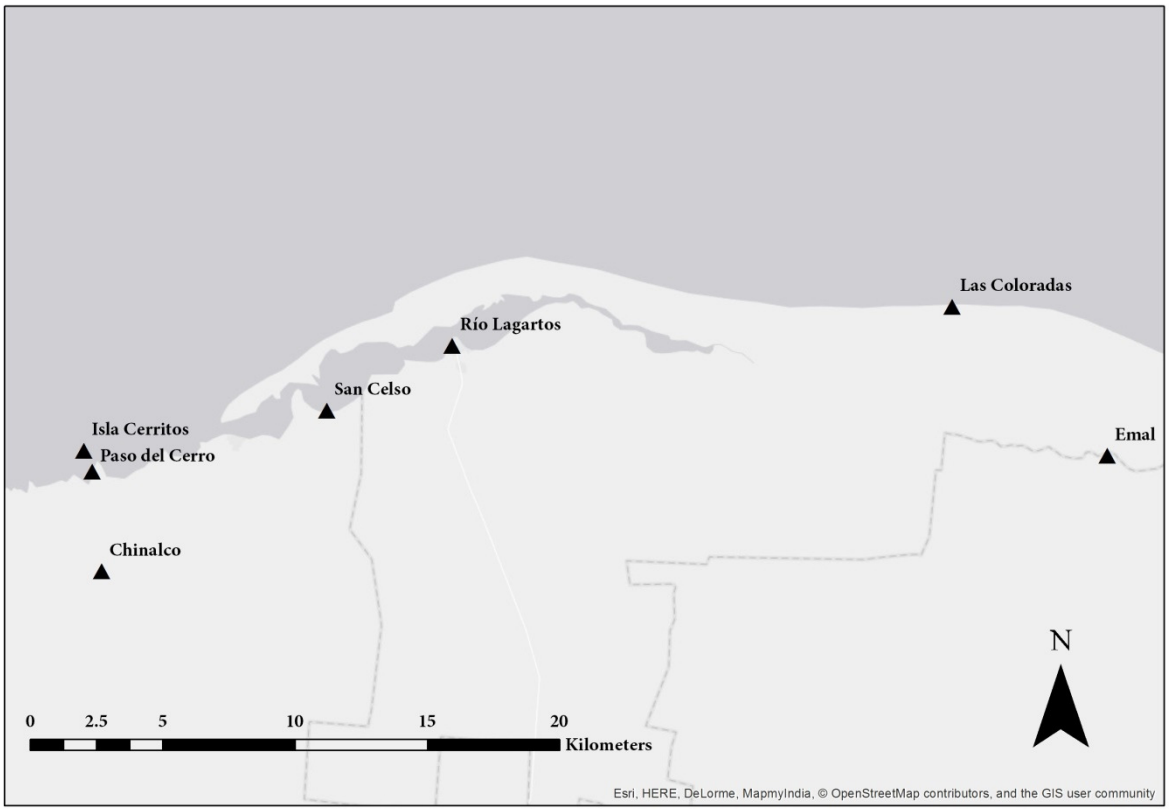


Figure 1.3: The north coast of Yucatán and the Río Lagartos Estuary with archaeological sites discussed in this study.

Despite its small size (approximately 200m in diameter, 3.15 ha), settlement on the island is dense with 36 masonry structures identified to date, including residential structures, a colonnaded hall, temples forming two plaza groups, artificially leveled platforms, and

underwater features associated with port facilities and fishing (Andrews, et al. 1984; Cobos, et al. 2007; Cobos et al. in process). Similar in terms of its occupational history, the island port of Wild Cane Cay in Belize is comparable in area (2-4 hectares at its extent) with six in-tact masonry structures (McKillop 1996:52). Comparatively, Isla Cerritos represents a densely constructed and organized built environment.

This island site was first reported by E.W. Andrews IV (1965b) and documented in more detail by Jack Eaton during his archaeological survey of the Yucatán-Campeche coast carried out in 1968 (Eaton 1978:41-42). Eaton made a surface collection and excavated an off-mound test unit on the flat, open south side of the island, encountering ceramics from all phases from the Late Formative to the Colonial period analyzed by Joseph Ball (1978:42). Anthony Andrews and colleagues returned to the area in the late 1970s, making surface collections on Isla Cerritos to compliment and build upon Eaton's sample.

The Isla Cerritos Archaeological Project (ICAP), funded in part by the National Geographic Society and the Instituto Nacional de Antropología e Historia, began in 1984 with intensive and systematic archaeological survey and reconnaissance of the island and the nearby mainland co-directed by Tomás Gallareta Negrón and Anthony Andrews with Fernando Robles Castellanos, Rafael Cobos, and Pura Cervera Rivero (Andrews et al. 1984; 1988). A topographic map of the island with its on and off-shore features was made (Figure 1.3), and the nearby sites of Paso del Cerro, Chinalco, and San Celso were also documented.

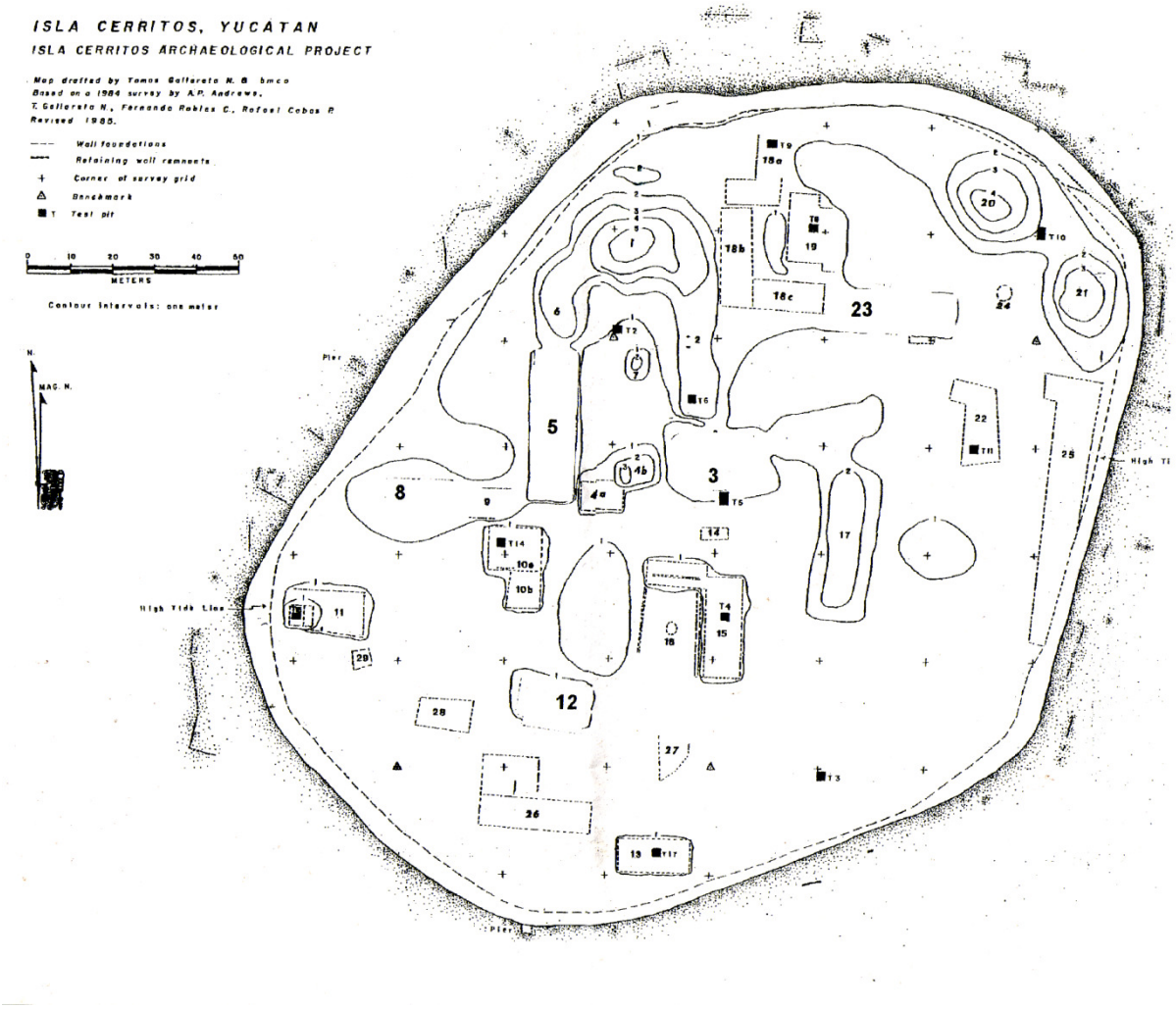


Figure 1.4: Topographic map of Isla Cerritos rendered by Tomás Gallareta N. based on survey data from the 1984 Isla Cerritos Archaeological Project field season. From Andrews, Gallareta N. and Cobos P. 1984.

Archaeological evidence generated through the first survey and excavations on Isla Cerritos, along with the nearby mainland sites of Paso del Cerro and Chinalco, on the north coast of Yucatán suggested that while the island shows evidence of human occupation from as early as the Middle Preclassic period, the principal settlement corresponded to the Terminal Classic period (800-1100 CE). Subsequent programs of excavation in 2006, 2007, and 2010 corroborate the interpretation of the site as a coastal port of trade and that once served as a primary coastal port for the Chichén Itzá polity and that this city-state played a key role in the infrastructural

development of the port by 900-1050 CE. It is also clear that the island continued to function as a port until around 1250 CE, up to two centuries after the decline of Chichén Itzá.

In this thesis, I address four overarching research questions through a multi-scalar analysis of the coastal settlement patterns, material culture from domestic contexts, and occupational sequence at Isla Cerritos that provide information about the social identity, status, and habitus of port residents. A fundamental assumption here is that domestic contexts provide material settings for a variety of social practices such as exchange, production, ritual, and subsistence (cf. Stein 1999) that I argue are integral to the formation, maintenance, and transformation of collective identities. The first question is 1) who occupied the port during the Terminal Classic period (800-1100 CE), and what does the household archaeology suggest about coastal lifestyles and social status within this port community? 2) How were this and other Maya port communities of the period 600-1250 CE organized socially and spatially, enabling Isla Cerritos to fit into the larger social history and maritime economy of the region? 3) What do the household architecture and domestic contexts of Isla Cerritos indicate about social mobility at ports and how the maritime branch of Maya culture relates to Maya society more generally? 4) What do the changing dynamics of this port community documented between the 9th and mid-13th centuries indicate about the sociocultural (and political-economy) relationship between the island and the regional center of Chichén Itzá, and the role of ports as "catalysts of social change" (Loveluck 2013:144) in the ancient Maya world?

Maya coastal ports were intentionally located in geographic, political, and cultural borderland spaces and became centers for exchange of all kinds, including ideas, population movements, and intercultural interaction. In the case of Isla Cerritos, this location is the geographic center of the north coast of the Yucatan Peninsula. We know that significant cultural

and political transformations took place at the end of the Late Classic and Terminal Classic periods in the northern Maya lowlands, and from this emerges the very international city of Chichén Itzá and its associated political and economic spheres. The Gulf coast littoral was heavily involved in these processes (Andrews 1983; Andrews and Robles 1985; Cobos 2011; Kepecs 2003; Braswell 2003a). By looking into this transitional period at Isla Cerritos, we gain additional insight about how intercultural interaction and economic specialization impacts the social practices that construct, maintain, and alter collective identities and the structure of the port community, along with its relationship to the inland political center and other coastal areas. As mentioned above, these four thematic questions are clearly not mutually exclusive and do overlap significantly, but they also provide a useful framework for organizing the questions and issues that are explored in this dissertation.

1.5 Taking the Coastal Route through this Thesis

This study is organized into six chapters. In Chapter 2, I provide a review of archaeological approaches to ports of trade in world archaeology and specifically Mesoamerica, advocating for a broad definition of "port." I outline the roles of ports in ancient political economies (e.g., the Maya), as well as the social dimensions of coastal communities. I also introduce the theoretical and conceptual frameworks that inform the archaeological interpretations presented here related to materializing social organization and mobility, identity and practice, and the potential of household archaeology to examine these issues.

In Chapter 3, I provide a macro-level analysis of the big picture of regional settlement along the northern Maya coast, placing the site of Isla Cerritos in its broader environmental, historical, and regional context based on what we have learned from archaeological surveys of

the coasts of this peninsula and the area between Chichén Itzá and the north coast of Yucatán. I also summarize the results of the archaeological surveys conducted at Isla Cerritos, Paso del Cerro, and Chinalco in the 1980s, identifying each site as a component of an expanding multi-component coastal settlement. Pertinent to this is an explanation of the mapping and survey methods employed in the 1984-85 field seasons and coastal salt production.

Chapter 4 presents a summary of methods and synthesis of the results of archaeological excavations and mapping conducted at Isla Cerritos 2006-2010, focusing on the macro-level analysis of the islandscape, architectural features, underwater features, and settlement pattern morphology. I discuss the archaeological evidence that supports the identification of Isla Cerritos as a Maya port of trade and describe its structure and organization. I also provide a preliminary estimate of the island residential population during the Terminal Classic period and architectural energetics estimates for the construction of the site.

This is followed in Chapter 5 by a micro-level analysis of the domestic contexts and household architecture excavated at Isla Cerritos, focusing on the artifact distribution and provenience within and between the domestic structures, as well as the bioarchaeology of eight human burials excavated in 2010 and three burials associated with a domestic structure excavated in 1985 and 2006. The methods of analysis and curation of artifacts and ecofacts at the Faculty of Anthropological Sciences of the Autonomous University of Yucatán in 2011-2012 (Facultad de Ciencias Antropológicas, Universidad Autónoma de Yucatán, hereafter FCA-UADY) are also summarized in Chapter 5. In addition to presenting an overview of the results of analysis by material culture class and chronological context in six domestic structures, I also present a synchronic spatial analysis relating multiple artifact classes to architectural and mortuary features within Late Classic, Terminal Classic and Postclassic contexts. Each of these

data sets contribute our interpretations of social organization and stratification within the small residential population at the port, the social practice of daily life, and settlement dynamics from the Late Classic through the Postclassic periods.

In Chapter 6, I conclude the thesis with a discussion of what the macro- and micro-analyses included here suggest about human behavior and social relations at Isla Cerritos, enabling us to "people" this port community. I also address the question of what we currently know about relationship between the port and inland center of Chichén Itzá and how evidence from the domestic contexts on the island contribute to further clarifying the sociocultural and political relationship. The significant potential of a comparative analysis of Late and Terminal Classic residential contexts from analogous and contemporaneous inland (e.g., Chichén Itzá and Xuenkal) and coastal Maya sites (e.g., Xcambó, San Gervasio, and Isla Chablé of the Islas de los Cerros group) where more extensive archaeology has been conducted is also discussed. This highlights how the similarities and differences between non-elite residences contribute to a better understanding of the maritime branch of Maya culture and their relationship to the wider Mesoamerican social world of which they were a part. This demonstrates how island and coastal populations who lived at the very edge of the landscape (i.e., the edge of the watery underworld in ancient Maya cosmology) formed distinct social groups, yet were also integrated into the sociopolitical and cultural rhythms of the wider Maya cultural region. From the perspective of a port community like Isla Cerritos, the coastal "periphery" is actually the "center" for certain activities and social practices, while the inland "center" can be "peripheral," just as in other contexts these roles are reversed.

Finally, I consider the value of household archaeology and research oriented toward the social dimensions of life at coastal port sites, citing the implications of this study for developing

more nuanced views of the Maya non-elite and the ways in which port communities facilitated social mobility, benefiting from wider interaction spheres, strategic alliances, and reduced control from interior city-states. There is tremendous potential for future research along these lines to contribute to Mesoamerican studies more broadly by helping to better model Maya inland-maritime relationships, while simultaneously enhancing our understanding of one of the world's rare "mediterraneoid" cultural, historical, and environmental settings, the importance of which has been recognized (e.g., Broodbank 2014; McKillop 1995; Finamore and Houston 2010), but the extensive archaeological documentation of which is still in the beginning stages.

CHAPTER 2:

A SOCIAL ARCHAEOLOGY OF MAYA COASTAL PORTS

2.1 Introduction

Trading ports of the ancient world have been the subject of numerous historical and archaeological studies over the past century with most, though not all, focusing on the how these communities functioned within the economic and political systems in which they were embedded and what the material remains found within these sites tell us about the ancient societies' trade and exchange practices. In this chapter, I will discuss the concept of "port" or "port-of-trade" as it has been used in world archaeological research to generate models about economics, trade, and the evolution of complex society. Using select examples from Mesoamerica and other regions of the world, certain characteristics that are common to many ports will be emphasized, along with the main areas where we tend to see variation. While inland and riverine ports clearly exist, and I will mention a few examples in this literature review, island and coastal sites are highlighted throughout this study. While other scholars have attempted to create more rigid typologies of ports, I see utility in a broader definition of "port community" for studies of this kind.

Relevant to this discussion is a brief review of what scholars have argued in the past and currently believe about how ancient Mesoamerican economies functioned, in particular Maya economic systems involving numerous kinds of products and resources exchanged through local, regional, and long distance networks. In this case, there is good evidence that by at least the Late Preclassic period, the Maya had developed an administered trade in bulk commodities related to tribute, combined with a concurrent market system that relied on both barter and currencies to facilitate transactions, regulate prices, and move products across great distances (Masson and

Freidel 2002). Coastal ports of trade played key roles within this economic system, and our focus in this chapter is on outlining what these myriad roles were. Not only were coastal communities key points of entry and exit for products and people moving along Mesoamerican waterways, but also centers for the production and distribution, via local exchange networks, of marine resources that were highly valued within Maya economy and society (Cobos 2010b; McKillop 2005b; Tokovinine and Beliaev 2013). Looking at the case of Maya coastal ports in light of European models, including the networks of Aegean island ports discussed by Cyprian Broodbank (2000) and the coastal ports of the Middle Ages along the English Channel investigated by Christopher Loveluck (2013) and Richard Hodges (1982), helps us delineate the overarching theoretical frameworks and potential contributions of port archaeology.

Less emphasized in the literature to date, but an equally important aspect of ports that I intend this study to contribute to understanding, is the social dimension of port communities. As introduced above, the location, organization, and practices that we document at ancient ports like Isla Cerritos facilitate not only economic exchange and transactions, but also the sharing of ideas, beliefs, languages and politics, human diaspora, technological change and, as a result, innovation in many areas of social life (Appadurai 1986; Loveluck 2007; Stein 1999, 2002; Yoshihiko 2012). As will be argued in more detail in subsequent chapters, coastal ports differ from inland centers in that often social norms that strictly govern human behavior and interaction between social and cultural groups are more relaxed, creating spaces for social transgression and, possibly, mobility (though restricted in many ways) within a highly stratified society like that of the Late Classic Maya. It is not surprising, therefore, that coastal port communities are also pivot-points for cultural encounters and social change and take on symbolic meaning within Maya cosmology, becoming the home of important religious shrines, and starring in mythic-

historical origin narratives. Thus, in this chapter, I also introduce these social dimensions and situate my study of Isla Cerritos within broader discussions of social archaeology (Hodder 2004; Meskell and Preucel 2004) and maritime societies in human history (Broodbank 2000; Dening 1980; Hau'ofa 1993; McKillop 2005b; Rainbird 2007; Renfrew 2004).

I conclude this chapter by explaining the links to Maya household archaeology. Approaches to ancient Maya households and related theoretical models are varied and extensive, and cannot be comprehensively covered in this chapter or, indeed, this thesis. Nevertheless, I focus on the limited number of previous archaeological projects that have targeted house mounds and groups that provide comparable data sets to those we have at Isla Cerritos. Of the many useful studies in household archaeology preceding and since Robert Wauchope's (1938; see also Wauchope and Ricketson 1934) ethnoarchaeological work through the Carnegie Institution of Washington and Flannery et al.'s (1976) *Early Mesoamerican Village*, I have found the perspectives and approaches of Richard Wilk (1988; also Wilk and Rathje 1982), Patricia McAnany (1993, 1995), Julia Hendon (1987, 2010), Scott Hutson (2004), Trent Stockton (2013), and Héctor Hernández A. (2011) particularly useful for conceptualizing the residential spaces and daily life of the Maya.

2.2 Ports-of-Trade and Socioeconomic Models

Understanding trade and exchange as a fundamental component of humanity has been part of historical, sociological, and anthropological thought since at least the 1920s, and this motivated economic anthropologists, historians and archaeologists to study not only exchange itself as social and economic practice, but also trading centers as the loci for these forms of interaction. Rahul Oka and Chapurukha Kusimba (2008) provide a recent comprehensive review

of the published literature on how archaeologists have variously approached trade and the theoretical debates about trade within anthropology more generally in both Old World and New World contexts. Here, I discuss the relevance of ports specifically to some of the main theories of trading systems, as well as the concept of traders (specialists involved in formal trade in complex societies) to establish how archaeologists, anthropologists, and historians have traditionally come to define the "port-of-trade" in various ways and, subsequently, set about studying them in ancient societies.

Oka and Kusimba (2008:340-41) interpret "exchange" very broadly as any form of interaction between humans, while "trade" more specifically refers to "the material-economic component of exchange" and "the material basis of the relational network of exchange"—by necessity present in any type of social exchange, regardless of social complexity. While these very general definitions are not always the way archaeologists and anthropologists have traditionally conceptualized these terms, the more broad approach is useful now because it leaves space for us to consider the socially embedded nature of trade, its relationship to the fulfillment of human needs, social process, and political economy that are all happening simultaneously (Oka and Kusimba 2008:340; Plog 1993). There are always economic, social, political, and environmental elements and motivations for those who participate in any kind of exchange—unequally distributed, of course, depending on the specific context.

Ports of trade have been part of anthropology's and archaeology's attempts to theorize exchange behavior and trading networks for the better part of a century now. Ports were not really integrated into studies of ancient economy and politics until the mid-20th century. In the 1920s, archaeologists documenting the variation and flow of material culture across regions were not especially focused on trade itself, but rather diffusion from a few primary areas through

migration as an explanation for functional and stylistic similarities and differences within the culture history paradigm (Oka and Kusimba 2008:342; Willey and Phillips 1958). Social anthropologists at the same time were seeking to understand exchange, especially gift-giving, within human cultures as a function of the larger social system or structure in which it is embedded in non-Western societies, typified by Bronislaw Malinowski's (1922) studies of the "archaic" or "primitive" societies of the South Pacific islands. Malinowski (1922) identified seven systems of exchange that structured eight types of social relations in Kiriwana culture and noted a range in motivations for transactions, from "personal gain" / "pure gift" in Kula exchange to varying levels of material profit (trade) (Oka and Kusimba 2008:343). This anthropological interest in the social nature of exchange no doubt influenced archaeologists and historians in many ways, including challenging the explanatory efficacy of diffusion as a passive process and encouraging the development of the concept of "interaction spheres" between prehistoric societies driving the diffusion of material culture and ideas (Caldwell 1964; Lamberg-Karlovsky 1975).

From a theoretical perspective, Marcel Mauss (1967) modulated the efficacy of the concept of the pure gift, arguing that all gifting and repayment were reinforced social obligations that were cross-culturally fundamental in any form of exchange, social relationships and organization. "Moral" motivations and obligations (social) underlay all economic transactions, and thus gain always exists within any "gift." He argued that this is most clearly observed in societies that either "immediately preceded ours" or were considered contemporary "primitive societies" (1967:267).

As theories of human economy and political economy developed, there was a tendency in economic history, social anthropology, and archaeology to separate pre-modern (or "primitive" /

"primitivist" / "prehistoric" / "archaic") and modern ("historic" / "modernist" / "complex") exchange systems as quite distinct, particularly along the lines of the motivations for exchange. While Mauss (1967:268) argued that "early," or "archaic," societies also had markets and profit motivations that even pre-dated (in some cases) currency, "modern" Western market economies (e.g., Semitic, Hellenic, Hellenistic, Roman, etc. that operated on contract, sale, and capital) were also structured around economic, legal, and religious institutions that were ultimately based on the same moral principles of social exchange and reciprocity. He stressed, however, that early societies' economies differed in that these phenomena were not discrete, and social relations and obligations superseded all.

In fact, most anthropologists of the 1920s-70s argued that pre-modern transactions had virtually nothing commercial about them and that true, economically-motivated trade was a characteristic of complex, highly stratified societies or societies that were transitioning toward statehood. Prehistoric societies were understood to be primarily closed corporate communities (Wolf 1957) with little need for much interregional interaction beyond "cementing social, marital, and political alliances" (Oka and Kusimba 2008:343). This primitivist position saw past human economic strategies as very different from contemporary ones and privileged agriculture over trade. The modernist position, on the other hand, argued that there was no difference and that ancient and contemporary economic structures should be analyzed through the lens of economic rationalism that is a cultural universal (2008:344).

By mid-century, this discussion had branched in economic anthropology and history into the substantivist and formalist frameworks, and this is where the "port-of-trade" concept as a "universal institution of overseas trade" in early complex societies is developed (Polanyi et al. 1957; Polanyi 1963:31). Substantivism and formalism are not diametrically opposed concepts,

but the latter argues that all human exchange is structured by efficient, rational, and maximizing principles. In contrast, the substantivist perspective, which resembles the earlier primitivist position, is typified by Karl Polanyi and his students' work (Polanyi 1963, Polanyi et al. 1957) and represents what has been termed the "decommercialization of ancient economies" (Oka and Kusimba 2008:344). Substantivists characterized ancient exchange systems as not necessarily defined by the conditions of market mentality and economic rationalism that also drive the modern economy based on fixed prices (Polanyi 1963:31). The formalist perspective interpreted economizing behavior (decision making) in the form of choice, allocation, and maximization of scarce means to achieve multiple ends as a cultural universal across time and space (Burling 1962:810). Substantivists argued that this was only a recent deviation from behavior in which social norms and rules determined the distribution of goods within economies that were thoroughly embedded in social processes (Oka and Kusimba 2008:344). Moreover, the substantivist definition of "economic" implies neither choice nor an "insufficiency of means" (Polanyi 1957:243); rather economic rationalism may not always guide sociopolitics. In archaic societies, reciprocity, redistribution, and exchange in the form of administered trade (controlled by elites from the top down) could also structure social relationships, both motivating and organizing ancient economies (Polanyi 1957:250; Hoopes 1993; Oka and Kusimba 2008:344).

According to this model, ancient economies are embedded in institutions—social, political, and religious, in addition to "economic," which create and maintain the structure and function of the system (Polanyi 1957:250). Polanyi's substantivist approach parallels in some ways Marxist social models from the same era that emphasized elite control over the means and mode of production in that sociopolitical elites administer specialized craft production of luxury and symbolic goods, their distribution and consumption, that then serve to reinforce ideological

control over non-elites (Earle 1977; Oka and Kusimba 2008:344). Here Polanyi also suggests that supply and demand may have influenced some elite production decisions, but did not affect non-elite, independent craft specialists as occurs in the more modern systems of the past two centuries. Like Mauss, he acknowledged the very early existence of both markets and currencies in antiquity, but according to this model, both were highly regulated by sociopolitical elites who fixed prices and the systems of exchange such that money itself did not become a commodity, but was socially controlled (Oka and Kusimba 2008:344).

In contrast to Marxist, cultural ecology, and cultural materialist approaches, the substantivists *emphasized* trade rather than marginalizing it as a key institution within the process of early state formation (Polanyi 1957:257). Long distance trade was not just the "movement of goods on their way through [a] market" where movement is controlled by prices, but could be mainly a peaceful method of goods acquisition by exchange between different communities, where the meeting does not "produce rates of exchange, but on the contrary they rather presuppose such rates" (1957:258). In archaic societies, administered trade was more likely to include the movement of bulk goods and tribute (both are social processes) and is assumed to be collective rather than for individual profit--a "functional alternative" to markets (Polanyi 1963:31). Exchange of this nature is facilitated by trade institutions, including 1) the neutral "port-of-trade," or the locus of exchange and a place where security is assured for the transacting parties under early state conditions (1963:30) and where 2) specialist traders conduct transactions using diplomacy, alliances, and gift giving / reciprocity (Polanyi 1957:259).

Of course, there are several problems with the substantivist conceptualization of economy in general, not the least of which is the false dichotomy drawn between market systems and administered trade systems when in any society all goods and services have "price" in the form

of a social and/or market value, and choices (whether made by elites or non-elites) are always involved with the manipulation and allocation of finite resources to achieve goals that affect how the exchange process occurs, regardless of the type of society (cf. Burling 1962:808-810). Most relevant to my research, however, is the theoretical development of the port-of-trade concept through this debate in economic anthropology and history because these ideas have strongly shaped archaeological studies of ports.

In *Ports of Trade in Early Societies* (1963) Polanyi suggests that there are universal characteristics of ports and offers a cross-cultural comparison of ancient ports from the north Syrian coast, classical Greek seaports, the Norse "wik," the Mesoamerican Gulf Coast, the Guinean coast of West Africa, the Malabar coast of India, and the Babylonian "karum." In his model, ports are most often positioned along coastal or riverine water routes, lagoons, or even inland, between or on the edges of ecological zones and on the peripheries of politically bounded territories (Polanyi 1957:116). Within these buffer zones, ports serve as a "neutrality device," intentionally located in areas beyond and between societies and their enforced norms and networks, or a kind of liminal space (Polanyi 1963:30; Heider 1969:462). These settings are designed to reduce hostilities and likely evolved out of silent trade along the Mediterranean coast carried out outside of towns, where low-walled areas faced the sea and Carthaginian and African traders could leave goods and gold in exchange without ever dealing with each other face to face (Polanyi 1963:34). This kind of place, known as an early "emporium," featured an altar that served as sacred protection for an area that was physically delineated by the wall where peace was maintained between normally hostile parties (1963:34). It was functionally and structurally very similar to the Norse *wik*, or walled coastal nodes set up along rivers, lakes or the sea for caravans moving from Central and Eastern Europe and the Near East (1963:34), as well as the

silent trade between Mbuti foragers and Bantu-speaking agriculturalists of the Democratic Republic of the Congo in the mid-20th century (Turnbull 1961).

In Syria the ancient coastal towns of Ugarit (c.1450-1200 BCE) and Al-Mina (c. 800 BCE) featured port facilities, such as warehouses, and are early examples of communities with port functions and peaceful economic and tributary ties to inland empires, such as the Hittites and Egypt (in the case of the former), was well as the Assyrian kingdoms of Mesopotamia (in the case of the latter) (Revere 1957:40). While it is unclear how much political autonomy these towns had, their neutrality and friendly relations with multiple, larger competing empires were arguably maintained because the larger empires depended on these ports and the trade conducted through them (Polanyi 1963:33; Revere 1957:40). What we do not learn through the historical analyses of these ports is whether the regional settlement pattern data provide any indication of the relationship between the coastal towns and inland states, though Polanyi (1963:33) argues that these ports were replaced by the Phoenician ports of Sidon and Tyre in the south a millennium later.

A second definition of "emporium" refers to the Classical Greek coastal cities of the 5th century BC that consisted of a separate sector devoted to foreign exchange, where the harbor, a food market, mariner lodging, warehouses, administrative buildings, and other port facilities were located. This type of emporium was closer to the settlement, but still separated by some form of physical barrier. By the 11th and 12th centuries, the word *portus* referred to "a place where merchandise was carried" and stored under guard in Western Europe (1963:35). These kinds of ports were places of transshipment located along bodies of water, attached to established towns outside the gates, and traders were invited to settle there in the winter, eventually leading to the growth of cities (1963:35). Here the port is not simply an empty location outside of a

settlement, but an evolving living space that, over time, is integrated into the growing communities.

Polanyi and his students, notably Ann Chapman (1957), also used the Aztec and Maya civilizations of Mesoamerica to illustrate their substantivist position and the theory of ports of trade as key economic institutions in archaic states. Mesoamerican ports were envisioned by Polanyi (1963:36) as villages, (i.e., communities) that provide the backdrop for exchange activities, rather than empty spaces functional for "silent trade," or even segregated emporium-like "barrios" populated only temporarily by foreign traders.

Chapman's initial study entitled *Port of Trade Enclaves in Aztec and Maya Civilizations* (1957) defines ports as territories, buffer zones, or spaces that were politically neutral and positioned between larger "militarily powerful metropolitan units" to facilitate the flow of trade between highland and lowland areas (116). She characterizes the Mesoamerican economy as having two distinct and operationally independent forms of trade—"home-based markets" that served non-elite consumers and the elite state-controlled exchange of luxury goods and raw materials that produced them carried out by specialist merchant-traders. In this model, ports relate specifically to the latter, serving as locations whose "specific function was to serve as a meeting place for foreign traders" and the primary organ for long distance exchange (1957:115).

Chapman (1957) primarily used ethnohistorical sources, including codices and Spanish chronicles, and the detailed historical studies conducted by Chamberlain (1948) and Scholes and Roys (1948) for the Carnegie Institution of Washington project in combination with some archaeological data (e.g., Blom 1932; Millon 1955) in her research. She argued that Mesoamerican ports consisted of either 1) individual permanent settlements or 2) whole regions where merchants representing different organizations (either states or other institutions) lived

and conducted trade in commodities that were imported from outside the metropolitan centers. Representatives of other ports also stayed to monitor activities (Chapman 157:116). With the exception of Xoconusco, which did pay tribute to the Aztec capital, Chapman (1957:17) envisions most ports as independent, relatively autonomous towns or provinces that were administered locally. She identified eleven port-of-trade enclaves specifically, along with two trading regions, most of which were located near the Gulf Coast and Isthmus of Tehuantepec between the Basin of Mexico and the Maya region. These include Xicalango, Potonchan, Tochtepec, Coatzalcoalcos, the Chontalpa towns of Mecoacan, Chilateupa, Cimatan, and the Acalan region (Itzamkanac). On the Pacific coast, she identified Xoconusco, Teutitlan Copilco, Zinacantan; in Yucatán, Ecab and the island of Cozumel; on the southern Caribbean coast, the regions of Chetumal Bay and the Gulf of Honduras.

Chapman's study focuses more attention on the goods that were exchanged, the documentary evidence for "*pochteca*[1] activities," and the general location of trading areas in Postclassic Mesoamerica rather than the structure and organization of specific ports themselves (a problem Andrews [1990:164] has also noted). It is interesting that even this early on, some forty years before postcolonial studies emerged in the social sciences and humanities, Chapman's vision of ports suggests that they are borderland spaces and loci for intercultural social interaction.

In summary, the substantivist perspective in economic history produced the first outlines of a theory of the "port-of-trade" as one institution structuring ancient economic systems; it identified some shared characteristics of ports and the traders and merchants who conducted long distance exchange in various early complex societies, as well as specific types of exchange that

[1] The pochteca is a Nahuatl term for professional merchants and entrepreneurs of the Late Postclassic Aztec Triple Alliance and other city states of the basin of Mexico who traveled and traded goods across different geographic, political and/or cultural regions.

took place at ports. According to the studies making up the *Trade and Market in the Early Empires* (Polanyi et al. 1957) volume, the trade conducted through all ports, including the Mesoamerican ports, is defined as administered trade and is not free, open, competitive exchange as in international markets (viewed as mutually incompatible with administered trade), so there is no guarantee of the equality of the exchange (Polanyi 1963:32). Likewise, when bartering and other forms of negotiation do occur, it is not in the *foreground* at ports, as it would be in a market setting, but rather in the *background* and therefore embedded within social relations, even silent transactions (1963:32).

From this perspective, ports are the settings for long distance transshipment and exchange of goods in bulk, exotic luxury items related to elite sociopolitical status, and tribute payment where value is fixed by the government and transactions can be supervised. Not surprisingly, variation across time and space in port types and functions, even the ones Polanyi and colleagues use as examples, contradict these very ideas (see Revere 1957 on Babylonian economics and long distance trade). While there are significant differences across cultures and over time in how ports are defined, some common characteristics the substantivists highlight include 1) location along transportation routes (land, waterways or sea), 2) neutrality, either through physical location in buffer zones, political agreement, or supernatural sanction, and therefore liminality between societies, 3) alliances with multiple inland centers or larger empires, and 4) the presence of port facilities such as harbors, docks, religious shrines, and/or storage areas. According to these models, markets should not exist in ports dedicated to administered trade, but Polanyi (1963:34) does mention food markets as a characteristic of the early Greek emporia, which is an unresolved contradiction in these early studies. Finally, since ports are distribution points for bulk goods, there should be little evidence of extensive accumulation of profit at the port site.

Formalist and substantivist models in economic anthropology would be highly influential in the following two decades because it brought trade (especially long distance trade) to the forefront of study. Karl Heider's *Visiting Trade Institutions* (1969) analyzed the ethnographic data on long distance exchange in non-western societies, suggesting that the dangers of external trade are mitigated by one or a combination of "trade institutions," including the extension of market systems, administered trade through ports, silent trade, traveling middlemen, and the extension of generalized reciprocity to the intersocietal sector (71). By the 1970s, the paradigm shift to understanding cultural process rather than just culture-history in the discipline of archaeology was well underway and raised important questions about the development and evolution of complex society and the relationship between humans, their environment, and culture change (Steward 1955; Wittfogel 1957; Carneiro 1970). Archaeologists working on islands in the Mediterranean, Southeast Asia, and the Caribbean turned toward archaeology, rather than colonial period chronicles and ethnography, to explore questions about the deep past, exposing important new data on the development and spread of agriculture and the colonization of islands over time (Broodbank 2000:15). The substantivist focus on the importance of long distance trade in exotic, luxury materials was very appealing to archaeologists and inspired studies of exchange that pushed the idea of trade networks much farther back in time and suggested various roles for trade in the process of developing social complexity (Oka and Kusimba 2008:339).

2.3 Definitions of "Port" and Typologies

Over the past forty years, Anthony P. Andrews (1990; 2008) has provided us with the most comprehensive overview of the archaeological data relevant to Maya coastal ports from the

Gulf Coast all the way around the Yucatan Peninsula to the Caribbean. His analyses emphasize variety in the kind and functions of coastal ports as demonstrated through settlement survey data and the ways in which these (and likewise the exchange networks themselves) changed through time. Andrews (1990:162-166) discusses seven types of Maya island and coastal ports that may have had specific functions associated with them, although none of them are mutually exclusive. They overlap significantly because each port site is simultaneously engaged in various activities, not all of which are trade related. This is one reason that ports are resistant to typologies and why I, like Andrews, prefer flexibility in definition.

Importantly, Andrews (1990:162) notes that all coastal ports fit under the general category of "coastal communities" in that at their most basic level they represent settlements of various sizes in which people regularly exploit marine resources, including salt, marine fauna, and volcanic pumice for basic subsistence needs, while also trading with inland communities for agricultural staples, lithic raw materials and tools, pottery, and other products. This is a subtle, yet important distinction from earlier port of trade analyses that underscore the *lack* of local resources and connections, while emphasizing the roles ports play in long-distance exchange activities within wider "international" economic systems as their foundational *raison d'etre* (Sabloff and Rathje 1976). In addition to being coastal communities, Maya ports have been more specifically identified as religious coastal centers, island necropoli, and specialized trading ports of four types: ports of embarkation, "ports-of-trade," coastal transshipment ports, and seaports of inland polities (Andrews 1990:162-166).

In describing specialized trading ports, Andrews (1990:165) prefers a more general description of common characteristics to "ports-of-trade" models proposed by some scholars (Chapman 1957; Polanyi 1963; Sabloff and Rathje 1976; Berdan 1978). The archaeological data

from sites like Cozumel (Freidel and Sabloff 1984), Tulum (Miller 1982; Vargas Pacheco 1997), and Xelhá (Robles 1990) simply do not fit the more restrictive models. Despite problems inherent in the models themselves, he argues that this is also due to the lack of detailed historical information available about Maya political and economic structures (Andrews 1990:165). I also would add that the lack of broad, horizontal excavations at coastal sites that have been only generally surveyed also inhibits a more full understanding of Maya ports.

In addition to other functions, most ports likely served, at least, as coastal transshipment ports, regularly spaced nodes located up and down the peninsula designed to facilitate the movement of bulk products along coastal exchange routes (Andrews 2008). Andrews (1990:165) suggests that way stations are most readily identified through archaeology since they may be small and absent in the historical record, and although he does provide examples of prominent transshipment points, including Isla Cerritos, he does not discuss what the archaeological signatures of this type of port may be, other than location. Armando Inurreta's analysis of material from Isla Uaymil (Inurreta Díaz 2004) provides a more detailed discussion of a transshipment port, or way station.

Ports of embarkation to offshore islands include mainland coastal sites such as Polé (Xcaret), El Meco, Paso del Cerro, Oxtankah, Santa Rita, and Chiquilá, etc. located directly across from important island ports, such as Cozumel, Isla Mujeres, Isla Cerritos, Isla Tamalcab, Ambergris Cay, Isla Holbox, Isla del Carmen, that provide a direct transportation route and gateway to the islands. Andrews (1990:163) notes that these sites had multiple functions as way stations for people and products, as direct links and the strongest connections between island and mainland sites and their regional exchange networks, in addition to any religious shrines on the island.

Only a few Maya ports have been archaeologically (and theoretically) linked via architecture and ceramics to large, inland centers that they served as seaports--Isla Cerritos (to Chichén Itzá), Xelhá (to Cobá), and Punta Canbalam (to Chunchucmil). Now that the island of Uaymil has been thoroughly documented archaeologically, it appears to have been connected strongly to both Uxmal and Chichén Itzá (Inurreta Díaz 2004) in what Brown (1977) would call a "polypolitical" situation. Major inland centers in the northern Maya lowlands, such as Chunchucmil, Dzibilchaltún and Izamal / San Fernando Aké, benefited from relations with the coast in order to access vital resources to support their large populations and control regional and extra-regional exchange routes (Dahlin et al. 1998; Dahlin and Ardren 2002; Kepecs 2007). More archaeological research is needed to clarify the nature of the relationship between numerous coastal sites that have been interpreted as linked chronologically and spatially to inland centers, such as Punta Canbalam to Chunchucmil, Tulum to Cobá, Emal to San Fernando Aké, Marlowe Cay to Altun Ha, etc. What is clear is that Maya ports were not all politically or administratively neutral vis-à-vis important inland polities and certainly not insular (Clark 2012). There is also no convincing reason to *a priori* separate conceptually all ports from the practice of local exchange of subsistence resources, locally produced goods, or markets.

The data we have for Maya coastal ports show that while there are significant changes that take place along the coast in terms of a dramatic increase in the size and number of sites with Itzá expansion in the Yucatan Peninsula in the Terminal Classic / Early Postclassic periods (Ball 1978; Eaton 1978), most maritime trade communities do not appear suddenly at this time, but rather have a long history going back into the Formative period (Andrews 1990:160). As nails continue to be driven into the coffin of the old Classic Maya is the southern lowlands / Postclassic Maya is the northern lowlands dichotomy in Maya archaeology, it is clear that more

archaeological research into the Classic period occupation and activities of the northern Maya lowlands needs to be undertaken, not just at coastal ports like Isla Cerritos, but across the entire region (Bey 2006:36).

Survey and preliminary testing of island and coastal sites in Mesoamerica have achieved their initial goals of providing "sketch[es] of the history of the occupation of the coasts and outlin[ing] the major features of the growth of a maritime economy through time" (Andrews 1990:160). These kinds of studies have contributed significantly to our understanding of how resources were acquired and exchanged and goods produced (both exotic and utilitarian), exposing the various roles exchange plays in the development and evolution of complex societies (Rathje 1971; Fash 1994:185).

Recently, Rafael Cobos (2010:154) has interpreted the differences in Chichén Itzá's relationship with the north/northwest coast and the Caribbean coast as a distinction between a closed regional political economic system over which Chichén Itzá had direct control (the west) versus an open political economic system (the east) in which a non-intrusive policy was enacted with regard to the Caribbean littoral. At island port sites like Isla Cerritos and Uaymil, as well as inland secondary centers to the west and north of Chichén Itzá, ceremonial centers were constructed that mimicked on a smaller scale the pattern of built space at the capital, including groups made up of temples, altars, colonnaded structures, and ball courts (Cobos et al. 2010; Cobos 2010a:152). Although it is not clear yet how these structures functioned in the administration of the sites, architecture may have been used as a way to establish and communicate an alliance between these communities and the urban polity of Chichén Itzá (2010:152). According to this model, exchange goods would enter the polity from the west

("point-to-point") through designated and administered ports and be transported from there to the center where they would be redistributed, presumably at large markets.

In the "open system" to the east, however, Chichén Itzá may not have had any administrative power over the ports. Rather, products such as obsidian would have worked their way down-the-line along the chain of ports and trading enclaves with the Itzá capital playing the role of just another consumer within the regional exchange system once the products reached the northern Maya lowlands. Cobos (2010:155) argues that architectural groups at Polé/Xcaret, El Meco, San Gervasio, and Chac Mool in Quintana Roo do not resemble as strongly the patterns seen at Chichén Itzá and northwestern Yucatán, while there are deposits of Cehpech-Sotuta ceramics associated with modest rectangular platforms that supported perishable structures—forms more likely associated with domestic activities than civic-ceremonial, or administrative functions. The evidence for hegemony of this inland center at Isla Cerritos will be evaluated in more detail in Chapter 4.

Taking into account the variation we see in port functions and settlement patterns within the Maya region and beyond, a broader definition of "port community" is most useful for this study. A port is conceptualized here as a community that includes a setting that facilitates the transfer and exchange of resources, products, people, and ideas as a result of its location and constructed environment.

2.4 Ports and Mesoamerican Political Economies

Coastal ports were not only some of the first Mesoamerican communities encountered by Europeans during the conquest, but also some of the first archaeological sites documented by Europeans in the subsequent four centuries. In the 19th century, John Lloyd Stephens, Augustus

Le Plongeon, and W.H. Holmes explored archaeological ruins on the northern coast of Quintana Roo and Yucatán, and Désiré Charnay excavated portions of Jaina Island (Andrews 1990:159). In northern Belize, Thomas Gann documented several coastal sites and conducted excavations at Santa Rita (1990:159). Early considerations of Maya trade, such as Franz Blom's seminal *Commerce, Trade, and Monetary Units of the Maya* (1932), and trade-related technology, such as canoe navigation (Thompson 1949), were primarily object-oriented analyses of exotic materials traded over long distances, their sources, and the routes and means by which they were transported.

In American archaeology, studies of interaction spheres replaced diffusion to explain the movement of resources, technology, and ideas across cultural regions beginning in the 1970s (Caldwell 1964; Lamberg-Karlovsky 1975). In Mesoamerica, Kent Flannery (1976) argued for the importance of the exchange of resources and prestige items across regions and between cultures in the development of civilization during the Formative Period, emphasizing the social aspects (fictive kinship, marriage alliances, ritual) of this exchange over what we might call "commercial" (or formalist) aspects. Kenneth Hirth (1978) drew directly from Polanyi's (1963) and Chapman's (1957) studies to develop his "gateway community" model for Mesoamerica in which he suggested that communities located between resource zones served as centers for trade, administration, and ritual to facilitate elite-regulated long-distance exchange.

Similarly, William Rathje (1971, 1978) and Jeremy Sabloff (Rathje and Sabloff 1976) expanded on the early long distance trade and port-of-trade concepts, linking them to a cultural ecology perspective with an eye toward examining the ways in which "social systems adapt to changing environments" (1976:81) and how this might have stimulated the development of trade systems and, subsequently, the rise of Maya civilization.

William Rathje's (1971) model for the rise of Classic Maya civilization in the Petén is based on the emergence of complex trading networks between the lowlands and highlands stimulated by resource deficiencies in the "core area" of the Maya world (i.e., the southern lowlands, particularly the Petén) that necessitated increasingly complex sociopolitical organization and interaction in order to obtain, basic resources, such as obsidian, salt, and imported stone for metates. Rathje (1971:276) argues that Maya highlanders (today and in ancient times) have direct access to nearby resource zones and that local markets are set up in nearby towns, making production, consumption, and market exchange possible at the household level. Lowlanders, on the other hand, have little access to raw materials and basic resources. They live in the rainforest, which he sees as a precarious zone for subsistence resources, and need supra-household organizations, including regional markets at distant centers and/or traveling merchants, to access these goods (1971:276). This model also distinguishes between the lowland core area (resource deficient) and lowland buffer zones closer to highland resources and markets and transportation routes between highland and lowland regions. This creates a situation in which the lowland core area has access to a limited amount of environmental resources that highland consumers need, but nothing beyond that which the buffer zones already had to exchange with highland merchants at markets that they are situated closer to (1971:277-278). Thus, complex society and its associated ideology, craft specialization, and social organization developed in the core area (the Petén) first as a response to the need to procure critical basic resources from less developed highland sources and buffer zones to which it later spread through increasing exchange and interdependence (1971:283). He does not discuss ports of trade specifically in this argument, but it is clear that Rathje would position these kinds of sites in the "lowland buffer zone" where there would be evidence for the exchange of finely

crafted elite prestige goods (such as polychrome ceramics) from sanctioned ceremonial centers in the core for bulk resources, such as salt, stone, and obsidian from the periphery. There are obviously numerous problems with Rathje's model for Maya social development, not the least of which is the fact that although no sub-region of Mesoamerica had access to all the resources it needed, the southern Maya lowlands were not as resource deficient in terms of basic supplies, including salt and obsidian (Andrews 1990; Andrews and Mock 2002; McKillop 2002, 2005) and subsistence surplus (Fedick 1996). However, Rathje's model is a Mesoamerican precursor to world-systems approaches (Wallerstein 1974; Blanton and Feinman 1984) in that it identifies a core area that, by controlling exchange, impacts the sociopolitical and economic organization of the periphery (buffer zones) and, subsequently, the trajectory of social development (Stein 1999:3). This kind of research placed trade and exchange, and thus political economy, squarely in the sights of archaeologists interested in understanding the rise and evolution of Maya civilization and the ways in which the Maya were connected to a broader Mesoamerican economic system at various moments in history (Hammond 1973; Brown 1977; Hirth 1978; Andrews 1983; Blanton and Feinman 1984; McKillop 1989; Masson and Freidel 2002; Rathje 2002; Dahlin and Ardren 2002; Kepecs 2007).

Sabloff and Rathje (1975) would set out to explore related questions through their survey of coastal sites on the Maya island port of Cozumel. Using Cozumel as a case study, they focus on the internal structure of a port, which (like Polanyi) they argue is cross-culturally applicable, through comparison to the Aegean island port of Delos (Rathje and Sabloff 1976:82). They also link Maya trade practices to broader Mesoamerican exchange systems (Sabloff and Rathje 1975; Rathje and Sabloff 1976) and even globally through comparison with prehistoric exchange in Melanesia and Australia (Rathje 1978). Cozumel, and particularly the site of San Gervasio, was

a religious shrine and pilgrimage center during the Late Classic and Postclassic Periods and can be compared to the island port of Delos in the Aegean, which also attracted both merchants and pilgrims as early as 700 BCE. According to Rathje and Sabloff's (1976) model, not all ports are "ports of trade." While trading ports all facilitate the storage, continued production, transport, and exchange of local for non-local materials, "ports of trade" deal exclusively in bulk, non-local goods with exchange controlled and executed by non-local, or foreign, "merchandisers" (1976:82). In this sense, ports-of-trade do not generate or exchange local products (they are entirely dependent on foreign exchange because they have no other resources) and must attract a large and diverse variety of merchants from different cultural backgrounds in order to maintain the primary exchange activities of the port. Sabloff and Rathje (1976:83) argue that to do this, ports of trade must procure information and capital by creating structures within the system that maintain an influx of goods, people, and information from outside. They must promote flexibility in cultural norms and reduce conflict between merchants, porters/traders of different and, perhaps, openly hostile ethnic, political, and/or cultural groups by reducing or strictly administering interactions. The second and third parts of this hypothesis extend Polanyi (1957, 1963) and Chapman's (1957) ideas about the political neutrality of ports, suggesting that increased administration over port activities, rather than less administration, would be necessary to effectively restrict or structure intercultural interaction (through spatial segregation), reducing the potential for conflict (cf. Heider 1969). The rules, however, would need to be more cultural in nature, rather than political/militaristic, and pragmatically flexible in order to create a space neutral and inclusive enough to facilitate exclusively non-local exchange.

In both Cozumel and Delos, Sabloff and Rathje (1976:85) see religion as structured to promote neutrality and a kind of sacredness that can be integrated into the socioeconomic system

to create "direct symbiotic feedback between piety and profit," along with a policy of openness and inclusiveness to attract rather than repel foreigners. For example, Classical Delos was considered the sanctuary of Apollo with over forty shrines constructed on the island with iconography and inscriptions depicting hundreds of different gods, and each shrine complex was associated with separate warehouse and port facilities (1976:85). When the island declined as a port of trade, the associated religious cults also went into decline (1976:85). On Cozumel, Sabloff and Rathje (1976:86) document multiple, small shrine sites along the east coast, dispersed several kilometers apart and located outside of settlements. They imply that this pattern relates to a method of conflict resolution, but do not describe how, other than perhaps as a way of keeping religious pilgrims/merchants of various faiths (assuming that the numerous shrines were representing different patron deities) separated from each other and local settlements. Moreover, the talking Ixchel shrine is interpreted through this lens as representative of a more flexible and adaptable religious orientation, as the deity can speak directly to her worshipers and, if need be, change, depending on the circumstances. Finally, Sabloff and Rathje (1976:87) discuss Cozumel's historic acceptance of Spanish landings and ultimately their alliance with the conquistadores as evidence for "pragmatic mercantile norms and conflict-dampening devices" integrated into the social system as a result of its status as a port of trade. Like Delos, Cozumel's decline is associated with shifts in trade networks, the subsequent usurpation by the Spanish of the mercantile economic system operating throughout the Yucatan Peninsula.

A primary component of Sabloff and Rathje's (1976) argument is that ports of trade are categorically *non-local*. They are intentionally located in places lacking in local resources and consisting of populations of foreigners without deep roots to the landscape or native culture,

positioned along transportation routes well outside the control of major inland polities (neutrality), and not engaged in local or regional exchange networks. However, as Andrews (1990:164) eloquently points out, Cozumel is by no means entirely deficient in local resources. Like all other coastal regions of Mesoamerica, Cozumel needed to import lithic raw materials, such as obsidian, but had ample access to good agricultural lands on which they cultivated subsistence crops (maize and beans, for example) and market crops, such as cotton, for local use and export (1990:165). They also had access to numerous marine resources for both subsistence and long-distance exchange, some of which were highly valued by inland centers (spondylus shells, stingray spines, etc.) (Hamblin 1984; Cobos 1989).

The predominance of the Sotuta ceramic complex in Terminal Classic times on the island suggests some kind of connection with the interior polity of Chichén Itzá, and thus the political status and/or neutrality of the settlements on the island remains elusive (Sabloff 1977:76; Andrews 1990:164). Sabloff and Rathje (1976) over-emphasize economic pragmatism and political economy in their port of trade model, separating ports completely from their local sociocultural context as permanent communities that have a long history pre-dating the Postclassic period, even denying the port's access to the local resources of its surrounding ecological niche. Ironically, they also use religious shrines and ideology as evidence to support this model, aspects of coastal Maya culture that seem highly embedded in symbolism and social interaction, practice, and identity—deep-seeded elements of any society-- that do not fit easily into a system of non-local, ephemeral, and "culturally non-specific" (1976:85) character. In some ways, the Cozumel study errs along the same lines as Polanyi's, in an effort to make the model more broadly applicable and the connection to cultural ecology stronger (the denial of local markets and exchange), important elements of the local historical and social context that do

affect the organization and dynamics of the port are lost. Still, these studies, to which we will refer again below, provide important insights into some of the broadly shared characteristics of Mesoamerican ports and how they operate within the context of the Late Classic and Postclassic Maya economies specifically.

Prior to Rathje and Sabloff's study, Mesoamerican ports of trade were characterized as small and densely located between "empires," having started out as villages that "developed into ports of trade" and served as storage and meeting places for traders to transact business; no markets were located in port communities according to this model (Polanyi 1963:37). Clearly there are issues with these interpretations, especially since we know, for example, that large markets did exist at or nearby trading centers such as Xicalango and that market systems and long-distance exchange were highly integrated enterprises (Masson 2002a:4).

Frances Berdan's (1978) reappraisal of Mesoamerican ports of trade critically examines Polanyi (1963) and Chapman's (1957) models, relying primarily on ethnohistoric data from Central Mexico. Berdan (1978:183) summarizes the substantivists' interpretation of pre-industrial economic systems as being based on reciprocity, redistribution, foreign trade, and market exchange, the latter which she brings into the discussion based on Chapman's characterization of it as a parallel system. These "exchange mechanisms" are associated with different institutions. For example, reciprocity occurs between symmetrical kinship or political units, the redistribution of goods happens through allocative centers, foreign trade is associated specifically with ports of trade, and markets are administered by a central power (1978:182). While the earlier models saw these institutions as separate, even when operating at or near the same location, Berdan suggests that in the case of Mesoamerica, these may be linked through both exchange activities and social organization (1978:183). Thus, she is able to reconcile the

simultaneous existence of long-distance overland and coastal trade networks with markets in Mesoamerica. While Berdan (1978:182) does admit that reciprocity exchanges were certainly occurring at the local level, she avoids dealing with local exchange practices and how they may have played out in port and market communities, as these kinds of exchanges are below the state-level resolution offered through the ethnohistoric sources. The ethnohistoric sources make it clear, however, that transactions conducted by members of the merchant guild, Aztec *pochteca*, did take place at markets, and some markets existed in what Berdan refers to as "port of trade areas" (1978:192). Maya merchant traders, or *pplom*, unlike pochteca, were required to be of noble status and operated independently as opposed to part of a state-sanctioned guild (1978:192 citing Roys 1943). It is unclear whether there were merchant barrios, or small communities of merchants living together in cities and/or ports in the northern Maya lowlands as is suggested for Central Mexico and the Gulf Coast region by Sahagún's accounts and by Cortés' in references to Nito and Naco in Honduras where there were neighborhoods of Nahautl-speaking merchants and people from Acalán (Berdan 1978:194; Brown 1977). This relates to at least one of the broad research questions of this thesis, particularly who was living in the residential spaces of the island port.

The data outlined above broadly coincide with ethnohistoric accounts from the early Colonial period that describe movements of the Chontal Maya (also referred to as the "Putun," and sometimes equated with the Itzá Maya in the literature) north and east from their Gulf Coast homeland in the Chontalpa region of Chiapas and Tabasco near the Laguna de Términos, also known as Acalan (Scholes and Roys 1948; Thompson 1970; Sharer 2006:528; Vargas Pacheco 2001). Much like the Postclassic codices and Spanish chronicles from Central Mexico that describe the complex and extensive political and economic networks that characterized the Triple

Alliance Empire at the time of the cultural encounter, historical sources produced in Yucatán during the Colonial period, such as the *Books of Chilam Balam* (of Chumayel, Tizimin, and Mani), the *Relaciones de las Cosas de Yucatán* by Bishop Diego de Landa, the *Titles of Ebtun*, and the *Ritual of the Bacabs,* describe in various levels of detail the political geography, ruling lineages, and key historical events before, during, and after the Spanish invasion of the Peninsula. While much of the discussion in these sources refers to the people, places, and institutions of the Late Postclassic period, they also reference earlier events such as the Chontal/Putun Maya migration and the development of Itzá political hegemony in the northern Maya lowlands. Roys (1943) and Scholes and Roys (1948) provided important syntheses of the ethnohistorical data related to the Chontal Maya migrations to and from Acalan, and Thompson's (1970) summary of these data in his *Maya History and Religion* emphasizes the growth of both sea trade and merchant groups that coincided with significant changes in lowland Maya civilization at the end of the Classic period.

Nearly 40 years ago now, Thompson (1970:7) referred to the Chontal/Putun as "the Phoenicians of the New World," crediting them with a whole series of foundational events with important ramifications for the history of Mesoamerica, from the development of the Caribbean coastal trading network, to constructing port facilities and shrines on the island of Cozumel, to the establishment of Chichén Itzá as a regional hegemonic political and economic power on the Peninsula—all tied to their skills as seafaring canoe merchants. While subsequent scholarship has generated more nuanced interpretations and confirmed the presence of both coastal and inland trading centers during the Classic period (Andrews 1990:160; Andrews et al. 1989; Vargas Pacheco 2001), Late/Terminal Classic Chontal Maya commerce clearly altered both coastal landscapes and Maya political economies through the establishment of ports and

facilitated the flow of ideas, people, and goods between Central Mexico and the Maya region (Chapman 1957; Polanyi 1963; Rathje and Sabloff 1976). This contributed to the rise of international religious symbols, cults, and cult centers, such as those associated with Quetzalcoatl (Ringle et al. 1998). Kepecs (2007:133) refers to "international soldiers of Quetzalcoatl" along with shared institutions that facilitated the flow of goods between regions dependent upon each other for access to products each produces, controls, and exports. With the fall of Classic period dynasties in the southern Maya lowlands, Chontal Maya groups appear to have moved east and south by taking control of the riverine trade routes, simultaneously moving into the northern Maya lowlands via the coastal littoral and asserting control over salt production areas along vital sea trade corridors (Thompson 1970:15; Sharer 2006:528; Kepecs 2007).

The historical sources do offer tantalizing glimpses into the social, political, and economic organization and practices of the Postclassic Maya and inspired archaeologists as early as the mid- 19th century through the first half of the 20th century to consider trade in the context of Mesoamerican culture-history (Sabloff 1977:67; Kepecs 2007:133). In addition to markets, Berdan (1978:193) discusses Maya trade in slaves through ports who were also used as laborers in the process of transshipment and cultivation of cacao in port of trade areas. This suggests that in addition to markets, agricultural fields (i.e., permanent agricultural production) were sometimes associated with ports, creating an image of ports as permanent settlements made up of multiple activity areas and social groups.

Berdan's review of ethnohistorical data on Aztec and Maya ports of trade ultimately says more about the various forms of exchange operating within Postclassic economies than the characteristics of ports themselves. However, in contrast to earlier studies, she suggests that the neutrality of Mesoamerican ports is in no way clear based on the available data and that port

activities may have included production and market exchange, as well as long-distance mercantile exchange, activities that previous studies argued were kept separate (1978:195). She also calls for more research into the role of professional merchants at ports of trade and their local connections, arguing that "their contacts in such locales were not limited strictly to administrative officials" (Berdan 1978:195).

Gasco and Berdan's (2003) more recent article on what they refer to as "international trade centers" in Mesoamerica provides an update of Chapman's (1957) review published 46 years earlier, as well as Berdan's (1978) earlier work, freely admitting that little additional archaeological data have been generated from port sites, other than survey data (2003:109). In contrast to Chapman, but in accordance with Andrews (1990), Gasco and Berdan (2003:109) interpret Mesoamerican trading centers (entrepots or ports) as highly variable in their organization and functions and primarily economic, or "commercialized," rather than strictly political—with neutrality motivated by economic pragmatism (cf. Rathje and Sabloff 1976).

The level of state involvement in port activities and administration, the relevance of local versus long-distance exchange, elite versus utilitarian goods, and the identity and organization of merchants are all aspects of ports that varied across cultures (2003:110). According to Gasco and Berdan (2003:110), international trade centers in Mesoamerica were generally settings of exchange between merchants of different regions and cultures and locations for a high volume of trade of a variety of goods. Based on these more general criteria and some new data, more trading centers could be added to the list of ports generated by Chapman, bringing the total to 19 ports of trade, including both inland and coastal centers. Maya sites they identify include Chontalpa, Potonchan, Itzamkanac, Xicalango, Cozumel, Chetumal, Nito, Naco, and Zinacantan. Moving beyond port of trade models from the late 1970s, they also suggest archaeological

signatures of trade centers from Yucatán (namely Cozumel) and Naco, Honduras as including low, single-unit agglutinated platforms that lack household middens and are nucleated in the center of small settlements that may have served as warehouses for the storage of goods (2003:111). Similar low structures from Terminal Classic and Postclassic contexts at the site of Chac Mool in Quintana Roo and Isla Cerritos, Yucatán have been excavated, however, and show material culture patterns similar to domestic contexts, including burials beneath some of the platforms (Cobos et al. 2007, 2010; Terrones González 2006).

Among Maya sites, Gasco and Berdan (2003:113) highlight the variety of trading centers, noting that Isla Cerritos and Wild Cane Cay link coastal trade routes directly with inland centers, while Cozumel Island and Chetumal are more independent, with Chetumal also serving as a center for cacao production. Both Nito and Naco are located on major trade routes leading to Copán and are reported to have both storage facilities and residential groups of foreign merchants from Central Mexico and the Chontalpa region (2003:113). In addition to the common characteristic of strategic location in peripheral and buffer zones between regions, Gasco and Berdan (2003:115) also note the tendency of multiple trading centers to be located in clusters along trade routes and to be settings of "sustained and continuous commercial activity." These are permanent settlements, rather than more ephemeral campsites or loci for "in-and-out trading" (i.e., they are communities where people had highly valued, long-term investments). These centers are also re-conceptualized as engaged simultaneously in both local and long-distance exchange networks for utilitarian and luxury goods through practices that were not separate, but highly interrelated (2003:116).

We have already discussed Sabloff and Rathje's (1976) ports of trade model, which developed out of their Cozumel survey project (Sabloff and Rathje 1975; Sabloff 1977; Freidel

and Sabloff 1984) and united the archaeological investigation of island and coastal sites with the development of theoretical perspectives on Maya trade, a union that would frame much subsequent research on Maya coastal ports. However, it is important to also mention the contributions of this project to developing models of Maya trade and political economy. The goals of the Cozumel Archaeological Project were to "expand the Scholes-Roys-Thompson culture-historical model and put it into a theoretical perspective" testing hypotheses about the changing nature of Maya trade (Sabloff 1997:69). Recall that their foundational theoretical assumption is that societies are organized and structured systems that must adapt to external (environmental), as well as internal variables through systemic change (Sabloff and Rathje 1975:81; Freidel and Sabloff 1984). The Cozumel data suggest a shift in trade practices during the Terminal Classic period (after 800 CE) from primarily overland trade routes predominant during the Classic period to a maritime trading network, and the Putun (or Chontal) Maya were the instigators of this shift (1975). Concomitant to this shift in trade orientation is an important social change from "a religious domination of society in the Maya lowlands to a more secular, mercantile domination" (Sabloff 1977:73). Sabloff and Rathje saw a marked increase in the size and occupation of sites on Cozumel, coinciding with the increasing predominance of Puuc and thin slate wares on the island and at Polé (Xcaret), the point of embarkation for the island from the mainland—all indicating that products from the west may have been moving in via coastal trade, rather than overland routes through Cobá (Sabloff 1977:75). There are also indications of mass production of Fine Orange, a light weight and highly mobile pottery, that Sabloff (1977:83) suggests increased the efficiency of Putun transport, and thus provided a competitive economic advantage. Later, with the power vacuum that Chichén Itzá created under Putun/Itzá control,

new architectural features such as columns and ceramics from the Sotuta ceramic sphere appear in island contexts (1977:76).

The Late Postclassic period (1200-1519 CE) represents the apogee of occupation on Cozumel, overlapping with the height of power of Mayapán and the extent of the coastal trade networks from the Gulf Coast of Tabasco around the peninsula to Honduras (Andrews 1998; Freidel and Sabloff 1984). The largest, most complex architecture on the island dates to this period, and significant ties between San Gervasio and other coastal port sites, such as Tulum, are apparent in the spatial layout and material culture patterns at these sites (Sabloff 1977:77). Sabloff (1977:79) also notes that exotic and long-distance exchange goods were not just limited to the elite of the main civic-ceremonial center at San Gervasio, but appear to have been "available to much of the population throughout the island." The sacbeob, or road systems, on the island connecting warehouse facilities to port facilities and settlements, along with a series of religious shrines along the eastern coast of the island were constructed and/or refined during this period (1977:79). The religious shrine dedicated to Ixchel, on Cozumel was one of the three most important pilgrimage sites in Late Postclassic Yucatán (Sabloff and Rathje 1976:86). Ixchel was a patroness of divinity, childbirth, fertility, weaving, and midwifery, and was usually associated with underworld iconography, such as the skull-and-bones motif shown on her skirt in some depictions (Miller and Taube 2003:100). According to Sabloff and Rathje (1976:86), the shrine to Ixchel on Cozumel was a "talking image" that spoke the word of the god directly to visiting pilgrims. Thus, by the Late Postclassic period, there is a shift in the centers of population, religious and political power in the Maya region from inland lowland sites to coastal ports such as Ecab, Tulum, San Gervasio, and Oxtankah as maritime trade with highland Mexico

and south to Honduras, along with salt production became primary cornerstones of the Maya economy.

Archaeologists interested in inland Maya exchange and interaction spheres at this time were also influenced by Polanyi's (1963) and Chapman's (1957) port of trade models. Kenneth Brown (1977:355), working with the Penn State archaeological survey and excavations of Maya sites in the landlocked Valley of Guatemala under the direction of William Sanders, suggested that a somewhat expanded version of the port of trade model provides a more convincing explanation of the material traces of Teotihuacan influence in highland Guatemala at sites like Kaminaljuyú during the Early and Middle Classic period than models based on military conquest. Rather than seeing a complete displacement of highland Maya material culture types and architectural styles, particularly those associated with subsistence, political, and religious practices, by central Mexican counterparts as might be expected with a direct political takeover of the region, Brown (1977:355) argues that the archaeological data shows a blending of traditions, suggesting that the entire valley region served as a port for long distance trade of elite prestige goods. Following Chapman's (1957:116) model, entire regions, including inland zones, can serve as ports of trade if they are strategically located between "empires" (or complex polities, resource regions, etc.), in politically neutral areas, and along trade routes.

In this case, the Valley of Guatemala is situated in an "environmentally transitional" and culturally intermediate zone between the southern Maya lowlands, the pacific coast and piedmont, and Central Mexico (Brown 1977:355). Artifacts of foreign source or style, along with architecture that incorporated Teotihuacan symbolism are interpreted as material signatures of a port or center for long distance exchange and intercultural interaction (1977:357). As is the case with Polanyi's (1963) model, political neutrality is an important characteristic (especially at

the outset of this interaction in the Early Classic period) with the regional centers of Kaminaljuyú and Frutal being politically weaker and, according to Brown (1977:356), less organizationally complex (i.e., "evolved") than either Teotihuacan or Copán—principal centers located on either side of the valley who could have sent traders to this "neutral" space to conduct exchange. Like Polanyi, Brown also sees long-distance exchange of prestige goods (destined for elite use) as an entirely separate system from local and regional exchange of subsistence and utilitarian goods, although in contrast, he implies that these activities took place simultaneously and in the same places, though in separate contexts (1977:356).

Brown's interpretations expand Chapman's model in three ways. First, within the broader port of trade region, several sites (he cites seven in the Valley of Guatemala) have separate, interrelated functions within the system, including points of entry, residence-administration, religious practices (cf. Cozumel's coastal shrines), and trade itself (Brown 1977:364). Secondly, like Sabloff and Rathje (1976:85), Brown (1977:357) sees the inland port of trade as providing the setting for exchange between foreign states, an activity with political ramifications at both local and regional levels, and thus requiring administration that structured the interaction between foreign traders and native elites, as well as religious sanction, expressed by the incorporation of foreign artifacts into ritual offerings and foreign architectural styles into civic-ceremonial structures he documents at Kaminaljuyú.

For Brown (1977:358) the Valley of Guatemala data require an expansion of the model to account not only for the influence of a stronger foreign power on the native population of the port region, but also the incorporation of native traditions, material culture, and architecture into the practices of foreign traders, in this case Teotihuacanos, that he argues are living in residence at the port of trade. He qualifies the notion of port "neutrality," suggesting that inland ports of

trade were either monopolitical or polypolitical in terms of administration—one or more political groups "supervised" the activities of the various components of the port. In the case of the Valley of Guatemala, it is interpreted as a polypolitical port in which two regional administrative centers at Kaminaljuyú and Frutal both exercised political control over the port and its functions. Interestingly, Brown (1977:358) interprets the incorporation of native traditions, such as burial practices, into foreign resident-traders' activities not as acculturation over time into highland Maya society, but rather as a conscious political and diplomatic strategy by the Teotihuacanos to integrate themselves into local elite lineages and political structures to increase their influence and control over the strategic port region. In this way, interaction with Teotihuacan traders influenced highland Maya elites and, subsequently, social, economic, political, and religious practices at Kaminaljuyú and Frutal incorporated both Maya and central Mexican elements.

Thirdly, Brown (1977:359) argues that inland ports, such as the Valley of Guatemala, are more vulnerable to political take-over by trading groups because, unlike seaports, there are more constraints to the development of competing ports nearby, and elites from nearby city-states are dependent on the flow of "status defining goods" through the inland port. In this case, he suggests Teotihuacan was unable to take control of the port militarily from such a great distance, but did seek to integrate Teotihuacan traders and ideology into the social, political, economic, and religious fabric of the region and in so doing, acquire increased political control over the area and profits, perhaps through obsidian exchange (1977:359).

While Brown's inland port of trade model for Kaminaljuyú and the surrounding valley is open to critical analysis from a number of angles, his expansion of Chapman's model for the highland Maya raises important issues relevant to this study. While he recognizes that political neutrality could be beneficial for ports of trade, his monopolitical and polypolitical types

acknowledge that in practice, ports are more likely to be politically aligned in multiple ways to nearby and/or more distant centers rather than explicitly neutral and that the development and decline of ports over time is related, in part, to their political structure and links to the regional centers and resource areas they connect. Brown's study also foregrounds the permanence of port communities, emphasizing the importance of the presence of foreign traders as permanent residents in enclaves and their cross-cultural interactions with others in and near ports in shaping the social, cultural, political, and economic milieu of port regions.

Interestingly, like Sanders (1978), Brown's theoretical assumption based on ethnohistorical sources from Mesoamerica is that long distance exchange was always carried out through the movement of merchant traders similar to the Aztec pochteca into distant regions where they established permanent trading colonies. These practices, documented in the Colonial period, of Late Postclassic merchant/traders have been uncritically utilized to model interaction in earlier periods with little or no archaeological evidence to support them. Brown and Sanders' work in the Valley of Guatemala was focused primarily on the political economy aspects of the Teotihuacan-Maya interaction, documenting the presence of Teotihuacanos in terms of foreign artifacts from distance sources or with central Mexican design motifs, as well as architectural characteristics, such as talud-tablero façades on masonry structures. They note, however, that in many civic-ceremonial and domestic contexts the so-called Teotihuacan styles/designs/traditions are mixed with Maya styles/designs/traditions (Brown 1977:358), and this calls into question their unambiguous interpretation of Teotihuacanos living in Maya houses and burying their dead in the Maya tradition. Could it not just as easily be a case of Maya elites incorporating Teotihuacan material culture into their social practices? Brown's study is hindered by a lack of attention to the domestic context through an explicitly household-oriented archaeology, and this

suggests that we need more broad, horizontal excavations of residential groups in port communities to really get a sense of who lived and worked at ports, and what "enclaves" (if any) existed, especially if the interpretation of the larger sociopolitical context of exchange—the expressed goal of Brown's investigation---hinges on precisely that kind of information. This is one of the primary objectives of my approach with this case study at Isla Cerritos.

One of the Maya coastal ports to be extensively excavated on the east coast of Belize whose occupation extends through the Late Classic and into the Postclassic period is the island of Wild Cane Cay. Wild Cane Cay is now 2.4 ha in size, but offshore test pitting demonstrated that it may have been double that size in ancient times prior to sea level rise (McKillop 1996:52). It contains a central plaza group and 6 in-tact structures and was extensively excavated by Heather McKillop (1996) in the 1980s and 90s as part of her investigations of coastal sites and trading enclaves around Port Honduras that resulted in her book *In Search of Maya Sea Traders* (2005). McKillop (2005b:139) sees the Port Honduras coast "as a laboratory for investigating ancient Maya economy, particularly sea trade and its relationship to local economy." Horizontal trench excavations of the mounds around the central plaza, along with a random test excavation strategy provided nearly full coverage of the island, documenting a long occupation from the Late Formative period through contemporary times with prehispanic architecture containing six in-tact floors (2005b:66). Several domestic middens were documented, along with faunal remains and human burials, providing insights into local subsistence practices, social organization, and mortuary practices, but the overarching research objectives of the project were geared specifically toward the structure of ancient Maya economy and sea ports' roles within it through the analysis of obsidian artifacts (2005:41).

McKillop (2005:43) defines Wild Cane Cay as a Maya port based on its location and the presence of a variety of long-distance exchange goods from diverse sources areas, including obsidian, jade, copper objects, and ceramics (such as Tohil plumbate). Strategic location is a key part of this interpretation, as Wild Cane Cay sits in the protected waters of the barrier reef of southern Belize, near the mouth of the Río Hondo, providing easy river transport to inland centers such as Nim Li Punit and Lubaantun, and between highland and lowland resource zones (McKillop 1996:52). In terms of strategic location, exotic imports, and possible economic function, Wild Cane Cay is often compared by scholars to Isla Cerritos. McKillop (1996:52) points out that in contrast to earlier research heavily influenced by substantivist perspectives, most researchers now assume that ancient Maya economy functioned similarly to modern economies in the sense that it responded to "the forces of supply and demand, based on the concepts of rational source, scarcity and maximization," making the location of the site on the southern end of the coastal trade route around the Yucatan Peninsula very important.

McKillop's analysis of the obsidian data from Wild Cane Cay suggest that rather than a simple "down-the-line" type of trade in which the supply of the product is reduced as it is exchanged, this resource was shipped in bulk directly to the island, which acted as a way station or transshipment point for exchange with large inland political centers who received the commodity in bulk (1996:50). The site also acted as a redistribution center for other coastal and mainland sites in the Port Honduras region. Between Late Classic and Early Postclassic midden contexts, obsidian density on the island increases by 800%, suggesting a major increase in the importation of this resource through the east coast (McKillop 2005b:142). Obsidian samples from Classic period deposits were chemically and visually sourced to highland Guatemala sources, mostly Ixtepeque and El Chayal (2005:45). Samples from the Early Postclassic deposits

were sourced to six different places, including Ixtepeque (where the majority still originated), El Chayal, Rio Pixcaya, La Esperanza (Honduras), and the central Mexican sources of Ucareo and Pachuca. These patterns are also observed at other small sites along this coastline including Fenchman's Cay and Green Vine Snake (2005:45, 142). The increase in number of obsidian sources accessed overall and the increase in central Mexican obsidian sources used by Wild Cane Cay is similar to the pattern and timing observed for Isla Cerritos (Andrews et al. 1989). McKillop (1996:54) also uses obsidian blade width as an index to measure resource conservation, with thin, narrow blades indicating more efficient and less wasteful use of a scarce resource, such that increasing conservation correlates with less ready access to the resource across the Maya area. Overall, Wild Cane Cay had thicker blades, conserving obsidian less throughout its history, suggesting frequent access to this resource in high quantities (1996:54). In the Early Postclassic period, island residents wasted even more obsidian, although they tended to conserve Pachuca green obsidian from Central Mexico (1996:55).

The argument based on the Wild Cane Cay obsidian data is that through the Late Classic period (c.600-900 CE), bulk trade networks and salt production (e.g., from nearby "sal cocida" production sites) were oriented toward the inland centers of the southern lowlands. Then, during the Terminal Classic – Postclassic transition, there was a shift in economic orientation away from salt trade and the southern lowland centers toward obsidian trade and the northern lowlands "circum-Yucatan" coastal trade network controlled at that time by Chichén Itzá (McKillop 2005b:142). As was the case with the ports farther north on the Caribbean, Chichén Itzá's presence may not have included overt administration, but increased access to trade goods from central Mexican sources, and patterns similar to both Chichén Itzá and Isla Cerritos suggest interaction with this broader economic sphere. It remains unclear, however, if Wild Cane Cay

was incorporated into some kind of "open system" of long-distance exchange such as that envisioned by Rafael Cobos, although these port sites along Port Honduras do appear to be oriented toward east coast patterns, remaining active in supplying the inland centers of northeast Belize through the Late Postclassic period, well after the fall of Chichén Itzá.

One of the biggest contributions of McKillop's work at Wild Cane Cay is its recognition of the importance of local and regional coastal exchange networks and the role of sea products and coastal sites in Maya cosmology. The sea itself served as a "portal to the underworld," and stingray spines, spondylus shells, coral, and other objects associated with dangerous sea creatures like sharks and manatee were quite valuable to inland and coastal Maya communities (2005b:87). The presence in island burials and middens of freshwater jute shells, limestone, chert, and ceramic figurine whistles from mainland sources demonstrates the kinds of products coastal people obtained through continuous local exchange with nearby inland communities (2005b:108). Despite the emphasis in the archaeological analysis of Wild Cane Cay on the structure of Maya economy, McKillop (2005b:88) sees a strong connection between coastal port activities and community identity, suggesting that islanders "may have couched their lifestyle and buried their dead within a symbolism submerged in the sea and its associated ideology, but their livelihood reflected their status as opportunistic and successful traders."

This would continue at Wild Cane Cay and the east coast ports well into the Postclassic period, while after the fall of Chichén Itzá in the middle 11th century, occupation at western and northern Gulf Coast sites decreases significantly (Andrews 2008). After 1150 or 1200 CE, the northern lowlands was politically fragmented into multiple provinces or chiefdoms, some with coastal port sites located within their territories that continued to be a vital link to resources for these polities, albeit on a smaller scale (Andrews 1990:161). A regional confederation formed in

the northwest at Mayapán, but there is little evidence that this site exercised control over the east coast, which by the Late Postclassic period had begun to flourish in terms of the number and size of sites from Ecab and Tulum in the north to southern Belize and coastal Honduras. Andrews (1990:162) notes that new centers of power emerged, this time on the east coast rather than inland, forming "an almost continuous chain of densely inhabited city states" dominating the exchange networks of vital resources all over Mesoamerica.

Taking McKillop's data from Belize into account as well, this model recognizes variation in coastal site spatial organization between the Yucatecan and Caribbean littorals and seeks to explain how different Maya political economies may have been integrated at the regional level during the Terminal Classic period. This kind of study represents the direction that the investigation of ancient Maya coastal communities is turning. Like McKillop's work in Belize, Cobos and colleagues from the Universidad Autónoma de Yucatán have carried out recent programs of extensive archaeological excavation at a number of coastal sites including the islands of Uaymil, Isla Piedras, and Isla Cerritos, and the mainland sites of Sihó and Chac Mool—all of which had different kinds of relationships with the inland centers of Chichén Itzá and Uxmal during the Classic and Terminal Classic periods (see Inurreta Díaz 2004; Cobos et al. 2007, 2010; González Ligón and Cobos 2006; Márquez Morfín and Hernández Espinoza 2006; Cobos 2010, 2011, 2012; Germon Roche 2011). In addition to Aguacatal, Jaina, El Meco, Cancún, Playa del Carmen, Xcaret, Xelhá, Tancah, Santa Rita, Wild Cane Cay, and Cerros on the Caribbean coast that are recognized by Andrews (1990:160) as having been extensively investigated, these projects move significantly beyond survey, greatly increasing comparative data sets and sample sizes. While the overall research orientation of these studies continues to be focused primarily on political economy and exchange, as we learn more about how coastal sites

are organized spatially and what activities took place there, the economic questions and interpretations have become more nuanced, local and regional exchange are now topics of investigation, and social organization and identity, and daily life are new targets of investigation.

Extensive excavations at Uaymil and Isla Piedras, for example, have helped archaeologists identify different types of ports. The Uaymil investigations have produced evidence of a transshipment port, or way station that had overlapping material associations with both Chichén Itzá and Uxmal, changing our perspective not just on the functional types of Maya ports, but also on the relationship between two large urban centers (Andrews and Robles 1985; Cobos 2010b). Isla Piedras shows material evidence of a strong relationship with Jaina Island in the Late Classic and may have formed a small island-coastal polity along the Gulf Coast (Inurreta Díaz 2006).

Recent investigations at Chac Mool on the Caribbean coast have broadened our knowledge about this coastal port considerably since its original documentation by Lothrop and Gann in the early 20th century (Terrones González 2006; González Ligón and Cobos 2006; Márquez Morfín and Hernández Espinoza 2006; Giannisis 2006). Consisting of three large plaza groups with both ceremonial and domestic structures, the early phase of occupation at the site dates to the Terminal Classic period and, as discussed above, ceramic deposits associated with low platforms contain Chichén wares (González Ligón and Cobos 2006:35). After the decline of Chichén Itzá in the Late Postclassic period, there is a significant reorientation of the site, including a shift of the site center to the east and the construction of new temple superstructures and altars (Terrones González 2006:18). Zooarchaeological, archaeobotanical, and bioarchaeological analyses at the port suggest that residents of Chac Mool in both the Terminal Classic and Late Postclassic periods exploited a rich marine environment high in proteins from

the sea, as well as birds, mammals, and reptiles in addition to agriculture including the typical Mesoamerican triumvirate of maize, beans, and squash, along with chile, seasonal fruits, and tubers (Terrones González 2006:19). Like Emal, this community was engaged in both salt production and port transshipment activities at the same time, utilizing the nearby lagoons as salineras (Terrones González 2006:20). Chac Mool also contains a well-preserved mortuary collection of 128 individuals that has provided key insights into social organization, diet, funerary rituals, demographic profiles, and activity patterns (Terrones González 2006:21). Burial patterns suggest a complex social organization with groups of different social rank, ranging from what appear to be elites who held positions of authority within the community to human sacrificial victims (González Licón 2006). Interestingly, osteological studies of muscular stress correlate with social status and change over time with Terminal Classic elites showing significantly less muscular stress than non-elites, while Late Postclassic elites and commoners show a similar high level of muscular development (Giannisis 2006:213). Investigations into social organization, subsistence, and activity areas at Chac Mool provide a more detailed picture of ancient Maya port life on the Caribbean.

Over the years since the publication of Anthony Andrews' (1990) important synthesis of archaeological data on Maya ports, archaeologists working along the Caribbean and Gulf Coasts have taken up the call for more extensive investigation of Maya coastal communities. Most research continues to be oriented toward understanding ancient Maya political economy and trade, and the broad, horizontal excavation of these sites has helped break free from earlier restrictive definitions of "ports-of-trade" to recognize variety in the organization, activities, and functions of Maya ports (Andrews 2008). These studies have also helped us refine models of ancient Maya economic networks and the role that sea trade played within them, elucidating

important regional differences, recognizing the role of local production and exchange, and finding material expressions of the dynamic changes taking place in the region from the Late Classic through the Early Postclassic periods with the increasing flow of people, ideas, and products and the rise and decline in fortunes of the great inland cities. Survey and excavations alike have documented the longevity of coastal sites over several centuries, indicating that these were not just ephemeral locations designed to provide the setting and facilities for long-distance exchange between foreign merchants, but coastal communities with deep local roots and traditions. Extensive excavations at Maya ports, such as those discussed below for Isla Cerritos, have the potential to provide new data on social organization, households, collective identities and belief systems, adding important social and cultural dimensions to our interpretation of coastal communities and their relationship with the inland Maya and broader Mesoamerican world.

2.5 Port Communities: The Social Dimension

The social aspects of Maya ports are not separate and parallel from political and economic "systems" discussed above, but rather cross-cut both, as all are based on social practice and interactions between social groups, and each affects the other. Thus, just as archaeologists interested in Maya island and coastal ports a half century ago expanded their interpretations beyond culture-history and ethnohistory to incorporate archaeological data and explore economic systems, we should continue to expand current research efforts to incorporate questions of social organization, identity, and community at Maya ports.

As will be discussed in Chapter 3, archaeological survey data have given us a sense of the important roles coastal sites played in larger economic networks and processes, and now

archaeologists are beginning to investigate the ports as themselves communities to get a better sense of their social organization, practices, and relationships. Many coastal sites have a variety of shrines and religious architecture, including Isla Cerritos, and Andrews (1990:162) notes that coastal sites located at the edge of the Maya world, or the geographical extent of a territory, were also "spiritual frontiers, as well as gateways to other domains." In Maya cosmology, the sea was associated with fertility, birth, death, and the watery underworld, and just as sea products were important ceremonial and prestige items for inland peoples, it is not surprising that coastal shrines of various types and the sites they were associated with became centers for pilgrimage and local veneration (Sabloff 1977; Miller 1982; Andrews 1990:162; Finemore and Houston 2010).

Andrews (1990:163) notes that the discovery of numerous human burials with precious offerings on island sites such as Jaina, Isla Cerritos, Uaymil, Isla Piedras, and Isla Tamalcab in combination with the cosmological importance of the sea and its associations with the underworld has led some scholars to believe that the Maya may have constructed island necropoli as burial grounds for elites from inland centers. While technically possible, there is no strong evidence that these sites functioned solely as island necropoli, and it is just as likely that over the course of their 1,000+ year occupations, the dead from these communities were interred within monuments and households on the islands as part of the sanctification of these spaces and veneration of ancestors (cf. Clark 2012). The presence of religious structures, as well as human burials at coastal ports, speaks to the existence of lineages in these communities that had established deep roots and connections to place.

Despite the significant social dimensions of port communities, most archaeological investigations have not focused on the residents who lived at these sites and their households.

One reason is the common analytical separation in Maya studies of the "domestic economy" from the "political economy," where the latter is most often prioritized as the target subject of archaeological analysis of port sites. In recent years, archaeologists working in household contexts have shown how interwoven these spheres actually are, especially in ancient Mesoamerica where pluralistic economies were simultaneously operating at multiple levels and scales (McAnany 1989:80). Domestic archaeological contexts represent the fundamental units of subsistence adaptation, production, and social organization in any settlement (Ashmore 1981; Santley and Hirth 1993). As such, residential spaces are at the intersection of the material and the cultural in unparalleled ways that provide interpretive opportunities for a wide range of human behavior at numerous social levels, from the individual to much larger collective social units (Wilk and Rathje 1982). From a social archaeology perspective, a key paradigm shift began in the 1980s when settlement pattern studies were correlated with ethnographic data on traditions of house construction, organization, residence patterns, production, and consumption (Wauchope 1938) to better theorize kinship and social identity in past populations (Wilk and Rathje 1982; Ashmore and Wilk 1988; Wauchope and Ricketson 1934). One of the great contributions of household archaeology is its potential to serve as a middle range linking individuals and kin groups to larger social, political, economic, and cultural networks (McAnany 1995).

Coastal Maya residences, once identified, are logical places to study this subculture and its contributions to larger Maya society, as well as how port settlements functioned as a particular kind of community. As basic basic adaptive units, dwelling spaces are the staging areas for the social practice of daily life and structure the "formation of subjects" through the course of life cycles (Hutson 2004:265). Houses provide a framework for subsistence practices

and production activities, and in domestic archaeological contexts we read the material traces of how people made a living (Hendon 2010). They are also, in most cases in ancient Maya culture, homes after death for ancestors interred within residential groups. The basic questions of who resided at the site and how they made a living have yet to be fully explored at most Maya ports, which is interesting, as these were settings partly designed for specialized activities of production and distribution outside the household and this could have affected domestic organization in different ways.

In an excellent study of household archaeology at the Late Classic Maya site of Xuenkal, Trent Stockton (2013:22) outlines the interconnected axes of household variability that are used in Maya archaeology to address social questions. The first is household organization, specifically the form and arrangement of residential structures within settlements, which can be used to trace social divisions and inequalities (Hirth 1993b; Netting et al. 1984). This can also relate to how sociopolitical institutions affect settlement patterns and promulgate social order (Hutson et al. 2006). While archaeologists have problematized the straightforward use of the size and elaboration of household architecture as an indicator of social status (McAnany 1995:162), especially considering the temporal longevity of houses and the complexity of heterogeneous residential compounds, the physical arrangement of households in space does reveal information about social organization (Douglass and Gonlin 2012:13). When we consider the space constraints of an island environment like Isla Cerritos, where land is scarce, the grouping and orientation of house platforms represent structures of inclusion and exclusion for different forms of collective identity. Divisions within individual structures, such as rooms and activity areas, further delineate social differentiation based on age, gender, occupation, etc. (Hendon 1987, 2004; Hutson 2004). Household archaeology makes it possible to examine these social groups or

collective identities from the bottom-up, starting within the kin group to identify the material expressions of the boundaries of inclusion/exclusion. Stockton (2013) begins at the level of the activity area and moves up to more inclusive levels of the house, domestic group, residential ward or neighborhood, and community, with some of these being linked more clearly to kinship groupings, such as family, lineage, or patronym. Social organization is complicated by extra-household groupings, by the fact that people belong to multiple social groups simultaneously that are interrelated in different ways, the boundaries blurrier at higher, more inclusive levels (Canuto and Yaeger 2000; Joyce and Hendon 2000). In this case study, for example, port residents are on an island, which has a clear physiogeographical extent, but the boundaries of kinship and "community" can extend beyond the physical delineation of space (Marcus 2000).

Household organization is also related to social status or rank, again in complicated ways. Increased access to resources and labor is often expressed in domestic architecture. The physical proximity of domestic structures to each other and residential groups to the main civic-ceremonial centers of Maya sites have been used to rank them within the social hierarchy (Ashmore 1981; Blanton 1994; Douglass and Gonlin 2012). Stockton (2013:24) points out the importance of household archaeology in helping to break up false dichotomies such as urban/rural and elite/non-elite that have been overused to characterize ancient Maya populations and social relations. The historical bias toward elites due to their visibility in the hieroglyphic, ethnohistorical, and architectural record has obscured the social complexity of the lower classes within Maya society, often grouped as undifferentiated "commoners" (Lohse and Valdez 2004). The study of Maya merchants and traders, for example, has been hampered by the fact that they rarely appear in the hieroglyphic or artistic record during the Classic Period and enter the historical record only toward the end of the Postclassic and early Colonial period once this

occupation / social group becomes associated with a high social rank (Tokovinine and Beliaev 2013:171). Domestic archaeology is one method of accessing historical information about social and occupational groups, as well as subcultures, when a textual record is lacking, if the residential spaces of these groups can be identified. While I cannot confirm a merchant or trader's residence at Isla Cerritos (see Chapter 5), the domestic contexts from a port community are logical places to evaluate the potential for household patterns to illuminate connections between occupation and social status.

Another axis of variability to consider that relates to the question of social status is the domestic economy. As mentioned above, there is a tendency to conceptually separate the political economy from the domestic economy along production / subsistence and elite / non-elite lines. In reality, the patterns that provide evidence for production and subsistence at the household level quite often overlap in the archaeological record, just as the activities do in life (Hendon 1991). The family groups within Maya households provide the fundamental corporate units for organizing labor, resource acquisition, and production for the house and larger social / political groups beyond the household (Blanton 1994; Nettle et al. 1984). This is one of the reasons that port communities are not simply empty "economic" spaces or nodes for the physical exchange of products. There are surrounding settlements, dwellings, and laborers that are involved in multiple economic spheres simultaneously. Masson and Freidel's (2012:456) recent study of markets in Maya society integrates comparative household archaeology at Mayapán and Tikal to argue that household production and interdependency reflect the economic diversification indicative of market-based trade, even as early as the Classic period. Once again, an examination of domestic contexts shows the integration of specialized production, subsistence, and trade of status goods, rather than separation into a simplistic economic duality.

Finally, there is the axis of domestic ritual, which can vary across houses as well, depending on kinship, ethnic and cultural traditions, social status, and many of the other categories of social differentiation discussed here. Religious beliefs and ritual practice pervade all aspects of Maya life, and this is as apparent in domestic contexts (if not more so) as non-domestic contexts, as will be discussed below. Households in the Maya region often have shrines or altars inside dwelling spaces or on the east side or patios of residential groups (Hutson 2004). Likewise, burial offerings and termination rituals between remodeling events in residential spaces not only express deep roots to place within a settlement, a kind of ownership, but also the invocation of supernatural powers and ancestral patrons for assistance (Lohse 2007; McAnany 1995).

The archaeology of residential spaces at the port of Isla Cerritos allows for a detailed examination of the variables described above in order to better understand the daily life, social organization, and changes that were taking place in a Terminal Classic coastal port. While this study attempts to balance the disparity in scholarship by focusing on the social dimensions of a Maya port community and maritime Maya lifeways, it can also contribute to on-going interpretations of the political and economic dynamics, since all are interrelated in the domestic sphere. This case study raises the interesting question of how a site's specialized function or setting affects household organization and variation, and from there, how this compares to other domestic contexts in the Maya social world. Now that I have provided the theoretical and anthropological foundation for this study, the next chapter begins the macro-level analysis, positioning the coastal sites of Isla Cerritos, Paso del Cerro, and Chinalco in their wider regional, ecological, and historical context.

CHAPTER 3:

MACRO-LEVEL ANALYSIS:

REGIONAL SETTLEMENT AND THE PORT COMMUNITY AT ISLA CERRITOS

3.1 Introduction and Multi-Scalar Approach

In carrying out a social archaeology of the port of Isla Cerritos, a multi-scalar approach that moves between different scales, or levels, of analysis is most effective. I integrate the broader view that macro-level analyses provide, such as regional and site settlement patterns, landscape archaeology, and underwater archaeology with micro-level analyses of particular archaeological contexts on the island, including the minimum domestic unit, a room, activity area and/or specific features through a qualitative relational analysis of the spatial distribution of material culture within domestic contexts excavated in 2010. The complexity and multifaceted nature of Maya social life prevents a single class of material data from providing a clear picture (Sharer 1993:95), and so we must incorporate information from different data classes that are related spatially and temporally, along with other, more distant, sources of information, such as regional settlement pattern data from the north coast and the ethnohistoric record discussed previously, whenever possible to strengthen our interpretations.

Working between different scales of analysis helps to identify relationships between trends or patterns documented within various data sets that, when combined, may provide more insight into social practices and the larger institutions and social system being studied than either does alone. To zoom in and examine the material remains of the social practices of daily life in the context of ancient Maya houses on Isla Cerritos is to access information about the social structures these activities reproduced, enabled and constrained. Learning more about these social

structures helps us better understand the larger social systems / institutions / processes operating at the scales of the community, region, and polity that these structures, in turn, reproduce and reinforce at a given point in history. Moving between these scales also helps document diachronic change on the island. In this chapter, the focus is on the macro-level, or the big picture, and we begin with an overview of the landscape and environment of the north coast of the northern Maya lowlands to get a sense of the geological and climatological context that has affected Isla Cerritos over the centuries.

Archaeological investigations began at Isla Cerritos in the late 1960s and 70s with Jack Eaton's (Eaton 1978) survey of coastal sites along the north coast and visits by E.W. Andrews IV and Anthony Andrews. More formal archaeological intervention first occurred 30 years ago with the inaugural season of the Isla Cerritos Archaeological Project (ICAP). Including this initial survey season, there have been a total of five field seasons in 1984, 1985, 2006, 2007, and 2010, four of which included archaeological excavations and three mapping. In 1988, members of the ICAP team carried out a regional survey of the 4000 km2 area between Chichén Itzá and Isla Cerritos known as the Cupul Survey Project (Andrews et al. 1989). A related regional survey, known as the Chikinchel Survey, was conducted a few years later by Susan Kepecs (Kepecs 1999; Kepecs and Gallareta Negrón 1995) just to the east between the coastal site of Emal and the inland site of Aké. This survey compliments the Cupul Survey, and both studies have assisted in establishing the strong connection between northern coastal ports and inland centers, as well as the salt trade, in the Late Classic through Postclassic periods. Subsequent research at the site of Xuenkal builds on these data, using spatial and viewshed analysis to further hypothesize about long-distance trade activities and inland-coastal politics (Ardren and Lowry 2011).

The first part of this chapter discusses the human ecology and regional settlement patterns of the northern Gulf and Caribbean coasts, synthesizing data from previous archaeological surveys of the region conducted over the course of the past five decades. Table A.1 in Appendix A includes an overview of 531 coastal sites that have been surveyed and (when available) their proposed occupational chronologies, providing a peninsular historical context for the port of Isla Cerritos. A basic analysis of these data compiled from several published surveys allows us to consider settlement pattern dynamics within the micro-regions along the northern Maya coast that suggest broader sociopolitical developments and population movements over time.

This synthesis highlights the Late and Terminal Classic periods along the northern Gulf coast as key watersheds in the social history of the maritime branch of Maya culture, preceding the major political and demographic shifts that play out in Yucatan across four centuries of the Postclassic period. The role of salt production on the north and west coasts is also outlined here, as it is one of the principal factors affecting coastal settlement history and maritime exchange networks. Then, the ICAP settlement survey incorporating the island and the nearest mainland coastal sites of Paso del Cerro and Chinalco is discussed in relation to the Cupul and Chikinchel surveys and the implications for interpreting Isla Cerritos as a part of a multi-component coastal community with a strong relationship to Chichén Itzá during the Terminal Classic Period. However, first a brief treatment of the question of regional chronology is vital, so that the reader will understand the reasons for the nomenclature employed here.

3.2 Chronology

In a recent chapter outlining the chronological problem at Chichén Itzá, García Moll and Cobos (2009:55-63) note that early investigators at the site relied heavily on ethnohistorical arguments and less on ceramic data produced through systematic excavation and analysis. Alfred Tozzer (1957:35), for example, proposed a five phase chronology between 600 and 1542 CE for the site that lacked any mention of occupation before 600 CE and positioned the primary occupation and extent of Itzá power during the Chichen II and III phases between 948 and 1260 CE when Mayapán emerged as a regional center and Chichén Itzá declined. George Brainerd (1958) relied on ceramics from the Carnegie excavations in concert with ethnohistoric evidence to develop a similar chronology divided into two main periods, the Florescent (750-980 CE) and the Mexican period (980-1450), the Mexican period being divided into Early (980-1180 CE), Middle (1180-1280 CE) and Late (1280-1450 CE) phases, the last also tied to the rise and apogee of Mayapán with the decline of Chichén Itzá. He identified certain ceramic groups with Chichén Itzá and specific chronological periods, including Chichen, or medium slateware, Silhó Fine Orange X, and Tohil Plumbate. He argued that these groups replaced Puuc-style slateware in the Early Mexican period (980-1180 CE).

While some of the specific dates vary, both chronologies present the earliest occupation as Late Classic (7th or 8th century) followed by the height of power of the city in the mid-10th through the 13th centuries, squarely in the traditional Postclassic period. The city's decline is associated directly with the rise of Mayapán. The Chichen I and Florescent periods were both linked to typically "Maya" traits, such as Puuc style architecture, sculpture, and slateware ceramics found in structures in the southeast quadrant of the city, and this reinforced the idea of a temporal and cultural division between "Old Chichen," or the Late Classic heart of the city built

in Maya style and a "New Chichen" of the late phases (Chichen III in Tozzer's chronology and the Early Mexican period in Brainerd's chronology). "New Chichen" saw the civic center shifted to the Great Terrace and Sacred Cenote, a reduction and change of hieroglyphic texts, and architecture and sculpture carved in a central Mexican style. This was, at the time, related to the idea of a Toltec invasion of the city in the Early Postclassic period. Brainerd's analysis pushed the dating of some structures in the civic ceremonial center back slightly from the Tozzer chronology, centering the city's height of power securely in the Early Mexican period (García Moll and Cobos 2009:56).

Later, Robert Smith's (1971) study of the pottery of Mayapán would formally define the Cehpech ceramic sphere as slateware typical of the Uxmal and the western Puuc region in the Late Classic that he argued was replaced over time by the Sotuta ceramic sphere typical of Chichén Itzá (Chichen slateware groups, Silhó Fine Orange X, and Tohil Plumbate). Sotuta ceramics were placed chronologically between 1000 and 1200 CE, and he argued that a later phase at Chichén Itzá characterized by Peto Cream ceramics and coarse slateware, known as the Sotuta-Hocabá horizon, was associated with the decline of the city at around 1200-1300 CE. These three chronological schema agreed that Chichén Itzá reached its height of power around 1000 CE after Uxmal, Cobá, and Dzibilchaltún were abandoned and that the city-state continued into the 13th century, positioning Chichén Itzá as a kind of transitional state between the Late Classic centers and the Postclassic kingdom of Mayapán (Cobos and García Moll 2009:57).

Additional research over the years by E. W. Andrews IV (1970), E. W. Andrews V, Anthony Andrews, Fernando Robles Castellanos (2003), Rafael Cobos (2004), Charles Lincoln (1985, 1990), Peter Schmidt et al. (1998), and Eduardo Pérez (2010, 2012) has significantly refined the ceramic and architectural chronology, incorporating radiocarbon dates from Sotuta

contexts at Chichén Itzá, the nearby cave site of Grutas de Balankanché, the coastal port of Isla Cerritos, and Mayapán (Masson and Peraza 2010). Heajoo Chung (2008) has also used thermoluminescence on ceramic samples from Chichén Itzá to propose a new chronology and ceramic groups. George Bey and William Ringle (2007) provided a synthesis of the ceramic chronology how it relates to recent ceramic analyses at Tula, Hidalgo. As noted in Chapter 1, Beniamino Volta and Geoffrey Braswell (2014) have also recently endeavored to combine the published ceramic data, epigraphic data from hieroglyphic texts, architectural and stratigraphic sequences to further refine the city's occupational chronology. What we now know is that Chichén Itzá was first occupied as early as the Late Formative period by the native inhabitants of the region, and that the city developed and expanded rapidly during the Late Classic period (after 750-800 CE) at the same time that a number of the Puuc centers, such as Uxmal, and Dzibilchaltún to the west, and Cobá, and Ek Balam to the east were flourishing. Along the Gulf coast at this time, the Canbalam ceramic sphere was spreading with significant population movements (Cobos and García Moll 2009:59; Jiménez Álvarez 2009).

In terms of northern Maya slatewares, Cehpech and Sotuta are quite similar ceramic spheres, with groups such as Muna and Dzitas closely related to each other and most other Late Classic period slates (Volta and Braswell 2014:384). In fact, Robles (2006) argues that across the northern Maya lowlands during the Late and Terminal Classic periods, multiple regional and cultural spheres of Cehpech slateware ceramics existed (three in the east, four in the west), of which the Sotuta ceramic sphere that becomes predominant after 900 CE at and around Chichén Itzá, formed just one of these regional Cehpech spheres. Cehpech and Sotuta ceramics have been reported together in Late and Terminal Classic architectural fill at Chichén Itzá and Isla Cerritos, and Sotuta ceramic groups are not restricted, but may be found in all architectural types

found within the urban core and periphery of the settlement (Lincoln 1990; cf. Cobos 2004). A close reading of the extant radiocarbon dates from various sites combined with hieroglyphic texts and architectural stratigraphy at Chichén Itzá does suggest a trend over time in which western (Puuc) Cepech ceramics are gradually replaced by the groups typical of Sotuta, including Dzitas, Dzibiac, Sisal, Kukula, and Silhó Fine Orange X with an overlap somewhere between 850-950 CE (Cobos et al. 2007; Volta and Braswell 2014:387).

At Isla Cerritos, we find stratigraphic overlap between the ceramic groups of the Chacpel ceramic complex (Tepeu, Canbalam ceramic sphere, eastern and western Cehpech) and the Jotuto ceramic complex (Cehpech-Sotuta) 800-900 CE, with Sotuta groups dominating the assemblages postdating 900 CE. From c.950 CE, Sotuta-Hocaba sphere ceramics, typified by Peto Cream ware is a popular utilitarian pottery at Chichén Itzá, and the coastal version of this ceramic group, known as Kukula, is predominant at Isla Cerritos. These data have helped push the chronology back about 150-200 years at Chichén Itzá, suggesting that the later Sotuta-Hocabá ceramic sphere and central administration of the city was in decline by 1050 CE, well before the apogee of Mayapán in the 13th century, completely revamping previous interpretations of the history of this Maya city and its regional hegemony. Thus, Chichén Itzá was not a lone urban settlement growing out of a political vacuum after the collapse of other regional centers to the west and east at the end of the 9th century (Andrews and Robles 1985), but developed within the complicated social and political milieu of the Late Classic period, experiencing its own periods of political growth and decline (Ringle et al. 1998; Ringle and Bey 2009). Likewise, the idea of an "Old" and "New" Chichén established by entirely separate groups at different times does not hold weight (see Lincoln 1990 for a detailed analysis of this question).

This chronological shift is significant in terms of how we define cultural periods and interpret synchronic change during the Late and Terminal Classic periods on the northern Maya coast. The pushing back in time of the occupational chronology at Chichén Itzá fits well with similar shifts in traditional chronologies in other parts of Mesoamerica. Recent research at Teotihuacan, for example, has pushed back the collapse of the city to a violent conflagration event sometime around 550 CE (López Luján et al. 2006), ushering in the Late Classic period and setting the stage for significant sociopolitical change and new exchange networks in Central Mexico and beyond. Certainly the "cosmopolitan network" of cities, like Chichén Itzá and Tula, with feathered serpent iconography owes some of its existence to these shifts (Ringle et al. 1998; Schmidt et al. 1998), and it makes sense that the development of these networks would also be earlier than previously believed. Fernando Robles (2010:39) points out that new radiocarbon dates from the Toltec Tollan at Tula, Hidalgo, along with dates from the most reliable ethnohistorical sources, indicate that this city likely fell in 1064 CE, meaning that the apogee, political decline and depopulation of Chichén Itzá and Tula were contemporaneous, taking place in the Terminal Classic period (Epiclassic period in Central Mexico). Likewise, radiocarbon dates from Mayapán suggest that this capital may also have emerged somewhat earlier than believed, perhaps as early as 1100 CE in terms of the initial settlement, though it likely took over a century and a half to consolidate into a regional metropolis (Masson and Peraza 2010; Robles 2010:57).

This makes the term "Early Postclassic," referring to the time period between 900 and 1200 CE, essentially obsolete in the north since it was originally defined by the older chronologies of those cities (Andrews 2010:371). Robles (2010:39) argues that it makes more sense from a sociocultural perspective to talk about the Terminal Classic period followed by a

unified Postclassic period with early and late phases anchored to the chronology at Mayapán. As mentioned in Chapter 1, the Terminal Classic period also seems to have earlier (800-950) and later (950-1100) phases in this region from a sociocultural perspective, though this hypothesis needs further testing with future investigations. In sum, according to this model, the early phase of the Postclassic period corresponds to the time after the fall of Chichén Itzá and Tula and concurrent with the rise in power of Mayapán on the west side and San Gervasio on the island of Cozumel on the east side of the peninsula (2010:54). The late phase of the Postclassic corresponds to the fall of Mayapán resulting from a Xiu lineage rebellion in the mid-15th century (1441-1461 CE), according to documentary sources. This phase also saw the commercial expansion of the Culhua-Mexica from Central Mexico into the Maya area to establish trading enclaves and garrisons along the Tabasco and Campeche coasts, the Soconusco coast, and along the east coast of the Yucatan Peninsula all the way to Nito and Naco in Honduras (2010:64).

3.3 Coastal Ecology of the Yucatan Peninsula

The Yucatan Peninsula that encompasses nearly the entire southern portion of Mexico, including the states of Chiapas, Campeche, Yucatán, and Quintana Roo, along with the modern nations of Guatemala and Belize, is at its base a relatively flat, karstic limestone peninsula with coastlines along the Gulf of Mexico, Pacific Ocean, and Caribbean Sea. The northern Maya lowlands are characterized as a pitted karst plain with tropical dry rainforest separated from the rainforest of the hilly karst plain to the south in the central/southern Maya lowlands by the Ticul Fault that crosses from the northwest corner of the peninsula to the southeast (Munro-Stasiuk et al. 2014:157-160). For the most part, the northern Maya lowlands are quite low and flat at less than 40 meters above sea level (asl) with the water table averaging around 4-6 meters asl. An

exception to this is the hill country in the northwest along the Ticul Fault, known locally as the Puuc hills, where the landscape rises to 50-100 meters asl, and there is very little surface water (Munro-Stasiuk et al. 2014:160). The Puuc hills contain the deepest soils in the north, while the majority of the region has very shallow soils just above the karst limestone base.

The solubility and porous nature of the limestone means there are numerous dissolution fractures, caverns, and crevices that create sinkholes, as well as channels for water to flow underground, and there are few rivers and lakes above ground (Munro-Stasiuk et al. 2014:159). The fracture patterns in the bedrock were also shaped by the impact of an asteroid some 65 million years ago that created the Chicxulub crater and sedimentary basin, over which the limestone base formed. Subsequently, the areas around the eastern rim of this crater have thinner bedrock, more dissolution, and a greater number of sinkholes (Munro-Stasiuk et al. 2014:160).

Sinkholes vary in size, depth, and distribution, but have had very important impacts on local hydrology, human settlement, as well as landscape and water management because they create ecological niches and microenvironments that affect soils, vegetation, fauna, and fresh water. Cenotes, from the Yucatec Maya term dzonot, are the most well-documented type of sinkhole with bases deep below the water table. The so-called "ring of cenotes" near the center of the northern Maya lowlands corresponds to the rim of the Chicxulub crater (Munro-Stasiuk et al. 2014:157). There are also dzadz, or aguadas, which have a base just below the water table and stay wet, creating natural reservoirs and a wetland microenvironment and bajos, or surface depressions well above the water table that can retain water during the rainy season for reservoirs, but are dry during the dry season (2013:157). Then there are rejolladas, which are collapses in the limestone shelf dipping to just above the water table, so they stay dry permanently but retain moisture and allow soils to build up to a greater depth, creating a cooler,

more humid microclimate (Munro-Stasiuk et al. 2013:157). Mandy Munro-Stasiuk, et al. (2013) have argued convincingly for the importance of rejolladas and these other natural depressions for the cultivation of crops in and around Classic Maya settlements within this northern tropical savannah environment where most of the rainfall (two-thirds) is concentrated seasonally between July and October. These depressions allow for increased moisture retention, lower average temperatures, and higher accumulation of soils. Within these microenvironments, the cultivation of "luxury crops" by the ancient Maya, such as cacao, avocado, sapodilla, and other tree crops, was possible with strategic management due to the lower temperatures and increased moisture, even while staple subsistence crops were grown elsewhere (2013:169).

Along the coastlines, natural sinkholes were also very important for providing access to fresh water along the barrier beaches and mangrove swamps where there is high salt content. Referred to locally as ojos de agua, fresh water springs fed by subterranean sources push up through brackish swamp water and/or sea water in certain places. At least three ojos de agua are located in the vicinity of Isla Cerritos, two directly across from the island on the shoreline near the site of Paso del Cerro and one approximately 5 km to the east on the beach of one of the outer banks of the Río Lagartos estuary across from the modern port of San Felipe. Larger, deep cenotes are also located along the estuaries and mangrove swamps of all coasts of the peninsula, and these no doubt affected the location of port settlements.

Initial exploration of Maya ruins along the coasts of the Yucatan Peninsula dates to the mid and late nineteenth century with visits by John Lloyd Stephens, W. H. Holmes, and Augustus Le Plongeon in Quintana Roo, excavations by Thomas Gann at Santa Rita in the Caribbean littoral of Belize, and the exploration of the island of Jaina, Campeche by Désiré Charnay. The first formal archaeological reconnaissance was conducted in the early and mid-

twentieth century (Andrews 1990:159). Short field trips were conducted by George P. Howe and William Parmelee of Harvard's Peabody Museum, Raymond Merwin, also from Harvard, and Sylvanus Morley and Jesse L. Nussbaum (Lothrop 1924)—all working collaboratively with the School of American Archaeology. The Carnegie Institution of Washington, under the direction of Morley, carried out surveys of the north and central coast of Quintana Roo in the 1920s by Samuel K. Lothrop, Thomas Gann, Oliver G. Ricketson and John Held that were published in Lothrop's (1924) monograph on Tulum. The Mason-Spinden Expedition of 1926 recorded additional sites on the mainland and Cozumel Island and the Expedición Científica Mexicana documented thirty-six additional sites in 1937 (Escalona Ramos 1946; Lizardi Ramos 1939; see also Con Uribe 2005).

In the late 1950s and 60s, settlement pattern studies of the east, north, and west coasts were conducted that incorporated mapping, test pit programs, and ceramic analyses to establish the first coastal chronological sequences based on material culture. These include William Sanders' (1955) survey of the east coast and surveys by E. Wyllys Andrews IV of the Tulane's Middle American Research Institute in northern Quintana Roo (Xcaret to Tulum) and the north coast of Yucatán (E.W. Andrews IV 1965a; E.W. Andrews IV and A. Andrews 1975) that also resulted in an excavation of a shell midden at Cancun (Andrews IV et al. 1974). Alberto Ruz Lluillier (1969) studied the west coast of Campeche, combining ethnohistory and archaeology. Jack D. Eaton (1978) conducted a coastal survey of Campeche and Yucatán in 1968, the ceramics from which were analyzed by Joseph Ball (1978) and both were published in monograph form by MARI.

Anthony P. Andrews continued to survey and initiate excavations of northern and eastern coastal sites in the 1970s, documenting ports and developing chronologies for the central coast of

Quintana Roo between Cancún and Playa del Carmen (Andrews 1976, 1978, 1986), while the Harvard-Arizona Cozumel Project was conducted in 1972-1973 under the direction of Jeremy A. Sabloff and William L. Rathje (Rathje and Sabloff 1978; Sabloff 1977; Sabloff and Friedel 1975; Sabloff and Rathje 1975; Sabloff et al. 1977). The coastal surveys from the late 1950s to the 1970s generally divide the coastline of the Yucatan Peninsula into sections based on geographical and ecological characteristics, and these divisions are largely upheld in subsequent studies (Andrews and Vail 1990; Gallareta Negrón, Andrews, and Cobos 1991; Robles et al. 2003). I provide a brief overview here of this ecological context, moving from the Campeche coast in the west through the Caribbean coast in the east. In the following section, we'll turn our attention to human settlement patterns documented to date through the major coastal surveys in order to place the port of Isla Cerritos in its broader regional and historical context on the north coast. As mentioned previously, this analysis is limited to the northern Maya coastal ports of the Gulf of Mexico and Caribbean with only brief mention of southern Caribbean ports and no discussion of Pacific coastal or lowland riverine ports.

In the modern state of Campeche, the Laguna de Términos is a large system of interconnected waterways linking the Gulf coast to the major inland river routes leading to the southern lowlands. On the western side of the lagoon, the Xicalango Peninsula is bordered by three smaller lagoons (the Pom, Atasta, and Puerto Rico) and is the location of the Maya port of Aguacatal, known in the Postclassic Period as "Xicalango" described by Chapman (1957), Matheny (1970), and later Vargas Pacheco (2001) as the western extent of Acalán. At the mouth of the Laguna de Términos and continuing to the northeast, several islands are close to the shore, the largest of which is Isla del Carmen where the archaeological site of Los Guarixés is the biggest of nine sites on the island. Moving east, the principal sites of the central Campeche coast

are Tixchel, Haltunchén, Sabancuy, and Chakan Putun (modern day Champotón). Several rivers join the sea at Laguna de Términos and a chain of lagoons and estuaries continues to the southwest into the modern state of Tabasco. One of the rivers which flows into the lagoon is the Candelaria River, which provides one of the main water routes into the north and central Petén, while the Palizada, Chumpán, and Mamantel rivers would have linked the coast to the Usumacinta River kingdoms, Palenque, and routes inland toward the highlands of Guatemala. The San Pedro and San Pablo rivers served as routes leading to Tabasco, Veracruz, and Central Mexico (Ruz Lluillier 1969:29). There is no doubt that this area would have been the major hub of trade and transport on the Gulf of Mexico in ancient times where a significant number of trade routes came together.

The entire lagoon area is an unstable marine littoral with shifting alluvium, periodic flooding, deposition and erosion of the limestone base and sands, creating delta-like wetlands that connect rivers and small islands that punctuate the lagoons and canals and are variously inundated (Ruz Lluillier 1969:16). This area from Xicalango up to Tixchel and Champotón mostly consists of low forest and mangrove swamp, and climatologically differs from the Campeche coast north of Champotón, as well as Yucatán and the rest of the northern lowlands, in terms of higher precipitation of 1500mm of rain on average between June and October (Ruz Lluillier 1969:26; Torrescano, Gunn and Folan 2012:55).

In general, equatorial currents flow north through the Caribbean along the east coast of Quintana Roo, crossing the northeast corner of the peninsula into the Yucatán Channel and Gulf of Mexico. All coasts in this region are characterized as tropical pluvial with winter storms (locally known as nortes) that bring cooler temperatures and heavier rains; the north coast of Campeche and Yucatán is dryer, semi-arid compared to the humid climate of southern

Campeche, Tabasco, Chiapas, and Guatemala that can receive double the average annual precipitation of Yucatán (Ruz Lluillier 1969:26; Torrescano et al. 2012:55; cf. Munro-Stasiuk et al. 2014:161).

Off the Caribbean coast of Mexico and Belize, the shallow waters of the Campeche Bank hug the shoreline, and the ocean floor plunges just beyond the coral reef. The bank's slope to the west produces very shallow waters that are nutrient and sunlight rich with abundant vegetation and marine life that extend up to 250 miles off the north and west shoreline in the Gulf of Mexico (Eaton 1978:5). The ancient Maya would have been able to access abundant sea life, including several species of shallow and deep sea fish, crustaceans, large turtles and sea mammals using relatively simple technology, including small boats, hooks, and weighted nets to the outer Campeche bank, where the water depth remains under 2,000 fathoms (Eaton 1978:6). Deeper waters would have required larger, more specialized watercraft, and we lack evidence that they navigated further into the open ocean beyond the bank. Eaton (1978:9), citing Tozzer (1941:156), points out that Landa's chronicle mentions the contact period Maya were certainly equipped for deep sea fishing and manatee hunting, with the trade in salted fish and meat products between resources zones being traditionally very important. The port of Champotón reportedly had a daily fishing fleet of 2,000 canoes that were sent along the northwest coast of Campeche and out to the more distant unpopulated islands on the edge of the outer bank (Eaton 1978:9).

While most of the peninsula features Tertiary marine clastic, limestone, and sandy marl soils, this area also features Quartenary sands, gravels, marine terraces and coastal alluvium (Eaton 1978:4). The soils on the coast tend to build up more, depending on deposition and erosion events over time—currents, winds, climatological events all affecting this—and the

result is that coastal sites are often highly stratified, a characteristic that Anthony Andrews (1990) argues is reminiscent of tell sites of the Near East. The barrier beaches that form the coastline in the northwest corner of the peninsula all the way to northern Quintana Roo are often battered by marine currents that periodically flood the interior beyond the sand dunes, creating a series of estuaries and rías between the beach and mangrove wetlands (Robles y Andrews 2003:104). These kinds of microenvironments that were easily navigable, whether barrier beach coastlines, shallow seas, estuaries, or wetlands, were ideal for watercraft-based trade routes (Ardren and Lowry 2011:429). The terrain beyond the mangrove that is seasonally inundated is known as the tzekel zone, and contains mostly low, thin, spiny vegetation and tropical forest interrupted sporadically by petenes, or islands of built-up soil, high jungle canopy, palms, palo de tinte wood, and fresh water springs bubbling up from subterranean sources (Robles and Andrews 2003:104).

Moving inland, the thin pockets of soil between exposed bedrock that are typical of the northern Maya lowlands are black mollisols only about 40 cm thick in most places and contain a high volume of small limestone pebbles referred to locally as chich (pebbly soil = *chich lu'um* or box *lu'um,* black soil) (Munro-Stasiuk 2013:161). Deeper, thicker red soils, referred to locally as kancab, are found further inland in the Puuc Hills region and in areas where deeper soil deposits, sometimes over 2m deep, accumulate in rejolladas and bajos. These terra rosa soils are calcareous red alfisols formed through limestone dissolution and the accumulation of silicates and tend to be moister with a more neutral pH level, thus more conducive to cultivation (2013:161).

Mangrove wetland is the prominent form of vegetation both in southern Campeche and along the north coast of Yucatán near the Río Lagartos estuary. Mangrove forms in places with

standing, stable mud that encourage the growth of 4-8 meter high trees grouped with interlocking roots that create an impenetrable barrier (Ruz Lluillier 1969:28). New plants grow directly out of parent trees (1969:28), and so the mangrove spreads out, pushing the coast farther out as well. The most common species are red and yellow mangrove, which both produce tannic acid utilized in the curation of hides and also as a combustible (Eaton 1978:6; Ruz Lluillier 1969:29).

North of the Laguna de Términos, the marine littoral consists of low, sandy beaches with brush vegetation, rocky headlands at the foot of hills generally devoid of significant ancient occupation except for the three marine ports of Tixchel, Champotón and Campeche (Eaton 1978:1; Ruz Lluillier 1969:28). This area only has sufficient soils and vegetation for limited agriculture and hunting, but the shallow waters with abundant floor vegetation and sea life serve as excellent fishing grounds, as discussed above (Eaton 1978:4; Ruz Lluillier 1969:26).

North of Campeche to Punta Canbalam, near present-day Celestún (about 100 km along the coast), the terrain returns to brackish mangrove swamp, punctuated by small islands and petenes, including Isla Piedras and Uaymil, which are now completely surrounded by mangrove, but were once open sea island ports in ancient times (Inurreta Díaz 2004). One of the northern Gulf Coast's most important Classic period Maya ports, Jaina Island, is located near the edge of this ecological zone, and like the other islands in this area it is quite close to the shore. At a greater distance offshore are islands that currently exist or were documented historically, such as the Arcas, Triangulo, Bermeja, and Obispo islands, but were never populated. These may have served as hunting / fishing grounds for tropical seal and manatee in ancient times (Ruz Lluillier 1969:27). Jaina, Uaymil, and Isla Piedras were very important ports of transshipment connecting the larger ports in the south at Laguna de Términos to the northern Maya lowlands and the north coast salt production areas (Andrews 1978; Andrews and Vail 1990; Cobos 2010b).

The north coast of Yucatán on the Gulf of Mexico from Celestún east to Dzilam de Bravo consists of a series of wide barrier beaches with mangrove swamp wetlands ranging from just 100 meters to upwards of several kilometers wide (Eaton 1978:1). This is one of the two main areas for evaporation salt production on the north coast, and several archaeological sites dating to the Formative through the Late Classic periods are located in this wetland zone (1978:1), including Xcambó, a site with large monumental architecture and elite residential groups (Sierra Sosa et al. 2014). The 80 km stretch between the contemporary ports of Dzilam de Bravo and San Felipe on the edge of the Río Lagartos estuary is almost entirely mangrove, and there is little to no coastal occupation until the barrier beaches appear again opposite San Felipe, forming the north side of the estuary.

It is here that Isla Cerritos [site 16Q-d(3):1, UTM: CU 674 850, Atlás Arqueológico de Yucatán, Garza Tarazona y Kurjack 1980] is located just offshore, with Paso del Cerro [16Q-d(3):2, UTM: CU 674 837] and Chinalco [16Q-d(3):5, UTM: CU 672 811] located on the mainland directly to the south. From Río Lagartos west to the Laguna de Yalahau are 70 km of coast that hold the largest and most highly concentrated salt flats in all of Mesoamerica. Here numerous Maya sites range in date from Formative Period middens to Late Classic and Postclassic port sites with masonry architecture (e.g., San Celso, Las Coloradas, Emal, and Vista Alegre) to those with occupation in the Colonial period (1978:11).

From the northern end of the Laguna de Yalahau wetlands, near Isla Holbox and Vista Alegre, the waters of the Gulf meet the Caribbean just west of the Yucatán Channel, and the coastal landscape shifts to primarily sandy barrier beaches once again, continuing east and south down the Caribbean coast of Quintana Roo (Eaton 1978:45). This region boasts the largest and most important coastal port sites of the Late Postclassic period, including Ecab, El Rey, Tulum-

Tancah, Xcaret (Polé), Xelhá, San Gervasio/Cozumel, Muyil, Chac Mool, Oxtankah, Santa Rita, and Altun Ha (Shaw and Mathews 2005).

3.4 Climate and Sea Level Change

In this section I briefly address the issue of environmental change and the possibility of impacts affecting settlement along the Maya coast. Climate change in the Maya region has been the subject of considerable debate within archaeology and paleoclimatology, especially regarding the correlation with and perceived relationship to the "collapse" of Maya cities at the end of the Classic period. In particular, the period generating the most interest is the Terminal Classic-Postclassic transition between about 750 and 1200 CE, and several models have been proposed that explain overall decline and dispersal of human populations in relation to changes in rainfall patterns, temperature change, sea level change, and events like volcanic eruptions, hurricanes, earthquakes, and tsunami. While the social, cultural, political, and demographic changes, interpreted as "decline" or "collapse," occurring in different micro-regions within the Maya area have multivariate explanations, this time period associated with the apogee of Isla Cerritos does correlate with documented periods of drought in the Yucatan Peninsula (Aimers 2007). Also, we see evidence in the archaeological record at Isla Cerritos for sea level change, and it is important to address here the question of what we currently know about sea level fluctuations in the region, as well as the limitations that exist for our interpretations.

The evidence that we have for rainfall and drought patterns in the Maya region come from speleothems in caves, tree rings, and lake and marine sediment cores (Hodell 2011:45). Accurate dating, including cross-dating between archaeological contexts and proxies used for estimating rainfall, is a critical issue in this region. The archaeological contexts do not always

have well-correlated absolute dates from sealed contexts, and sometimes the direct dating techniques used in climate science have less accuracy with increased resolution (shorter increments of time) within a period like the Terminal Classic (Hodell 2011:45). The exception to this is tree rings, but along the coastal tidal basins on the Gulf and barrier beaches of the east, primary growth forest is less common than mangrove. Another issue is distance between the contexts sampled for paleoclimate data and the archaeological sites we are analyzing. Along the northern Maya coast, the areas with the most climate science research coverage are along the southwestern Gulf coast and central and southern Quintana Roo and Belize. Currently, our evidence for drought on the north Gulf coast comes from sources outside the immediate zone--a cave site at Tecoh in western Yucatán and Lake Chichancanab in the southern lowlands (2011:45).

These sources and others indicate reduced rainfall in the Maya region between 800 and 1000 CE, and the speleothem profiles from Tecoh suggest that there were 8 periods of drought between 800 and 950 CE that lasted anywhere from 3-18 years each (Hodell 2011:45). This corresponds to the first phase of the Terminal Classic period, the early development of Chichén Itzá, and the Chacpel-Jotuto ceramic complex transition on Isla Cerritos. While these represent significant dry periods that no doubt were of serious concern, the social, political, and economic changes reflected in the archaeological record at Maya sites demonstrate how the Maya adapted to these pressures, and some places thrived (such as the north coast) in the face of these challenges while others suffered from a combination of these factors and others. Aimers (2007:348) suggests that along the coast, Campeche and central Quintana Roo show the strongest correlation between drought and settlement pattern and material culture changes. In northwestern Campeche/Yucatán and the north coast, on the other hand, this is a period of

significant growth and activity, as will be discussed below. Irrespective of micro-regional variation, it is important to remember the scale of the time periods and changes we document at the macro-level. Whether environmental or cultural, most of the changes discussed take place gradually over significant periods of time (Aimers 2011:44), as opposed to rapidly in increments perceptible within a single generation.

An important question for researchers interested in coastal archaeology is sea level change and its effects on archaeological site formation and transformation processes. Geologists and paleoclimatologists establish sea level curves based on dating mangrove (Rhizophora mangle) peat and shallow water coral (Acropora palmata) levels in cores, the former growing in a narrow tidal range makes it a good proxy for marine transgression, especially when it occurs relatively rapidly (McKillop 2002:137). Current sea level curves for the Gulf of Mexico and northwestern Caribbean show significant sea level rise from the Late Pleistocene through the early Holocene, when sea levels were as much as 32-35 meters lower than today (McKillop 2002:142; Milliken et al. 2008; Toscano and Mcintyre 2003). This, drier savannah-like landscape would have been what the earliest human occupants of the Mexican Caribbean experienced. By 4000 BP, sea levels were within 2 meters of the current level, and the rate of rise stabilized to approximately 1 meter/1000 years, or 1mm/year (Milliken et al. 2008; Toscano and Mcintyre 2003).

Heather McKillop's (1995, 2002, 2005a, 2005b, 2010) coastal archaeological research in southern Belize has integrated sea level rise data with archaeological analysis to determine what effects, if any, this had on ancient Maya coastal settlements. She has noted slightly different rates in late Holocene sea level rise in the northern and southern barrier lagoons of Belize, where northern ports like Ambergris Cay show stepped sea level rise, first 70cm from 3000-1500 BP,

followed by a 15cm rise in the subsequent 1250 years correlated with Maya settlement at the site of Marco Gonzalez, 450-1200 CE (McKillop 2002:145 citing Mazullo et al. 1987). The southern barrier lagoon sites around the Port of Honduras show a steady 1 meter/1000 years rate during the Classic period (400-900) during which sea level rose gradually about 50cm (2002:167). Then, at c. 900 CE, the rate of marine transgression increases to 4.3 meters/1000 years until 1500 CE, representing a total rise of 2.58 meters that submerges Classic and Terminal Classic period contexts under sea level, as well as some early Postclassic contexts (2002:167). After this, the rate slows again to 1 meter/1000 years to the present time.

On the island port of Wild Cane Cay (often compared in the literature to Isla Cerritos), the effects of these fluctuations in Caribbean sea level rise were that the Classic period settlement easily kept pace with a gradual 1mm/year rise in the water table, the island area was larger, and the (is)landscape was much drier and suitable for tree cropping, growing native palms, corn, and fruit trees confirmed through palynological analysis of soil samples extracted from submerged contexts (McKillop 2002:149). Beginning in the Terminal Classic period at 900, the rate rapidly increases to about 1.3cm/year, and the islanders must adapt with landfilling techniques and raising the architecture at the port onto large stone platforms over the course of the next three centuries. While perhaps not as noticeable to residents at the time, the island area is slowly reduced, and they lose the ability to grow many of the plants cultivated previously (2002:149). However, their adaptations are successful enough to allow the port to flourish through trade until the early Postclassic period.

In Stingray Lagoon, Belize, the island of Punta Ycacos was used during the Early Classic period for specialized salt production and canoe trade to inland cities (c.300-600 CE) (McKillop 2005a). The seasonal flooding of the cays in this area and the Northern River Lagoon was good

for evaporation salt production, and formal salt works, including at least 45 production sites with wooden structures and facilities for evaporation and brine boiling production, were constructed to meet the demand of inland Maya cities that used this salt to augment imported north coast salt (McKillop 2005a:5634). By 600 CE, however, the rising sea level inundated the salt works too much for evaporation production, and by 900 CE, the former salt works were under 30cm of water (McKillop 2002:165). At the same time, the market for salt shifted significantly with the decline of the inland cities in Belize at around 800-900 CE, so rather than re-locate the salt flats, production ceased and limited quantities of salt were produced at the household level at Postclassic coastal settlements, such as Wild Cane Cay (2002:165). In this region, sea level rise combined with cultural and economic factors to alter the settlement pattern, subsistence and trade practices, and island landscapes.

At Isla Cerritos and other island and petén sites along the mangrove coast of northern Yucatán, the question of sea level rise is important. Water depth on the Campeche bank is already shallow, and if current levels represent a rise, then the questions of whether islands like Isla Cerritos were at one time connected to mainlands via seasonally inundated peninsulas or whether areas that today are enclosed wetland deltas were once open sea are relevant. At Isla Cerritos, there is archaeological evidence of sea level rise of approximately 60cm, and most of the Pre-Classic contexts documented on the island are at or just under the current water table. Of course, we need future research designed to directly examine sea level fluctuations on the central north coast through core sampling in and around Paso del Cerro to support this interpretation and identify any fluctuations such as those reported by McKillop in Belize. If we estimate that sea level rise was relatively steady in this area at 1m/1000 years, as it was for northern Quintana Roo (Shaw and Benson 2015:7), this would suggest that Isla Cerritos was an island, at least for all of

its Late Holocene human occupation. If it took 600 years to rise 60cm, marine transgression may not have begun until around 1400 CE. However, the examples discussed above that show minor variation from northern Quintana Roo to southern Belize underscore the need for a micro-regional approach to data collection. If the rate of sea level rise on the north coast was lower, it may have very slowly accrued over about 2000 years, in which case it would have been hardly noticeable to Maya port residents. As will be discussed in more detail in the next chapter, stone alignments documented in the sea just beyond the island are evidence that the landscape was once greater in size through artificial expansion or lower sea level, and thus the architectural energetics calculations for island construction in Chapter 4 are based on the largest extent of cultural material / features that have been mapped to date.

A recent study by Charles Shaw and Larry Benson (2015) from the coast of Quintana Roo between Cancun and Tancah presents geological evidence with radiocarbon dates for another form of rapid environmental change that may have seriously impacted coastal Maya ports during the Classic period. The coastline directly across from Cozumel island consisting mostly of crescent beaches, mangrove, and rocky headlands is interrupted by a high coastal berm rising 4.5 meters above the current sea level, 20-30 meters inland from the shore and running 50 kilometers north-south paralleling the modern coastline (2015:1). They argue that this was caused by an extremely large, singular tsunami that struck the coast 1500 years BP, or around 470 CE, depositing the boulder-covered berm following the current coastline exactly (2015:3). The berm sits at least 4 meters above the highest storm surges today and tapers off inland. The sea level curves discussed above suggest that the tsunami wave(s) would have measured over 5 meters in height and pushed inland some 400 meters (Toscano and Macintyre 2003; Shaw and Benson 2015:8).

Berms of this nature can be produced by major hurricanes, and the peninsula is struck by hurricane level storms nearly annually; however, Shaw and Benson (2015:6-8) argue that this feature is more characteristic of a mega-tsunami "dump deposit" with boulder stacks caused by a huge surge higher than the average storm surges associated with hurricanes. While this is a common storm path, the repetitive depositions necessary to create a berm of this size and the lack of features of this nature in other parts of this coast support the model of a singular, catastrophic event. The western Caribbean and Yucatan are seismically calm locations where tsunamis are rare, although an interesting feature that Shaw and Benson (2015:6) note is that coastal pumice deposits in this area (hence any volcanic activity) stratigraphically postdate the berm. The dating to around 450/500 CE leads to speculation about the relationship of this seismic event with the eruption of the Ilopango volcano and any precursors that may have occurred.

The ramifications of a tsunami of this nature and other seismic events for north coast ecology is unclear, but there may have been indirect cultural implications resulting from catastrophic environmental disruptions along the Caribbean littoral. As will be discussed in the next section, coastal settlement dating to the early-mid Classic period is fairly low in northern and central Quintana Roo, and this may be one hypothesis. However, the line of argumentation that Maya sites built on the berm are all Postclassic (Shaw and Benson 2015:6) is complicated by the fact that Xcaret does have some Pre-Classic occupation (Andrews IV and Andrews 1975), and there is no evidence of a major disruption of settlement or evidence for geological impacts on Cozumel at this time, which seems very surprising. Cultural impacts of a tsunami of this size on the north coast might be increased salt production and trade from the southern lowlands and the Cobá corridor, if Tancah, Xelhá or Cozumel were adversely affected.

In this section, I have described evidence for late Holocene climatic change, sea level rise, and a possible tsunami event that could have affected the settlement patterns of the northern Maya coast during the Classic-Postclassic periods. Some of these result in very gradual changes, while others would have had more rapid social, cultural, economic, and political impacts in ancient times. There is a clear need for additional collaboration between paleoclimatologists, geologists, and archaeologists to better correlate the geological and climatic data with well-dated archaeological contexts to flesh out the relationships between them. With regard to Isla Cerritos, future palynological and paleoclimatological studies on the island, at Paso del Cerro, and along the estuary will undoubtedly help us better understand sea level rise in this micro-region, as well as the adaptations port residents made to adjust for environmental challenges and opportunities in the tidal zone.

3.5 Settlement Dynamics on the Northern Maya Coast

The earliest evidence for human exploitation of the coast in eastern Mesoamerica comes from Quintana Roo where human remains dating to the Late Pleistocene (13,000-12,000 BP) have been recovered from an underwater cave site called Hoyo Negro (Chatters et al. 2014). Another eight partial skeletons of Paleoamericans associated with Pleistocene megafauna were also documented within 20km of this site, although these remains lack radiometric dates (Chatters et al. 2014:752). In Belize, lithics that may date to c. 7000 BCE have been documented, and eight sites from the Archaic Period (7000-2500 BCE) have been tentatively identified based on stylistic typologies, but also lack absolute dates (Andrews and Vail 1990:54; MacNeish and Nelken-Terner 1983). We know that year-round settlements were established in certain places on the coast by the end of the Middle Pre-Classic / Formative Period, around 400-

300 BC, and likely developed from earlier seasonal encampments. By this time the shallow, fecund waters of the Gulf along the Campeche Bank provided an environment rich in marine biodiversity for the Maya to exploit using basic technology and watercraft, and shell middens along the north coast east of the modern port of Progreso indicate several small hunting and fishing settlements (Eaton 1978:9). While the barrier beaches have shifted over time, the current pattern of coastline was in place by 1000 CE (1978:11).

To date, over 500 archaeological sites located less than 10 km from the coast have been documented in varying detail in surveys conducted over the past century in the northern Maya area from eastern Tabasco and southern Campeche to Belize. Table A.1 in Appendix A provides an updated list of 531 coastal sites from the regions discussed in this thesis compiled and combined from thirty published surveys, archaeological reports, and studies. Nearly a quarter (n=128) of these sites are located on islands, including 33 from this list on Cozumel. Two of the most important repositories of survey data, Jack Eaton's (1978) Archaeological Survey of the Yucatan-Campeche Coast and Anthony Andrews' and Gabrielle Vail's (1990) Cronología de sitios prehispánicos costeros de la Peninsula de Yucatán y Belice, serve as the base for this table with new chronological information and sites incorporated from more recent sources.

It is important to note that the chronological information presented in Table A.1 is of variable accuracy and mostly based on ceramics collected through survey, although some of these sites have chronologies that are well-anchored with absolute dates. For the purpose of examining general trends at the macro-level here, this is sufficient, and I do not distinguish by dating method. For future studies in which a higher chronological resolution is required, it will be necessary to refine the chronological information and cross-reference the relative dates with absolute dates for particular sites. Also, the table does not include survey data from the southern

Caribbean coast of Guatemala and Honduras, nor does it address the Pacific coast of the Maya region.

The table is organized into nine regions: Tabasco and Southern Campeche, Campeche Coast, North Coast of Yucatán, Northern Quintana Roo, Central Quintana Roo, Southern Quintana Roo, Northern Belize, Central Belize, and Southern Belize. Whenever possible, I indicate periods of occupation of these sites and a date range for the "principal occupation(s)," or the periods we currently believe these sites reached their demographic, political, economic, and architectural extent. Around 45% (n=238) of these sites are still not securely dated at all, and the 55% that are vary in accuracy from small surface collections of ceramics on one extreme to broad excavations with both relative and absolute dates from sealed contexts on the other, so naturally all dates in this table are approximate. With this in mind, however, it is worthwhile to discuss some of the general diachronic trends in coastal settlement that are apparent in order to put Isla Cerritos in a broader regional and temporal context.

Joseph Ball's (1977, 1978) pioneering studies of coastal ceramics and artifacts helped establish the first chronological sequences for the Maya coast, integrating data from numerous sites to produce models of population movements and technological change vis-à-vis the southern lowlands of Maya civilization. The nine chronological phases he established representing periods of relative stability along the coast are incorporated into Table 1.1 in Chapter 1, the general chronological table, where one can see how these phases correlate with the periods currently in use in the northern Maya lowlands and Table A.1. Over the past three decades, some of Ball's ideas have held up well or been refined with new data, but one trend that is not surprising is that as more coastal sites are excavated extensively, we are finding the

number of coastal settlements with permanent Middle Pre-Classic occupation continues to rise, pushing some established chronologies back by a century or more.

3.5.1 The Middle Pre-Classic Period (1200-300 BCE)

Only 17 of the coastal sites discussed here contain small quantities of ceramics of the Early Nabanché (Nabanche-Mamom) ceramic horizon, dating to the end of the Middle Pre-Classic or Formative period. While few of the sites from the region are well-dated, sedentary Middle Pre-Classic coastal villages are found in southwest Campeche near the Laguna de Términos at Aguacatal (Xicalango), Los Guarixés, around the mouth of the Río Sabancuy at Tixchel (Ball 1978:172), Chakanputun (Champotón 1) (Ek 2012), and two other sites dating to c.400 BCE (Ancona Aragón 2012; Forsyth 2012). The Campeche coast north of the modern port of Champotón was only very sparsely populated at this time and surface collections have not elucidated the nature of these occupations (Forsyth 2012:133). Small villages and shell middens were also present in northern Yucatán and Quintana Roo between Progreso and Tancah, including the area around the Río Lagartos estuary and near Cabo Catoche (Ball 1977:169; Robles and Andrews 2003).

Our recent excavations at Isla Cerritos have produced Dzudzuquil, Muxanal, and Joventud (Early Nabanche-Mamom, Early Komchen ceramic complex,) ceramics in very low quantities associated with domestic architecture and burial contexts, and it is likely that the extent of small-scale Middle Pre-Classic occupation will appear farther west with subsequent excavations of coastal sites. Indeed, Robles and Andrews (2003:106) have reported small quantities of Early Nabanché horizon ceramics at the coastal site of Tzikul near Progreso as well. More substantial Middle Pre-Classic occupation, including numerous large sites with

monumental architecture, sacbeob, and ballcourts, is apparent inland in northwest Yucatán near the modern city of Mérida, corresponding to thicker soils for agriculture (Anderson 2011; Robles and Andrews 2003:108, 2004).

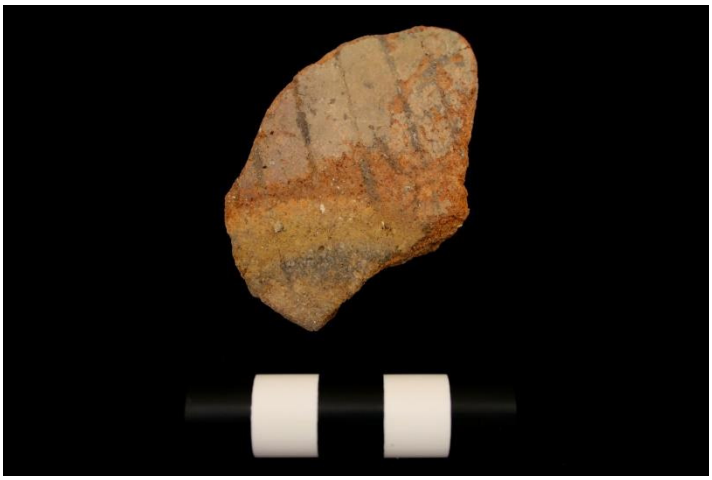


Figure 3.1: Middle Pre-Classic period Dzudzuquil group (Dzudzuquil cream over brown: unspecified striated) ceramic sherd from Isla Cerritos, Structure 19. ICAP 2010.



Figure 3.2: Middle Pre-Classic period, Early Nabanché horizon Joventud group (Joventud red: joventud) ceramic sherds from Isla Cerritos, Structure 23. ICAP 2010.

Along the Caribbean littoral, there is very little population prior to 300 BCE, with the exception of a small population developing at Tancah and more significant settlements already established at Muyil in Southern Quintana Roo and at the Pre-Classic center of Cerros, Belize.

Scott Fedick and Jennifer Mathews (2005:47) have documented Early Nabanché and Mamom horizon ceramics in the Laguna de Yalahau region in northern Quintana Roo, though not associated with any extant architecture. These Early Nabanché ceramics all along the coast are exactly what is found at contemporaneous inland sites and are related to the Mamom tradition shared with the southern lowlands of the Maya region. Robles and Andrews (2003:39) interpret these wares as very late Middle Pre-Classic to Late Pre-Classic transition hold-overs due to the technological conservatism of the coastal periphery at this time that may be more strongly associated with the Late Pre-Classic than any substantial Middle Pre-Classic settlement on the coast. However, more recently Rissolo, Ochoa Rodríguez and Ball (2005:75) argue that Dzudzuquil ceramics from caves and other early contexts indicate that a local tradition of ceramic production had developed on the north coast by this time. As settlement increased significantly in the Late Pre-Classic period on the east coast and around the Laguna de Yalahau (Glover 2012; Rissolo et al. 2005), it would not be surprising to find earlier occupation along the Caribbean with more extensive excavation.

3.5.2 The Late Pre-Classic Period (300 BCE-250 CE)

Ball's (1977) coastal Cienaga phase (300-50 BCE) straddles the end of the Middle Pre-Classic (1200-300 BCE) and the early Late Pre-Classic (300 BCE-250 CE) and represents the first period of significant occupation on the northern coasts with dense deposits of material culture and masonry architecture appearing at several sites (Eaton 1978:9). His Nizuc phase (50 BCE-150 CE) and Salitre 1 and 2 phases (150-450 CE) round out the end of the Late Pre-Classic period. Around the Laguna de Términos and including the Islas de los Cerros in eastern Tabasco, only 33 of 98 sites have been dated at all. Of these, there are 21 sites (64%) with Late Pre-Classic occupation, and 7 have some kind of substantial settlement with monumental masonry

architecture, including the sites of Tixchel, Aguacatal, and Champotón. To the north of the Río Sabancuy, settlement during this period increases to 11 sites from Haltunchén, which was established in the late Middle Pre-Classic, to Punta Canbalam near present-day Celestún. Five sites in this area begin to develop significantly between 200 BCE and 50 BCE, including the islands of Isla Piedras, Jaina, and Uaymil, and populations are moving north and west to the coast—a transition Ball (1977) marks with the Nizuc phase. As previously pointed out by Andrews (1990:160), the increase in settlement density and scale of sites at this time around both the Laguna de Términos and Chetumal Bay (e.g., Cerros) on the opposite eastern coast suggest that maritime trade networks were fully established by the Late Pre-Classic period, and that competing coastal centers had developed on the two extremes of a west-east axis serving these competing regions (Ball 1977:173).

The ceramics from Cienaga phase coastal sites in southwest Campeche show strong ties to first the Mamom horizon and later Chicanel horizon ceramics of the southern Maya lowlands, indicating a strong connection between the population of the interior central-southern Maya lowlands and the contemporaneous occupants of the Río Sabancuy drainage area who likely moved to the coast from the adjacent inland zone (Ball 1978:122). The Mamom ceramics found at southwest Campeche sites are quite similar to that from inland Pre-Classic Maya centers to the south, but with a few coastal peculiarities in decoration (incised lines around the rim) and forms (small bowls and tecomates with red slip) (Ancona Aragón 2012:154). Both Ball (1977:170) and, more recently, Forsyth (2012:137) point to technological conservatism in the material record from southwest Campeche during the Pre-Classic, where coastal populations appear to be producing the same ceramic types well after 50 CE, despite significant changes documented at interior centers. To Ball (in the late 1970s), this indicated that coastal zones were "peripheral to

inland events," and primarily subsistence-based fishing hamlets with only limited trade in marine resources inland during this period. Now it seems the picture is complicated by the fact that we might be dealing with a Late Pre-Classic demographic decline at coastal ports in this area that parallels the decline in fortunes of inland cities in the southern lowlands at this same time with whom they may have had significant ties (Forsyth 2012:137).

Of 73 prehispanic sites identified from the north coast of Yucatán between Celestún and the Yalahau Lagoon, 67% (n=49) have been dated, and of these over half (n=26) have Late Pre-Classic occupation. Within the Late Pre-Classic period, Ball's (1977:172) Nizuc phase (50 BCE-150 CE) refers to a time in which he and Eaton (1978) argued that about 300 km of the north coast from Cerros de los Caracoles in the northwestern corner of the peninsula to the Río Lagartos estuary declined in settlement, while just to the east El Cuyo, Alegría 1, Alegría 2, and Alegría 3 flourished in the early part of this phase, only to be abandoned in the last century of the Pre-Classic period. This so-called "depopulation" probably reflects a sampling bias from the time of the survey, however, since north coast sites that have been excavated extensively in recent years from this area show small Middle and Late Pre-Classic settlements that grow steadily in the Early Classic period. That is the case at the Gulf port sites of Cerro de los Caracoles, Tzikul (Robles and Andrews 2003), Xcambó (located in the marshlands northeast of Mérida; see Sierra Sosa et al. 2014), and at Isla Cerritos where our excavations show continuity of occupation from 300 BCE well past 500 CE (Chapter 4).

While many of the sites of this period were small and may have been occupied only seasonally, others were growing settlements with evidence of both production and exchange that were related to inland Maya cities, not entirely "peripheral to inland events," as originally postulated by many. For example, of the north coast sites with relative or absolute dates listed in

Table A.1 (n=49), over half have principal occupations that begin in the Late Pre-Classic and carry through the Classic period. Moreover, Andrews (1990:160) points out at least 15 Maya coastal sites "were involved in salt making" by this time along the salt flats of the northwest coast and near the Río Lagartos estuary (cf. Eaton 1978:11), and the inland centers of Dzibilchaltún and Komchén--the most powerful regional centers of the northern Maya lowlands at this time--are replete with deposits of marine shells and other marine resources as offerings. Later iconographic references to the sea also appear in architecture at these sites. We will discuss salt production and its role more below, but clearly, local trade in marine subsistence and ritual resources, lithics, and ceramics are indicative of the mutually beneficial economic relations between coastal sites and the interior that impacted coastal settlement patterns.

A few sites from this time also show evidence for participation in long distance trade networks that extended beyond the Maya region. At Isla Cerritos, Xaumito complex burials dated to c.100 BCE contain basalt grinding stones imported from Veracruz, jade from Guatemala, and obsidian sourced to Zaragoza, Puebla (Cervera Rivero 1996:116, 165). There is no doubt that long-distance oversea trade networks were already established before the Late Pre-Classic period.

In contrast to southwest Campeche, the artifact assemblages found on the north coast contain high quantities of ceramics that are technologically and modally more similar to late Nabanché horizon (Chicanel) assemblages in terms of paste, temper, form, slip, and decoration, indicating derivation from the northern plains (Ball 1977:169). During Ball's Salitre 1 and 2 phases (150-450 CE), what some Mayanists refer to as the "Proto-Classic," there are more heterogeneous assemblages that show a strong relationship to rising and established inland centers, such as Dzibilchaltún, Izamal, Tzemé, Aké, and Ucu, whose pottery is ultimately

derived from Chicanel ceramics as well (Ball 1978:126). Sierra Red group ceramics indicate a link to the central and southern lowlands from the "southern cone" of Yucatán/Southeast Campeche, perhaps through the Río Candelaria basin to the northwest coast (Ball 1977:174). This pottery also moves east from the Petén to Southern Quintana Roo and up the east coast to Tancah at this time.

The Late Pre-Classic period is one of the historical peaks of settlement in the northeast corner of the peninsula and the northern Caribbean littoral. In the Laguna de Yalahau region near the Holbox fracture zone, where there are a series of fresh water wetlands, population increases significantly during the Late Pre-Classic-to-Classic period transition (Proto-Classic) and several sites developed large-scale architecture in the megalithic style associated with larger inland centers like Izamal (Fedick and Mathews 2005:36, 48). The ceramics at these sites primarily reflect the eastern distribution of Chicanel sphere groups (Glover 2012) linked to the Petén via Tancah, Xcaret and Muyil--all coastal centers that develop at this same time (Sanders 1955; see also Table A.1).

Among the east coast sites north of the Bay of Chetumal, at least 16 have Late Pre-Classic occupation. It is worth noting that this microregion receives significantly more annual precipitation at around 2,000 mm than most of the northern Maya lowlands just to the west, and paleoclimatological reconstructions indicate that it was even wetter during the Pre-Classic period (Curtis, Hodell and Brenner 1996; Fedick and Mathews 2005:37). All indications are that the coastal Maya were adept at managing wetland environments for both cultivation and resource extraction, augmenting this with fishing and horticulture beyond the mangrove line pursuant to the managed mosaic model (Fedick 1996).

In Belize, we have already mentioned the importance of Cerros as an eastern terminus for inland trade routes connecting the eastern and western Maya lowlands during the Late Pre-Classic period. Around this area in northern Belize, there are at least 12 sites with Late Pre-Classic occupation on the mainland coast, but none of the 22 island sites that have been surveyed seem to have had Pre-Classic occupation. Further south between modern Belize City and the southern Caribbean, just 3 coastal sites have small Late Pre-Classic occupations—Moho Cay and Watson's Island (two of 24 islands) and Kakalché.

3.5.3 The Early Classic Period (250/300-600 CE)

The Early Classic Period, corresponding to Early Period I and the beginning of Early Period II in the Andrews IV (1965) chronology, is a time that certainly merits more archaeological investigation throughout the northern Maya lowlands (Mathews and Morrison 2006), and the coast is no exception. As the picture is becoming more complete with recent investigations, several trends are discernable. The settlement patterns show a steady increase in coastal site occupation for the peninsula overall (n=107) with settlements concentrated along the Laguna de Términos, the salt flats of northwest Yucatán to Yalahau, and parallel growth south of Chetumal Bay (southern Caribbean). The Late Pre-Classic settlements north of Sabancuy, along the barrier beaches, as well as the northern Caribbean tend to decline. Anthony Andrews (1990:160) has shown that, in general, starting around 250 CE some coastal sites stand out as having both public, monumental architecture of varying scales and extensive supporting residential populations.

In the southwest corner of the peninsula near the Laguna de Términos, investigations by Matheny (1970) on the Xicalango Peninsula at Aguacatal and Santa Rita and by Ball (1978) at

Isla del Carmen and Horno, showed evidence for a growing occupation from 250 to 550 CE (Ball's Salitre 2 and 3 phases). The local ceramics from these sites are mostly Gulf coast wares with shell temper, but Socorro Jiménez (2012:170) points out that two later local red types (Punzo red and Estero red) are stylistically similar in form to early Tzakol I ceramics, indicating strong connections to the Petén region. Just to the north, the central Campeche coast is practically depopulated during this period, with Tixchel being mostly abandoned by the end of the Late Pre-Classic period and very little activity at Champotón until after 600 CE (Forsyth 2012:138). In fact, survey data show that occupation of the Campeche coast north of the Río Candelaria will double in the Late Classic period. In the Early Classic, however, two island sites along this coast—Jaina and Isla Piedras-- develop into key ports linking the Laguna de Términos area (and thus trade routes from Veracruz and the Petén) to Tzikul and Xcambó on the north coast, and from there to points inland and east.

The architecture of Jaina in the Early Classic period is very reminiscent of Petén sites with acropolis style civic-ceremonial groups, a ball court, stelae and hieroglyphic texts, and temples featuring rounded corners and apron molding (Benavides 2012a:313; Jiménez 2012:178). Local utilitarian ceramics are mostly Celestún red, while fine polychromes (Tepeu I and II) come from several sources, including Edzná, Becán, Balamkú y Calakmul in the Campeche-Guatemala Petén zone (Benavides 2012a:305). Fine paste ceramics, including most of the Jaina figurines, were imported from Veracruz (central and the Tuxtlas), the Usumacinta and Grijalva river basins, and the region around Palenque (2012a:305). In fact, the Gulf coast is described as a "fine paste" zone, as these were traditionally the most popular high status ceramics traded across the region (Aimers 2007:39).

The ceramic profile, featuring Cochuah-Chikín ceramics (250-550 CE), is quite similar on Isla Piedras at this time (Inurreta Díaz and Pat 2005), as well as Petenes de Xlabarco, Cerro de Caracoles (Jiménez 2012:178), and Tzikul—major ports on the northwest coast (Robles and Andrews 2003:108). Socorro Jiménez (2012:178) argues that from the perspective of at least one artifact class, ceramics, these island sites appear to form a "single cultural block" during this period. Moreover, this "series of maritime enclaves," in northern Campeche, as Robles and Andrews (2003:108-109) refer to them, probably served as a principal corridor for exchange between the northern Maya lowlands and Teotihuacán, as ceramic groups originating in northwest Yucatán have been found in Xolalpan phase contexts at that central Mexican city (Rattray 1984).

The corpus of hieroglyphic inscriptions from this region includes an emblem glyph for Jaina that may represent the port itself, its political realm beyond the island, or the title and name of a high-ranking member of the ruling lineage who controlled the port (Graña-Behrens 2006; Stone and Zender 2011:26). By the Late Classic period, this emblem appears at the island port of Uaymil and hinterland sites such as Xcalumkin and Santa Rosa Xtampak, indicating that the port and its ruling lineage was engaged with and influenced regional politics and economics at a scale on-par with centers like Dzibilchaltun and Ek' Balam (Graña-Behrens 2006:110).

On the north coast, almost 60% of the dated sites have some occupation between 300 and 600 CE, and 43% develop substantially at this time. The increasing importance of salt and the scale of its production and distribution within exchange systems had a major effect on coastal settlement patterns in this region at this time (Andrews 1983). Coastal salt production will be discussed in more detail in the next section, but the settlements north of Jaina that get large at this time are located near either the western salt lagoons between the Ría Celestún (e.g., Punta

Canbalam) and Dzilam or the eastern salt works around the Río Lagartos estuary and the Las Coloradas barrier beach. Tzikul and Xcambó are the largest ports, the former has not been extensively excavated, but contains small-scale public architecture, including masonry pyramids, a ball court, and a circular temazcal sweat bath (Robles and Andrews 2003:108).

The old models of Maya economy that stress separation between the elite-administered long-distance exchange of prestige goods between communities and the local barter exchange of subsistence goods within communities where everyone had access to the same resources (Chapman 1957; Tourtellot and Sabloff 1975), have now been replaced by models that demonstrate the complex interplay between production, exchange, and consumption operating simultaneously at different scales that characterize Maya economic networks. There is good evidence that by the Early Classic period, a complex, articulated market system, such as that thoroughly documented at the contact period, had already developed and was functioning in the Maya region (Masson and Freidel 2012). Evidence from household archaeology across time and space and the spectrum of social classes from Classic and Postclassic Maya sites supports the idea that market-based exchange, tribute, and other forms of patron-client exchange co-existed, and markets integrated craft production (at household, elite artisan, and industrial levels), occupational specialization, and trade of raw materials and surplus subsistence goods at all levels of society (2012:459).

Within an articulated system like this borne out of the cumulative development of economic institutions over time (as opposed to binary scenarios indicating one or the other), the tribute system emphasized in hieroglyphic texts and elite exchange both complimented and stimulated the development of regional markets and vice versa, the largest located in the civic-ceremonial centers of cities where elites also lived (Masson and Freidel 2012:457). This model

postulates that elites did not exert absolute control over all specialized production, redistribution of surplus, or the markets themselves, nor would they have benefited from this. Rather, they had increased access to exotic goods because of their wealth, they placed markets strategically, regulated their scheduling, adjudicated disputes, collected taxes (exerting the necessary basic administration), and stimulated the trade of luxury goods & their value in the market by imbuing them with status and creating demand for them in the cities (2012:460). They also benefited from the prestige of hosting the markets and encouraging access to alternative sources of subsistence and vital resources, should local production or supplies be interrupted by outside factors (2012:478). Because wealth goods had market value in currencies (e.g., cacao beans, shell beads, greenstone beads, cotton mantles, and copper bells), they could be exchanged for subsistence goods and vice-versa—these were not separate economies. Masson and Freidel (2012:459) provide convincing archaeological evidence for this kind of economic diversification with households in rural areas producing surplus for markets and elites exercising control only over aspects of distribution.

Port communities on the north coast that emerge during the Classic period were located strategically in relation to salt sources, and evaporation production was becoming very specialized at this time in order to meet the growing demand stimulated by elite preference at lowlands cities (McKillop 2002). Central markets motivated the coastal communities to increase salt production and fishing to almost industrial scale (Masson and Freidel 2012:462). Xcambó was the most important port site on the north coast during the Early and Late Classic periods (250-700 CE) (Sierra Sosa 2004; Sierra Sosa et al. 2014). By its early occupation phase (250-550 CE), the relatively small settlement contained both an administrative center and numerous residential patio groups (Sierra Sosa et al. 2014:223). Xcambó controlled the salt beds in the

marshlands to the north between the site and the open coast, including Xtampú, an evaporation salt production complex and settlement with numerous beds that demonstrates the increased scale of production. Throughout Xcambó, archaeologists have documented the round stone foundations of conical storage facilities (Sierra Sosa 2004:103). The site's pier, which facilitated the embarkation of watercraft navigating the wetlands of the Ría, is located on the north side and aided the transport of salt and other products moving along the Gulf coast villages and from these inland via manual transport. There are also sacbeob (raised causeways) linking the site center to residential groups and two agricultural settlements located inland, now called Misnay and Cemul, that would have aided in supporting the resident population (Sierra Sosa et al. 2014:223).

Much like the rising Classic period political centers of the interior, such as Oxkintok, Ti'ho, Dzibilchaltún, Yaxuná, Becan, and Izamal, Xcambó's architecture shows clear cultural influences from the Guatemalan Petén combined with the northern "megalithic" style (Sierra Sosa et al. 2014:225). The ceramic profile also strongly parallels these interior centers with links to the Tepeu I ceramics of the Campeche-Guatemala Petén and the middle-lower Usumacinta basin (Jiménez 2012:178). At the same time, however, as a coastal port the site participated in a variety of other exchange networks from the Mezcalapa sphere of the eastern littoral of Tabasco to the Caribbean coastal ceramic groups (Jiménez 2012:178).

This ceramic pattern is also observed at most of the larger north coast settlements that develop at this time near the eastern salt beds, including San Crisanto II, La Providencia, Emal, El Cuyo and Chiquilá, and is certainly one shared characteristic of Classic period port communities (Andrews 1990:160). There is a very clear shift within this material culture class in the latter part of this period from one that reflects inland stylistic and technological choices to

coastal varieties, including locally produced shell temper wares and copies of inland styles (both northern and southern), imported ceramics from an emerging Gulf coastal sphere and the Caribbean coast (Robles and Andrews 2003:40).

At Isla Cerritos between 300 and 700 CE, the small port settlement continues to develop steadily with both perishable and masonry architecture and material culture that is oriented toward the northwest interior of Yucatán, and the east coast. On the north side of the island, the large raised platform that supports the stone foundations of the eastern temples and residential structures was constructed on huge limestone blocks resembling the contemporary megalithic architectural style of the northern lowlands. The ceramics from this period at Isla Cerritos show connections to Ek' Balam (Huachinango) and Cobá (Tituc Orange), suggesting that the port was also participating trade with the largest market cities in the region

In addition to the influence of salt production, a second and certainly related trend that is evident from the Early Classic settlement pattern is the development of large-scale, urban population centers located within 20 km of the coast in places that are typically marginal areas for agriculture (Andrews 1990:160; Dahlin and Ardren 2003). Sites like Dzibilchaltún, Chunchucmil, Tzemé, San Fernando in the north and Chunyaxché and Altun Ha on the east coast were administrative centers with a regional power base where artifact patterns and iconography attest to strong economic, ritual, and political connections to the coast. Andrews (1990:160) and Dahlin and Ardren (2002:255) argue that these could have been key market centers serving as gateway communities (Hirth 1978) that bridged salt and other marine resources, as well as obsidian, between the coastal port networks and more powerful interior kingdoms (e.g., Chunchucmil and the port of Punta Canbalam on the Ría Celestún salt lagoon). Others suggest that the inland cities established ports or gained administrative control over them and trade routes

in specific resource areas, as may have been the case with primary regional polities like Dzibilchaltun, Izamal, and Cobá (e.g., Xelhá) to trade agricultural products for salt (Andrews 1990: 160; Sierra Sosa 1999; Robles 1990). Additional investigation of the residential areas of these ports are needed to determine whether the evidence supports inland administrative control or more independent household production and occupational specialization as described in the newer market model. Hieroglyphic inscriptions from a stela at Dzilam Gonzalez, a site located less than 20km of the modern port at Dzilam de Bravo, include what could be interpreted as an emblem glyph, which also appears in inscriptions at Late Classic Chichén Itzá (Graña-Behrens 2006: 111), and might be another example of a coastal site that took on regional political importance (perhaps as a secondary center) during the Classic period.

These examples show that the Early Classic is the time when political and economic ties were forged between inland cities and networks of coastal ports along the western and northern littoral that increase in scale and complexity after 600 CE. Previously established coastal trade networks also took on a more "international" character, spreading beyond the Maya region to connect with wider Mesoamerica (Andrews 1990).

Further to the east in northern Quintana Roo and down the Caribbean coastline, Early Classic settlement is mostly confined to a just few sites that develop into maritime trade and distribution centers for products moving up from the southern lowlands. After 350 CE, the Yalahau region is practically depopulated with the exception of the island port of Vista Alegre on the eastern edge of the salt zone, which becomes a center for the production of a widely exchanged utilitarian pottery popular all along the coast (Fedick and Mathews 2005:47; Glover et al. 2011). In northern and central Quintana Roo, there is Early Classic presence at El Meco, Mulchi, and Mandarín, but most of the sites in this area with significant populations are on

Cozumel Island or mainland gateway ports leading to that island (e.g., Xcaret, Xamanhá, and Ina). An important port is established at Xelhá that has a very strong relationship with the inland polity centered at Cobá and served as the channel by which products from the Petén were distributed west into northern Yucatán and the Puuc region (Andrews 1990:161; Andrews and Robles 1986; Robles 1990). As discussed above, it is not clear whether a climatic event, such as the proposed tsunami of 450/500 CE might have affected this settlement pattern by essentially wiping out several coastal settlements on the northern Caribbean (Shaw and Benson 2015). Uninterrupted settlement on Cozumel and the ports of Xcaret and Xelhá do not lend support to that interpretation.

San Gervasio and other interior sites on Cozumel grow significantly during the Cochuah Littoral ceramic complex (300-600 CE), when Group I is constructed in the acropolis style at San Gervasio (Peraza Lope 2005:80). Cozumel island would continue to function as a key coastal administrative center, port and pilgrimage site from this point forward in time until Spanish contact with very little change or disruption, despite major political and social upheavals on the mainland. South of Cozumel, Tancah and Muyil, located on a coastal lagoon, both continue to flourish in this period as distribution centers for products moving north from Belize and northern Petén cities such as Becan and Calakmul, as well as locally produced east coast ceramics, including Tituc Orange Polychrome and fiber-tempered Cetelac group pottery (Witschey 2005:138).

With the decline of Cerros, Santa Rita Corozal and Oxtankah become centers of regional power and trade around Chetumal Bay in the Early Classic period (Gudjeran 2005:191). Located between the termini of the New River and the Río Hondo that lead to the southern lowlands, Santa Rita had very strong political, economic, and cultural ties to Tikal and affiliated sites in the

Petén (Chase and Chase 1988). The Early Classic architecture at Oxtankah in the Petén style indicate close ties between this site, as well, and the southern lowland interior (Gudjeran 2005:191). This corresponds to the century of significant inland political shifts with the military, political, economic, and cultural intervention of Teotihuacan in the Maya area and the foundation of new dynasties at several of the region's key cities (Fash, Tokovinine, and Fash 2009; Braswell 2003; Fash and Fash 2000).

The coastline of southern Belize currently appears to have had little population during the Early Classic period beyond Ambergris Cay, small settlements around Placencia Lagoon, and the maritime ports and island salt works at Paynes Creek, Stingray Lagoon, Punta Ycacos, Frenchman's Cay and Wild Cane Cay (McKillop 2005a). Again, the evidence for salt production reaching industrial proportions during the period 300-600 CE at Punta Ycacos, suggests that inland market demand in the Petén for alternative (non-north coast) sources was high during this period and that specialized production was not always directed by the urban elites of the inland states, but controlled by the coastal communities in the resource zone who developed strategic alliances to access markets (2005a:5633). The reduction in demand with the decline of inland cities at the end of the Classic period is one reason the salt works there were not relocated in the Terminal Classic period (McKillop2002:165). As was the case in the Late Pre-Classic period, the ports along Chetumal Bay were still the principal coastal termini at this time for trade routes moving east from the southern Maya lowlands and eastern highlands to the Caribbean and the counter point to the western ports at Isla del Carmen and the Laguna de Términos.

3.5.4 The Late Classic Period (600-750/800 CE)

The Late Classic period was a time of demographic expansion and significant political, cultural, and economic shifts visible in the evolving settlement pattern and material record of the Maya coast. These developments parallel the rise of new, powerful city-states in the heart of the northern Maya lowlands that compete and collaborate with established urban administrative centers for regional dominance in an area with limited resources and even more limited rainfall, especially during periods of drought. With inland populations at their height throughout the Maya region and inter-polity tensions and alliances exceedingly complex and quickly evolving, the importance of maritime trade in sustaining economic systems, markets, and sociopolitical relationships grew significantly.

In Tabasco and southern Campeche, 61% of the dated sites reach their extent at this time, and Aguacatal and Santa Rita near the Laguna de Términos continue to develop into active ports. Moving north in Campeche, the site of Champotón develops into a sizable settlement at this time (Forsyth 2012), but most of the activity on the west coast north of Champotón is confined to the islands of Uaymil and Jaina discussed above. On the north coast of Yucatán, 53% of the dated sites are occupied during the Late and Terminal Classic periods (600-1100), and this represents the height of maritime activity along this part of the coast, although salt production continues through colonial times. The Gulf coast from Isla Cerritos west to Veracruz shares a strong cultural and technological affinity at this time, expressed most clearly in the Canbalam ceramic sphere of mostly utilitarian ceramics that are popular and exchanged widely only along the coast after the fall of Teotihuacan. This coincides with an increase in the production and distribution of fine paste ceramics in this region that replace polychromes as "prestige" wares (Aimers 2007:349). This ceramic interaction sphere and what it represents at Isla Cerritos will be

discussed in more detail in the next two chapters, but it could represent a Gulf coast political and economic network, perhaps a kind of "league," that developed out of the overall population rise along the coast and the spread of coastal traditions and ideas with marine products that were in great demand in the Late Classic market. This might also be linked to waves of migration along the coast of the Chontal from Acalán, so often referred to in the historical record, as we do have bioarchaeological evidence of demographic shifts from Xcambó dated to this period. If so, Isla Cerritos was part of this network, with on-going trade ties to the interior Puuc centers, Chichén Itzá, Ek' Balam, and Cobá. These new Late Classic regional centers were growing in the northern Maya lowlands, creating new markets nearer to the coast for these goods, while the southern lowland polities controlling the inland river and overland trade routes began to decline.

The number of sites occupied on the northern Caribbean continues to be low at this time, although Vista Alegre, Tancah, Xelhá, and Muyil serve as transshipment points connecting the products moving north from the sea ports around the Port of Honduras with northern markets, including, prestige goods from the southern lowlands (McKillop 2002:173). In southern Quintana Roo and Belize, 50-60% of all dated coastal sites are occupied during this time, and mainland and island ports show evidence of specialized production at the same time that political integration is waning in the lowlands, as discussed above with reference to the salt works. The maritime ports in this micro-region benefitted from this economic system until marine transgression became slightly more rapid, flooding the salt works, and coinciding with the decline of interior markets for coastal production. Island ports at Ambergris Cay and Wild Cane Cay functioned to move obsidian and marine resources up the coast from the highland Guatemalan sources and inland to the Petén until they declined in the Postclassic period (Guderjan 1995; McKillop 2005b). The decline of Teotihuacan and the southern Maya lowlands

after 600 CE triggered changes in the Mesoamerican-wide obsidian exchange networks. El Chayal obsidian was used primarily in the Maya lowlands until the overland trade routes declined with the fall of the cities of the Petén (Braswell 2003a:140). The Gulf coast Maya, on the other hand, traded with the Cantona polity for obsidian from the Zaragoza, Puebla source in highland Mexico during the Late Classic period (2003a:139).

3.5.5 The Terminal Classic Period (750/800-1100 CE)

After 800 CE, significant political and economic shifts in the interior of the Yucatan Peninsula had important ramifications for settlement patterns and trade and exchange networks operating all across the northern Maya lowlands. The city of Chichén Itzá rose through the Late Classic period to become the primary political and economic center in the northern Maya lowlands by 900 CE. The site was already established as a major pilgrimage site and market center before this time, but its sphere of economic, political, religious, and social influence expanded significantly during this period as it transformed into a Tollan, or a cultural capital in the east of a growing Mesoamerican "international style" associated with the Epiclassic period (Ringle and Bey 2009).

As discussed above, the Terminal Classic period has also been correlated with extended periods of drought of variable effect and broad sociocultural, economic, and political changes expressed at many sites through increasing variability of material culture and artifact classes that "weaker centralized control" by elites and increasingly hybrid cultures and diverse cities (Aimers 2007:350). Chichén Itzá is often described as transforming pre-existing trade networks and centralizing its control over the economy by establishing, or otherwise asserting complete control over coastal ports like Isla Cerritos, mostly on the Gulf coast and less often along the Caribbean

littoral (Aimers 2007:339; Cobos 2010a, 2010b, 2010c). As will be discussed in more detail below, the Itzá state is thus interpreted as shifting the reliance of lowland Maya trade from overland routes to sea routes, at the same time that several of the southern kingdoms declined, leading many to associate these changes with a Chontal or "Putun" Maya incursion into the region from the southern Gulf coast, Río Candelaria area (Andrews 1990:161; Thompson 1970).

As a regional market city, 9th century Chichén Itzá is often modeled as a "solar central market" in which Itzá elites controlled all aspects of the production and distribution system (Masson and Freidel 2012:479). They are also argued to have established "mercantile" and "military" bases linking ports, key resource areas, and the central city, indicated by material evidence for strong alliances with Champotón, Campeche, Jaina, Canbalam, Xcopté, Punta Cerrito, Uaymil, and Vista Alegre, in addition to Isla Cerritos (Andrews 1990:161). This stimulated a rise in activity in southwest Campeche ports, as well, where 26 dated sites have been surveyed on the coast from Tabasco to Celestún.

At Isla Cerritos and 25 other sites documented along the north coast for this time period, the Canbalam ceramic sphere was replaced by the Cehpech-Sotuta horizon around 900 CE--a suite of local and trade ceramics popular at Chichén Itzá. While Chichén Itzá did establish stronger social and political ties and increased investment in coastal trade and salt centers, the inland city does not shut down all of Isla Cerrito's external trade relationships with other inland markets or coastal sites. This is similarly the case with Uaymil and other western Gulf coast ports that have been investigated more thoroughly.

As an extension of the Isla Cerritos Archaeological Project, Andrews, Gallareta, and Cobos carried out the Cupul Survey[1] in 1988, covering the 4,000 km2 area between Chichén Itzá and the Bocas de Dzilam to the northwest and San Felipe to the north in order to get a sense of the polity's core area of influence between the capital and Isla Cerritos (Andrews et al. 1989:91) (Figure 3.3).

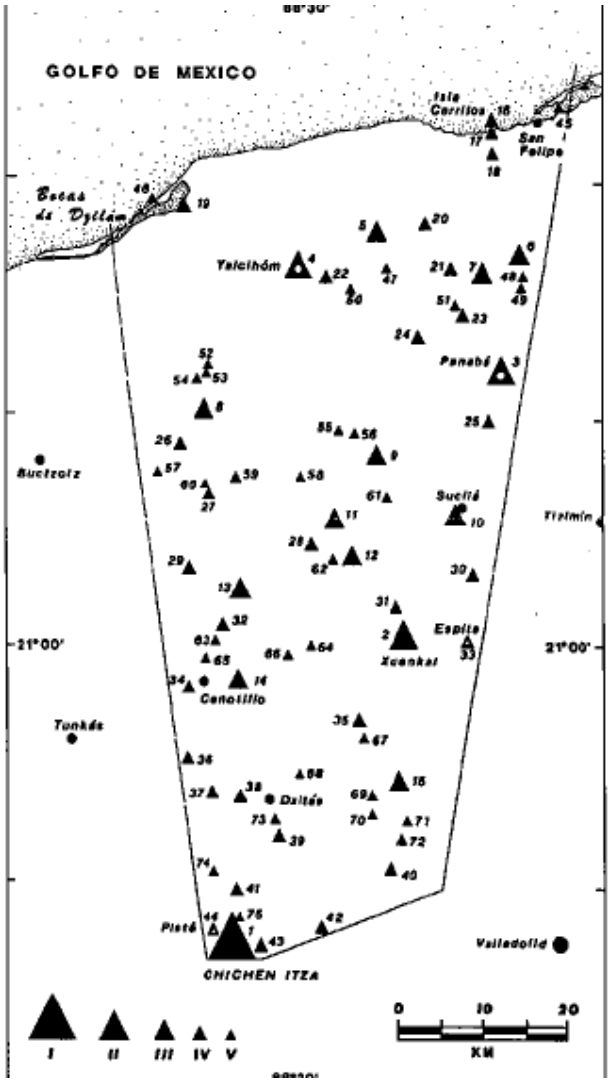


Figure 3.3: The Cupul Survey area. From Andrews et al., 1989:92.

[1]The names "Cupul" and "Chikinchel" refer to the 16th century name of the province that covered these survey areas. The political geography of the Late Postclassic and Early Colonial periods may have historic roots in how political territory was delineated at the height of inland centers', such as Chichén Itzá and Ek Balam, regional influence.

This survey data was later complimented by Kepecs' (1999) survey of the neighboring Chikinchel Province, which covered most of the Río Lagartos estuary, including the site of Emal, and the inland center of San Fernando Aké. The details of these surveys will be discussed more below, but relevant here is that during the Early Classic period, occupations at many of the sites within the survey regions were small, and the northern portion appears to have been divided into six "city-states," the centers of which were located beyond one day's walking distance from each other (Kepecs 2007:135; Kepecs and Gallareta Negrón 1995).

Kepecs found that in the Late Classic period, typical northern Maya slateware ceramics and imported polychromes began to be mixed with new ceramics, including volcanic ash-tempered Celestún wares and Fine Gray at salt-making coastal sites and at the inland centers of Dzibilchaltún and San Fernando Aké (Kepecs 2007:136). These ceramic types are now considered diagnostic of the Canbalam ceramic sphere and, possibly, Chontal Maya or Mixe-Zoque migrations from the lower Gulf Coast. The traditional myth-history recounted in the colonial period Chilam Balam of Chumayel states that the "Itzá" came to Yucatán from the eastern coast (Caribbean) and moved inland to Aké (likely San Fernando Aké, according to Kepecs) where they were "born" and then moved to the northern coastal site of Tixchel where they stopped for some time (2007:136; Roys 1973:70-73). The "Tixchel" referred to here is not the coastal site in southern Campeche mentioned above, but rather a small site located just east of the modern Las Coloradas salt beds. Eventually, they migrated south to Sucopo, Tahcabo, Kikil, Panabá, and Yalsihóm, which are all sites identified in the Cupul survey (Andrews et al. 1989; Kepecs 2007:137). At this time, many of the small sites (Rank III, IV and V) go into decline.

The Terminal Classic period (800-1100 CE) is when the majority of the sites documented in both surveys are occupied and reach their extents, and this correlates with the centuries in which canoe-based maritime trade was thriving in the Maya region (Ardren and Lowry 2011:431). Terminal Classic deposits in both areas are dominated by the Cehpech-Sotuta ceramic sphere, which is the pattern corresponding to Chichén Itzá after 900 CE. Moreover, many of the sites with Early Classic occupation that declined during the Late Classic re-emerge with more significant occupations during this period.

Kepecs and Gallareta (1995) argue that these settlement patterns indicate that the Itzá had a significant impact on settlement in this region as they moved south from the coast, eventually establishing themselves at an ideal inland center, Chichén Itzá, from which they could take control of northern coastal salt production at sites like Emal, Dzilam, Tixchel, and Xtampú and distribution through ports like Xcambó, Dzilam, and Isla Cerritos by establishing a new regional settlement hierarchy.

On the Caribbean coast, the situation varies from one in which ports are peacefully allied with Chichén Itzá, militarily conquered, or completely ignored and oriented toward other market centers to the east and south. In central Quintana Roo, 46% (n=29) sites on the mainland and Cozumel have occupation during the Terminal Classic period, and 37% (n=7) in southern Quintana Roo were also occupied. The evidence for a changing relationship between Isla Cerritos and Cozumel during the Terminal Classic is still somewhat ambivalent, as there are conflicting interpretations of the material record (cf. Andrews 1990:161; Peraza Lope 2005; Sabloff and Freidel 1975).

Some of the east coast sites were linked more directly to Cobá, Ek' Balam and the southern Maya lowlands, even during the Terminal Classic period, although some turned to

alliances with northern lowland centers after the decline of various cities in the Petén region. El Meco, Xcaret, Xelhá, Chac Mool and Tancah have material ties to Chichén Itzá (Andrews 1990:161).

In Belize, settlement generally continues unabated in the north with sites shifting their trade allegiances to the northern Maya lowlands, such as Lamanai, while others such as Colhá and Nohmul show evidence for military invasion from the north between 800 and 950 CE (Aimers 2007:348). Wild Cane Cay and Ambergris Cay also appear to shift during the Terminal Classic period to develop economic relations with Chichén Itzá and its market and trading spheres. After being involved in the shipment north of grey obsidian delivered via river and overland routes from highland Guatemala, these ports shifted business in the Terminal Classic period to the importation and distribution north and south of popular exotic goods related to Chichén Itzá (McKillop 2002b). In central and southern Belize, settlement declines to 6 and 2 sites respectively during the Terminal Classic, perhaps as a result of both sea level rise and the decline of the markets at depopulated southern cities.

Obsidian is one class of material culture that has been used to discuss changing exchange patterns related to the rise of the Itzá during the Terminal Classic period. Braswell (2003a:140) has documented what he calls an "International Sphere" which emerged around c.800 CE in a few regions within the Maya area that shifted to Central Mexican sources of obsidian. First, the Late Classic Gulf coast network, mentioned above, is linked to Zaragoza obsidian. Chichén Itzá and its allied ports show patterns in which several different Mexican sources were accessed along with the two main highland Guatemala sources, grey El Chayal being the second highest quantity. The Puuc sites in the western Cehpech ceramic region also appear to be importing Mexican obsidian directly through Terminal Classic ports like Uaymil through the 11th century,

indicating that Uxmal and Chichén Itzá participated in the same obsidian trade networks, while Ek' Balam and Cobá did not (2003a:141). Mexican obsidian travels through this network on the sea and decreases with distance from the coast, and Ixtepeque shifts to a Caribbean coastal route reaching inland centers via rivers and up to the north coast (2003a:141). An important point is that Chichén Itzá does not control all of the trade of this resource in the Terminal Classic. Other obsidian also reaches the southwest Maya area and Guatemalan piedmont, as well as Copán and Chiapas via overland routes (2003a:144).

3.5.6 The Postclassic Period (Early 1100-1400 CE, Late 1400-1542)

During this period, the political collapse of Chichén Itzá and other large inland agricultural centers in the northern and central lowlands result in population shifts and increasingly development along the Caribbean coast. In the early phase of the Postclassic period after the political decline of Chichén Itzá around 1050-1100 CE, Isla Cerritos continues to function as a small port for almost two centuries, even while there is very little occupation on the north coast of Yucatán and Campeche. The few sites that remain populated in this area, such as Emal, are strategically located near the Las Coloradas salt source and show trade relations with the southern Gulf coast and Mayapán, the principal Maya city of northwestern Yucatán at this time. From the 15th century into the early colonial period, there is a small re-occupation of some of the house platforms on Isla Cerritos, but most of the structures at the site had been filled in and converted to ritual altars.

In southern Campeche and Tabasco near the Laguna de Términos, the trading centers of Xicalango and Champotón, as well as the riverine port of El Tigre (Acalán), were the largest of 14 coastal sites with occupations during this period. These are known from the historical

chronicles as neutral ports facilitating exchange between the imperial capitals of the Mexican highlands and the Maya region. As Andrews (1990:62), points out the real axis of power had shifted by the fall of Mayapán in 1444 to the northeast Caribbean coast where walled ports, such as Tulum, and the integrated sites throughout Cozumel were flourishing. In northern Quintana Roo, 94% of the dated sites have occupation during the early phase of the Postclassic period, and 97% during the late phase. In most cases, this represents the height of population for these sites.

By the early phase of the Postclassic period, the Maya relied on the commercialized market system to augment subsistence and obtain raw materials that were, in turn, used to produce surplus craft products for the market (Masson and Freidel 2012:461). After the dissolution of many of the royal houses of the principal Classic period cities, exotic trade items could be bought by anyone with sufficient currency alongside basic staples (Braswell 2003a:155; Masson and Freidel 2012:460). Specialized occupations associated with commercial trade took on higher social status, and patron gods of travelers and merchants were venerated in Yucatán (Andrews 1998:22). Obsidian continued to be imported to regional markets from both Central Mexican sources and, increasingly, from Ixtepeque in highland Guatemala via Caribbean routes (Braswell 2003a:156). An interesting correlation exists between periods of increased economic integration across Mesoamerica and the spread of shared religious ideas, iconography, and styles during the Terminal Classic period (Feathered Serpent related motifs) and the late Postclassic "international style" (2003a:158). This is indicative of how important trade and traders were in the exchange of ideas, languages, and cultural customs, as well as products and resources.

In contrast to a high number of small coastal ports located at strategic distances from each other, larger ports grew into centers that included markets, civic-ceremonial administrative centers, religious shrines, and agricultural zones, such as Ecab, Tulum-Tancah, El Meco,

Cancun, Mulchí, Playa del Carmen/Xcaret, San Gervasio, Paamul, etc. (Andrews 1990, 1998). The central Quintana Roo port settlement pattern, including Cozumel, reflects this with 98% of the sites dating to the late phase of the Postclassic period. In southern Quintana Roo around Chetumal Bay 15 coastal sites, including Chac Mool, Ichpaatún, and Chetumal/Santa Rita/Oxtankah were occupied continuously through the Postclassic period. To the south in Belize, coastal settlement is reduced from Terminal Classic occupation to around 30 sites spaced more distantly, including Marco Gonzalez, Colson's Point, Placencia Point, and Wild Cane Cay (Guderjan 1995; McKillop 2005b).

Beyond the League of Mayapán, small decentralized polities in the northern lowlands attempted to maintain access to coastal canoe trading routes and marine resources, but the largest shipments of goods appear to have been going back and forth from Mesoamerica to lower Central America via three port zones in the Maya region 1) the lower Gulf coast ports connecting with Central Mexico and inland river routes to the remaining Petén polities, 2) the series of salt, pilgrimage, and market towns along the northeast Caribbean and lagoons anchored at Cozumel, and 3) the southeastern ports of Nito and Naco leading to the Bay Islands and the Ulúa River valley (see Andrews 1990:162; 1998:21).

3.6 Coastal Salt Production

As described above, in the Late Pre-Classic period (300 BCE–300 CE), occupation along the coasts of the Yucatan Peninsula consists of mostly small fishing villages and hamlets that supplied inland centers like Dzibilchaltún and Komchén with marine resources, a few somewhat larger sites with masonry architecture and port facilities participating in long-distance exchange networks, and at least one important trading center at Cerros and, possibly, also at Tancah.

Anthony Andrews (1990:160) lists at least 15 sites with remains of salt-making technology from this early period. Salt has always been a vital subsistence resource in Mesoamerica, crucial for everyone's survival but limited in terms of where natural sources are located (Andrews 1980:24; McKillop 2002:1). Quantitative estimates of salt consumption are complicated by several factors, not only biological necessity, but also acquired taste (cultural), its use in other forms of production and food preservation (McKillop 2002:16). Andrews (1980:24, 1983) estimated that a large Maya community of 50,000 people would have required a minimum of 400 kg of salt per day, based on a range of 8-30g/person need for tropical farmers, or 131 tons per year. A more conservative estimate by McKillop (2002:17) of 6g per person/day would be 10,950 tons of salt per year to supply a postulated population of 5 million people in the region during the Maya Classic period. Salt was a scarce commodity in the southern Maya lowlands, and although salt production by the "sal cocida" (brine boiling) method existed there and in the Salvadorian littoral, the Alta Verapaz region, along the Pacific coast of the Isthmus of Tehuantepec, and coastal Belize, the largest source of salt anywhere in ancient Mesoamerica was located along the northern coast of the Yucatan Peninsula near the Celestún and the Río Lagartos estuaries (Andrews 1980:29; Andrews and Mock 2002:312; McKillop 2002:3). Early Colonial period sources suggest that Yucatecan salt was favored because it was "white and clean and had a good taste" compared to that produced elsewhere and by other methods (Eaton 1978:13). Near the geographic center of this coastal salt region, lies the port of Isla Cerritos.

By the Classic period, solar evaporation salt production using salt pans developed into a large-scale, specialized operation on the northern coast of Yucatán and southern Belize. In Yucatán, administrative centers with public architecture and extensive residential settlement developed near salt sources, such as Xcambó, Emal, San Cristano II, La Providencia, and

Chiquilá on the north coast, Xelhá, Tancah, and San Gervasio on the Caribbean, and Jaina Island on the western Gulf coast (Andrews 1983; Andrews 1990:160). Salt was harvested during the dry season by scraping the salt beds and dumping the salt in large mounds where the exterior was burned to produce a protective crust (Eaton 1978:13). The tapesco method, described by Williams (2009:184) and Andrews (1983:62), involves filtering marsh soils with salt water to produce brine for solar evaporation in shallow pans. At the Classic period K'aak Nab' salt works at Punta Ycacos, Belize McKillop (2005a:5633) found evidence of wooden buildings that were used to store salt and possibly boil brine indoors as part of the large-scale production process.

Xcambó, in particular, was a major port with significant amounts of long-distance trade wares and the production, storage, and export of salt from the Late Formative through the Late Classic period (Andrews and Mock 2002:311; Sierra Sosa et al. 2014). Extensive urban settlements, such as Chunchucmil, Dzibilchaltún, and San Fernando Aké located just inland from the coastal wetlands were definitely consumers of salt and marine resources and may also have redistributors of these resources through markets, riverine, and inland trade routes to the south.

McKillop (2002) makes a convincing case that the large populations in the Maya lowlands in the Late Classic period needed to augment northern solar salt production with brine boiling production at both inland salt springs and Caribbean coastal sites such as Northern River Lagoon, Salt Creek Lagoon, San Juan, Marco Gonzalez, Watson's Island, Placencia, and Punta Ycacos Lagoon in Belize (McKillop 2002:2). This form of salt production was also intensive and required fuel to artificially evaporate salt-infused brine by boiling it in huge pots over fires (2002:19). It is debated, and perhaps an unresolvable question, which form of production was more cost-effective and which sources were preferred by which consumers because the product

itself is perishable, and the question of what specific products were exchanged for (or carried – e.g., dried meat, fish) salt remains elusive.

What we do know now is that southern lowland sites were not entirely dependent on the more expansive north coast salt sources to provide this product in bulk; rather they could also exploit sources of salt production in the southern Caribbean, Pacific coast, and inland salinas that were, in some cases, closer (McKillop 2002:20; cf. Andrews 1983). In Belize, the location of salt works and maritime ports closer to major river routes leading to the Petén polities likely balanced out the increased secondary production cost, especially if we take into consideration the higher sea transportation cost of Yucatecan salt (Andrews and Mock 2002:325). Thus, it may be that the demand for Yucatecan salt in the Classic period was greater than the sources could supply alone, and southern production sprang up to mitigate the shortage of what had become a luxury good through regional exchange, providing competition (2002:324; Kepecs 2003:120).

McKillop's (2005a:136) extensive work at Punta Ycacos shows that salt production was outside the purview of the centralized administration of inland cities, and thus was an industry controlled by the coastal Maya living in the resource zone. As mentioned above, production stopped there in the Terminal Classic period (after 900 CE) due to rising seas and reduced demand from declining inland cities. Andrews and Mock (2002:325) point out that Salinas de los Nueve Cerros was abandoned in the 9th century, at exactly the same time that Chichén Itzá was rising to its height of power in Yucatán, and the major architecture and port facilities of Isla Cerritos were constructed. Salt was transported by canoe and porters and traded at regional markets. It was also exacted as tribute and paid as a tax in several Mesoamerican polities (Williams 2009:185). The specialized knowledge, environments, and technology required to produce salt in significant amounts suggest that its production and local trade was less likely to

be controlled by inland states than its inland distribution, which could be regulated through taxation or tribute in exchange for access to larger markets and increased consumption in the cities. Thus, salt was an important factor in shaping social and political alliances between the maritime Maya and interior city states.

Historical records from the early Colonial period provide some additional insight into the scale and organization of salt production in prehispanic times, well after the fall of both Chichén Itzá and Mayapán, that carried over under Spanish rule. Diego de Landa reported salt beds from the northwest corner of the peninsula near Celestún through to Dzilam, but there seems to have been a cessation of salt production east of Dzilam (near Isla Cerritos and Paso del Cerro) to the salt beds at Emal in the Río Lagartos estuary (Eaton 1978:14). Grijalva's early expedition witnessed salt beds in production on Isla Mujeres in 1517, and Roys (1957:3-108, cited in Eaton 1978 and Andrews 1975) reported that 12,000 tons of salt were produced from coastal salt works on the west and north Gulf coasts in 1605. In the Late Postclassic period, access to salt production zones was apparently controlled by individual lords seated in nearby towns who exchanged the right to harvest salt for payment in other goods. It is possible that this infrastructure had earlier roots.

In the preceding sections, I have presented a broad picture of the prehispanic ecology and settlement patterns of the Maya coast from the earliest human occupation through the Postclassic period to provide the historical and environmental context in which the port community of Isla Cerritos developed and declined. In what follows, I discuss the cultural landscape of the island and immediate mainland coast on the edge of the Río Lagartos estuary, based on the settlement surveys carried out as part of the Isla Cerritos Archaeological Project in the 1980s. This situates

the three related sites of Isla Cerritos, Paso del Cerro, and Chinalco in the micro-region of the north coast and the historical Cupul Province survey region.

3.7 ICAP 1984-1985: Site Survey and Mapping

Isla Cerritos is a small island approximately three hectares in area in the Gulf of Mexico located some 500 meters from the north shore of Yucatán. In 1968, Jack Eaton excavated an off-mound test pit on the south end of the island, the ceramics of which were analyzed by Joseph W. Ball (1978). Between 1975 and 1983, Anthony Andrews visited Isla Cerritos various times and conducted airplane and helicopter aerial reconnaissance of the region, photographing the island and adjacent mainland (Andrews et al. 1984; Andrews and Gallareta Negrón 1986). The Isla Cerritos Archaeological Project (ICAP) was initiated in 1984, and over the course of nearly three decades since the project began, changes have occurred in survey and excavation methodologies. In this section, I describe the reconnaissance, mapping and survey methods employed at both the regional and site levels in 1984-1985, including additional discussion of the Cupul survey results.

The 1984 survey was conducted under the co-direction of Tomás Gallareta Negrón and Anthony Andrews, with Fernando Robles Castellanos and Rafael Cobos. The project was supported by the National Geographic Society and the Centro Regional del Sureste del Instituto Nacional de Antropología e Historia de México for two survey field seasons in 1984 and 1985[2]. By this time, the island and nearby mainland sites of Paso del Cerro and Chinalco had suffered extensive looting, erosion from storms and shifting seas, and the removal of cut stone from the

[2] The report from the 1984 field season was published as Isla Cerritos Archaeological Project: A Report of the 1984 Field Season by Anthony P. Andrews, Tomás Gallareta Negrón, Fernando Robles Castellanos and Rafael Cobos Palma, National Geographic Society, 1984. See this report for additional details.

mounds for modern construction in nearby towns. Archaeological intervention was designed as a salvage operation to document as much as possible before the site's potential destruction (Andrews et al. 1984:6). At the end of the first season, the ICAP team filled all open looter's trenches to reduce the visibility of cultural material. In the 1990s, the mangrove coast in this area was declared a wildlife refuge and access to the island was restricted. As a result of community-level enforcement, there is much less illicit excavation and destruction today, although the island remains significantly at risk.

The 1984 survey season took place for five weeks in late June and July and focused on creating a topographic map of all visible archaeological features on the island and in the mangrove swamp directly across on the mainland coast. Included, as well, was a submerged 330 meter long stone rubble feature located 80m off the south side of the island and several other stone alignments just off shore that may have served as retaining walls for expanding the islandscape or as piers for watercraft (Andrews and Gallareta Negrón 1986:44). A systematic surface collection of visible ceramics, artifacts, and ecofacts was carried out on the island and at the mainland sites of Paso del Cerro [16Q-d(3):2, UTM: CU 674 837] and Chinalco [16Q-d(3):5, UTM: CU 672 811]. The project employed nine workers from the nearby port town of San Felipe, Yucatán.

The project also conducted aerial reconnaissance, through which they identified Chinalco and one other archaeological site, San Celso, adding these to a regional map they created using aerial photographs and long-distance triangulation covering the area around the mouth of the Río Lagartos estuary. These aerial photographs were taken years before the island became a sea bird sanctuary filled with nests, and as a result these photographs continue to be the best remote sensing images of the island we have so far. Including the prehispanic and colonial port of

Holkobén, now the modern port of Río Lagartos, five sites were documented along this stretch of the north coast (Andrews and Gallareta Negrón 1986:44).

Oral histories were also collected from local informants who provided information about the geomorphology of the coastline, noting that the sandbar in front of the port of San Felipe appeared recently (within the past century), and aerial photos confirmed the presence of older formations north of San Celso. Andrews et al. (1984:11) argue that this indicates that the mouth of the estuary in ancient times was likely located closer to San Celso, about three kilometers east of its present day location.

The topographic maps of Isla Cerritos and Paso del Cerro were prepared using a high-powered theodolite and stadia, along with tape and compass, with contour lines drawn at 1 meter intervals (Andrews 1995:19) (Figures 1.3 and 3.5). This method was chosen over use of the Maler convention, as most of the structures on the island were only visible as "amorphous mounds" at that time (Andrews et al. 1984:12). From the tallest point on the island, on Structure 1, a 25 square meter grid was established over the site, and additional survey stations were set up on the grid within a few meters of every visible surface feature on the island (1984:12). Four of the grid stations were cemented in place as benchmarks for future excavations. The 1984 survey identified four types of visible structures on the island prior to excavation: structures with visible wall foundations or stone alignments, mounds higher than 1 meter without any visible alignments, mounds less than 1 meter in height without alignments, and rectangular shaped depressions. The team documented a total of 31 (29 numbered) structures on the island, the tallest of which, Structure 1, rises to a height of 6 meters. Thirty modern trenches were also recorded and backfilled.

Offshore features at this time were visible in low tide, but submerged in high tide. Stone alignments of large uncut slabs of limestone nearest the shore appear to have been retaining walls, possibly used to prevent erosion in ancient times, suggesting that the islandscape was once larger. Two alignments documented south and west of the island are described as the remains of ancient piers or mooring places (Andrews et al. 1984:14).

Many of the offshore stone alignments had been removed in historic times prior to the 1984 survey. The 330 meter stone feature south of the island, often referred to in the literature as a "sea wall," was mapped by skin-diving archaeologists who staked out the edges with poles visible from the shoreline and then plotted the poles using a transit (1984:15). This feature consists of large blocks that were filled in with loose rubble and varies in width from 2 to 5 meters due, in part, to erosion and stone removal. Three gaps are present in the wall, and on each side of the central gap there are stone platforms that may have supported perishable structures much like the low platforms on the island (1984:15). This feature will be discussed in more detail below.



Figure 3.4: Aerial photograph showing Isla Cerritos and the submerged stone alignment off the south shore between the island and Paso del Cerro. Photo: ICAP Archives, UADY.

The ICAP team also cleared and mapped much of the site of Paso del Cerro located on the mainland directly across from the island, documenting additional features in the surrounding mangrove swamp and along the shoreline.

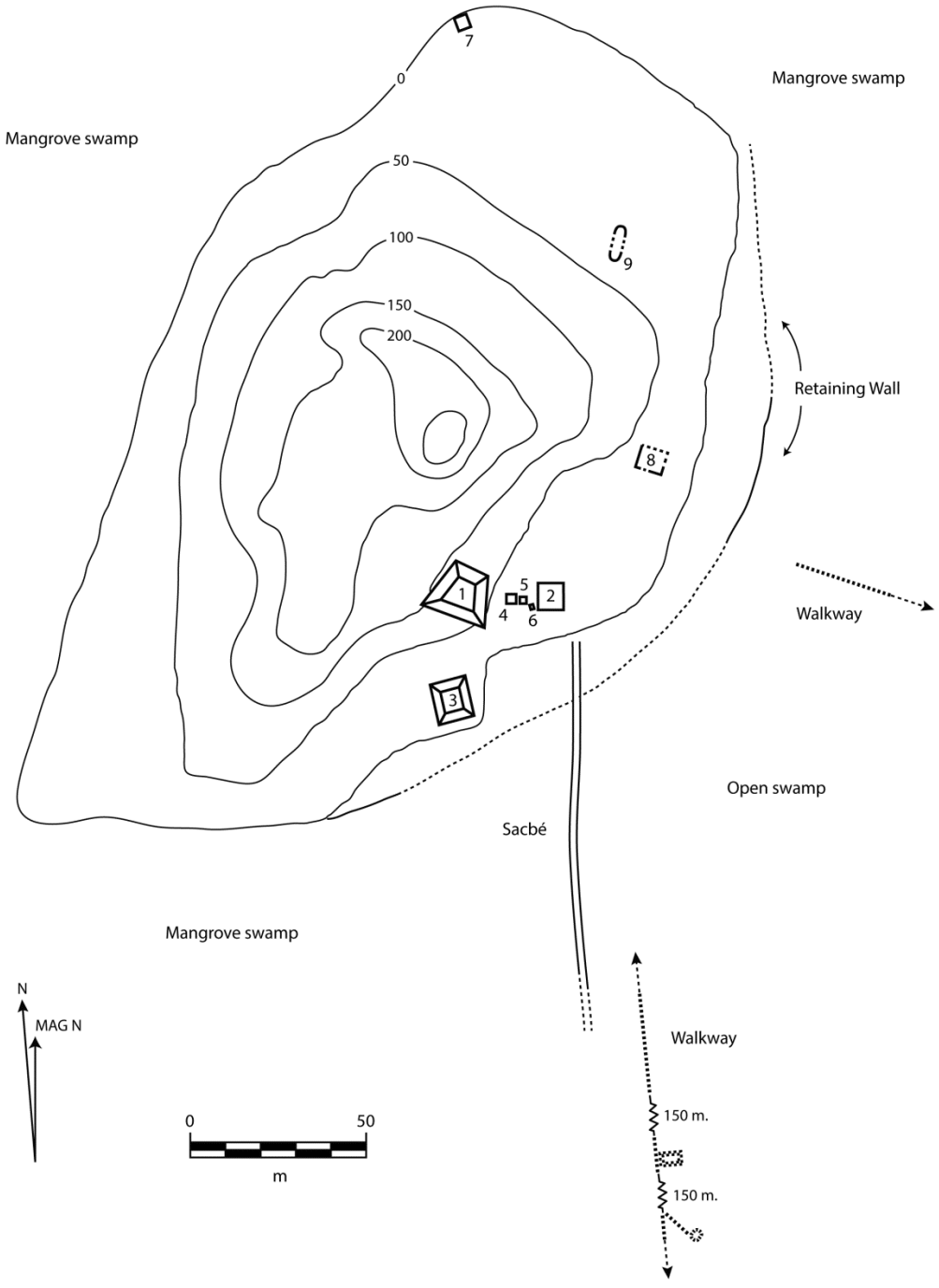


Figure 3.5: Topographic map of Paso del Cerro. Modified from Andrews et al. 1984

Aligned with the central gap in the submerged harbor wall between the island and mainland, an artificially cut canal leads inland from the sea to Paso del Cerro. In front of this canal the ICAP survey team recorded a submerged rock outcrop that is no longer visible, but may have been an artificial construction that local legend claims was the end of a bridge or causeway in ancient times (Andrews et al. 1984:16). Two ojos de agua, or fresh water springs, were mapped along the edge of this coastline and probably served as the main sources of fresh water available to both Isla Cerritos and Paso del Cerro (1984:16).

The site of Paso del Cerro is located on a natural rise of high ground 100 meters inland from the coastline, forming a petén (island-like hillock), surrounded by mangrove wetlands. It was mapped in 1984 from a polygonal survey line that ran around the petén and several transects that crossed the center portion (1984:17). The site measures 240 meters (N-S) by 160 meters (E-W) and is divided in the middle by a low ridge 2.5 meters in height. Nine structures were mapped, and all are confined to the east side of this ridge. Six structures cluster around a plaza, forming a group with two low (2-3 meters high) pyramidal structures, a low platform, and three "plaza altars" (1984:17). Three other low platforms were also identified and may have been the foundations for domestic structures.

In the swamp just east and south of this hillock, several cultural features were partially documented before mapping had to be abandoned due to heavy rains and rising water levels. These features include a 2 meter wide sacbé (or "white road," a prehispanic raised stone-lined causeway) and two stone walkways made of large limestone blocks running east and south from the site, allowing foot traffic above the high water table of the mangrove swamp. These paths were followed for several hundred meters by the survey team that was only able to partially map them (Andrews et al. 1984:17, Figure 3.5). Just east and south of the hillock, retaining walls

made of large limestone slabs positioned vertically (ranging from 0.5-1 meter in height) and quite similar to those documented offshore of the island, were also visible. Prehispanic evaporation salt pans were documented, along with several other stone alignments and low structures visible only in aerial photography between Paso del Cerro and the high point of the mainland beyond the mangrove, but these features also could also not be formally mapped in 1984 due to impenetrable vegetation (1984:18).

Two artificial canals were documented running south from Paso del Cerro, but it is unclear if these are also prehispanic in date like the coastal canal discussed above, or if they might be historic constructions or even natural waterways (1984:18). In the spring of 1985, Gallareta and Cobos returned to the mainland to continue mapping the central portion of the site of Chinalco, as well as a "satellite residential group," located south of Paso del Cerro in line with the sacbé, walkways, and canals discussed here (Andrews and Gallareta Negrón 1986:45).

Surface collections of artifacts were made on the island in the 1970s after Eaton's test excavation, and these were included in the samples systematically collected in 1984 at Isla Cerritos, Paso del Cerro and Chinalco. For each locus and context collected from 1975-77 and 1984, the researchers filled out a lot card with the number of artifacts and ecofacts collected, provenience, and observations. These lot cards are currently archived with the aerial photographs at the Universidad Autónoma de Yucatán and have also been scanned for future conservation as part of this project.

In the controlled surface collection, primary attention was paid to ceramic sherds in order to develop a general chronology for the sites and individual structures. A total of 3,983 surface finds were collected from 1) general surface areas, 2) surfaces of individual structures, and 3) along the trailings of illicit excavation trenches (Andrews et al. 1984:20). Ceramic sherd totals

for each site were: Isla Cerritos (3,306 in 1984, 280 in 1975-77), Paso del Cerro (169), and Chinalco (46). San Celso was briefly visited, but only a few Late Formative period sherds were collected and these were not included in the overall ceramic analysis from 1984 (Andrews et al. 1984:9). These showed an occupational history ranging from around 100 BCE through the 20th century, with most of the overall sample (including every sample associated with a structure) dating to the Terminal Classic period using the type-variety system (Andrews and Gallareta Negrón 1986:45). A total of 55% of these surface ceramics represented groups from the Cehpech-Sotuta ceramic sphere, the suite of ceramics most directly associated with Chichén Itzá and dating to around 900 CE. The ceramics from Paso del Cerro also dated to the Terminal Classic period and those of Chinalco, located 4 kilometers to the south, included both Terminal Classic (800-1100 CE) and Postclassic groups (1100-1542 CE), with the majority actually falling into the Postclassic range. The results of this ceramic analysis, along with the mapped cultural features characteristic of a port complex and the location of the site 90 kilometers directly north of Chichén Itzá suggested a strong economic relationship to this inland center.

The geographical location of these sites near the mouth of the Río Lagartos estuary and just west (15 kilometers) of the largest and longest producing salt flats in Mesoamerica would have been ideal for control over the trade of this resource (Andrews 1983; McKillop 2002). As discussed above, the location of several Chichén Itzá-related coastal ports near salt producing regions suggests that this capital may have controlled salt production and trade on the north coast during at least the Terminal Classic period. The fact that Isla Cerritos is the closest coastal port to that center lead the researchers to argue that the island served as one of the principal ports for this city, even prior to more extensive excavation on the island (Andrews et al. 1984:9).

The 1985 field season at Isla Cerritos was divided into two phases, an early spring phase from April-May in which Gallareta and Cobos carried out additional mapping at Paso del Cerro and a late phase from June-July during which test unit excavations were conducted on the island by Andrews, Gallareta, Cobos, Robles, and Pura Cervera Rivero. The fascinating results of this season and the subsequent analysis of the contexts excavated have been reported in detail in a number of publications and licenciatura theses (see Andrews and Gallareta 1986; Robles 1987, 1988; Sorayya Carr 1987; Andrews et al. 1988; Andrews et al. 1989; Gallareta Negrón et al. 1989; Andrews 1995; Cervera Rivero 1996; Gallareta Negrón 1998; Cobos 2010b) and will not be repeated fully again here, except when summary is relevant to this project's methodology and interpretations.

The 1985 survey excavations at Isla Cerritos achieved more than the stated goals of procuring a significant sample of ceramics to produce a relative settlement chronology along with the kinds of artifacts needed to discuss trade patterns in the Maya region and greater Mesoamerica. The recovery of preserved charcoal and mangrove wood from sealed contexts allowed for radiometric dates (n=5) provided by Beta Analytic that corroborated and further refined the ceramic chronology, and this chronology would be used in future years to clarify the relationship between the Sotuta and Cehpech ceramic spheres (referred to here as the Cehpech-Sotuta and western Cehpech spheres) in the northern Maya lowlands as discussed above. Once desalinized, the 1985 ceramics were analyzed by Fernando Robles Castellanos, then a doctoral student at Harvard University, using the type-variety classification system typically utilized for prehispanic Maya ceramics based on paste color and surface finish (Smith, Willey and Gifford 1960; Gifford 1976; Ball 1977; Robles 1990).

Based on this sample, Robles created five ceramic complexes for Isla Cerritos as artificial chronological units based on the frequencies of temporally diagnostic ceramic groups found together in sealed and dated contexts (Robles 1988:65). These complexes he named after shell types, and there is considerable overlap with some groups appearing in more than one complex, while the frequency of others are confined to a single complex. These complexes are Xaumito (100 BCE-300 CE), Trompillo (300-700 CE), Chacpel (700-900 CE), Jotuto (900-1100 CE), and Tomburro (1100-1542 CE). The dates and groups associated with these ceramic complexes have shifted slightly over the past two decades as the ceramic sample from the port has increased (see Table 1.1 and Chapter 5.2), but Robles' original ceramic units and complexes continue to serve as the foundation for the chronology and terminology used in current analysis of Isla Cerritos material culture.

While there is a significant number of ceramics from the Late Formative and Early Classic periods (Xaumito, Trompillo complexes) the majority of the ceramics from this sample are groups in the Cehpech-Sotuta ceramic sphere, and this was also the case in deposits from all of the masonry structures tested in 1985 (Andrews and Gallareta Negrón 1986:45). Certain Sotuta groups, such as Dzitás, Silhó Fine Orange X, and Sisal are found in both the Chacpel and Jotuto contexts, and these are places where we find western Cehpech groups mixed with Sotuta in sealed contexts. It is also interesting that western Cehpech ceramic groups, such as Muna, are well-represented in the Chacpel ceramic complex, and these kinds of ceramics are strongly associated with Ek' Balam (Bey et al. 1998), an important inland political center that is also close to Isla Cerritos. This chronological overlap between only certain groups on the island is another reason why I initially targeted the Chacpel and Jotuto contexts in this study, as these represent transitional periods of some sort that need further elucidation.

3.8 Northern Nodes of the Cupul Province

In the spring of 1988, ICAP archaeologists Andrews, Gallareta, and Cobos, along with James Callahan and Peter Schmidt, carried out an archaeological survey known as the Cupul Survey Project in the region between Chichén Itzá and Isla Cerritos as an extension of the 1984-85 project (Andrews, Gallareta Negrón and Cobos 1989). The goals of the survey were to extend the coverage of the (at that time) on-going survey of the Atlas Arqueológico del Estado de Yucatán (Garza T. de González y Kurjack 1980) into this area using the same general methods and numerical site ranking system and to document potential trade routes and associated settlements between the inland center and sites on the north coast (Andrews et al. 1989:91). A total of 75 sites in the region that were accessible at the time were surveyed, including 35 that were previously unrecorded and 40 known sites that were revisited. 1:50,000 scale INEGI (Instituto Nacional de Estadística e Informática) maps and aerial photographs were used to revise the UTM coordinates of the known sites, sketch maps were made of each, photographs were taken of standing architecture, and the extent of each site was recorded (1989:91). In addition, a small sample of surface ceramics was collected from each site as part of the survey, and these were analyzed and curated at the ceramoteca laboratory at the Centro Regional Sureste del Instituto Nacional de Antropología e Historia (1989:91).

The Cupul Survey used the same numerical ranking system based on settlement size used in the Atlas (Garza T. de González y Kurjack 1980). According to these criteria, Rank I sites are large-scale, urban cities with monumental architecture, civic-ceremonial centers, and dense settlement. Only Chichén Itzá fell into this category. Rank II sites are sites of urban proportions, but on a smaller scale than a regional center like Chichén Itzá (i.e., secondary centers). Three sites were documented that fit these criteria, including Xuenkal, Panabá, and Yalsihóm. Rank III

sites are smaller, non-urban settlements conceptually equivalent to "towns," and 11 of the sites from the survey fit into this category (1989:91). The Cupul Survey diverged from the Atlas survey methodology with regard to classifying Rank IV sites. In the Atlas, all smaller villages and rural hamlets were considered Rank IV sites, however, Andrews et al. (1989:91) found it more useful to further distinguish between 29 "villages" with at least one formal architectural plaza group (Rank IV) and 31 "rural hamlets" (Rank V) which are "small, undifferentiated mound groups" (1989:91).

The Cupul Survey Project also examined LANDSAT satellite imagery of the region that showed three distinct ecological zones corresponding to both observed site settlement patterns and available subsistence resources (Andrews et al. 1989:92). Zone I includes the coast, mangrove swamp, associated petenes, savannahs, and what is referred to in the northern lowlands as tzekel, an arid region of limestone plains with only low scrub vegetation that continues 4-6 kilometers inland from the coast (1989:92). Five sites from the survey area, including Isla Cerritos, are located in this zone, and the region only supports agriculture in a few spots with sufficient soils. The site of Chinalco is located in one of these fertile spots within the tzekel zone. The second zone moving south, 4 - 40 kilometers from the shoreline, is a flat plain with arable soils. Until recently this was heavily forested and today is used mainly for cattle grazing. This area contains a number of cenotes and rejolladas, such as those described above.
In this zone within the survey area, the archaeological settlement pattern was significantly denser, including Rank II settlements that would have supported larger, urban populations (1989:92). The third zone further to the south encompassing the area around Chichén Itzá and east is an area of low, rolling hills, deep soils, large cenotes, and numerous rejolladas. This zone is the best area for maize and garden-crop agriculture (milpas), cacao cultivation, orchards, and

in colonial times, cotton cultivation. It definitely supported the largest prehispanic populations, including Chichén Itzá, Ek' Balam, and Sací located east of the Cupul survey area (1989:92).

These settlement pattern data from the Cupul Survey Project include 36 sites with Terminal Classic period surface ceramics contemporaneous with Chichén Itzá that could have served as nodes along two trade routes linking the inland center with ports on the north coast (Andrews et al. 1989:93). The eastern corridor would have passed through larger sites, such as Xuencal and Panabá, leading up the shortest route to the Gulf coast via the three northern coastal nodes of Chinalco, Paso del Cerro, and Isla Cerritos, while the western corridor would have passed through Yalsihóm to Dzilam Gonzalez and its probable coastal port(s) along the Bocas de Dzilam (1989:93).

The Cupul Survey data show that the heaviest human occupation of the area between Chichén Itzá and the north coast, including the size, complexity, and extent of settlements occurs during the Terminal Classic and early phase of the Postclassic (Andrews et al. 1989:94). The settlement pattern of the region consists of a series of secondary centers with smaller settlements connecting them at intervals less than a day's walk from each other (1989:94). Many of these sites were not only well-positioned to access coastal ports, salt beds, and trade routes, but also situated far enough inland to exploit good soils for agricultural production of crops like maize, beans, squash and cacao—all vital to the maintenance of the Maya kingdoms (1989:95). The Cehpech-Sotuta ceramic complex dominates the assemblages in these northern Yucatecan sites, and the presence of Puuc style veneer masonry and colonnaded structures similar to those documented at the Itzá capital motivated Andrews, Gallareta Negrón, and Cobos (1989:94) to hypothesize that while local elites may have continued to control these settlements, they may have also formed part of a larger Itzá polity administered from the inland center, perhaps through

a strong military presence at the secondary centers. Susan Kepec's Chikinchel Survey (Kepecs 1999), introduced above, had similar objects and methods, although she created an additional ranking category "VI" for coastal shell middens since her survey covered more coastline than interior. Creating maps in ArcGIS that combine the settlement data from both surveys, I was able to recreate maps for each period that include the ranked sites from which we have a relative ceramic sequence in order show the dynamics of settlement between the north coast and Chichén Itzá during the Classic period.

Recently, Ardren and Lowry (2011) have also re-examined the Cupul survey data with an emphasis on trade routes, merchants, and the archaeology of Xuenkal, one of the Rank II sites located 60 km north of Chichén Itzá in the survey zone. Their interpretation follows Andrews et al.'s in the identification of both an eastern and western route between the coast and Chichén Itzá based on ceramic patterns and settlement location, and they argue that traders (or "merchants") arriving to Isla Cerritos would have needed specialized knowledge and the right supplies to choose which inland route to follow, due in part to the four different environmental/geological zones they would cross that each present distinct obstacles to transport (2011:433).

I would argue that another consideration would have been whether the trade goods in transport included bulk loads of salt, as there likely would have been an as yet unidentified coastal port near Dzilam for other products moving inland via the western corridor, while Isla Cerritos was positioned at the entrance to the zone of coastal salt beds extending east along the north coast.

Ardren and Lowry (2011:435) expand upon the way station model proposed by the Cupul survey by way of travel time estimates and viewshed analysis. They note that prehispanic settlements appear at the transitions of each ecological zone, including two semi-urban centers

on the eastern route. Also they estimate that a porter traveling with a backrack of goods could have covered 35 km/day, reaching Chichén Itzá in a minimum of three days via three way stations. Due to the flat landscape, they argue that travelers could have used monumental architecture at each way station site to view the proximate site and orient the journey with higher architecture (at larger sites) enabling viewsheds of up to double the distance—perhaps one explanation for smaller nodes along this corridor being positioned more closely than large centers (2011:436, emphasis mine). This does not take into consideration the vegetation or any potential perishable visual impediments, but the idea is that the trade route is very much affected by the coastal port(s). According to this model, the subsequent Terminal Classic settlement patterns were engineered to facilitate foot traffic for specialists in long-distance exchange. This represents a slight shift in emphasis from a center-periphery paradigm that stresses inland administrative control in defining coastal trade networks to how maritime social groups and trading specialists help shape regional settlement, economics, and politics.

Regarding Chichén Itzá's influence on the Caribbean coast in the Terminal Classic, the situation is more difficult to gauge based on current evidence. There is evidence of Itzá "presence" in the form of Cehpech-Sotuta ceramics and Modified Fluorescent style architecture on Cozumel Island, and there may have been interactions between Chichén Itzá and El Meco, Polé/Xcaret, Xelhá, Tancah, Ambergris Cay, and other sites in northern Belize, but more detailed excavations of coastal sites will be needed to elucidate the strength and nature of the relationship with the eastern coast (Andrews 1990:161).

3.9 A Multi-Component Coastal Community

I argue that the island port of Isla Cerritos formed one part of what can be interpreted as a larger multi-component coastal community that included both Paso del Cerro and Chinalco, now designated as separate archaeological zones. As will become clear in Chapter 4, the island settlement pattern includes both residential and non-residential architectural groups, but there is no natural source of fresh water on the island. Island residents were dependent on a strong relationship, quite possibly kinship, with the salt-makers of Paso del Cerro located just 500 meters across the water where at least two fresh water springs have been documented. The mainland portion of the community provided access to tidal forest resources, and the artificial canals facilitated the transport of people, building materials, foodstuffs, water, and other supplies multiple times a day between the island and the mainland. Further to the south, residential platforms were documented on the sacbé between Paso del Cerro and Chinalco (Andrews et al. 1984:18). Chinalco is located just south of the tidal zone where soils are sufficient for agriculture and limestone outcrops are available for quarrying stone (Ardren and Lowry 2011), and it is not surprising that routes of communication, whether the stone walkways or canals are oriented north-south to facilitate the movement of resources that each part of the community needed from each other.

Isla Cerritos provided the port facilities, civic-ceremonial groups and shrines (i.e., administrative and religious infrastructure), and possibly household-level craft production or fish processing to the mainland. The Paso del Cerro and Chinalco zones would also have acted as buffers between the port activities, including foreign trade / traders and storage of prestige goods, and the main inland transportation route leading to the Cupul corridor.

Multi-component port settlements become common in the Late Classic period, and other examples include Xcambó where the salt beds, including the Xtampú salt works, docks, and non-elite residential sections are segments connected to the civic-ceremonial center and storage facilities via walkways and roads (Sierra Sosa et al. 2014:222). On Cozumel, a much larger island, the trading center has been described as being made up of several interconnected sites and spaces at the "supracommunity level" (Sabloff and Freidel 1975:392), where San Miguel provided port facilities for traffic from the Yucatecan coast, but had to be provisioned by inland agricultural sites and the religious and administrative center at San Gervasio, which were connected via sacbeob. The site of Buena Vista, Cozumel had storage facilities managed by a semi-elite residential group (Batún Alpuche 2004).

On a smaller scale, the complementary interdependence and organization of Isla Cerritos, Paso del Cerro, and Chinalco attests to coastal Maya adaptations to the challenges and opportunities of living along the Gulf coast littoral. Settlement patterns are affected by the integrated concerns of occupational specialization, production, subsistence, and logistics. At the same time, this case demonstrates how conceptualizations of "community" are not always coincident with the physical extent of the site, or island, but vary within and between sites based on social relations and affiliations (Marcus 2000). Ports, in particular, often confound attempts to circumscribe collective identities and define boundaries within and beyond sites, when the settings are designed to facilitate movement, exchange, and interactions between groups.

In the next chapter, I focus more narrowly on the island portion of the community at Isla Cerritos, describing the site settlement pattern and archaeological excavations conducted in 2006, 2007, and 2010. At the macro-level of the site, I identify domestic and non-domestic

architecture and describe the spatial setting, using this information to estimate population size and energetic investment in port construction.

CHAPTER 4:

THE EXCAVATIONS AT ISLA CERRITOS

4.1 Introduction

Isla Cerritos is a small island with a complex and dynamic history of human exploitation from the first centuries after the emergence of complex society in the northern Maya lowlands to the arrival of sea-faring conquistadors, from swashbuckling smugglers of the colonial period to the last house built on the island in the 1960s. It is a special site compared to the majority in the northern Maya lowlands in that it has deep stratigraphic contexts in many areas that are relatively well-preserved, some continuing beyond 3 meters in depth (total range of test pit depth: 80-350 cm). The physical space of the island currently measures just over 3 hectares, and thirty six structures have been mapped to date (32 numbered), resulting in a mound density of 1146 mounds/km2 that is quite high compared to many larger Maya sites (c.f., Rice and Culbert 1990:10-11). Being such a highly constructed environment, there are several layers of plaster floors that provide sealed, or partially sealed, stratigraphic contexts. Beginning with the first test excavations in 1985, many of the units exposed 3 or 4 floors, and one test pit profile included 13 stratigraphic levels and 8 floors (Andrews and Gallareta Negrón 1986:45; Cervera Rivero 1996). Thus, the island represents the accumulated stratigraphy of around 2,300 years of human occupation.

The architectural excavation and consolidation program carried out as part of the 2006-07 field seasons exposed both civic-ceremonial and domestic contexts from the Terminal Classic period forward in time, shifting the focus slightly to understanding the port complex as part of a coastal community during the apogee of Chichén Itzá (Cobos et al. 2010a). Inspired by the initial

results of the 2007 season, we returned to the island in the spring of 2010 to examine in more detail the domestic contexts identified on the north side of the site, making Isla Cerritos one of the few coastal port communities besides San Gervasio (Sabloff and Rathje 1975; Sierra Sosa 1994), Xcambó (Sierra Sosa 1999), and Playa del Carmen (Rhoads and Hernández 1991) where excavations of domestic contexts have been conducted. This allows us to pursue a number of research questions related to who, if anyone, actually lived on the island, how the settlement might have been organized socially, and whether the changes we document in the social practice of daily life in the community correlate with key historical transitions at Chichén Itzá, thereby providing additional insight into the changing sociocultural and political relationship between the inland center and the coastal port.

In what follows, I summarize the methods and results of the 1984-85 survey seasons, as well as the excavation of six structures in three field seasons between 2006 and 2010, concentrating on my own most recent work, which will be analyzed in greater detail in the next chapter on micro-level analysis. I also provide a synthesis of what we know about the historical evolution of the built environment of the island based on the surveys and excavations and the implications of the site settlement pattern for interpreting the residential and social dimensions of this port community as outlined in Chapter 2, as well as the role Isla Cerritos played over time in the north coast region as discussed in Chapter 3. The accumulated archaeological and settlement data from the past five field seasons of research is also used to calculate a preliminary population range and energetics estimates for the cost of construction of the island port in terms of the materials, transportation, and labor involved.

4.2 Survey Test Excavations 1984-1985

Like most studies of Maya ports (Sabloff and Rathje 1975; Andrews et al. 1984; McKillop 1995; Sierra Sosa 1999), the initial phase of investigation at Isla Cerritos focused on the important task of determining the function of the port and establishing its chronology and possible role within regional economic and political networks. The 1984-1985 survey and test pitting program included 17 test units measuring 2 x 2 square meters that extended in depth, wherever possible, to bedrock or the water table. These units were strategically placed on architecture, directly in front of structures where the architecture meets plazas, or on the artificially leveled area known as the "southern plain" in the southeast quadrant of the island.

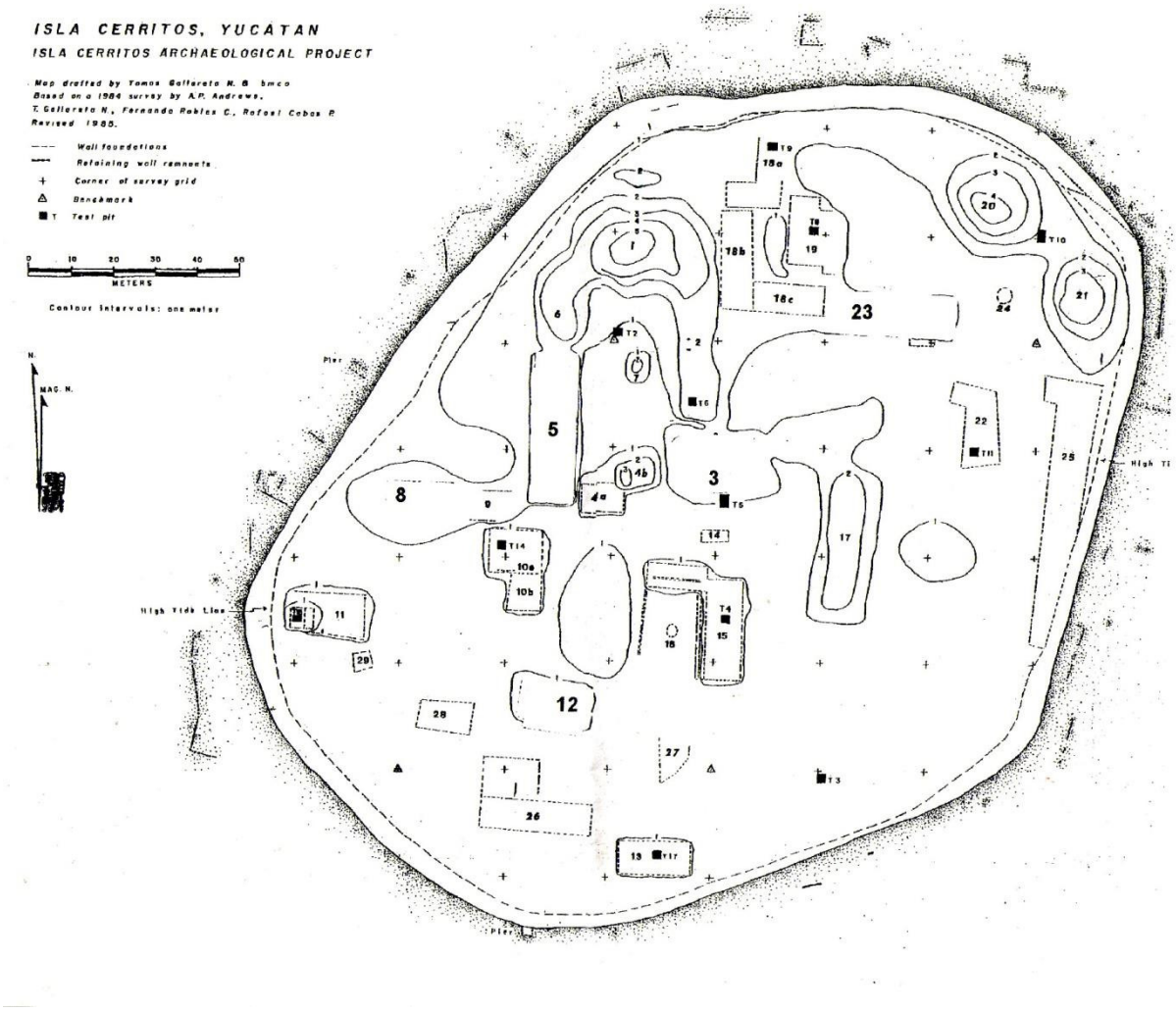


Figure 4.1: Map of Isla Cerritos by T. Gallareta, A. P. Andrews and R. Cobos showing the location of test units excavated in 1985 as black squares. From Cervera Rivero (1996).

A total of 15 structures of the 29 then mapped on the island were tested, including Structures 1, 2, 3, 5, 8, 10a, 11, 12, 13, 15, 18a, 19, 20, 22, and 23. The excavations were conducted in natural stratigraphic levels, and all soils were screened in ¼ inch screens. Each unit received an individual test pit number 1-17, and each level was excavated separately with the provenience information and observations recorded on a standardized lot card that was assigned an individual lot number. This lot number refers to a particular context or volume of soil excavated and almost

always corresponds to the level when excavation proceeds following natural stratigraphy. Lot numbers were given a unique IC-number + letter combination. All artifacts and ecofacts related to human occupation in each lot were collected and separated by material type in cloth bags that were labeled with provenience information, including unit number, structure or locus, level number, and lot number. Some ceramic analysis took place in the field, and many lot cards from 1985 have the ceramic complex information written on the upper right corner of the card. Each lot card used for material culture collected in 1975, 1984, and 1985 also contains sections for a description of soil color and texture, as well as observations on the stratigraphy or materials associated with the lot, name of the excavator and date. A check box for material culture including shell, bone (human or animal), lithics, ceramics, glass, metal, and "other" is included so that quick tallies could be made with specific elements and observations of material culture listed on the back of the card. These lot cards are archived in hard copy and digital form at the FCA-UADY.

The stated goals of the first phase of the project were to generate a representative ceramic sample to create a strong chronological profile of occupation at the site, date the different structures on the island, and expose a variety of cultural contexts and features related to the port activities and Terminal Classic occupants (Andrews 1995:19). Over 45,000 artifacts and ecofacts were recovered from 170 stratigraphic contexts in 1985, in addition to the material collected in 1984. Fourteen human burials were discovered in this survey, and the test units were expanded to fully excavate them when necessary. One grave (Burial 7) in Structure 8 contained four individuals, and all burials were excavated by the field archaeologists. All cultural and organic material was removed to the regional center of the Instituto Nacional de Antropología e Historia

for storage and analysis, and today these materials are housed in both INAH and UADY research labs.

For each numbered test unit, one side was chosen as representative for a profile drawing showing the stratigraphic levels from the surface to bedrock or the water line. On the left side of these drawings the ceramic complex information was added to show what stratigraphic levels pertained to which ceramic complexes. The description and profiles for all test units are compiled in Pura Cervera Rivero's licenciatura thesis (1996) (Figure 4.2).

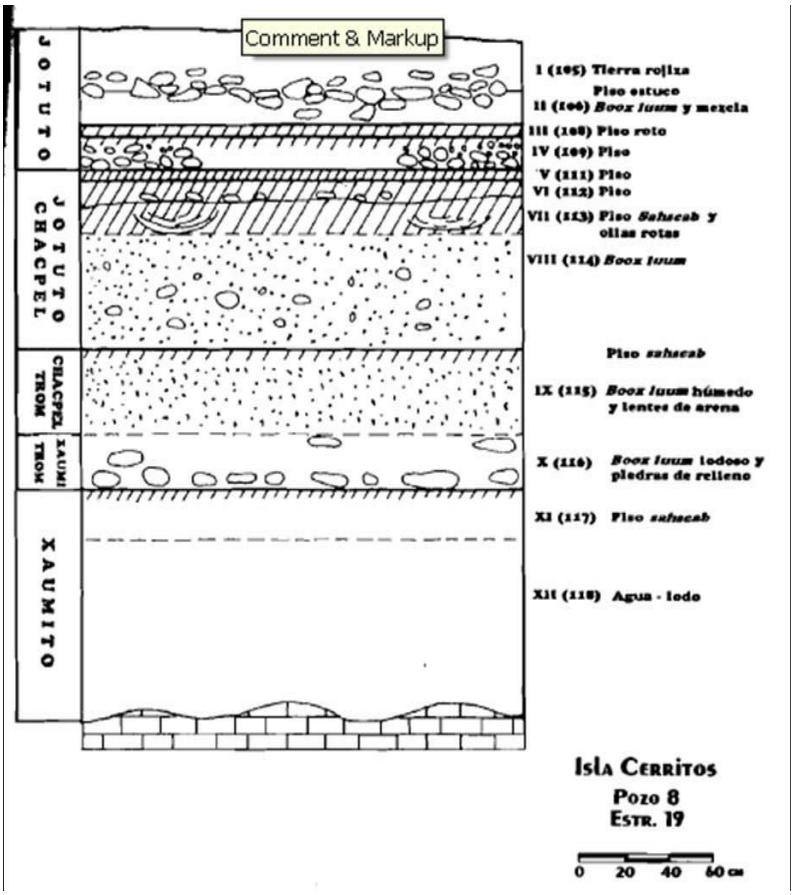


Figure 4.2: Example of a profile drawing and stratigraphy for the west side of Test Pit 8, Structure 19, excavated in 1985. From Cervera Rivero (1996:125).

The ceramic chronology for Isla Cerritos, originally established by Fernando Robles, was based on 16,000 sherds collected during the 1984-85 survey, many from sealed contexts that were cross-checked with associated radiocarbon dates (Robles 1987, 1988). The overall sample increased by a total of 19,474 sherds and 8 complete vessels after the 2006 and 2007 field seasons.

The lithics sample from 1984-85 consists of 241 artifacts made from limestone, obsidian, chert, basalt, and greenstone that were analyzed in the laboratory by Pura Cervera Rivero (1996) who co-authored an oft cited paper in 1989 on obsidian sourcing for the sample. Interestingly, imported basalt, jade, spondylus shell beads, and obsidian from a central Mexican source (Zaragoza, Puebla) appears very early in the archaeological record at Isla Cerritos in a burial located in Structure 15 (Xaumito ceramic complex, Late Pre-Classic period, c. 150-100 BCE). This indicates that long distance elite sumptuary exchange goods reached the island well before the Itzá capital arose to splendor and extensive regional power some 700 years later.

Much discussion was generated about the obsidian sample of 109 artifacts from 1985, of which a small portion (n=34) of black and grey obsidian was sourced at the Lawrence Berkeley Laboratory using X-ray fluorescence and Neutron Activation Analysis (Andrews et al. 1989:355). A significant amount of green Pachuca obsidian that could be identified visually was found in these excavations, and when the source results came back on the dark obsidian, it was clear that obsidian from at least four Mexican obsidian sources (Pico de Orizaba, Ucareo, Zaragoza, and Pachuca) was accessed by island residents during the Terminal Classic period. At the same time, the highland Maya sources at El Chayal and Ixtepeque were also utilized and made up about 25% of the sample. While subsequent excavation on the island has balanced out the sample size somewhat, such that highland Maya sources make up a larger percentage of the

sample rather than such a small minority, the combined Mexican sources are still predominant, and the pattern is quite similar to that documented from Chichén Itzá (Braswell 2003). Moreover, this pattern is also similar to that found at other coastal Maya sites in Terminal Classic period contexts along the north and west coasts of the peninsula, while reverse patterns have been recorded on the Caribbean coast (see Góngora Aguilar 2009; McKillop 1995).

In addition, the ecofacts recovered from the 1985 survey have also been important beyond the island. The faunal remains were analyzed using a comparative collection by Helen Sorayya Carr (1987) and are remarkable for their preservation, which includes mammals such as deer, which islanders would have had to import from distant inland sources. Most bone material in the northern Maya lowlands does not preserve well in the thin karstic soils of the peninsula, however a significant sample from the contexts at Isla Cerritos does, and this provides insights into the varied diet of the coastal Maya. Subsequent analyses of the faunal data excavated in 2006-2010 by zooarchaeologist Christopher Götz (FCA-UADY) (Cobos et al. 2007, 2010; n.d.; Götz and Chávez n.d.) and his students, David Herrera (2011) and Eduardo Chávez (2014), have proven equally invaluable for insights into local resource availability and use, the function of certain structures, and even social identity (see Chapter 5.4).

Finally, the archaeological mollusca sample from 1985 at 21,940 specimens was the largest ever recorded at the time in the Maya area and was analyzed by Rafael Cobos (1985). Not surprisingly, shell is the most common artifact class encountered on the island and provides information on subsistence, as well as craft production. In addition to salt, marine shell (worked and unworked) was one of the most significant local resources for export for Isla Cerritos and most of the coastal Maya. The majority of species from archaeological deposits on the island are Gulf coast (north and west coast) varieties, but some Caribbean species are found as well, most

commonly in ritual contexts. The high amount of shell found in excavations on the island affects methodology in that representative samples must be taken from the whole, as was done with the 1985, 2006, 2007, and 2010 excavations, rather than recording and conserving every piece found. Likewise, it has also become clear with more broad excavation on architecture that shell was also used as a building material and in architectural fill.

The significant amount of data generated from the 1984-1985 survey seasons, much of which is summarized in this chapter and cited from published sources (Andrews 1995; Andrews et al. 1985, 1986, 1988, 1989; Cervera Rivero 1996; Gallareta 1998; Gallareta et al. 1989; Robles Castellanos 1987, 1988) and unpublished archived field notes and lot cards (FCA-UADY), continues to be an important source of information incorporated into our strategy to address current research questions regarding the domestic contexts and social organization at Isla Cerritos. As will be discussed below, the broad horizontal excavations conducted in 2006, 2007, and as part of this study in 2010 cover a relatively restricted chronological period of this port's history. In addition to probing several structures and plazas at the site that have yet to be excavated further, the 1985 test units also provide time depth (including absolute dates) that allows for my limited interpretation of the "dynamics," or change over time, from the earlier periods of island occupation that relate to demographic and social changes. There is still much to do for future investigators to more adequately explore the earlier periods of occupation at this site, the non-domestic structures, and refine the chronology with additional absolute dates from recently excavated samples.

4.3 Stratigraphy and Dating

In this section I describe the stratigraphy and excavation methodology employed during the ICAP 2010 field season. While we collected samples of organic material, these, along with

samples taken in 2006 and 2007, have not been submitted for absolute dates yet. As a result, my chronological interpretations are based on relative dating methods using stratigraphy and current ceramic chronologies based on the type-variety system most commonly employed in the Maya region. The ceramic chronology on the island has been anchored in points based on radiocarbon assays from samples excavated in sealed contexts between floors, burials contexts, as well as unsealed contexts during the 1985 survey (see Andrews et al. 1988). Thus, a brief explanation of my use of stratigraphic dating on the island is pertinent here.

Our horizontal excavations within each unit in 2007 and 2010 followed natural stratigraphic levels with arbitrary divisions of 20 cm within each level when necessary. Most commonly, natural levels were augmented by "cultural levels," upon reaching an architectural feature, such as a floor, bench, etc. or an artifact concentration preceding any natural soil change. Individual lot numbers were assigned using a letter + number combination, the letter corresponding to the structure. Lots could vary within stratigraphic levels based on features or concentrations, but most often these correspond to all soil and material excavated within a particular level and unit. In contrast to 2006 and 2007, lot sheets were again used in 2010 (as in 1984-85). In all field seasons, lot lists were maintained with provenience information. These field notes, lot lists, and lot sheets are curated in the archives at the Faculty of Anthropological Sciences (UADY).

The 2010 horizontal excavations concentrated mostly on the occupation associated with the Jotuto ceramic complex (800-1100 CE) and forward in time, with only selected units and lots associated specifically with the Chacpel period and overlap between the Jotuto and Chacpel ceramic complexes (700-900 CE). The north side of the island faces the open sea and is exposed to wind and weather from the north. While we do not know much about the form of Structure 32

that we registered in our mapping of this area in 2010, this elongated stone architecture that runs east-west along the north shore may have functioned as a barrier to protect the residential groups located between the main civic-ceremonial group and temples 20 and 21 from flooding, storms, and constant erosion. As will be discussed in Chapter 5, the limestone blocks serving as the foundation stones for the house platforms that supported the buildings are very large, rough cut blocks, making the platforms 80cm to over a meter tall in some places. This is high enough to keep the buildings' floors dry during minor flooding events. In addition, the largest platform stones tend to be placed on the north side of these structures, facing the winds that typically move into the area in the afternoon, and on Structure 19, the north side of the platform was reinforced with a second wall of blocks in pre-Columbian times.

The implications of this exposure to erosion processes on the stratigraphy are two-fold. First, the latest lime plaster floors in the structures dating to the Jotuto and Tomburro ceramic complexes are only partially preserved and do not provide sealed contexts. The earlier floors from the Chacpel complex that are buried under a layer of stone, sand and shell fill are much better preserved. The patio, plazas, and alleyway floors are highly eroded, and within these areas, reversed stratigraphy, as well as significant bioturbation, does appear in certain loci, especially along the north side of the structures behind Structure 32. The limestone architecture and sculpture throughout the site is also significantly impacted by erosive processes. As a result, the relative dating of stratigraphic layers excavated in 2010 is based on the percentages of diagnostic ceramic groups present in lots associated with particular levels. An important caveat is that the highest percentage of type-varieties documented in these domestic contexts is always utilitarian ceramics, which tend to be more conservative in terms of change over time, so in the absence of absolute dates, this is a potential sample bias that must be considered.

In Figures 4.3 and 4.4, I have modified Cervera Rivero's (1996) profile illustrations from test units excavated in Structures 19 and 23 in 1985 to show the stratigraphy and archaeological contexts excavated in these same structures in 2010. I also show how the nomenclature used in this study relates to that used in the previous published reports on the 1984-85 field seasons.

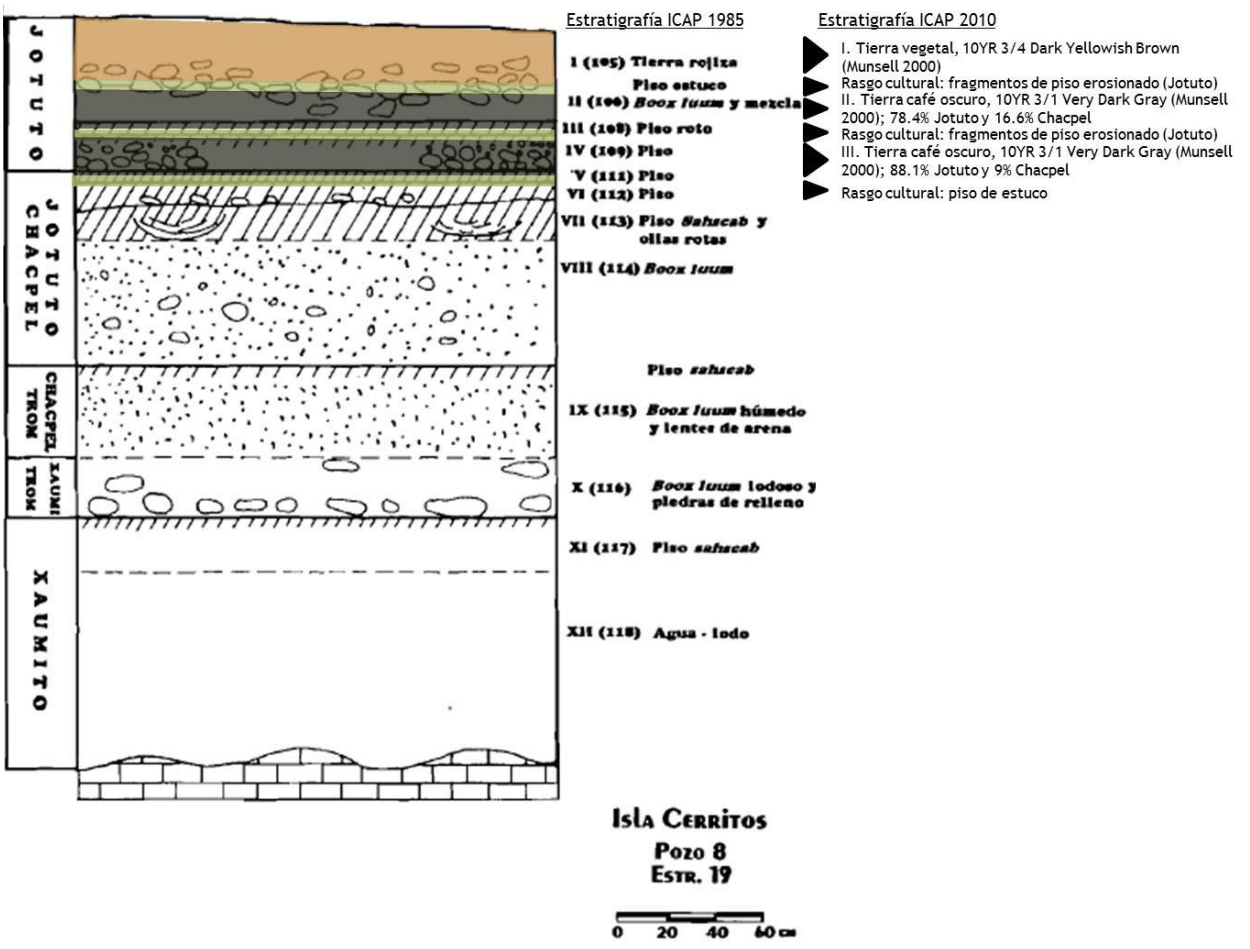


Figure 4.3: Profile illustration of Test Pit 8 excavated in Structure 19 in 1985 with corresponding ceramic complexes modified to indicate the stratigraphic levels recorded in the 2010 excavations with associated ceramic complexes and Munsell (2000) soil identifications. Green layers represent plaster floor levels.

In Structure 19, twelve stratigraphic levels were originally identified using local terminology for soil types common to archaeological projects in northern Yucatán. In the 2010 excavations, we identified fragmented floor surfaces and the lime, shell, and pebble fill between

surfaces as a single cultural feature, following Littmann (1967), and associate it as the base of the level. Thus, Level I (2010) consists of the surface and humitic layer of soil 10YR 3/4 Dark Yellowish Brown (Munsell 2000), corresponding to the "reddish soil" layer (1985) and ending with the eroded lime plaster floor indicated in green in the figure. The material culture associated with Level I is overwhelmingly Jotuto complex mixed with lower percentages of Tomoburro (Postclassic period) ceramics and historic artifacts. Level II, beneath the first floor, consists of a dark brown soil referred to as boox luum in 1985, or "black soil" in Maya, extending to a second eroded stucco floor. This soil is recorded as 10YR 3/1 Very Dark Gray (Munsell 2000) and represents the most common prehispanic fill layer found on the island. In this structure, lots from this level contain 78% Jotuto ceramic groups mixed with 16% Chacpel groups, suggesting a terminus post quem of c. 850-900 CE. Level III consists of the same type of soil between this floor and an earlier, well-preserved plaster floor corresponding to the fill between stratigraphic levels IV and V of the 1985 survey. We documented approximately the same ratio of Jotuto to Chacpel ceramic groups (88% to 9%) as the previous level, correlating to a period postdating the late 9th century.

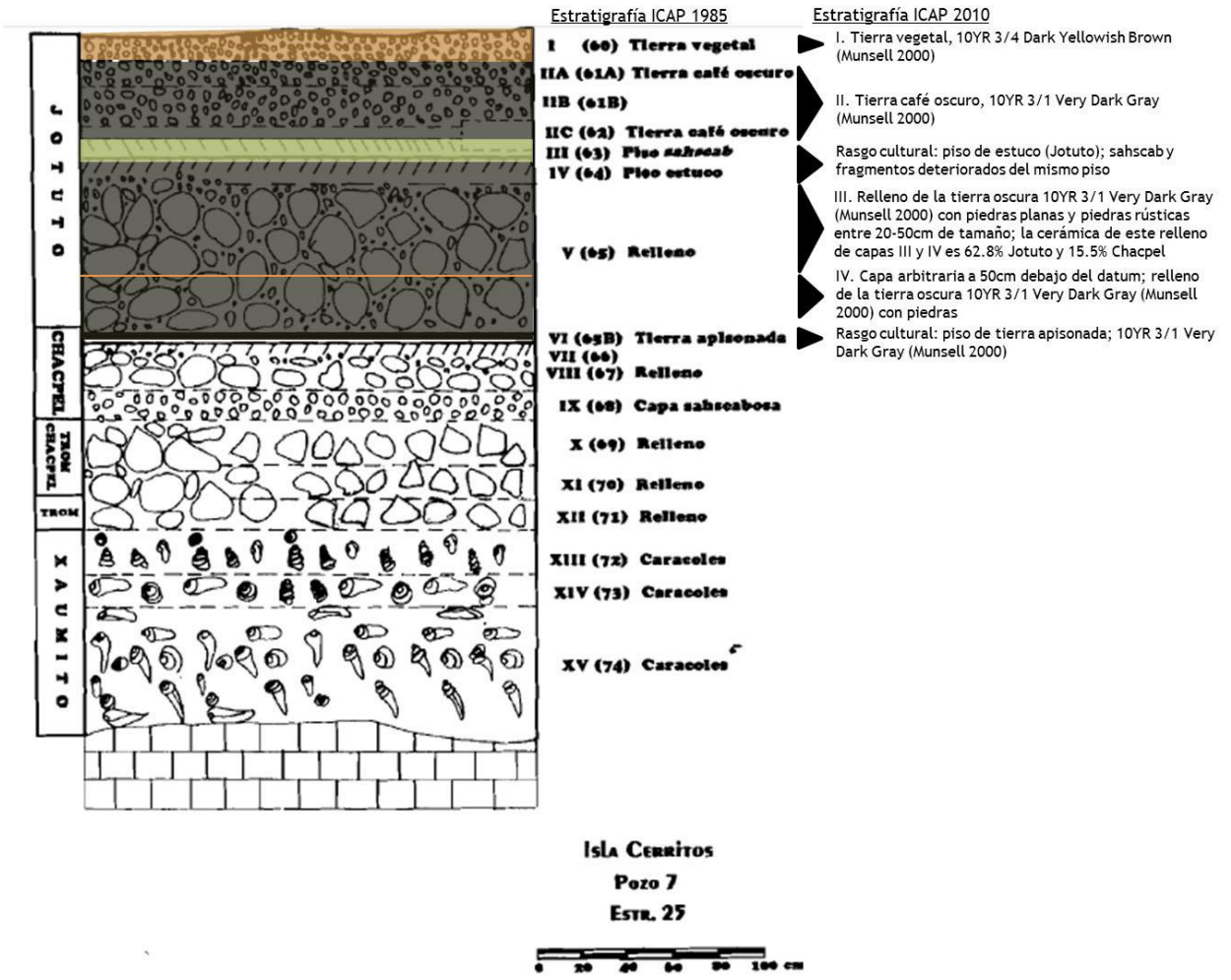


Figure 4.4: Profile illustration of Test Pit 7 excavated in Structure 23 in 1985 with corresponding ceramic complexes modified to indicate the stratigraphic levels recorded in the 2010 excavations with associated ceramic complexes and Munsell soil identifications. Green layer represents a plaster floor level, while an orange line indicates an arbitrary level at 50cm below datum.

In Structure 23, stratigraphic Level I, the humitic layer, 10YR 3/4 Dark Yellowish Brown (Munsell 2000), is followed by a thick layer of 10YR 3/1 Very Dark Gray denominated Level II in the 2010 nomenclature and extending to the fragmented Jotuto complex plaster floor (arbitrary levels IIa, IIb, IIc of the 1985 test unit). Ceramics from these levels are overwhelmingly Jotuto groups with smaller percentages of Tomburro and historic period material culture. Cultural Level III (2010) beneath the plaster floor and lime/pebble fill also consists of the dark brown soil mixed with flat stones ranging from 20-50cm in size. This fill contains 63% Jotuto and 15%

Chacpel ceramic groups, suggesting a terminus post quem of at least 800 CE and corresponds to stratrigraphic levels III, IV, and V excavated in 1985. We terminated the excavation of this level and lot at the arbitrary depth of 50cm below datum. Level IV (2010) consists of 20-25cm of the same dark brown soil (10YR 3/1 Very Dark Gray) extending to a packed earth floor associated with this same period. Levels III and IV correspond to the transition from the occupation of Structure 23-sub through the remodeling of the house into its Terminal Classic period form. The packed earth floor predates the Jotuto period ground surface of the plaza, patio and circumambient space between residential platforms. Thus, specific contexts in Structure 23 and some of the burials excavated beneath the patio of the West Patio Group provide small windows into the Chacpel-Jotuto transition, or the period between 800 and 900, while the majority of the domestic contexts excavated correspond to the Jotuto complex after 900 CE. The contexts excavated in 2006 and 2007 discussed in the next sections are dated using a combination of the 1985 test pit stratigraphy and the general ceramic chronology developed from representative samples from each structure (Cobos et al. 2007, 2010).

4.4 Mapping and Spatial Analysis 2006-Present

After 1985, no additional fieldwork took place on Isla Cerritos until 2006 when horizontal excavations were initiated under the direction of Rafael Cobos and the Universidad Autónoma de Yucatán. No additional extensive site mapping took place in 2006 and 2007. The excavation grid was established from the original zero point on Structure 1 for excavations on Structures 8, 12, 3, 5, 23, and the southern plain using a Leica total station. In 2010, new benchmarks were established near the platforms located on the north side of the island from the

original zero point, and the excavation grid was extended from there to Structures 19, 18a, 18b, 18c and 23 using a Topcon 3000W total station.

One goal of the eight week 2010 ICAP field season directed by Rafael Cobos and the author, Rodolfo Canto Carrillo, and Mauricio Germon Roche was to begin updating the topographic map of the island with information in digitized form that can be integrated directly into a GIS spatial database. As discussed above, 1984-85 survey team produced an excellent topographic map that has stood the test of time and only recently been updated with minor changes. However, new survey technology allowed us to record more points in less time using three reflective prisms positioned a meter apart at regular intervals. More extensive clearing on the north side of the island for excavation, along with updated data processing software (ArcMap 9.3 and Surfer 9.0), allowed us to document cultural features previously obscured during the first survey, topographic fluctuations imperceptible to the naked eye, along with changes in the geomorphology of the island over 25 years.

Under the direction of Rodolfo Canto Carrillo, A 50 meter x 40 meter area from the north shoreline of the island between Structures 1 and 20 was completely cleared of low vegetation for excavations, and one two-meter-wide transect was cut running north-south across the center of the island. Two additional two-meter transects running east-west across the island were opened at 60 meters south of the north shore and at 100 meters south. In addition to the primary benchmark on Structure 1, additional survey stations were established at elevated points along the transects in order to cover as much area as possible despite the vegetation. Employing the same methods used in the recent surveys at Chichén Itzá in 2008 and 2009 in which we participated, three prisms were used simultaneously and positioned approximately 60 cm apart. After taking points on all three, workers would move the prisms approximately 1 meter forward,

depending on the terrain and cultural features. Canto Carrillo also mapped several points along the current shoreline and on exposed offshore features, when tides permitted, in order to begin examining the effects of past erosion.

We were unable to map the entire island due to time constraints during the eight week field season, but did obtain several thousand points, documenting in their totality several mounds and three offshore features west of the island. Canto Carrillo then generated a preliminary digital elevation model (DEM) using Surfer software that showed topographic features previously undocumented on the island, including the rectangular feature (denominated Structure 32) that may be a platform or thick wall running along the north edge of the island beyond Structures 18a and 19 (Figures 4.3, 4.4). These results and their implications for interpreting the site settlement pattern and identifying domestic groups will be discussed in the next section. Overall, results of the recent total station mapping on the island are encouraging, and we plan to return in the future to finish mapping the area and possibly explore the mainland site of Paso del Cerro in more detail.

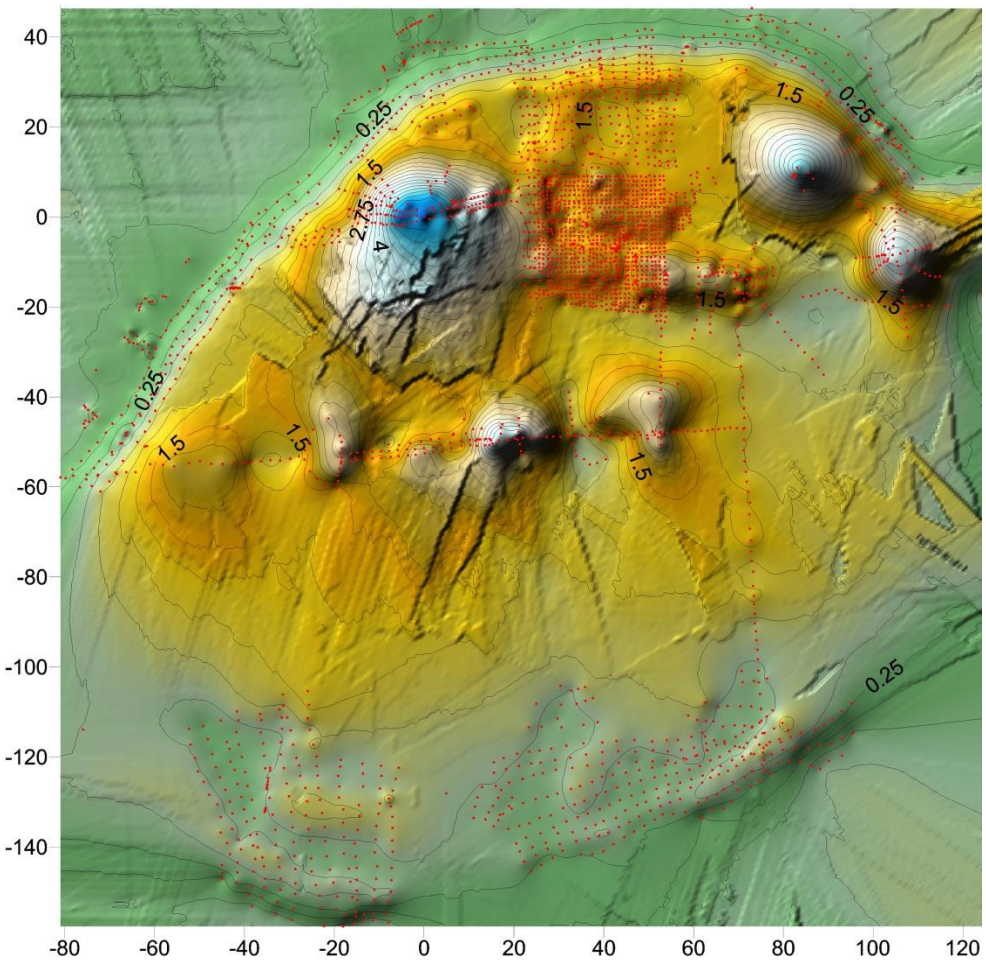


Figure 4.5: Preliminary digital elevation model generated from the points taken during the total station mapping of Isla Cerritos in March-April 2010.

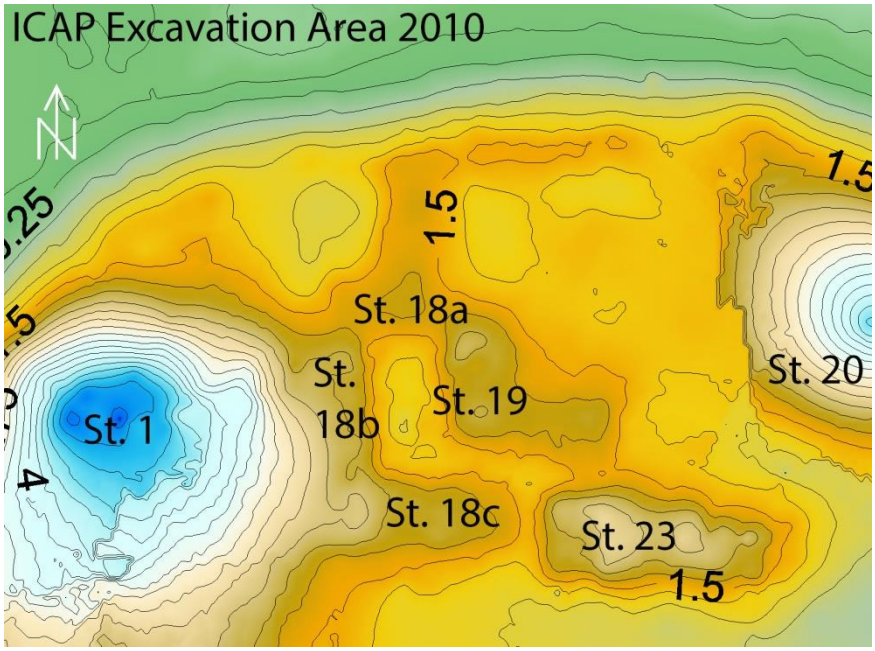


Figure 4.6: Topographic map of the location of residential structures on the north side of Isla Cerritos targeted for excavation in 2010.

In 2014, Kaitlin Statz, an anthropology student and archaeological illustrator from New College of Florida, worked closely with Anthony Andrews and me to produce an updated site map for Isla Cerritos using Maler conventions. This new map uses the 1984 topographic map as a base and incorporates additional spatial and architectural data from the 2006, 2007, and 2010 excavations to further fill in the picture of settlement layout and organization. Statz and Andrews have kindly permitted me to reproduce this map here (Figure 4.7).

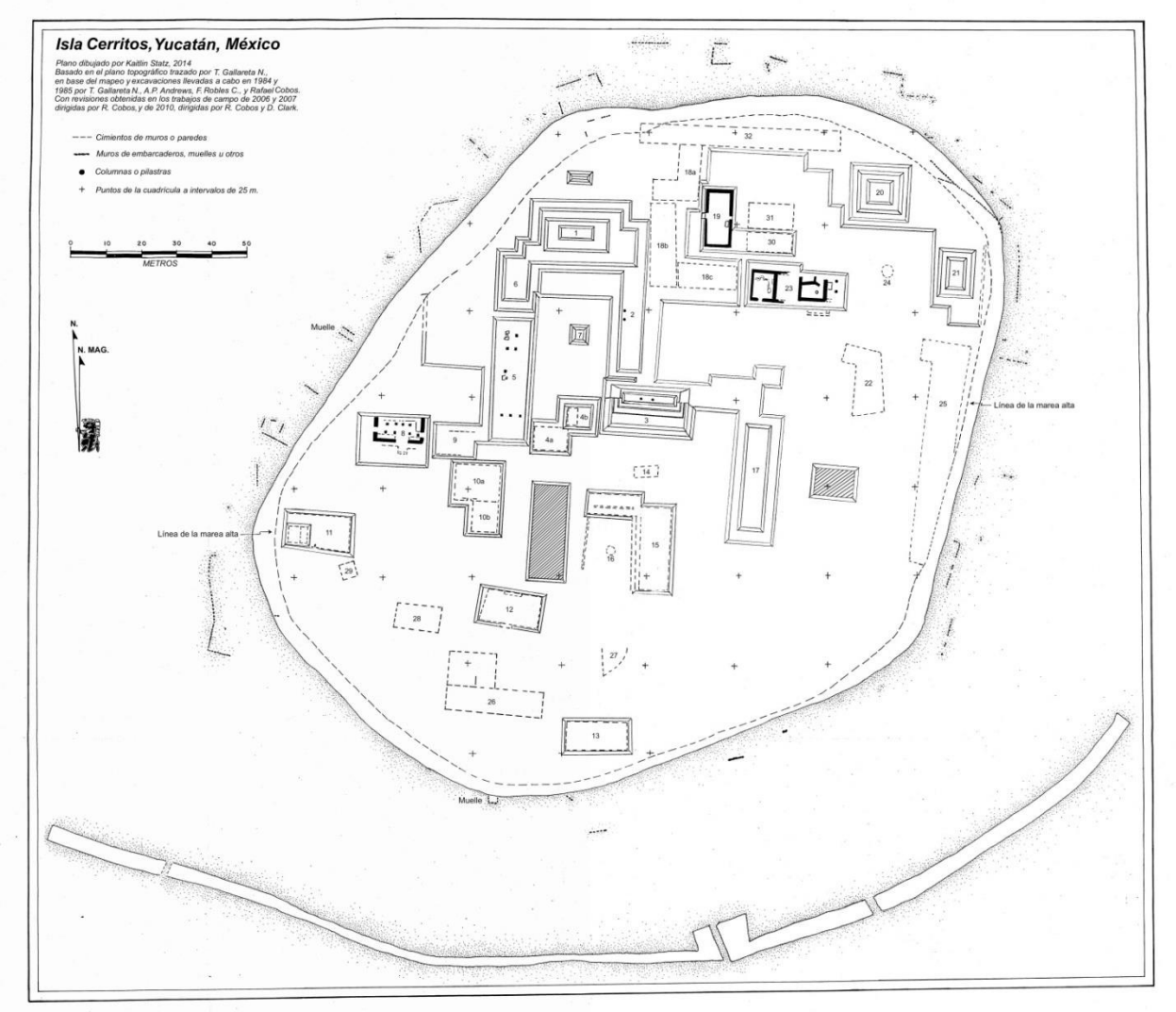


Figure 4.7: Archaeological map of Isla Cerritos using Maler's conventions for architecture and incorporating spatial data from the 1984, 1985, 2006, 2007, and 2010 field seasons. Kaitlin Statz (New College of Florida), 2014.

One of the key contributions of this map is the clarification of some of the architectural features through the close review of the spatial data collected in 1984 and subsequent excavations. Various architectural details, including interior divisions of space, from excavations conducted in 2006, 2007, and 2010 have been added to Structures 5, 8, 19, and 23. In the process of producing this map, Statz drew our attention to two rectangular features that I previously mistook for low mounds or platforms, but are actually depressions below the modern ground surface. One is

located directly south of the main civic-ceremonial group on the island behind Structures 4a and 12, while the other is located just west of Structure 17 on the north end of the southern plain—both are shaded with diagonal lines in this map (Figure 4.6). I believe that these were likely reservoirs, or aguadas, where fresh water could have been collected and stored. While we will not be able to test this hypothesis and date these features until future investigations, their form is certainly reminiscent of constructed reservoirs documented at other Maya sites that were used to collect and store fresh water (A. Chase 2012). Acknowledging the fact that these depressions cannot at this time be identified conclusively as either reservoirs or sunken patios, for the purposes of this thesis, I will refer to them here as R1 (short for Reservoir 1) and R2 (Reservoir 2) for short. The lack of natural sources of fresh water on Isla Cerritos makes it imperative that apparatus existed for storing water brought to the island from the nearest fresh water springs located along the shoreline at Paso del Cerro not only to supply the permanent and seasonal resident population with drinking water, but also for mixing with the blend of ingredients used to make the mortar, or argamasa, and the plaster used in the construction of buildings. As I discuss in more detail in section 4.5.2.3, the location of these features near the southern plain is logical for a water management function, constructed just off the platform sustaining the main "acropolis" group and the domestic Structure 8 at what would have been the southern shore of the island prior to c. 800 CE.

4.5 Island Settlement Morphology: ICAP 2006-2010

As introduced above, the Isla Cerritos Archaeological Project began broad horizontal excavations on the island in 2006. This research was programmed for two field seasons in 2006 and 2007 funded by the National Geographic Society and the Universidad Autónoma de Yucatán

and is discussed fully in two INAH field reports (Cobos et al. 2007 and 2010), two book chapters (Cobos 2010b, 2010c), and various licenciatura theses on faunal remains (Chávez 2014; Herrera 2011), mollusca (Germon Roche 2011), and lithics (Andrejko, n.d.). The objectives of both field seasons were to explore the Terminal Classic (800-1100 CE) occupation of the island to get a sense of how this coastal community functioned at the time it served as a principal port of Chichén Itzá. In the course of two five-week field seasons, excavation and consolidation was carried out on five structures, ten test units were excavated on the southern plain, and an underwater survey was conducted to further document offshore features.

In 2006, Rafael Cobos, Rodolfo Canto Carrillo and Lilia Fernández Souza directed excavations on architecture, and Vera Tiesler Blos and Andrea Cucina directed the excavation of three human burials. Several other UADY archaeology students and visiting archaeologists from abroad participated in these excavations—a truly international effort—along with twenty-five trained excavators and masons from the port of San Felipe, Yucatán, some of whom had also participated in the 1985 excavations.

The architecture chosen for excavation in 2006 and 2007 included five different kinds of structures in order to provide a range of variation in port activities during the Terminal Classic period all the way through the Late Postclassic period when activity at the site is still present, but much reduced. Structures 5 and 8 are located on the west side of the island (Figure 4.8). Structure 5 is a colonnaded hall that forms part of the west side of the main civic-ceremonial plaza group on the island that is enclosed by Structures 1, 2, 4a, 4b, and 6 with Structure 7, an altar in the center of the plaza. Structure 8 is located to the west, behind Structure 5, and may form another small group with Structures 9, 10a, and 10b with an open area between them. Whether this can be interpreted as a formal plaza group is questionable, depending on the

occupational dating and form of structures that have yet to be investigated. Structure 12 is located on the south side of the island and oriented toward the south (Figure 4.9).

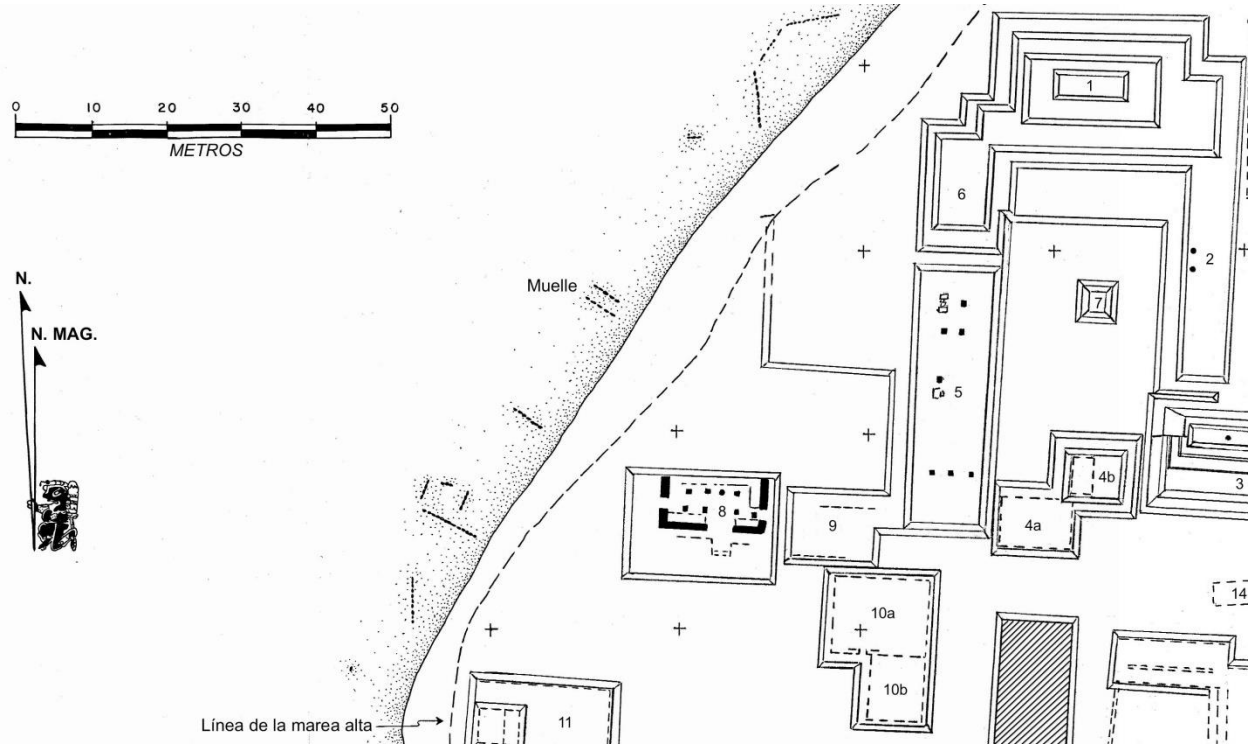


Figure 4.8: The west side of Isla Cerritos showing Structures 5 and 8 excavated in 2006 and 2007 and neighboring structures. From Statz 2014.

Structure 3 is a pyramidal structure located near the center of the island, abutting the east side of the main plaza group, oriented toward the south and an open plaza. Structure 23 is a rectangular platform on the north side of the island near the patio group formed by Structures 19, 18a, 18b, and 18c (Figure 4.9).

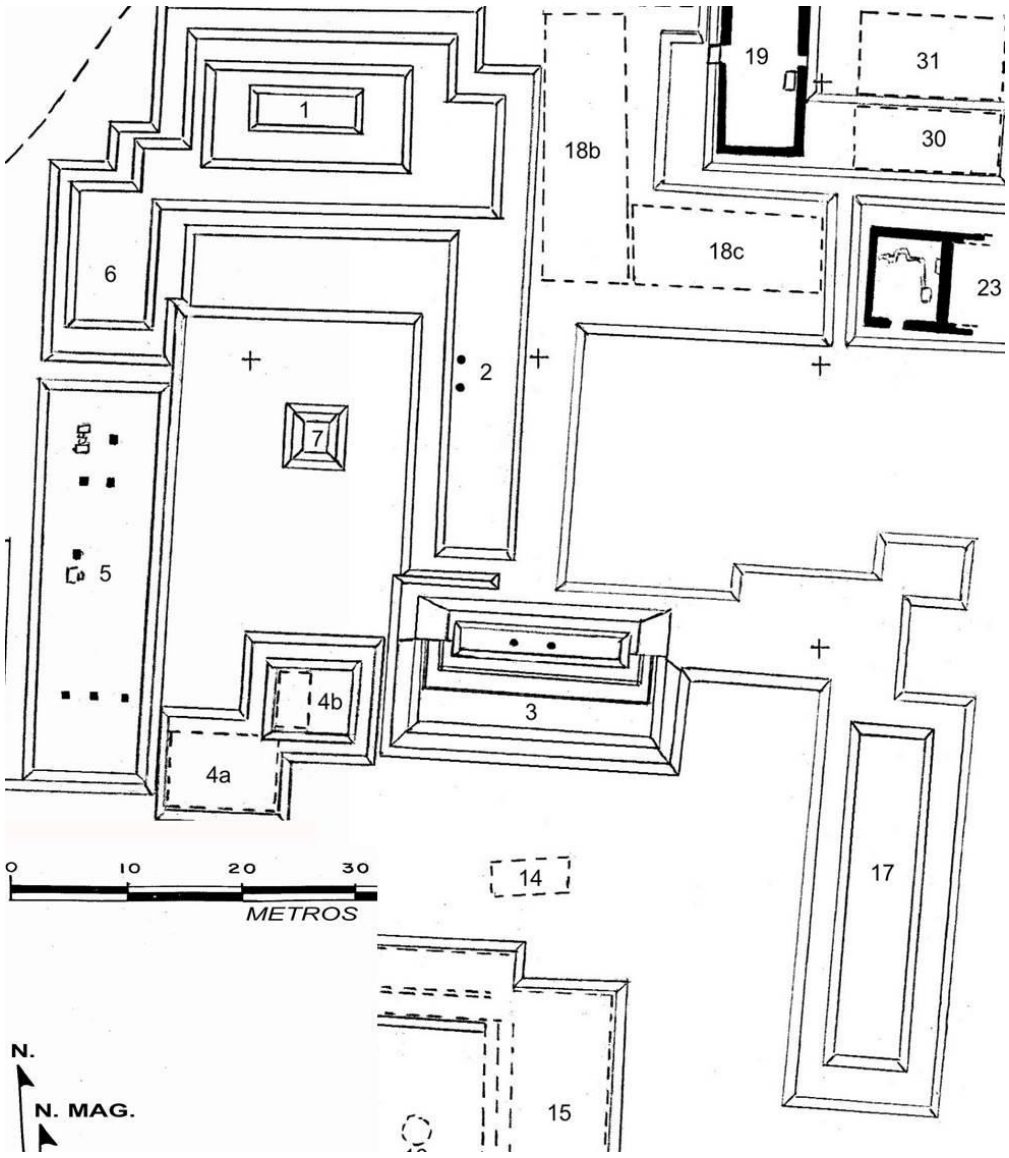


Figure 4.9: Structure 3 located in the center of Isla Cerritos, excavated in 2007. From Statz 2014.

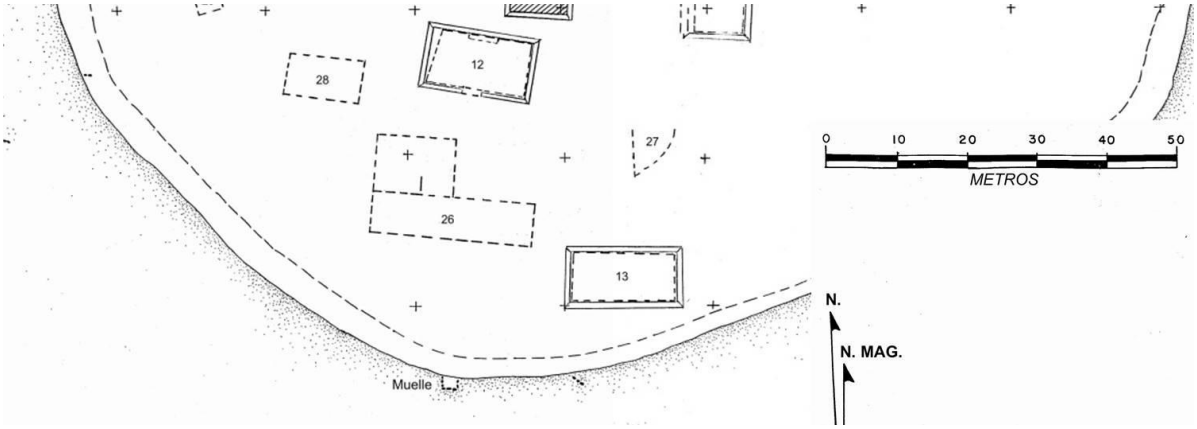


Figure 4.10: The south side of Isla Cerritos showing Structure 12 excavated in 2006 with neighboring structures. From Statz 2014.

These structures were also chosen for excavation because they had been loci for test units during the 1985 survey, and thus the excavators had a sense of the architectural stratigraphy prior to excavation.

In 2010, we returned to the island to carry out excavations on the north side of the site as part of the data collection for this dissertation research, focusing on the structures we identified in 2007 as pertaining to domestic areas in the port community. This research was supported by the Universidad Autónoma de Yucatán and CULTUR with the assistance of Harvard University, and the U.S. Department of Education Fulbright-Hays Doctoral Dissertation Research Award.

We knew from the test excavations carried out in 1985 that human occupation of this area is the earliest on the island, so there was also potential to examine architecture pre-dating Terminal Classic deposits. The use of the total station for mapping also allowed us to more accurately position the grid and excavation units, as well as map in detail the position of architectural features, including floors, walls, benches, doors, stairs, columns, niches, drains, and alleyways. We also digitally mapped the location of significant artifact concentrations, middens, and burials that were exposed during the excavations. The results of these excavations are reported here and in a forthcoming INAH field report. All excavations were conducted under

permits issued by the Instituto Nacional de Antropología e Historia de México (Consejo Nacional de Arqueología) in 2006, 2007, and 2010, and all cultural material was transported under INAH permit for storage, curation, and analysis in the Archaeology and Bioarchaeology laboratories of the Faculty of Anthropological Sciences (FCA) at UADY.

Before excavating, the structures were cleared of vegetation, and the grid extended from the zero-point on Structure 1 using the total station to establish benchmarks near the structures. The grid used in all horizontal excavations on the island is made up of 2 meter x 2 meter units and named with a specific number + letter combination, with numbers corresponding to the unit's location along the north-south axis and letters to the east-west axis. Rows of multiple units are denominated calas, or transects, and each assigned a letter in the order of excavation. The method of stratigraphic excavation within each unit was addressed in section 4.3.

In 2010 we used standardized lot sheets to record stratigraphy and context information, artifact provenience, and general observations related to the excavation of each lot. These forms record the structure, transect, unit, level, and lot information, as well as soil color/texture, artifact types and numbers, sculpture, total station points, probable ceramic complexes, photograph numbers, and a description of the drawings made for each lot (see Appendix C, Figure C.1). These lot sheets were scanned in order to preserve them and are kept in digital and original form with the ICAP project archives and photographs at the FCA-UADY.

In 2010 two undergraduate archaeology students from the FCA, Eduardo Sansores Peraza and Cecilia Soldevila Illingworth, assisted with archaeological illustrations in the field and in the lab. They, in turn, trained four of the 20 excavators from San Felipe and Panabá, Yucatán in plan and profile drawing. This made it possible to illustrate more excavation contexts with greater

accuracy in less time. Soldevila also organized and inventoried the material culture in San Felipe as part of the cataloguing process discussed in more detail below.

On two separate occasions during the season, archaeologists Lilia Fernández Souza (UADY) and Mario Zimmermann (Washington State University) visited the site to take paleobotanical soil samples from stucco floors for microbotanical and phosphate analysis as part of a future, regional study of paleobotanicals from domestic contexts at northern Maya sites.

Because Isla Cerritos is now a wildlife preserve for nesting sea birds, care must be taken during certain seasons to avoid clearing areas with nests or leaving either string and flagging tape out after each day's excavations, and thus units were strung for excavation or mapping and unstrung upon completion. When trees could not be removed due to nests, these units were left unexcavated as controls. This system of transects and units facilitated the exposure of architectonic features and provided maximum control with regard to artifact provenience.

All excavated lots were screened separately, primarily through a 1 cm mesh screen followed by a 0.5 cm mesh screen for special contexts or burials. Artifacts and ecofacts were separated by material class (e.g., ceramics, bone, shell, etc.) and stored in plastic bags. Each bag was labeled on the outside in ink and contained a tag with the following provenience information printed: Field Season, Structure, Cala, Unit, Level Number, Lot Number, Material. Some of the lithics, shell, and ceramics from the excavations were washed in the field house at San Felipe by local sherd washers using soft brushes and water prior to being transported to the laboratory in Mérida, while other material was washed and sorted in the laboratory after the field season. Ceramics were desalinized in the FCA laboratory by soaking in fresh water.

In 2010, each level and lot was fully documented through photography and 1:20 scale drawings. All levels containing architectural features or cut stone were drawn in plan; profiles

were drawn of the excavated structures as well as each unit once excavated to its base or floor level. Multiple digital photographs were taken in plan and profile of each unit, surface, excavated level, and lot, as well as of cultural features, architecture, and artifact concentrations or special contexts. In 2006 and 2007, the archaeologists each drew plan view drawings of levels that contained cut stone or other features and profile drawings were made at 1:20 scale of units that bordered an unexcavated area. All exposed architecture was drawn and photographed in plan and profile. After each field season, larger scale drawings were made in Photoshop and Illustrator that combined multiple plan and profile views of architectonic features and stratigraphic profiles.

During excavations, cultural features received individual feature numbers, and cut stone, when not in situ, was fully documented before being separated and incorporated into consolidation and restoration. Very little stone sculpture, architectonic or artistic, remains on the island. The fragments of sculpture that were documented were separated, received a tag with provenience information, and were transported to the FCA laboratory for curation and further study. In the next section, I discuss the overall site settlement pattern, incorporating the spatial data from the recent mapping and excavations to identify residential groups.

4.5.1 Island Settlement Pattern: Domestic Structures

The test units excavated in 1985 on the north side of the island (test units 7, 8, 9, and 10), between Structure 1 of the main plaza group and Structures 20 and 21 (two pyramidal temples in the northeast corner of the island) demonstrate that this area is the oldest continuously occupied portion of the port. Ceramics recovered in the 2010 excavations confirmed human presence here dating from the late Middle Pre-Classic period (c.350 BCE), pushing the ceramic chronology of

the port back nearly two centuries.[4] While the entire island is a highly constructed environment, the northern half forms the bedrock core upon which were constructed the platforms supporting subsequent architecture. The main platform in the northern and eastern quadrants of the island that features the dual pyramidal structures (20 and 21) is supported by very large, rounded limestone blocks carved in the megalithic style popular in northern lowlands architecture most often dating to the Early Classic period. The raised platform built over the northwest quadrant and center of the island that supports the main civic-ceremonial group, I refer to here as the "acropolis platform." Structure 1 and its annex (a small unnamed mound, possibly an altar) behind it to the north, as well as the main plaza enclosed by the long gallery structures are located there.

In general, the architecture on Isla Cerritos can be described as low rough-cut limestone enhanced in ancient times with thick layers of stucco, along with upper walls and roofs made of perishable materials, including wood, wattle and daub, and huano (palm thatch). Inside, many of the interior spaces did contain low stone walls, plastered stone benches, altars, round columns, and square pillars that are well-preserved. Some structures may have had walls made entirely of dressed stone, but in subsequent years the exposed cut stone visible above the mounds were collected and repurposed for modern constructions in nearby towns. To date, no vault stones, also referred to as "boot stones," used in Maya architecture to construct corbeled vault roofs have ever been found on Isla Cerritos. Therefore, the assumption is that all superstructures on the island had perishable hip roofs made of wood and palm thatch (palapas) that no longer remain.

A wonderful full color mural painting from a wall in the interior throne room of the Temple of the Warriors at Chichén Itzá was recovered in fragments during the excavations of

[4] The new ceramic data create the need for a Middle Pre-Classic ceramic complex that pre-dates the Xaumito complex. Because a new ceramic complex has not been added yet to the site's ceramic chronology, I will refer to this period of occupation as "late Middle Pre-Classic" or "pre-Xaumito contexts" in this thesis.

that structure carried out by Earl Morris and the Carnegie Institution of Washington in the 1920s (Morris et al. 1931:424, plate 159, Figures 4.10, 4.11). The mural was carefully reconstructed in watercolor by artist and archaeologist Ann Axtell Morris, and the watercolor is now in the collections of the Peabody Museum of Archaeology and Ethnology at Harvard University.

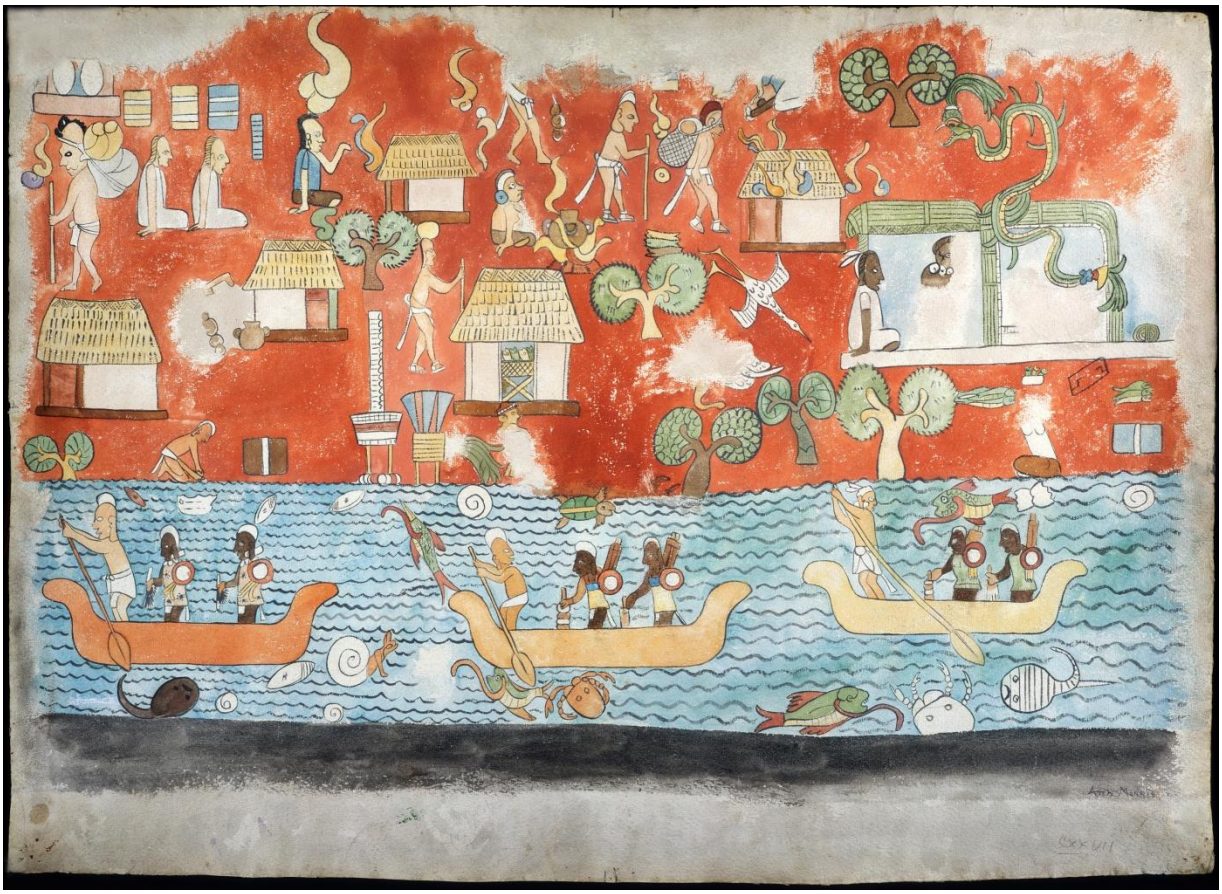


Figure 4.11: Watercolor reconstruction by Ann Axtell Morris of the "Maya Seacoast Village" mural that stood in the throne room of the Temple of the Warriors at Chichén Itzá. Gift of the Carnegie Institution of Washington (c) President and Fellows of Harvard College, Peabody Museum of Archaeology and Ethnology, Harvard University, PM# 46-34-20/26287 (digital file# 60742828).

The mural painting, aptly titled "Maya Seacoast Village" by Morris, dates to approximately the end of the 10th or early 11th century CE (Bey and Ringle 2007) and depicts an unidentified Maya coastal community and the sea just off shore where canoes carrying oarsmen and warriors move through the water above abundant sea life (Cobos 2011:210). On land, a coastal settlement is

shown with several houses and people engaged in activities of daily life, as well as porters carrying different types of cargo through the village. Speech scrolls emanate from certain individuals and a pot is set to boil in the patio between structures in a residential group. A male individual uses a grinding stone along the shoreline, and a basket filled with fish is seen inside the door of one of the houses facing the sea (Cobos 2011:216).



Figure 4.12: Eastern room (interior) of the superstructure of the Temple of the Warriors at Chichén Itzá, Yucatán. The view is of the partially restored wall where the "Maya Seacoast Village" mural painting was originally located. This view is from the south side of the large throne centered on the eastern wall.

While we do not know what settlement is pictured, some of the activities that are shown are involve the movement, trade, and transaction of goods that one would expect at a port. Likewise, the daily life activities and household architecture in the mural are provocatively reminiscent of the patterns of material culture and architecture described above that we documented archaeologically at Isla Cerritos in 2010. For example, the houses with lime plastered perishable walls and thatch roofs are constructed on stone basal platforms, and some

have a covered porch or extension supported by wooden poles. Some of the domestic platforms on Isla Cerritos that supported perishable superstructures and palm thatch hip roofs also show evidence of post holes and porches (just as in the mural). Thus, this unique ethnohistorical source and the archaeological record of the port corroborate and help to bring each other alive.

The first ICAP survey documented a group of five low, platform structures in the northern portion of the island. Four of these five structures enclose a shared patio area and had the appearance in plan of a "household cluster" (Winter 1976:25) made up of what Wendy Ashmore (1981:47) defined as "minimum residential units," or structures of at least 20 square meters of (originally) roofed area associated with circumambient space. This group includes Structures 18a, 18b, 18c, and 19 and is referred to here as the West Patio Group (Figure 4.12). Most archaeologists working in the Maya region agree that a typical residential group settlement pattern contains at least 4 structures in close proximity or sharing walls of varying elaboration and function, such as "dwellings" for sleeping, outbuildings for storage, production, cooking, or religious ritual that surround a central shared space, often with a temple or shrine located on the east side (Ashmore 1981; Haviland 1981:100; Hendon 1987, 1992; Hutson et al. 2006; Wilk 1988). For Julia Hendon (1987:527-545), these kinds of groups represent a "minimum domestic unit," (MDU) otherwise referred to as a "household group" or "residential group." A group of residential structures built on a platform that surround a more open space with less restricted access is here identified as a "plazuela group" (Ashmore 1981:49). Note that this term is not used in this study to denote any kind of social status vis-à-vis other household groups. Individual structures that are not associated with any group may be outlying houses or may form part of an "informal group," defined as residential structures that do not share a central circumscribed

space, but are located closer to each other than to any other structures or groups (Ashmore 1981:48).

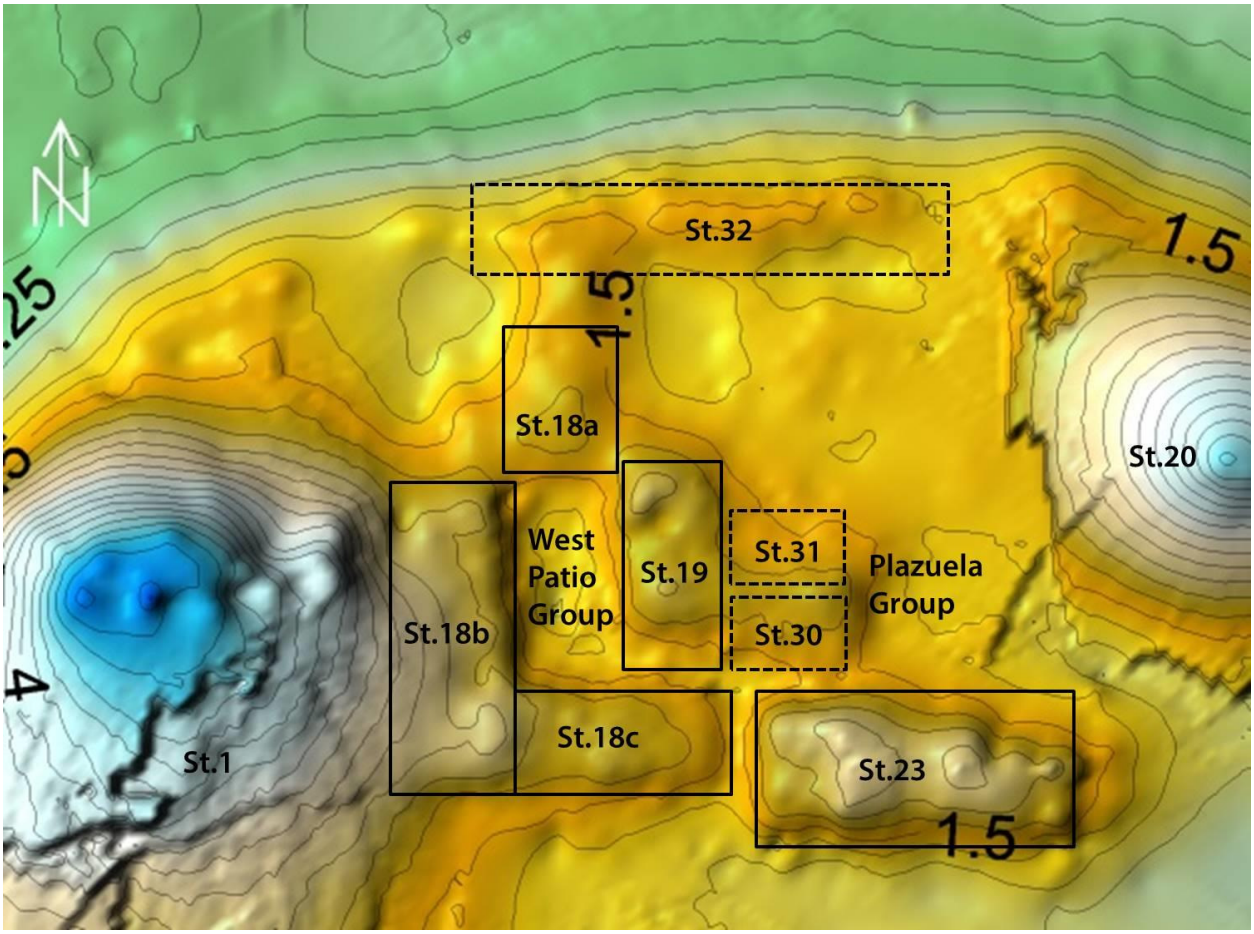


Figure 4.13: DEM showing the residential groups on the north side of Isla Cerritos. Dotted lines represent structures identified through mapping and excavations in 2010, but not fully exposed.

The principle of abundance often used in Maya settlement pattern studies to assign a domestic function to low platform mounds based on their frequent occurrence across a site is problematized by the idiosyncrasies of individual families' social practices within the context of kinship and social norms, variability in style-function correlation, and the diversity of activities and activity areas in and near household structures and over time (Haviland 1970; Wilk 1988). Thus, not all structures that make up a residential, or household, group occupied by a kinship group (fictive, real, nuclear or extended) are necessarily houses, or dwellings (Haviland

1988:121). With this in mind, we assign a general domestic function to a structure at Isla Cerritos by examining a combination of multiple lines of evidence, including the settlement pattern, architectural form and features, and associated material culture types and patterns. An important caveat is that while the functional and stylistic descriptor "domestic" includes any enclosed / roofed spaces and open spaces (patios) that were the locations for the many kinds of activities related to daily life, it is safest to recognize the potential of any enclosed / roofed domestic building to be a dwelling space for the purposes of discussing the port's residential population, unless material evidence indicates otherwise.

Directly to the east of Structure 18c, which encloses the south side of the West Patio Group, Structure 23 is a rectangular range-like structure constructed along an east-west axis, much like Structure 18c. The initial testing of this structure in 1985, along with more extensive excavations of its eastern portion in 2007 (discussed fully in the next chapter), confirmed the domestic function of this building through rich deposits of utilitarian ceramics, grinding stones, cooking and water storage vessels, spindle whorls, and food refuse (Cobos et al. 2010). It was unclear prior to the 2010 excavations, however, whether Structure 23 formed part of the residential group directly to the west or was oriented away from the group. We therefore targeted this area, specifically Structures 23 and 19, for the most recent household archaeology conducted at the port.

The preliminary digital elevation models produced from the topographic data showed two previously undocumented structures visible to the north and east of Structure 19 (Figure 4.12). A basal platform just east of Structure 19 was confirmed through excavation and named Structure 30. A stone alignment running east-west along what is today the north shore was slightly exposed due to erosion and appears to consist of a low wall or narrow platform, but will require

future excavation to confirm its form and extent. This structure was named Structure 32. An additional low platform, named Structure 31, was discovered directly north of Structure 30 and east of Structure 19 during the excavation of the east wall of the latter. Structure 30 did not correspond to any topographic fluctuations recorded in the survey, nor was it visible from the cleared surface of the island.

The western walls of the platforms of Structures 30 and 31 are both located less than 2 meters east of Structure 19, and therefore a significant portion of each wall was exposed during the horizontal excavations of Structure 19 in 2x2 meter units in the north-south running Transect X. The southwest corner of Structure 30 was excavated as part of the east-west running Transect T, while the southeast and northeast corners of the platform were documented by extending Transect J north from the Structure 23 excavations.

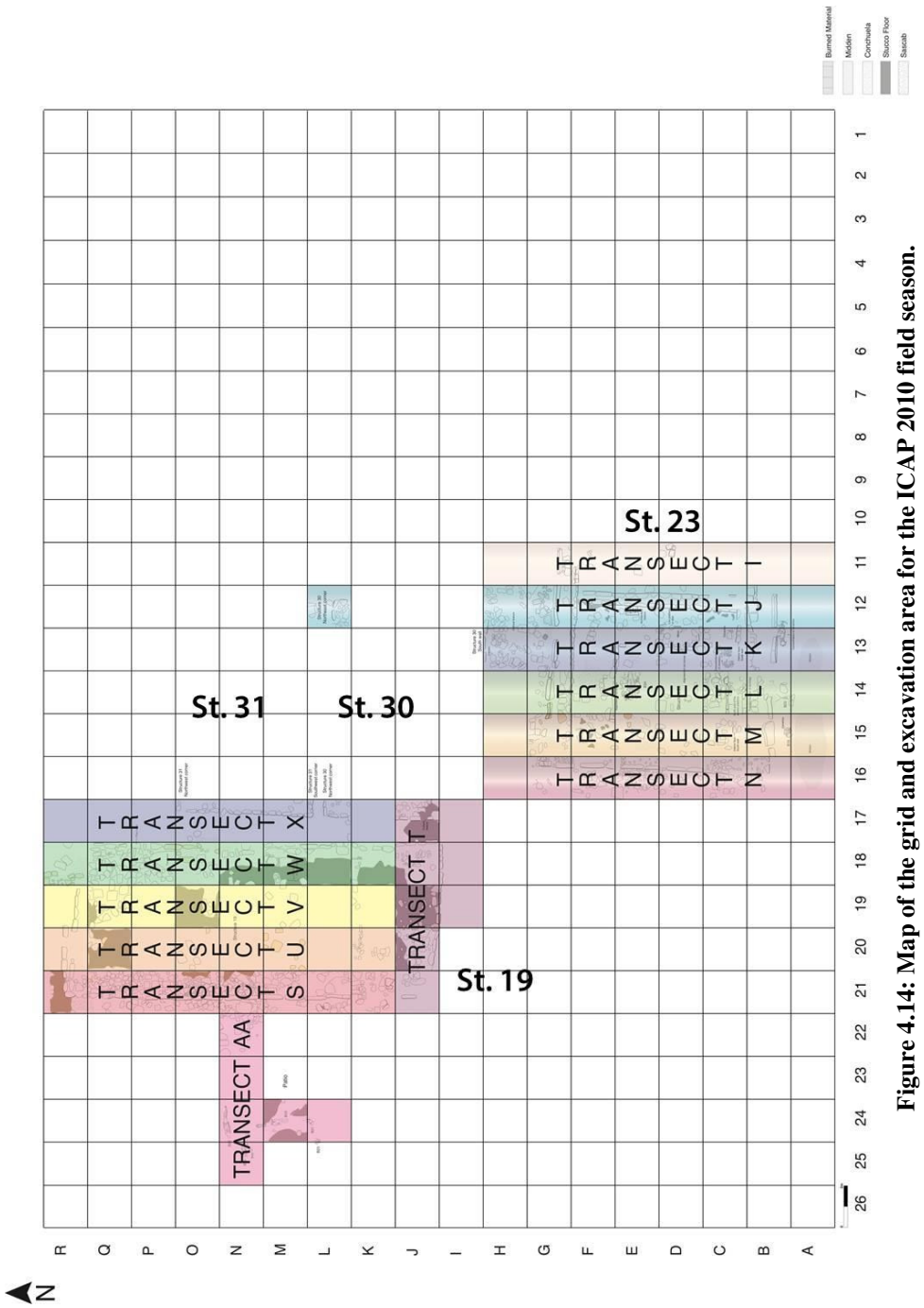


Figure 4.14: Map of the grid and excavation area for the ICAP 2010 field season.

Both Structure 30 and 31 are characteristic of basal platforms that support domestic architecture, and artifact concentrations support this interpretation. Future excavations will be necessary, however, to determine what interior features existed in the buildings that they supported. It is very possible that additional low platforms of this type will be discovered later in the area directly east of these structures that was not cleared in 2010. The discovery of these domestic structures without clear topographic signatures underscores a problem noted by many survey projects and discussed by T. Patrick Culbert and Don Rice (1990:14) in relation to accurately estimating population size from mapped domestic structures. The issue relates to the underestimation of site mound densities because structures are simply hidden from view during mapping. A remedy proposed by many archaeologists is to apply a standard addition to account for unrecognized structures in the settlement pattern. Arlen Chase (1990), for example, recommends a 37.4% addition to mound counts around Tayasal, and David Webster and AnnCorinne Freter (1990) suggest that adding 38% for small structures and 50% for large structures is appropriate for estimating unmapped buildings discovered in excavations at Copán. In the following discussion of my estimated population range for Isla Cerritos, I add 35% to the number of structures to account for undocumented platforms like Structures 30 and 31.

We now have a clearer picture of the settlement pattern on the north side of the island between the main civic-ceremonial group and Structures 20 and 21 on the northeastern shore. To date, eight structures have been documented in this area, seven of which are interpreted as domestic based on architectural form and material culture patterns (Structure 32 is excluded for now). These seven structures form two residential groups, one a patio group (the West Patio Group) and one a more open plazuela group located directly to the east. I will discuss the details of the archaeological excavations and material culture distribution of each of the domestic

structures in the next chapter, but the architectural remains confirm that Structure 19 was oriented west, facing the patio of the West Patio Group, while the dimensions of the cut stone on the western façades of Structures 30 and 31, along with the paved alleyways between these platforms and Structure 19, indicate that they faced east, forming the west side of the plazuela group. Various rooms in Structure 23 were accessed from the east side, north side, or south side, but not from the west. Therefore, this structure was oriented away from the patio group, rather than a part of it, and formed the south side of the plazuela group (Figure 4.14).

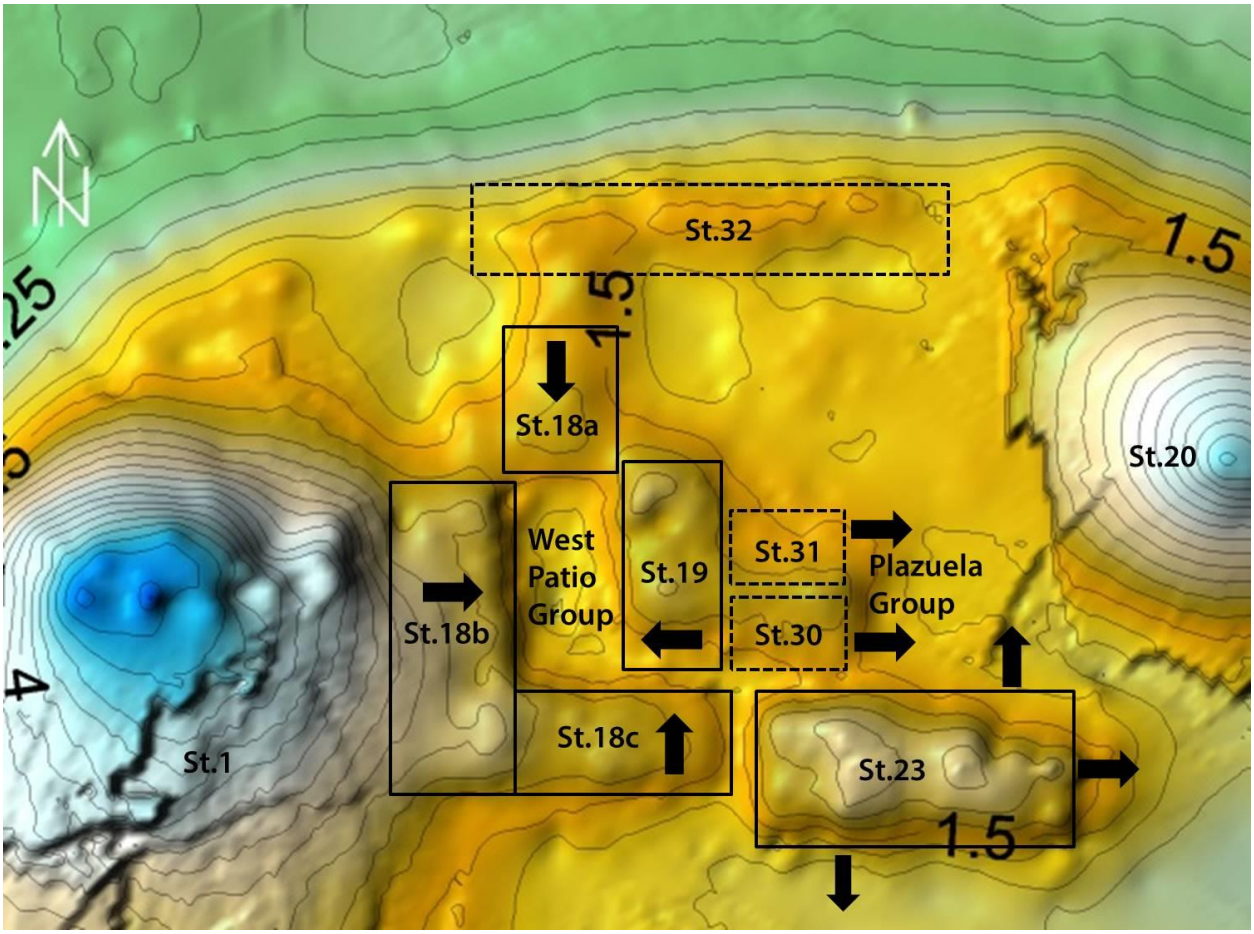


Figure 4.15: Map with arrows indicating the orientations of the structures forming the residential groups on the north side of Isla Cerritos.

One other structure on the island, Structure 8, has confirmed domestic occupation layers and is included in this study. Located west of the colonnaded hall of the main plaza group, it

was tested in 1985 and horizontally excavated in 2006 and may be a single, outlying house. However, Structure 8 is also located proximate to Structures 9, 10a, and 10b and may form part of an informal residential group, as it is oriented south, away from the main civic-ceremonial plaza group of the island. We cannot confirm the orientation or function of the latter three structures without further archaeological investigation (Figure 4.8).

Structure 22, a low boot-shaped platform just to the southeast of Structure 23 was tested in 1985 and contains what appears to be domestic refuse dating to the Late and Terminal Classic periods; however we cannot yet confirm the domestic function of Structure 22 without further excavation, and thus it is not included in this analysis (Figure 4.16).

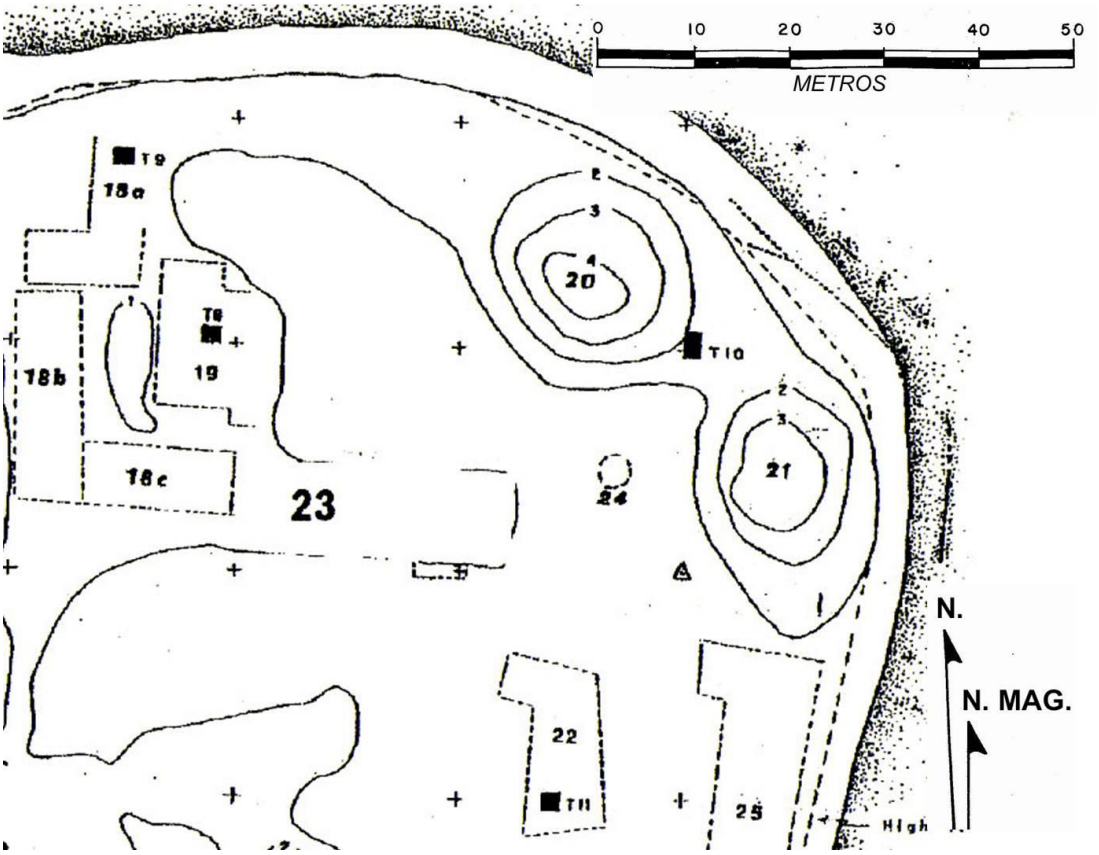


Figure 4.16: The northeast quadrant of Isla Cerritos, showing the northern residential structures and Structure 22, a possible domestic structure, outside the household groups.

All eight confirmed domestic structures are spatially separate from the two central plaza groups containing civic-ceremonial architecture that are both oriented to the south.

Estimating the size of ancient populations based on mapping archaeological remains is a notoriously complicated and problematical endeavor. Rice and Culbert (1990:14-18) summarize the methodological challenges and limitations that archaeologists have attempted to ameliorate in the Maya region in various ways over the past century. Despite the limitations, calculating a range of residential population size for the port of Isla Cerritos is essential in this study for a number of reasons. First, there are speculations in the literature about whether a permanent residential population ever lived on the island and whether the mortuary record at the site reflects demographics for the port, coastal community, or some other hinterland settlement. An estimated population range based on identified domestic contexts provides another approach to resolving this question and more explicitly defining the extent of the permanent settlement and organization of the coastal community. Second, in order to discuss the material indicators of social organization and relations within the community in terms of my research questions, a reasonable appraisal of the size of the social groups discussed is imperative. Third, population size estimates are a key component in any attempt to determine the labor and resource expenditure involved in the construction and maintenance of the port, and whether the administration of a larger, inland population center or an influx of colonists was necessary for the site to reach its maximum extent during the Terminal Classic period.

I combined three complimentary methods used in the Maya lowlands for calculating population to generate an approximate population range (in contrast to a single value) for the island portion of the coastal community (not including Paso del Cerro or Chinalco). One is based on the total number of residential platforms and an average family size of 5.6 persons (Redfield

and Villa Rojas 1934), also advocated by Rice and Culbert (1990:17). The others use measurements of roofed space, combining Narroll's (1962) estimate that an individual needs 10m2 of roofed area for living space, and Tourtellot et al.'s (1990:245) study of domestic groups at the site of Sayil in western Yucatán, which argued that each room in a domestic structure holds 4 people on average. The problem with using the Sayil method alone is that we only have accurate room counts for the structures that have been excavated horizontally.

I do not include reductions for disuse or contemporaneity because the amount of data we have on the chronology of the structures identified as domestic is unequal with some having clear indications of pre-Jotuto complex occupation, while others have equivocal evidence for earlier forms of construction and/or later reuse. Since we do know that the confirmed domestic structures to date were all occupied during the Jotuto ceramic complex (Terminal Classic period) when the port was most active, my estimate is a maximum from that time that I use (admittedly with caveats) as a hypothetical upper limit for earlier occupations. I also do not incorporate mound/km2 density into my population estimates because the space restrictions of the island skew the value to the high end, making it seem as dense as a much larger, urban core. I do take into consideration the 5-30% reduction recommended by Rice and Culbert (1990) to account for non-dwelling structures within household groups by using a 30% reduction for the minimum estimate and a 5% reduction for the maximum of the range. Thus, the minimum calculations in these ranges consider only the 8 confirmed domestic spaces, their total areas of roofed space, the 35% increase for unmapped structures and a 30% reduction for possible non-residential functions. For the maximum estimates, roofed areas of 11 domestic structures are considered, including three structures-- 9, 10a, and 10b--that might form part of a residential group with Structure 8 on the west side of the island. At the maximal end of the range, only a 5% reduction

is made for non-residential function, and the 35% addition for unmapped residences. The results include three overlapping ranges of 45-62; 44-64; and 55-112. This suggests that by 900 CE, when the island size and occupation reached its apogee and at least 8 of the confirmed domestic structures were in use, the port component of this coastal community could have housed between 44 and 112 people, or 8-20 families with a median population of 59. This estimate should be considered tentative, pending further research, and does not, of course, count all of the temporary occupants who visited, worked at, or passed through the port facilities daily.

4.5.2 Island Settlement Pattern: Non-domestic Structures

Excavations in 2006 and 2007 also helped to elucidate the form and function of some of the non-residential structures from island plaza groups, and these will be discussed below. One of the interesting aspects of the Maya seacoast village mural from the Temple of the Warriors at Chichén Itzá is the presence of a structure that has the appearance of a civic-ceremonial building, distinct from the wattle and daub houses in the rest of the village. This particular building has a long, rectangular platform covered in a thick coat of white plaster, and what appear to be three columns or pillars. It is marked (or named) in the painting by a long, green feathered serpent in the foreground, twisting above the center of the structure. At least one seated person is present, wearing a white tunic and facing the interior of the first of two interior spaces. His darkened skin suggests he may be a merchant or priest. The columns and roof are covered in thatch and bound reeds, similar in green color to the feathered serpent.

One of the characteristics of Maya coastal ports is the presence of ritual and administrative structures that range from numerous shrines and altars, to large pyramidal

structures with temples and colonnaded halls, to small throne rooms that likely served multiple functions of reception, presentation, administration, and worship (Andrews 1990, 2008; Cobos 2010b). In Maya settlement patterns, the assignment of a ritual function to structures often depends on the location, orientation, height, and elaboration of the architecture, but as Linda Brown and Payson Sheets' (2000:18) has documented on the southwest Maya periphery, the construction of distinct ceremonial precincts is not confined to large centers, but also common in small sites where local politics and ritual ceremonialism was an active part of daily life. Ports-of-trade models for Mesoamerica and elsewhere suggest that multiple religious structures dedicated to distinct gods or faiths are important components of ports as integrative mechanisms facilitating intercultural contact and social interaction essential in long distance trade (Rathje and Sabloff 1975; Sabloff and Freidel 1975). In this case, I argue that the broader coastal community combined both island and mainland components such that Isla Cerritos provided the physical setting for port facilities and the civic-ceremonial plaza groups for political and religious administration. In the sections that follow, I discuss the built environment of the island, its layout and orientation, through the archaeology of the non-domestic structures that were investigated in 2006 and 2007. The data from these excavations provide insights into how the island was organized for social, political, and economic integration, as well as what the Terminal Classic period architecture suggests about how the island port was related to the inland center of Chichén Itzá.

I began with a description of the feathered serpent structure pictured in the Maya Seacoast Village mural because it is has the look of a colonnaded hall, or gallery, an architectural form that becomes more prominent during the Late/Terminal Classic and Early Postclassic periods. These are often associated in the literature with the feathered serpent cult centers that

appear across Mesoamerica at that time (Cobos et al. 2005; Fernández Souza 2006; Ringle and Bey 2009). On Isla Cerritos, as one moves south through the alley separating Structures 18c and 23 into the open space between the residential area and Structure 3, the principal plaza group on the island is located directly west. This group consists of the tallest pyramidal structure on the island, Structure 1 at over 5 meters high, which forms the northern end of the plaza enclosed by Structures 5 and 6 on the west, 4a and 4b to the south, and Structures 2 and the corner of Structure 3 on the east (Figure 4.16). Both Structures 5 and 2 are long rectangular platforms with visible columns that have the appearance of colonnaded halls. These are also quite similar to the front portion (i.e., the gallery) of the gallery-patio complexes documented in abundance at Chichén Itzá and at the Epi-classic center of Tula in Central Mexico.

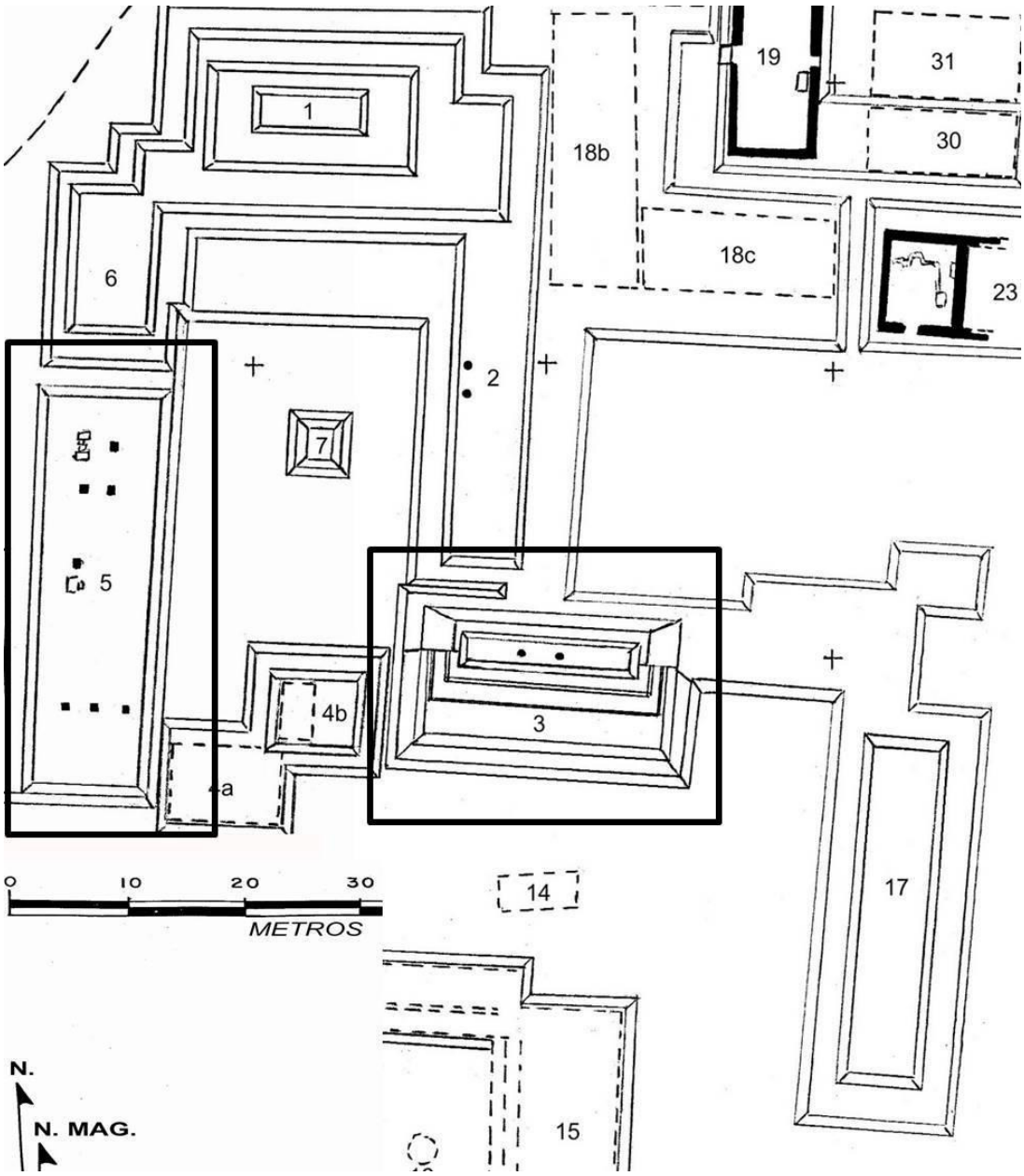


Figure 4.17: The main civic-ceremonial plaza groups of Isla Cerritos with Structures 3 and 5 excavated in 2006 and 2007 denoted.

Gallery-patio complexes are found in several forms, and most often have an anterior rectangular or "C-shaped" hall open on one side with one or two rows of round stone columns or square pillars between the main access and a door in the rear wall leading to a square room with at least four columns surrounding a sunken or flat patio (Fernández Souza 2006:359;

Proskouriakoff 1962; Ruppert 1950; Shook and Irving 1955). Often there is a bench along three sides of the gallery, a niche(s) in the middle back wall, and/or small altars that may be located outside the gallery in front of the entrance, built into the back wall or bench, or as a square block between the central columns. The function of these complexes has been debated in the literature for decades, with interpretations including elite domestic contexts (Fernández Souza 1999, 2006), "public residences for unmarried men" (Proskouriakoff 1962:89), residences for dignitaries, priest-traders, sacrificial victims, prisoners, or ball players, or judicial palaces (Fernández Souza 2006:364; Ruppert 1950), temples with access restricted to priests, administrative and reception spaces (Cobos et al. 2005; Kurjack 1994), production areas (Lincoln 1990), spaces for warriors' orders (Arnauld 2001:386), and resting places for visiting traders and porters (Ardren and Lowry 2011; Inurreta Díaz 2004). The archaeological patterns associated with these kinds of structures are quite variable, and they may in fact be multi-use spaces, but interpretations generally pivot around whether they are (or which parts are) domestic or non-domestic contexts (Fernández Souza 2006:375).

At Chichén Itzá, Rafael Cobos has documented the prevalence of gallery-patio complexes in groups that also contain a temple and altar, a pattern which repeats itself from the center radiating out along the system of sacbeob connecting multiple parts of the city. Structures such as 2D6, 2A17, 3B8, and El Mercado are examples of typical patio-galleries at Chichén Itzá, and Fernández's (1999) excavation of 2A17 there demonstrated strong evidence for domestic occupation. Cross-culturally across Mesoamerica, the colonnaded gallery portion of gallery-patio complexes is the variable element, while the interior square patio with columns is the basic element (Fernández Souza 2006:375). Colonnaded halls and C-shaped rooms without any connected sunken patio or interior rooms are found at many Late Classic Maya sites, and some,

like those documented on Cozumel Island, do not show domestic artifact patterns (Sabloff and Freidel 1975:382). The excavation of Structure 5 at Isla Cerritos in 2006 and 2007 and Structure 5 at the contemporaneous Gulf coast port of Uaymil in 2004 (Cobos et al. 2005) provide some insight into the function of these types of structures and their relationship to gallery-patio structures at Chichén Itzá.

4.5.2.1 Structure 5

Archaeologist Lilia Fernández Souza excavated the north side of Structure 5 in 2006, and I excavated the south side of the building in 2007. Methodologically, the 2007 field season was a direct continuation of 2006 with only minor variations. One important difference was that all soils in 2007 were screened only through 1 cm mesh screens, rather than fine screens. No human remains were discovered in the contexts we exposed within Structure 5.

This colonnaded hall is oriented north-south, measuring 31 meters long and 9 meters wide on the north side. The structure extends east an additional 2 meters on the south end, meaning that the north end is slightly narrower than the south. This is, in part, due to an extensive bench that runs the entire length of the west wall, turns along the south wall and then turns again toward the north, continuing for 3 meters. From a bird's eye view, the bench appears to have the form of a fishhook, or reverse "J". The structure widens, not only to accommodate this turn in the bench, but also another row of columns and additional interior space between the bench and the eastern edge of the platform (Figures 4.17 and 4.18). Structure 5 is a gallery-style structure that opens toward the east and likely had a step leading up to the open side. The excavations of 12 transects across the north end of this structure in 2006 exposed both round columns (3) and square pillars (5) set in regular rows between the bench and low east wall.

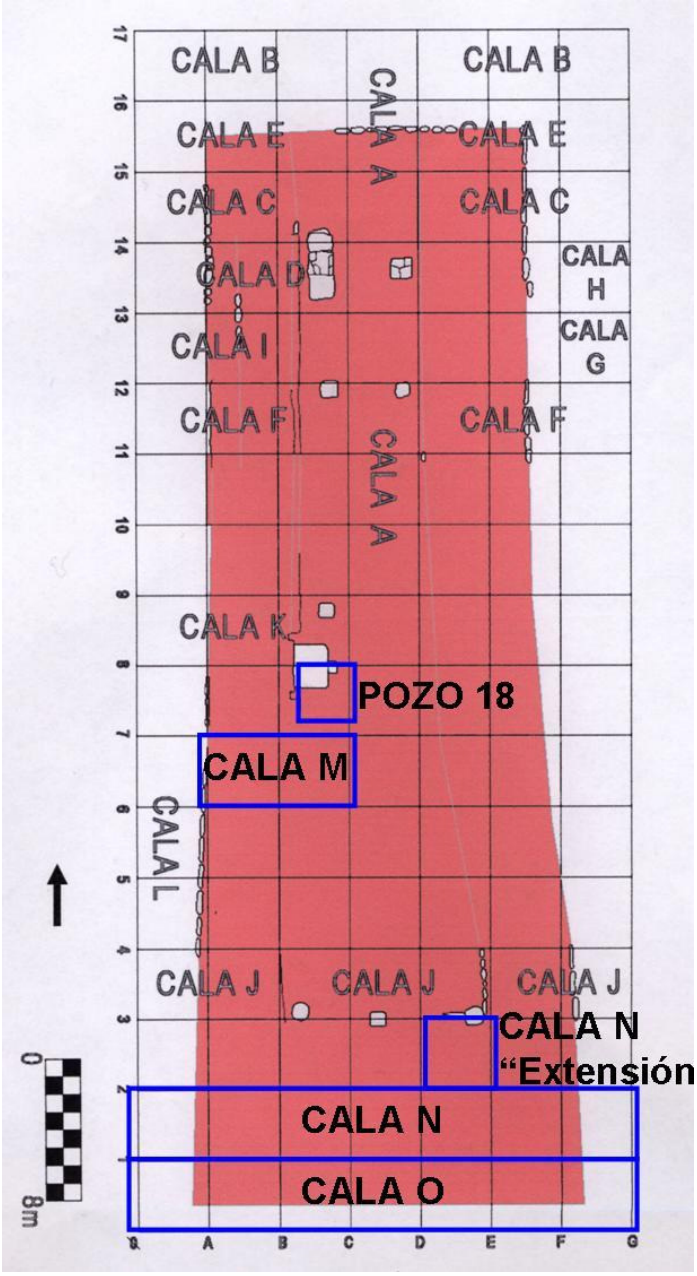


Figure 4.18: Plan view of Structure 5 showing the grid and transects ("calas") excavated in 2007, as well as the architectural features exposed in 2006. From Cobos et al. 2010.

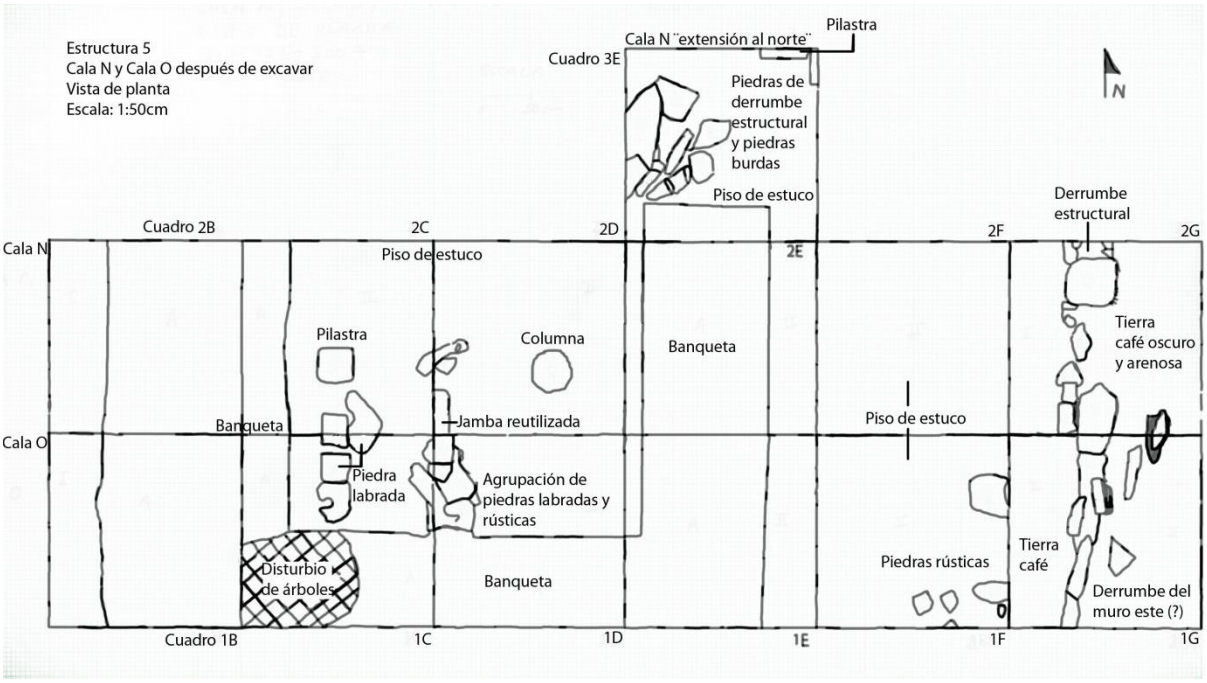


Figure 4.19: Field illustration in plan of the south side of Structure 5, the colonnaded hall, excavated in 2007, showing the south end of the stone bench, the interior pillar and column, the east wall of the platform, and informal alignments of stone reutilized from other structures as spatial divisions during the Late Phase of the Postclassic period (after 1200 CE).

Three trenches were excavated on the south side of the structure in 2007, exposing another rounded column and square pillar in situ between the eastern and western bench segments. Round columns and square pillars alternate in this room. As is the case with the colonnaded room at Uaymil, these do not appear to have been decorated, except for thick layers of lime plaster in contrast to colonnades at Chichén Itzá and Tula that feature sculpted images of warriors, sorcerers, priests, and possibly merchants (Cobos et al. 2005:249; Ringle and Bey 2009:351). No vault stones were found anywhere in association with Structure 5, and all indications are that, unlike most patio-galleries at contemporaneous inland sites, this one was covered by a flat roof made of perishable materials and not a corbeled vault.

Test Pit 1 was excavated in Structure 5 in 1985 and shows four floors, two of which are formal stucco floors that were built with the columns and pillars in association with early Sotuta ceramics. Some form of construction was present at this locus as early as the Xaumito (100

BCE-300 CE) phase, but very little of that structure remains. Our excavations focused on the latest occupation from c. 900 CE forward in time, and the latest stucco floor remains in excellent condition.

The units of each transect were excavated in three strata based on natural and cultural levels. The dark brown humitic layer was excavated to the level of a natural soil change to lighter brown soil mixed with small stone and stucco fragments (interior fill). This change corresponded to the appearance of the surface of the bench. The next level (Level III) was a "cultural layer" in that it was excavated from the surface of the bench to the level of the latest stucco floor.

Test Pit 18 was opened by the author in 2007 and proceeded to the level of an earlier (second) stucco floor (still dated to the Jotuto complex), and this floor was also well preserved under layers of architectural fill. We encountered evidence of a rounded scar cut into in this earlier floor where a column was most likely removed, and this suggests that Structure 5 contained columns throughout the Terminal Classic period and that these may have been shifted around in remodeling events that took place at the time the port was bustling (Figure 4.23). The south side of the bench was probably expanded when the latest floor was constructed and the entire south end of the structure was widened. Construction activity from the Postclassic period was also detected when cut and uncut stones, including a door jamb, were taken from other structures on the island and reutilized in Structure 5 to make rustic walls and interior spatial divisions between columns, such as the wall documented in situ between the column and pillar dividing the bench into two segments at the south end of the gallery (Figures 4.19, 4.20).



Figure 4.20: Photographs of the south side of Structure 5 after excavation , showing three sides of the stone bench running the length of the structure. The column and pillar are in situ on the stucco floor and an informal alignment of stones added later further divides the space.

An interesting architectural feature was discovered in Structure 5 inset 50 cm into the center of the bench along the west wall. Here the bench was cut and long, flat limestone blocks (larger than the wall stones used in other parts of the structure) were inserted against the wall. Between the two finished bench segments a low, rectangular platform-like feature was constructed that sits just 16 cm above the floor and is significantly lower than the surrounding bench. It was completely plastered over with lime stucco and sealed to the floor. Flush with the eastern edge of this feature is a finely cut square stone that is aligned with the center of the feature, giving it an irregular form (Figure 4.20).



Figure 4.21: Photograph of the architectural feature inset into the bench along the west wall of the Structure 5 gallery visible behind a square pillar. The circular intrusion is prehispanic. From Cobos et al. 2006.

This feature has been variously interpreted as a throne or a low altar. It is somewhat similar to square altars that are found between benches along the rear walls of the gallery portion of gallery-patio structures at Chichén Itzá (e.g., Structure 2D6) in the way that it is inset into the bench and extends out from it. However, those altars are usually nearly the same height as the surrounding bench, not lower. The low level of this feature also potentially confounds the throne interpretation, as the person "seated" on this throne would have been positioned lower than everyone else on the surrounding bench, an awkward position for an individual of high status or one carrying out official duties within this society.

Regardless of the feature's exact function, it is clear that it is located in a central place that would have been visible to anyone in the gallery and that it faces east through the columns and pillars toward the main plaza of the civic-ceremonial group. The surface of this feature was broken in ancient times by a circular intrusion 20 cm in diameter that was cut in the Late Phase of the Postclassic period when something was removed from inside. No sign of historic intrusion was present in the fill above this feature.

In 2007, I excavated Test Pit 18 in five stratigraphic levels to examine the intrusion, learn the construction sequence of this feature, and determine if any offering beneath might provide insight into its function. In order to do so, we carefully removed the stucco from the southern half of the feature, leaving the northern half of the feature in-tact for future investigation. Approximately 10 cm beneath the base of the intrusion, we exposed an undisturbed portion of an offering consisting of an eroded and fragmented stone sculpture in the form of an erect penis with testicles, measuring 27 cm in length, 20 cm in width near the forepart, and 15 cm in width in the shaft. The sculpture was placed dorsally and oriented toward the east. A large nearly complete shell and a shell fragment were placed in the same fill directly south of the sculpture. Interestingly, when the shells were later analyzed by Mauricio Germon Roche (2011:86), one was identified as Busycon contrarium and one Pleuroploca gigantea, now known as Triplofusus giganteus, or the colorful Florida Horse Conch (Figure 4.22, 4.23). Both are found along the north coast in the Gulf of Mexico, and the latter is the largest gastropod in American waters and known to have been used by Maya scribes for paint palettes.



Figure 4.22: Photograph of the phallic sculpture and shell offering beneath the southern half of the feature inset into the Structure 5 bench. Test Pit 18, Level IV.



Figure 4.23: Photograph of the phallic sculpture from the Structure 5 offering in profile.



Figure 4.24: Photograph of Structure 5, Test Pit 18, Level V showing the floor of that predates the construction of the gallery bench excavated in 2006 and 2007. A column had been removed prior to the placement of the offering beneath the "altar" feature.

These objects were found within fill between the two stucco floors, with soil that was mixed with stucco fragments and some burned material. Carbon and soil samples were collected from this fill for future laboratory analysis. Beneath the offering and fill, we exposed the second (earlier) stucco floor with the large scar from the column that had been removed during the remodeling of the building. This indicates that during the previous occupation phase, Structure 5 was an open gallery with columns.

This is not the only phallic sculpture found on Isla Cerritos. In 1985, a limestone phallic sculpture very close to the same size (27.5 cm x 8.6cm, element #IC-226:2) and also dated to Jotuto times was excavated from Test Pit 17 in Structure 13 located on the south side of the island (Cervera Rivero 1996:33).

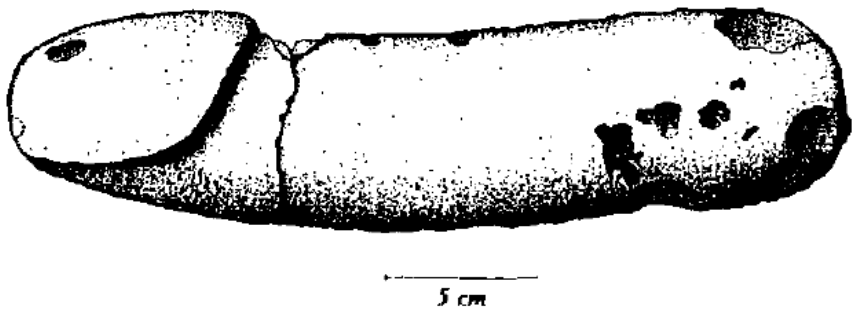


Figure 4.25: Illustration of element # IC-226:2 by Pura Cervero Rivera (1996:33), a phallic sculpture in limestone excavated during the ICAP 1985 survey season.

Phallic sculptures and depictions of penile bloodletting are common at Chichén Itzá and some of the Late Classic Puuc centers, but are very rare in Maya sculpture from other settlements in the northern Maya lowlands (Ardren 2012; Armhein 2001) and practically non-existent on the coast. These depictions are related to male fertility, agricultural fertility, and sacrifice, and it is interesting that large, exotic shells are also present in this part of the Structure 5 offering, as sea shells are often associated with female fertility and the underworld in Mesoamerican iconography (Miller and Taube 1993:152). This offering may represent a symbolic dualism of male and female fertility, also combining water symbolism with fertility, and thus tying the space to rulership (Lucero and Fash 2006:6).

The presence of this offering sanctified the platform feature that was visible to everyone seated on the bench or standing in the open gallery. The location of Structure 5 on the west side of the main plaza group, adjacent to the largest temple on the island, Structure 1, also lends credence to the idea that this building had an important civic-ceremonial role for semi-public activities. The sample of diagnostic ceramics analyzed from these excavations is significantly smaller than the domestic contexts (at just over 2100 fragments) and there were almost no lithics

found, despite consisting of a greater volume of excavated fill exposed floors. This is, in general, a strong indication that Structure 5 does not represent a domestic context. Also, the ceramic types found here include small quantities of local Xcanchacan black on cream utilitarian ollas and larger quantities of Sisal Unslipped and Dzitas slatewares popular at urban Chichén Itzá. Fine Cehpech slatewares, such as Muna slate, and imported Canbalam ceramic groups including Teabo Red, Chablekal Fine Gray, and Vista Alegre are also common. The sample also includes higher quantities of finely decorated, imported serving vessels, including Silhó Fine Orange cajetes, and Tituc Orange Polychrome and Huachinango Incised Bichrome pottery compared to other structures—a good indication that this is a meeting place where food and drink was consumed, but not prepared. This is very similar to the material culture pattern reported for the contemporaneous colonnade at the island port of Uaymil on the Campeche coast where serving vessels dominate the artifact assemblage and the remains of cooked marine species (e.g., 15 kilo fish!) were recovered (Cobos et al. 2005:249).

One function of this civic-ceremonial space appears to have been reception and meetings of community civic-religious leaders and/or visitors from beyond the island. The architectural form of the Terminal Classic phase of the building includes some characteristics that are quite similar to colonnades at Chichén Itzá, such as the open side facing the plaza, long, wide bench and inset altar. At the same time, however, the building is not part of a gallery-patio complex as per Fernandez's definition of variations on the form (2006:374-375), and the alternating square pillars and circular columns, the reverse "J" form of the bench, and the low irregular shaped altar are distinct characteristics of Structure 5 of Isla Cerritos.

The main civic-ceremonial group at Isla Cerritos includes masonry structures that were constructed on an artificial platform with packed earth floors from as early as the Late Pre-

Classic Period (c.100 BCE). Subsequent Terminal Classic period architecture, however, eliminated almost all physical traces of these earlier structures. Major renovations that established the form of this group were begun by the Late Classic period (700-800 CE), creating a miniaturized (in both height and area) acropolis group enclosed by eight structures on the terrace that formed the base of the north side of the island. By the Terminal Classic period, the main group consisted of the principal 6 meter high (total) pyramidal structure and its rear annex to the north, at least two colonnaded halls on the west and east, three low platform structures, and a radial-shaped altar/platform (Structure 7) built near the center of the plaza. Structure 3, a slightly lower pyramidal structure, encloses the plaza in the southeast corner.

4.5.2.2 Structure 3

Structure 3 was excavated by archaeologist Rodolfo Canto Carrillo in 2007 and is a five meter high mound consisting of a superstructure built on a terrace that sits on a basal platform located in the center of the island. At its base, the structure measures 25 meters long and 12 meters wide. Though it borders the main civic-ceremonial plaza group to the north, the structure is oriented toward the south, so it forms the north end of another more open plaza group formed with Structures 4a, 4b, 15, and 17 to the south. A low altar (Structure 14) in the center of this open plaza has not been excavated to determine its form or function. Just to the southwest across this plaza is a sunken rectangular feature that might be a reservoir (R1).

Two test units were excavated on the structure in 1985, including Test Pit 5 located at the southern base of the building and Test Pit 13 located in the center of the superstructure that was dug to a depth of 80 cm (see Cobos et al. 2010 for a detailed description). In 2007, Canto excavated a total of 96 additional units in two transverse trenches (Transect A and Transect B)

along the central axes of the structure, exposing a superstructure that sits on a level terrace (Figure 4.25).

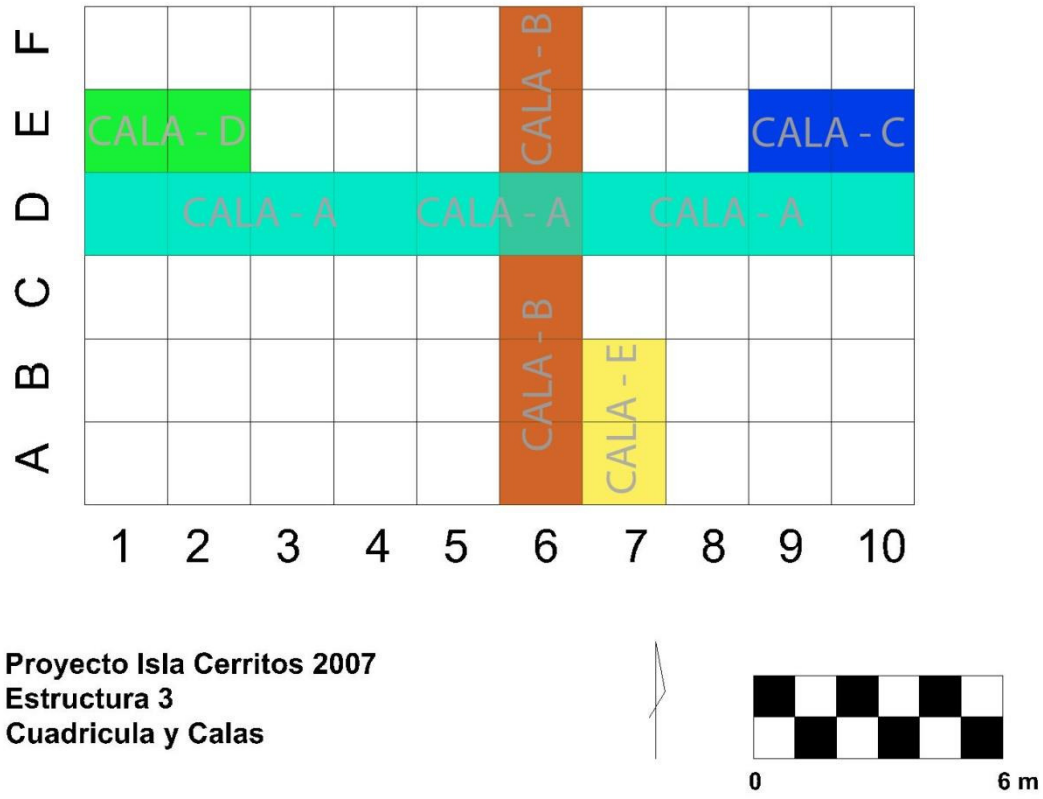


Figure 4.26: Excavation grid and units for Structure 3, ICAP 2007. Illustration by R. Canto, from Cobos et al. 2007.

Three additional transects were also excavated, two on the east and west ends of the superstructure to expose the area between these test units and determine whether a main stairway leading up to the temple from the plaza floor ever existed. In Test Pit 13, a deteriorated stucco floor was documented, along with the base of a column that was no longer in situ in 2007. This column segment was later found below the structure off the south side.



Figure 4.27: Photograph of transect A, Unit 5D of Structure 3 excavated in 2007, showing the plastered bench and inset columns of the superstructure of the temple. From Cobos et al. 2010.

The ceramic sequence documented in these test units and in the 2007 excavations indicates only a single period of occupation during the Jotuto ceramic complex (900-1100 CE). The final phase architecture was exposed through two levels of excavation, the first removing the humitic layer of dark soil that had built up over the mound and the second lighter architectural fill with uncut stones was removed to expose the underlying architecture (Cobos et al. 2010).

Structure 3 supports a temple that contains three large, completely plastered columns inset into a nine meter long bench that faces south toward the harbor and Paso del Cerro. Rather than uncovering a central stairway leading to this room from the plaza below as expected, the excavations exposed two layers of large flat cut stones sloping in talud form, beginning at the terrace and terminating in a vertical wall (the base) terminating in the plaza floor.



Figure 4.28: Photographic views of the south side of Structure 3, showing the sloping apron between the terrace and base of the structure. The superstructure with the bench and columns is visible above. From Cobos et al. 2010.

The upper bench room was accessed only by way of a small stairway located on the east side of the structure that had been dismantled in the past (Cobos et al. 2010:18).



Figure 4.29: Photograph of Unit 10D, Level II, Structure 3, showing the narrow stairway (later removed) on the east side that accessed the superstructure. From Cobos et al. 2007.

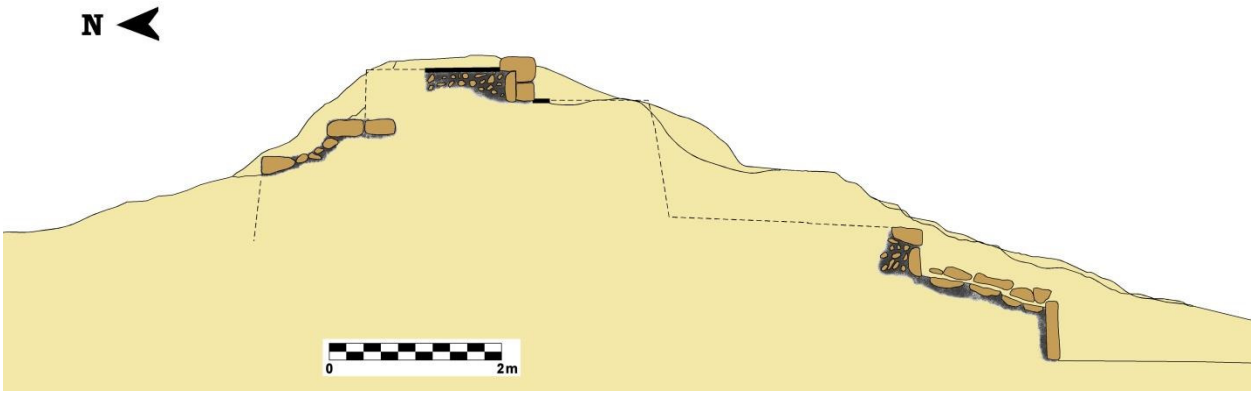


Figure 4.30: Profile illustration of Structure 3 after excavation in 2007 by R. Canto.



Figure 4.31: Photograph of the Great Ballcourt and Upper Temple of the Jaguars at Chichén Itzá. Photo by the author.

This architectural form is similar to that of the sloping apron and bench wall of a lateral structure of a Mesoamerican ball court (Taladoire 2001:104). However, there is no other parallel lateral structure to the south, only a low altar and Structure 15, also unexcavated, but in no way similar in form to Structure 3. Thus, there is no definite ballcourt playing alley. Interestingly, there are some features of Structure 3 that compare favorably to the Upper Temple of the Jaguars built on the east lateral structure of the Great Ballcourt at Chichén Itzá, albeit on a much reduced, miniaturized scale. The Upper Temple of the Jaguars faces out over the playing alley of the ball court with the entrance to the two interior rooms framed by large serpent columns that support the lintel upon which the roof is built and intricately carved serpent heads with open mouths that protrude out at the bottom. While there are steps leading from the terrace to the entrance of the UTJ superstructure that housed a large altar or throne, access to the top of the sloping terrace from the ground level is permitted only by a narrow, side stairway on the south end of the ball court structure. In Structure 3, the uncarved, round, stuccoed columns (each of which has a protruding base making them nearly "L" shaped themselves) frame the bench and would have supported a perishable roof covering both the seating area and the terrace in front. From the perspective of a person seated on this bench facing out over the terrace and talud apron from the superstructure, the access stairway is located to his/her left, just as it would be for a person facing out from the Upper Temple of the Jaguars and stepping down to the terrace of the Great Ballcourt at Chichén Itzá.

Additional archaeological investigation of Structure 3 on Isla Cerritos and the plaza directly to the south is clearly warranted to confidently associate this structure with the ball game. Certainly it could not have served as a functional ballcourt for that particular sport. W. Fash and B. Fash (2007:277) have demonstrated the strong association of ball games with

economic activity, including markets and long-distance exchange in Mesoamerica and pointed out several iconographic representations of ball game activities being carried out on temples that are not actually ballcourt structures at all. Indirect evidence in support of this interpretation also comes from the structure's location, peripheral to the main civic-ceremonial plaza, and demonstrated care in the construction of the sloping apron that Vernon Scarborough (2003:83-85) argues are both characteristics of Late Classic Maya ballcourts. The sloping terrace was constructed of two layers of finely cut flat stones, showing care and maintenance rather than a rough interior covered with thick layers of lime plaster.

It is possible that Structure 3 at Isla Cerritos represents an architectural reference to the ball game or related activities and in this way serves as a multi-use ceremonial space for the kinds of rituals of world-making/centering, mythological performances, feasting and/or political and economic events that took place in and around Maya ballcourts. Indeed, Chichén Itzá boasts the highest number of ball courts with 13, including the largest of all Mesoamerican ballcourts. Another ballcourt at Chichén Itzá, Structure 3C10, was built directly into the east side (rear) of the Red House structure. While this ballcourt has two parallel sloping aprons, only the east lateral structure actually supports a superstructure with a room and columns. Moreover, I would argue that the Great Ballcourt at Chichén Itzá is far too massive to have actually been functional for the game. Rather, it would have served as a stage for numerous other grand events, performances, ritual, and political activities that were carried out in the Great Terrace.

Throughout Mesoamerica, but especially in Maya cosmology, ball courts symbolically represented an underworld setting and were often positioned on the south side of ceremonial precincts or in topographically lower spaces than raised acropolis settings (Carrasco 1990; Mathews and Garber 2004:55). Structure 3's position at the south end of the civic-ceremonial

axis of the site and in proximity to water collection in aguadas is suggestive of underworld symbolism (Scarborough 2003). Matthew Moriarity and Antonia Foias (2007) found archaeological evidence for feasting in association with a ballcourt at the Late Classic port of Trinidad de Nosotros, and David Anderson (2012) has demonstrated the role of ballcourt playing alleys in processions and civic-religious activities as early as the Middle Pre-Classic period in the northern lowlands. Thus, precedents exist in the Late Classic Maya social world for multi-functional ballcourts, non-ballcourt architecture serving as alternative spaces for ball playing, and ballcourt architecture integrated into other forms of civic-ceremonial and domestic architecture. As will be discussed in more detail in Chapter 6, it is no coincidence that the latest phase temples, altars, colonnades, and ballcourt on the Great Terrace at Chichén Itzá were constructed c.950-1000 CE, the same period in which the final renovations of Structure 3 on Isla Cerritos also took place.

4.5.2.3 The Southern Plain

Southeast of the plaza group in the center of the island and beyond Structure 17, is a flat plain devoid of stone architecture. This southeast quadrant of the island is affectionately known as the "southern plain," first surveyed in the 1970s. The southern plain was artificially leveled and closer to sea level than the platform upon which most of the structures on the north side of the island were built. No masonry structures are visible in this area, and in 2007 we carried out a program of 10 test excavation units to look for any evidence that could shed light on what activities took place in this area or if any buried architectural features existed. One characteristic of this location is that it leads right up to the south shore, which was and continues to be a good place to moor watercraft and approach the island's structures. In ancient times, this shoreline

would have been located just 80 meters or less behind the harbor wall between the island and the mainland.

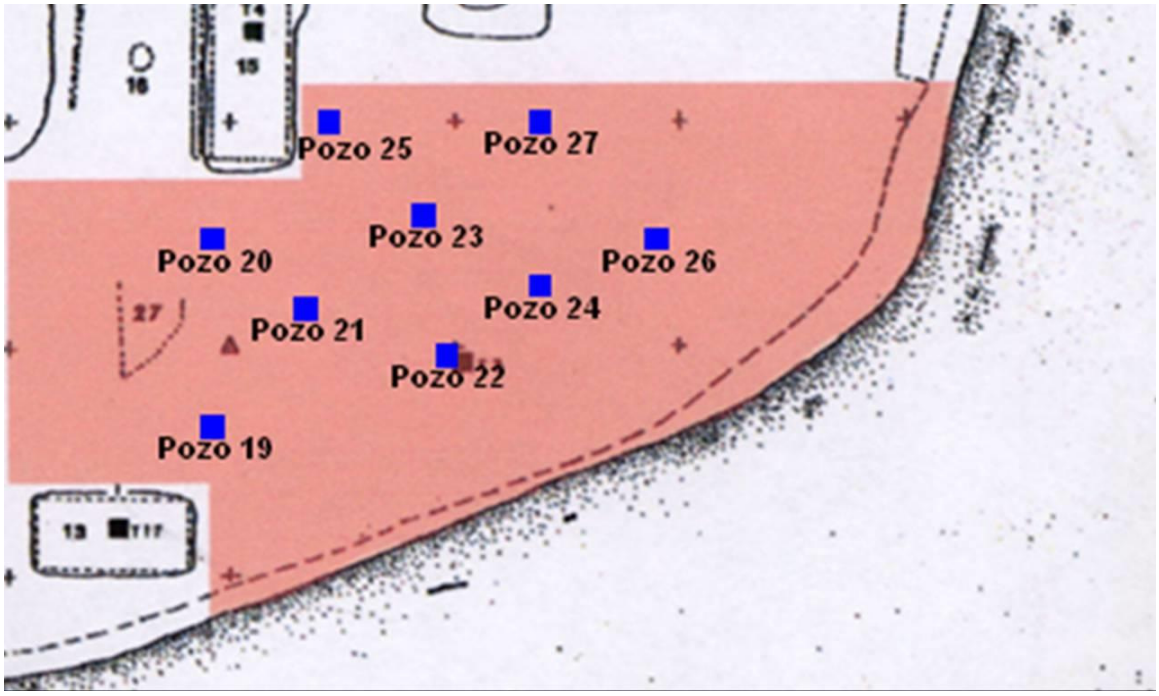


Figure 4.32: Map showing the southern plain of Isla Cerritos and the location of test units excavated during ICAP 2007.

In 1985, a single test pit located in this area exposed a vertical alignment of stones that served as a retaining wall used to artificially expand the islandscape from north to south. The cultural material associated with this test unit included wood and mangrove, and from this came a radiocarbon date of 903 CE.

In 2007, I excavated ten 1 x 1 meter units (Test Pits 19-27) strategically placed 10 meters apart in a zigzag pattern for maximum coverage over a 50 meter by 30 meter area (Figure 4.31) Each unit was excavated in arbitrary levels of 20 cm each through rich, black soil to the water line, which appeared at approximately 60 cm below datum in most of the units. Profiles were drawn of each unit, along with plan views in units where concentrations of materials or stones were present.

In Test Pit 27, located on the north side of the southern plain, an alignment of rough cut stones spaced a few centimeters apart ran north-south through the unit. Each side of this feature contained the same kind of dark reddish soil, and this alignment is consistent with that described above as a possible retaining wall which was documented farther south (Figure 4.32).



Figure 4.33: A view of the southern plain on Isla Cerritos during test unit excavations in 2007.



Figure 4.34: Photograph of Test Pit 29 on the southern plain, showing an alignment of stones that may have served as a retaining wall for building up soils and expanding the island artificially to the south during the Terminal Classic period.

No evidence of any other kind of architecture appeared in the other nine units spread across this plain. The soils in this area, however, were not in the least bit sterile. Artifact patterns are quite varied with bone (including the large bones of sea turtles), shell, ceramics, lithics (flakes and blades) and burned material (charcoal and bone) found mixed together like a midden. This is consistent with the use of dark soils and middens as fill for island expansion well underway by the early 10th century. However, this does not clarify what activities took place on the southern plain or if perishable structures were actually present in ancient times. The location is convenient for the loading and unloading of people and products from watercraft moving through the harbor and into the port or to and from the mainland components of the community. The question of whether a small marketplace may have existed in this area is still open and would require a concerted interdisciplinary investigation. Markets are mentioned at a few ports

discussed in the ethnohistorical sources (e.g., San Gervasio), but this is quite rare since markets were typically located at more densely populated and regionally central locations in Mesoamerica. A comparative study of chemical residues in soil samples from a modern market at Antigua, Guatemala and the proposed location of a marketplace at the ancient Maya center of Chunchucmil by Bruce Dahlin, Tim Beach and colleagues (Dahlin et al. 2007:363) documented similar high concentrations of phosphorous and zinc correlated to food preparation areas and vegetable stands. While this approach is subject to complications due to equifinality, a similar chemical soil study of this area could produce valuable information about another possible activity to consider in this area, as well, namely horticulture in the form of small gardens, or solares, to augment agricultural products brought to the island from the mainland. Paleoethnobotanist Mario Zimmerman (Washington State University), who assisted us with taking microbotanical samples from the floors of the residential groups, noted the presence of untended cotton growing among the plants on the southern plain (M. Zimmerman, personal communication, April 2010). This observation is interesting in light of the ceramic spindle whorls that have been unearthed in excavations in the domestic contexts of the island (Chapter 5). One of the depressed, semi-subterranean square features that may have been the smaller of two reservoirs (R2) holding fresh water is also located on the north end of the southern plain and would have been a convenient feature for irrigating gardens by taking advantage of the rich, dark soils used as fill in this portion of the site.

For a small island seaport, such as Isla Cerritos, effective water management was absolutely essential, and a complete study of this topic warrants its own archaeological investigation and dissertation. As noted above, there is no natural source of fresh water on the island, the nearest natural sources being fresh water springs, or ojos de agua, along the coastline

of Paso del Cerro. As a result, the minimum 20-50 liters of water per day needed by island residents (Lucero and B. Fash 2006:4) had to brought in via canoe or raft from at least a half kilometer away and added to fresh water stores already on the island. In my energetics estimates for the construction of the port discussed below, I do include water in construction cost calculations, but the expense of daily procurement and transportation of this resource for basic human consumption is not included. It is not surprising that the overwhelming majority of ceramic vessel forms found on the island are large ollas for storing liquids.

Water management affects the site settlement pattern in at least two ways that relate to daily life and collective identity within the port community. First, the coastal community must extend beyond the physical extent of the island itself (i.e., the officially designated archaeological site) to, at a minimum, Paso del Cerro where the nearest fresh water source is located. Therefore, the island is but one component of the larger "port community" concept with specific social, political, and economic functions and architectural elements, as discussed in Chapter 3. The location of the civic-ceremonial center and port facilities there mean that island residential groups are intentionally located near the settlement's nucleus of economic, religious, and political authority—a position associated with increased status at most Maya sites that are organized concentrically (Tourtellot 1993:228). While the variation of collective identities, occupational versus ascribed social statuses, will be discussed in more detail in Chapter 5, island residents all had access to imported water, an expensive resource.

Second, while the two subsurface depressions mapped on the island have not been investigated archaeologically, their interpretation as part of a water reservoir system makes considerable sense, as the need to store fresh water during the rainy season and coming in from Paso del Cerro was vital to island residents and visitors. The structures I have nicknamed R1 and

R2 are located at what would have been (prior to the Terminal Classic artificial island expansion) the original southern edge of the island and the first point of disembarkation for watercraft arriving from Paso del Cerro, now just south of the main plaza group and at the north end of the southern plain (Figure 4.9). It would have been easy to fill them with water from the mainland. Vernon Scarborough (2003:86) would argue that these features were also well-positioned at the margins of plaza groups and platforms to act as receptacles for water running off the acropolis platform and Structure 15 courtyard (R1) and the main platform, which sustained the residential groups on the north side of the island (R2). Excavations in the patio of the West Patio Group uncovered a long rectangular block of stone sculpted with a U-shaped depression worn smooth, perhaps a kind of drain. It had come to rest just at the eastern edge of Structure 18b and may have been used to route water from Structure 1 on the acropolis platform to the main platform, where it would continue to flow from there through the paved alleyways between the residential platforms out to the plaza and southern plain area. Artificial aguadas could also have been important components of ritual practice on the island as entrances to the watery underworld and reflective pools that could be used for scrying divination (2003:86). One of the main complexities of water management on an island surrounded by the sea is also how to prevent flooding and the contamination of fresh water by salt water coming in from the open sea to the north, and at Paso del Cerro, the opposite – to maintain the saline pools used for salt production. Clearly significant future investigation in this area is needed.

4.5.2.4 Structure 12

In the southwest quadrant of the island, six structures have been documented that tend to be oriented on an east-west axis and do not form coherent plaza groups. The exception may be

the domestic Structure 8, which might have actually been part of a residential group with Structures 10a, 10b, and 9, particularly if the latter three turn out to be oriented to the west rather than east in future investigations. On the whole, the structures in this area of the site tend to be low platforms, many of which were re-used in the Late Phase of the Postclassic period for ritual purposes. The excavation of Structure 12 in 2006 was directed by Cobos and Canto and exposed an open rectangular platform structure measuring 15.50 meters long by 8.30 meters wide. This structure is one of the southernmost structures on the island and faces south along a slightly skewed east-west axis. A small stairway leads up to the platform. Test Pit 16 from 1985 was excavated near the center of the structure to a depth of 2 meters, and three formal stucco floors, now partially preserved, were documented (Cobos et al. 2007:78-80).

Chronologically, it appears that Structure 12 was first built and used in the Chacpel ceramic complex (700-900 CE) and acquired its current form by the Jotuto complex (900-1100 CE), when the port reached its maximum occupation. Nine transects were excavated with a total of 96 units to expose the Jotuto occupation and determine its construction sequence and possible function. Three natural / cultural soil levels were recorded, including a layer of rustic and cut stone that may have been intentionally placed on the platform at the end of the building's use-life. Over the Jotuto floor, Burial 15 was discovered inside an alignment of stones in the form of an informal cist. This burial consisted of the remains of an infant positioned in a large ceramic tecomate with a strombus shell offering placed next to the vessel (Figure 4.34).

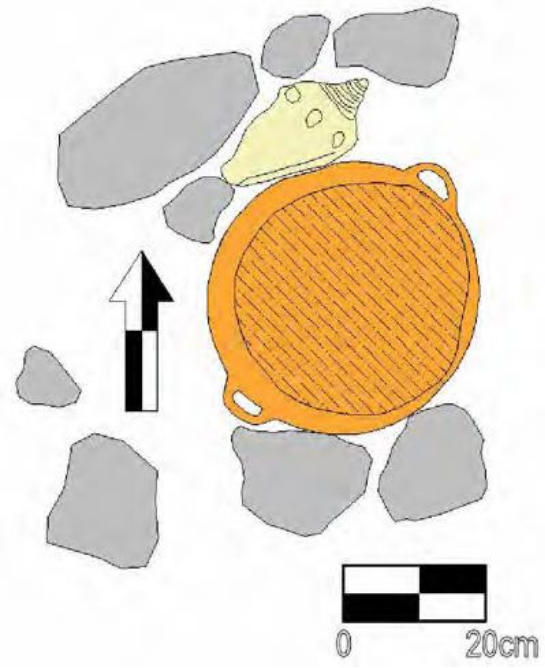


Figure 4.35: Illustration of Burial 15 ceramic and shell offerings in Structure 12. From Cobos et al. 2006.



Figure 4.36: Photograph of a second complete Navula group tecomate found in Structure 12. From Cobos et al. 2006.

This offering, along with another Navula group ceramic vessel nearby, date to the Postclassic period after the fall of Chichén Itzá. As will be discussed in more detail in Chapter 5, Navula group ceramics are ubiquitous utilitarian ceramics in the region after 1100 CE, but at Isla Cerritos, we find a considerable variety of these types of tecomates that appear to have been produced locally and continue to be used into the very late Postclassic and early Colonial period on this part of the coast, even after this technology is virtually abandoned inland. For one, this indicates that structures at the port continued to be used for various purposes well beyond the political collapse of the inland cities of Chichén Itzá and Mayapán.

The north wall of Structure 12 was made from huge limestone blocks 80-90 centimeters in height that supported the large 90 cm-wide bench built out of uncut stone (once covered generously with thick stucco) along the wall. The stucco that covered the bench is not well preserved here due to significant erosion, but there is some indication that there may have once been a roof constructed of perishable materials that covered only the bench space (1.5 x 6 meters) at the north end of the platform. The rest of the platform appears to have been an open area of 90 sq. meters, and likely had a public administrative function, perhaps having to do with reception or supervision of port activities (Cobos et al. 2007:104). The bench faces the south end of the island and the mainland (Paso del Cerro), as well as the harbor wall or wharf, approximately 100 meters to the south of the platform. It is also oriented toward a small dock on the south shore of the island, and may have been one of the first formal platforms (in addition to Structure 13) encountered by anyone disembarking from watercraft moored on the south shore of the island from c. 800 CE and later.

4.6 Port Facilities and Maritime Trade Networks

As Sabloff and Freidel (1984:371) pointed out many years ago, trade and trading centers in Mesoamerica have been identified primarily by the presence and distribution of artifacts of long distance origin, but the physical traces of port facilities that are the material evidence of trading institutions that structure the exchange networks are much more elusive. Isla Cerritos is still one of the few Maya coastal ports besides Cozumel, Xcambó, Emal, Jaina, Uaymil, Wild Cane Caye, and Punta Ycacos (e.g., the K'aak' Naab saltworks) where archaeological evidence for port facilities have either been pursued or documented and has the potential for more extensive investigation. The theoretical model for the pre-Columbian trading port developed by Rathje, Sabloff, and Freidel using Cozumel Island as a case study and, in part, building upon Chapman's (1957) discussion of Mesoamerican trading institutions, identifies the presence of permanent docking, warehouses (storage structures), market places, and factories as material-architectural signatures of these institutions (Rathje and Sabloff 1973; Sabloff and Freidel 1984:371). At many Maya ports, including Cozumel, most of these are not readily identifiable in the archaeological record. At Isla Cerritos, however, particular port facilities have been identified. In this section, I discuss the archaeological evidence for port facilities on the island and how they are integrated into the site settlement pattern with implications for how the coastal Maya organized the social setting for exchange within the port community.

In June 2006 and March 2007, underwater archaeologist Guillermo de Anda Alanís, with the assistance of UADY undergraduate students, conducted an underwater archaeological survey of the offshore features near Isla Cerritos, many of which were originally documented during the 1984-85 field seasons. Due to tidal variation and wind shifts, water depth and visibility fluctuates through the course of the day with a maximum visibility underwater of 15 meters early

in the morning versus 3 meters in the afternoon. High tides in the afternoon raise the water level to 1.5 meters in some places, but overall water level is low around the island. In 2006, the underwater survey team focused on the 330 meter stone alignment located 80 meters south of the island that has been variously called a "sea wall," "dike," and "dock" in the literature (Andrews et al. 1984; Andrews 1990, 2008; Gallareta Negrón 1998; Cobos et al. 2007).

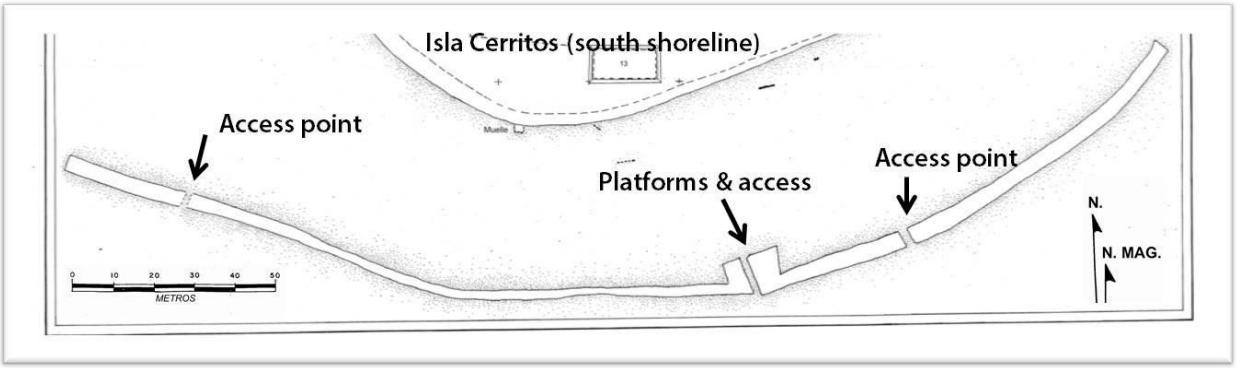


Figure 4.37: Modified map of the offshore stone alignment between Isla Cerritos and Paso del Cerro (now submerged) that may have served as a wharf or harbor wall for watercraft accessing the port. After Statz 2014.

While some arguments have been advanced that this feature served as either a defensive wall (W. Folan, personal communication, 2010) or a wave breaker (Sharer 2006), its location off the south side of the island in calm waters suggests a function related more directly to controlling maritime traffic and port activities. In low tide today, the stones of this feature practically break the current waterline, and in ancient times, it likely stood much higher out of the water.

Snorkeling archaeologists carried out the underwater survey by moving along three transects in a zigzag fashion on both sides of the alignment. By 2006, the feature was almost completely covered by sand from the sea bottom, in addition to corals and sponges, and the visibility of the stones themselves was much reduced from 1985. This may be the result of ten hurricanes of various levels of strength that have passed within a mile of the island in the past 25 years (Cobos et al. 2010:17). In several places along the feature, the alignments were more

formal with stones equidistantly spaced. Several stones in the alignment also had regular orifices 2 cm in diameter with evidence of wear, such as raised ridges, that are likely the result of rope or cords having been repeatedly tied or run through them (Figure 4.37).

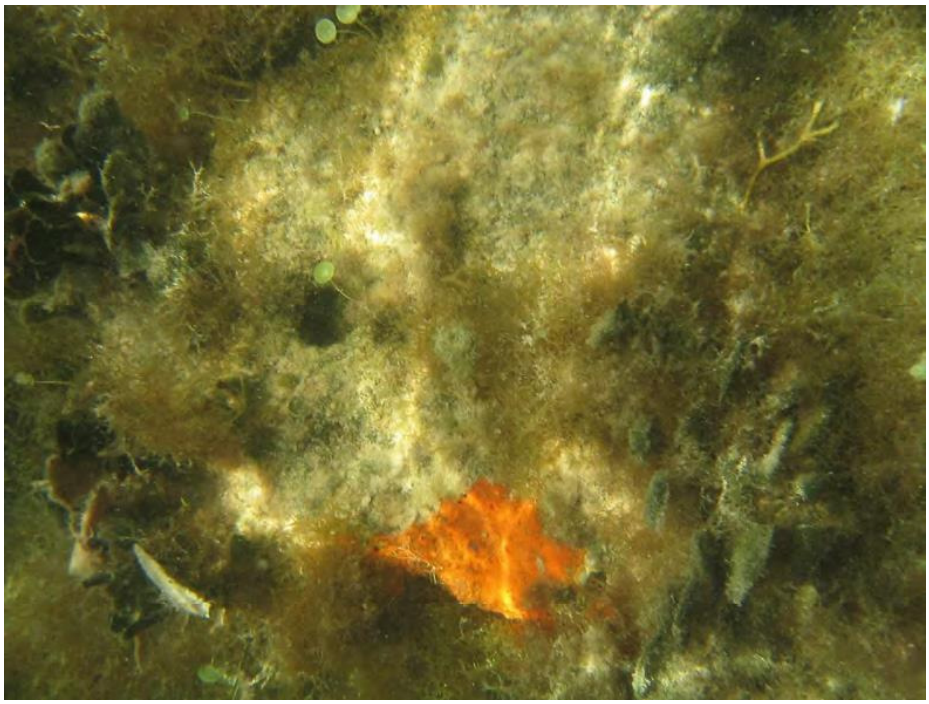


Figure 4.38: Detail of one of the stones of the submerged dock or wharf feature showing residual wearing from cord or rope that were documented during the underwater archaeological survey, ICAP 2006. From Cobos et al. 2006.

This stone barrier that follows the arc of the island has three openings which would have provided access between the island and the mainland for small watercraft, such as canoes. The central opening is flanked by two wider platforms that may have supported superstructures at some point in their history. These features, though not conclusive, are indicators that part of the function of this stone wall was to act as a mooring place for watercraft moving between the mainland, island, and along the coast. It also served to control the flow of traffic along the calm seas between the island and the mainland, creating a both an artificial harbor and wharf for the

island (see Andrews 2008:20). At least two stone alignments closer to the island shore on its west and south shores would also have served as docks or slips for watercraft.

In 2007, the underwater archaeologists identified only one other submerged structure between the submerged wall and the mainland. This is a roughly rectangular 6 meter by 8 meter stone alignment located 220 meters south of the island at a maximum depth of 60 cm under the surface. This feature was staked out using the equivalent of underwater flagging pins and mapped in detail. The construction is made of a combination of dressed limestone blocks and rustic stones. One of the blocks has a carved orifice running through the stone that creates a ring through which something could have been tied. Ceramic sherds litter the area in and between the stones, indicating that it was an intentionally constructed prehispanic structure and that it dates at least the Jotuto period (900-1100 CE). Due to its roughly square shape, de Anda suggests that it might be an altar, but since nothing comparable has been documented underwater in the area, its true function remains enigmatic (Cobos et al. 2010:116).

The underwater features of Isla Cerritos provide the archaeological evidence that the Terminal Classic Maya here invested in infrastructure to facilitate water navigation, control traffic between the island and mainland portions of the community, and thereby enhance the efficiency of regional and long distance trading networks already in place. In their port of trade model, Rathje and Sabloff (1975:7) distinguish between seasonal trade and regular non-seasonal trade on Cozumel. The former refers to the movement of perishable commodities that are either harvested / produced seasonally or must be transported during the dry season (e.g., cotton fabrics, honey, etc.). The regular non-seasonal commodities, such as salt, stone and minerals, ceramics, slaves, gold and other metals, shell, etc. can be shipped all year. Each of these broad categories should be further qualified as regional trade goods versus long-distance exotica, the

former referring to the exchange network of local marine products moving inland in exchange for agricultural and forest resources which was probably the backbone of the system (McKillop 2002). The location of Isla Cerritos at the northern extreme of the Yucatan Peninsula put it directly in the center of the salt production zone and the maritime trade routes moving along the coasts and wetlands. Products moving in from the west included turquoise, pyrite, hematite, most but not all ceramics, basalt, Mexican obsidian, chert, cotton textiles, slaves, and from the east and south came cacao, copal, Guatemalan obsidian, jade, gold, spondylus shell, Caribbean shell, and less ceramics. Local products included north coast shell (worked and unworked) and marine resources, salt, honey, and perhaps utilitarian ceramics. There is no doubt that at least some of the porters depicted in the coastal village mural are working the regional exchange networks along the coast and just inland.

Smaller dock facilities on the south shore of the island would have also provided mooring for small watercraft, such as rafts, assisting in the transport of bulk goods from canoes moored along the wharf to the southern plain at times of high tide. There is also a dock on the west shore where watercraft could easily reach domestic Structure 8 and/or the area behind the main civic-ceremonial group (and Structure 5). Because the transshipment of fresh water and local products within the regional network would have produced the most sea traffic, controlling access from the mainland and Paso del Cerro would have been a primary function of the main wharf. The construction of at least one (documented so far) artificial canal on the mainland at Paso del Cerro that is cut inland toward Chinalco is another indication of the importance of the regional trade network and connecting the three components of this coastal community discussed in Chapter 3. Artificial canals are another reported feature of Maya port complexes (Andrews 2008:29).

The harbor wall south of the island with its large central platforms, possibly supporting wooden superstructures at one time, is simultaneously a facilitator of communication and a barrier to access from the mainland (Andrews 2008:20). In some ways, this is an ancient and cross-cultural characteristic of ports that often had a physical barrier separating the setting of exchange from the larger community around the port and/or the hinterland. In Greek emporia or the Assyrian karum trading enclaves of Anatolia, the area of exchange, storage, and lodging for visiting merchants was kept separate from the rest of the settlement as a way of maintaining security under enforcement not of secular law, but the sanctity of the space. This "protection of the shrine" promoted neutrality within these settings, allowing enemy states to continue to carry out economic transactions while restricting the space for cross-cultural interaction (Revere 1957:52). A similar pattern of restricting access between designated port facilities on the coast and the interior is also apparent at other Classic - Postclassic Maya ports, some of which grow increasingly nucleated with massive defensive walls over time. At the island petén of Vista Alegre located to the east of Isla Cerritos on the north coast, a tall and wide (over 2 meters) stone wall, also referred to in the site report as a sacbé, or causeway, follows the curve of the island on the south end, dividing the port from the mainland Yalahau wetland region to the south (Glover et al. 2011). Other examples occur at the sites of Río Azul, Xelhá, and Trinidad de Nosotros on the shore of Lake Petén Itzá in Guatemala (Andrews 2008:21; Moriarty 2004). In a similar fashion to the harbor wall at Isla Cerritos, these walls have platforms along the top where superstructures once served as watch towers or outposts for guards / officials responsible for controlling access. While noting the antiquity and frequency of this tradition, Anthony Andrews (1990:166) implies that defensive walls may also be indicative of a link between a port and a powerful inland polity seeking to protect its harbor facilities. One of the functions of these

structures was certainly security, but they allowed the port keepers to prevent port visitors from accessing the mainland territory, as well as protecting the port from inland invasion. That is, the coastal residents could cut off the route of access from the inland polity as well, although at Isla Cerritos a prolonged separation of the island port from Paso del Cerro would not have ended well for island residents do to the need for water.

The date of construction of the underwater features at Isla Cerritos is not confirmed, but the associated ceramics found to date are all Late/Terminal Classic Cehpech-Sotuta groups. The Harvard-Arizona Cozumel Project in the 1970s associated site nucleation on that island with the late Postclassic Period, after the fall of Chichén Itzá and during the heyday of Mayapán in northwest Yucatán. These features at Isla Cerritos and Vista Alegre suggest that this kind of architecture was already a common part of port facility design and not a response to changing mainland politics.

Storage structures, or warehouses, are also exceedingly difficult to identify in the archaeological record at Maya ports. In part, this is due to the fact that the objects stored in bulk were often perishable materials that no leave no substantive residue (Sabloff and Freidel 1975:384). On Cozumel, storage facilities were tentatively identified at Buena Vista and La Aguada as structures with long (some c.30m on a side), rectangular basal platforms built with large, roughly cut stones to keep whatever was stored inside high and dry, and superstructures with multiple small rooms (Sabloff and Freidel 1975:384). At Xcambó, round subterranean, stone-lined storage units have been surveyed in the elite residential and civic-ceremonial groups at the site, but no interpretation has yet been possible as to what these once held (Sierra Sosa et al. 2014), thus in both cases we lack positive evidence to bolster the interpretation. At Isla Cerritos, one logical location for Jotuto ceramic complex phase storage or warehouse facilities

would be on the south side of the island, just west of the southern plain. Of the five low platform structures (Structures 12, 13, 26, 27, and 28) mapped in this area, only Structure 12 has been thoroughly investigated and identified as an administrative structure with a short bench and central stairway. Thus, further investigation is necessary of the other structures to identify any evidence that they served a strictly storage function at the port.

In the residential area on the north side of the island, Structure 23 contains multiple rooms, including two open rooms facing toward the plazuela to the north. In these rooms, high quantity concentrations of north coast shells, many semi-worked, were recovered in 2007 excavations – so much that we needed to take representative samples from each unit rather than curate all of the ecofacts that could be recovered (Germon Roche 2011). As will be discussed in Chapter 5, this context indicates that shell is one of the few artifact classes correlated with production activities on the island and these domestic spaces might also have been used as storage rooms for used mollusk shells that would be later worked into finished tools, instruments, or other products valuable for local use and in regional trade. While Sabloff and Freidel (1975:403) make reference to "factories" in their description of Postclassic trading center infrastructure, there is little evidence, with the exception of saltworks (McKillop 2005a), for specialized production beyond the household scale at Isla Cerritos.

As discussed above, the presence of an ancient market on the island or mainland is also unknown, although open plazas and leveled areas like the southern plain are possible loci to investigate. Ethnohistorical sources report two Late Phase Postclassic sites (Cachí and Chauacha) on the Caribbean coast of northeastern Yucatán that featured thatch-roofed market structures in association with plazas at the time of contact (Roys 1943; Sabloff and Freidel 1975:371). Unfortunately, there is still no clear correlation between either artifact patterns or

architectural form to warehouse or market functions at port sites. Only a combination of broad excavation and multiple lines of evidence from lab analyses can help clarify this issue.

In Chapter 2, I echoed Andrews' (1980a; 1990:164) critiques of the previous applications of port-of-trade models to Mesoamerican sites as too restrictive and frequently inappropriate for the kinds of archaeological and historical data we have access to still holds true (cf. Berdan 2003; Chapman 1957; Rathje and Sabloff 1973, 1975). At the same time, some of the characteristics of trading settlements outlined in these models are useful for interpreting the settlement pattern, identifying architectural elements and spatial configurations, as well as the social organization of port communities. For example, a common reference in the literature is to the prevalence of religious shrines and ceremonial architecture at ports to encourage and serve a variety of visitors, and as a method of reducing the potential for conflict by sanctifying the space by supernatural power, rather than using a police force or the administration of any one state (Andrews 1990:162; Patel 2005:99; Rathje and Sabloff 1975:7). Within this coastal community, civic-ceremonial plaza groups, temple structures, altars, and port facilities are combined on the island, bringing religious, administrative, and economic practices together in a small space. Of the largest pyramids on the island (Structures 1, 3, 20, and 21), only Structure 3 has been excavated thoroughly, and we argue that it may represent a symbolic ball court structure and/or a miniature reference to the Upper Temple of the Jaguars at Chichén Itzá. Structure 1 is the principal pyramid of the site and forms the main symbolic mountain around which the radial altar (Structure 7), two colonnaded halls flanking it, and three other structures that form the largest plaza group are oriented. The two temples (20 and 21) in the northeast corner of the island have not been excavated either. They may have served as the eastern shrine(s) for the northern residential groups, and there appears to be a round altar located on the plaza floor

between them, bordering the open plazuela space of the residential group. At the same time, these temples frame the eastern horizon over the sea and may have had other religious meanings and ritual uses. In addition, if the superstructure of either temple was oriented toward the east, they would have provided an unobstructed view to the prehispanic port of San Celso, near the present day town of Río Lagartos at the mouth of the estuary leading to the principal salt flats. A modern lighthouse signals to watercraft from the end of that peninsula today, and we know from ethnohistorical accounts that Cozumel's coastal shrines also served as watch towers where fire signals could be used to communicate between the ancient ports (Sabloff and Freidel 1975:403). Since Isla Cerritos is the only coastal site between Dzilam and Emal that features civic-ceremonial plaza groups and pyramidal structures, it likely served as a religious center as well for the other coastal settlements along the estuary.

When the port facilities are integrated into our overall understanding of the settlement pattern at Isla Cerritos and the macroanalysis of the region, it is clear that Isla Cerritos is a Maya maritime port complex that conforms to at least three, and possibly up to five of the non-mutually exclusive functional types outlined by Andrews (1990) in his seminal paper for Maya ports. The seven types he describes are: coastal communities, religious coastal centers, island necropoli, ports of embarkation to offshore islands, ports-of-trade, coastal transshipment ports, and sea ports of inland polities. Isla Cerritos fulfills the requirements of a coastal community that participated fully in local and regional exchange networks, a religious coastal center, and a coastal transshipment port for commodities moving east and west, as well as in to the interior of the peninsula. It is also likely that for at least two centuries, it served as the principal sea port for the inland polity of Chichén Itzá, but we will return to a more nuanced discussion of the nature of this relationship in subsequent chapters. While the site does exhibit some of the

characteristics, beyond the presence of long-distance trade goods in the material record, outlined in traditional port-of-trade models, the utility of these models for Mesoamerica is quite limited.

4.7 The Islandscape and its Built Environment

Below most of the structures excavated thus far on Isla Cerritos there is evidence of earlier construction and, in some cases, extant portions of masonry substructures. While very early plastered and packed-earth floors (Pre-Classic and Early Classic) were recorded in the test excavations from 1985, architecture pre-dating the Jotuto ceramic complex was rarely uncovered in recent excavations, although what has been documented can be dated to the Late Classic period Chacpel ceramic complex. It seems that a significant overhaul of architecture occurred at Isla Cerritos between 800-900 CE and then again from 950-1050 CE, with frequent remodeling and construction continuing during the Terminal Classic period and into the Early Phase of the Postclassic period. Most of the extant masonry architecture was in place with the layout as we see it today by 900-1000 CE, and the Terminal Classic re-orientation and construction destroyed much of the earlier architecture.

The islandscape was also expanded artificially by the Maya by progressively adding soil, refuse, and organic material in a similar fashion to soil building practices used throughout Mesoamerica, such as terracing and chinampa agriculture. The coastal residents of the San Blas islands on the border of Panama and Colombia provide the best ethnographic analogy for the process of island expansion we documented in the southern plain excavations at Isla Cerritos (Andrews et al. 1989; Dillon 1984). There, families described by Dillon (1984:57) as "worldly-wise intermediaries in trade" cooperate to build the island out from the shoreline by laying down coral retaining walls in the water up above the high tide line, laying a base of corozal palm

fronds down and filling the wet area in with a mix of soil, sand, and trash from the mainland to cover the retaining walls. On Isla Cerritos, retaining walls were lower and consisted of uncut limestone. Alignments of stone like this either parallel or perpendicular to the shoreline are still visible off the current shoreline of the island and a few alignments of stone were exposed in the southern plain test excavations. We believe that the natural bedrock base of the island is on the north half, while the area from Structure 15 south was likely artificially expanded in the Terminal Classic period. As discussed above, the rich, black soil containing organic and inorganic refuse mixed in that we found on the southern plain would slowed erosion. Most of these landscape expansion activities can be dated to around 800-900 CE with one absolute radiocarbon date of 903 CE from this context. The stone alignments that have been mapped beyond the current shoreline of the island represent terraces for expansion that were either never completed or the subsequent extension has eroded away over time. If the latter is the case, the total area of the island might have been larger in ancient times.

The artificial expansion of the islandscape represents a significant investment of resources and human labor in the construction and maintenance of this port, especially when we consider that most of the building materials, including huge limestone blocks, wood, lime plaster, soil, and huano for thatched roofs, etc. had to be transported to the island from the mainland. Somewhere between 800 and 900 CE, the role of this port within coastal and inland trading networks must have changed with the strategic value of the island increasing within the economy to the point that the returns matched or surpassed the investment.

Someone approaching the island at this time from the mainland portions of the community at Paso del Cerro and Chinalco via the coastal canals and then the wharf and harbor would have entered the site via the most proximate shore near Structure 13, or through the

southern plain area. Prior to 800 CE, the southern shoreline of the island may have been just beyond the Structure 15 platform complex, with its open courtyard and round altar facing south, and the larger of two reservoirs just to the west. Following the former route north, or from anywhere on the southwestern shoreline, would have led to Structure 12 and beyond the reservoir and plaza south of Structure 3 into the main civic-ceremonial group. Structure 3 would have been visible in the center of the island with Structure 1 also visible rising above all the other structures in the distance. Moving north from the southern plain would lead one past the long range structure (Structure 17) and the square reservoir to the residential groups clustered on the north end of the island. Bordering the residential plazuela group, there is an open space with a round altar and the dual temples (20 and 21) rise above the northeast corner of the island framing the horizon and eastern sea. In the next section, I provide energetics estimates for the amount of person-days of labor required to build the different structures and expand the islandscape artificially.

4.8 Port Construction Costs: Energetics and Population Estimates

While Isla Cerritos may have been marginally larger in extent in prehispanic times, the current area of the island port is 3.15 hectares. With 36 confirmed masonry structures, this is a highly constructed landscape that represents a significant investment in human labor, ingenuity, and material resources. An important question is how to quantify this to determine whether the small resident population of the port would have been able to build and maintain this part of the settlement without assistance from a large corvée labor force amassed from an inland regional center that invested in and controlled the port. This is directly relevant to further clarifying the relationship between this sea port and the inland center of Chichén Itzá over time, specifically as

regards the degree of political and economic control the Itzá state had over the port, its dependency on this center's administration to maintain port functions (Andrews 1990:164; Cobos et al. 2005:248). As will be discussed in Chapter 6, multiple lines of evidence suggest that the rise of Chichén Itzá as a regional power in the northern Maya lowlands during the Late and Terminal Classic period significantly affected Isla Cerritos and other Gulf coast and Caribbean ports, but the question of whether an Itzá military, administrative, or even colonial presence was established at this port remains unanswered.

Energetics estimates are one way that archaeologists have used architectural, spatial, and material culture data to study labor as a social practice and economic investment, connecting both to social organization, as well as political power (Abrams 1994; Carrelli 2004; Erasmus 1965; Ringle and Andrews V 1988; Shelach et al. 2011). Over the years, methods have been refined in the Maya area to more effectively translate the various architectural elements of built space, the processes involved in construction, structural volumetrics, and raw materials into their "energy equivalents" (Abrams 1994:xi). The common unit for translation to energy cost is Person-Days (PDs), or the number of work days required for 1 person to complete each task (Carrelli 2004:114). Fortunately, the Maya region is one of the places where architectural energetics has been employed most effectively over the course of several decades. For the purposes of this research, I combined methods from Erasmus' (1965) analysis of labor investment in the construction of Uxmal in the northern Maya lowlands with Abrams' (1994) comprehensive study of the energetics of construction in the residential zones of Copán, Honduras. I also incorporated the useful updates to Abrams' approach utilized by Carrelli (2004) for the Copán Acropolis and Gonlin's (1993) calculations for simpler, perishable domestic structures. Erasmus' (1965) study of Uxmal provides the relevant ethnographic data on

stone quarrying, woodcutting, and the speed of manual cargo with Yucatek Maya informants that provide the foundation for acquisition and transportation estimates for limestone, sascab, and lime plaster aggregates—materials used in construction at Isla Cerritos (versus volcanic tuff which is the preferred stone in the Copán Valley). Abrams (1994) further refined transportation estimates by factoring different speeds for traveling with cargo and returning without, as well as the maximum quantity of raw materials per load, and provided estimates that take into account variability in rates of construction for different kinds of architectural features and the differential level of care required for these. Finally, Carrelli (2004) added in calculations for the additional energy cost involved in the production of argamasa (mud mortar), water for mortar and wet-laid fill, the construction cost of laying lime plaster, and maintenance costs involved in remodeling and building over earlier structures.

For Isla Cerritos, I calculated the cost in PDs of acquisition (or the procurement of raw materials), preparation (also referred to as production or manufacture) of the materials, transportation, and construction for each material type or aggregate used in the architecture. One difference in the case of this island setting is, of course, the separate calculations required for sea and land transportation. Raw materials have to be transported by human power over land to Paso del Cerro, and there loaded into canoes destined for the island located 500 meters north. They must then be unloaded and moved over land within the island to the construction site. For ease of presenting the data, I combined all transportation over water into one value (sea) and all transportation over land into another value (land), with loading/unloading cost (practically negligible anyway) added to sea transport. Preparation includes stone cutting/sculpting, lime plaster preparation that takes place at a distance from the construction site. For acquisition, preparation, and transportation, a PD is estimated to be 5 hours, while for construction, a PD is

the equivalent of 8 hours, following Abrams (1994). Energetics estimates were calculated for all structures on the island, the main platform and acropolis platform upon that were built to support the groups on the north side of the island, the main wharf / harbor wall, two docks, reservoirs/sunken features (R1 and R2), and the artificial island expansion to the south. Energetics tables for select architectonic features and the island as a whole are presented below.

Some building materials used at northern Maya coastal sites, such as conchuela (a compact mix of salt water, shell, and sand sometimes used for fill or to make rough blocks), shell, chich (small stones), and sascab that were used in platform fill and subfloor fill were substituted in the equations used by Abrams (1994) for materials of similar weight more commonly used at Copán for like purposes (e.g., river cobble, burnt lime in fill, argamasa). I follow both Carrelli (2004) and Abrams (1994) in using a single constant of 44 PD/m3 for the preparation of lime plaster, one of the most costly processes in Maya construction, that combines the acquisition with cost of mixing, boiling, and preparation.

We have different amounts of information about the architecture of Isla Cerritos depending on which structures have been subject to archaeological testing and excavation and which have only been mapped or partially mapped. In calculating energetics, I always used as much information as was available from previous excavations and maps of Isla Cerritos, but in the absence of direct evidence, I made cautious estimates based on indirect evidence and comparison with similar architecture types from other Maya sites. The architectural features analyzed here can be grouped broadly as underwater features (port facilities), island platforms, island expansion, unexcavated mounds, unexcavated masonry structures, unexcavated civic-ceremonial structures, and excavated structures. We do not have enough information yet about substructures on the island to take a diachronic approach for energetics as Carrelli (2004:115)

does using the substructures of the acropolis at Copán, so only the last phase of architecture is included in these estimates. The exception to this is when excavations have identified lime plaster floors—all are taken into account in the building cost estimates. In the case of unexcavated mounds, they are assumed to consist of stone and fill platforms with entirely perishable superstructures. If tested, the 1985 profile is used to calculate platform level and floor construction costs. If untested, the platform volume is estimated using topographic maps for height and the Maler-style map for platform dimensions. Unexcavated masonry structures are generally higher mounds with visible cut stone in association with a superstructure. For these structures and for unexcavated civic-ceremonial structures, I calculated minimum and maximum energetics estimates where the maximum assumes that superstructure walls and columns were built entirely of masonry, while minimum estimates are based on walls that are half masonry, half perishable (wattle and daub). Again, all roofing on the island is assumed to have been palm thatch, usually pitched hip roofs similar to modern palapa structures still used in Yucatán today (Wauchope 1938).

Construction costs of interior features such as benches, niches, windows, altars, etc. are added as "construction of features" values, again using a constant by Abrams (1994). I always use the maximum values for these structures in the tables presented in this thesis and in my calculations of total cost of island construction. In Table 4.1, I summarize the cost estimates for the construction of Structure 1 and the small platform/altar behind it, referred to here as the "annex."

Table 4.1: Labor estimates for the construction of Structure 1 and annex on Isla Cerritos.

Str. 1+Annex				**Total Person-Days**	**91422**
Platform	**28x19x5 meters Acquisition (PDs)**	**Preparation (PDs)**	**Transportation (Land) (PDs)**	**Transportation (Sea) (PDs)**	**Construction (PDs)**
Cut limestone	3992	1029	25130	206	2661
Earth	293	0	17664	136	8506
Shell and Chich	57	0	467	61	
Sascab and/or conchuela	124	0	11497	51	
Water	496	0	112	36	
Lime plaster	---	9108	4798	46	828
Totals	4962	10137	59668	536	11995
Superstructure	**10x4x2.5 meters Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Veneer limestone	99	26	623	5	66
Wall fill	15	0	255	1	14
Water	6	0	1	0	0
Wood/Huano Thatch (roofing)	70	0	86	0	6
Lime plaster	---	792	417	4	72
Totals	190	818	1382	10	158
Annex	**7x3x2 meters Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Cut limestone	63	16	395	3	42
Earth	4	0	277	2	134
Shell and Chich	1	0	7	0	
Sascab and/or conchuela	2	0	184	0	
Water	8	0	1	0	
Lime plaster	---	264	138	1	24
Totals	78	280	1002	6	200

In this table, note that costs of acquisition, preparation, transportation, and construction are separated for the platform, the superstructure temple, and the associated annex just to the north of the structure and then added together for the total labor estimate for the structure of 91,422 PDs. Fresh water values are separated out for wet fill in the platform and for the mix of water, sascab, earth and sand used in argamasa, but additional water values are subsumed within wattle and daub construction costs (Gonlin 1993) and lime plaster (Erasmus 1965, Carrelli 2004).

Overall, then, water estimates are likely to be slightly underestimated. In architecture with wattle and daub construction, the roofing is included in the wattle and daub construction cost calculation (see Gonlin 1993), but the perishable materials (i.e., wood and thatch) used are factored in separately for acquisition and transportation costs.

The most significant cost differences for Isla Cerritos vis-à-vis interior sites like Copán and Uxmal that needed to be accounted for were transportation of the raw materials across water (sea transportation) and the distance of the site from the sources of building materials. In order to calculate quantity per load and velocity values for watercraft traveling the half kilometer from the canal at Paso del Cerro to Isla Cerritos, I needed to determine an average size, hull volume, weight capacity, and speed for a Maya sea going canoe. The only direct archaeological evidence of canoe travel in the Maya region comes from part of a wooden paddle recovered at the K'ak' Naab' saltworks off the southern coast of Belize (McKillop 2010), but plenty of descriptions of Maya dugout canoes, ocean and river navigation, and other watercraft come from the iconography, art, historical descriptions, and ethnography (Ciudad Real 1873; Cobos 2010c; Colón 1947; Díaz del Castillo 2008; González de la Mata and Andrews 1999; McKillop 1995, 2010; Thompson 1949; Tozzer 1907).

For energetics estimates, I sought a median size from the range of variation and the most efficient design and volume for stably navigating shallow seas close to the coast with a heavy load. From the famous description Fernando Colón (1947) of a (possibly) Maya trading vessel approached by his father, Cristóbal Colón on his fourth voyage near the Bay Islands of Honduras in 1502, we get an upper limit description: "long as a galley and eight feet wide," carved from a single tree trunk with 25 oarsmen and possible up to 40 people (see Thompson 1949:69). European galleys at that time could be 25-60 meters in length and 3-7 meters wide, while the

simplest log boats could range up to 15 meters in length (Crumlin-Pedersen 2010:112). Other Spanish descriptions from the early 16th century describe the carrying capacity of Maya canoes to be 40-50 men (Díaz del Castillo 2008[1632]:4), but Ciudad Real (1873:232) describes them as much smaller at "a vara and a half wide [~1.3m] narrowing to two palmas [~42cm] apart." However, modern sea canoes inspired by traditional Aleutian three-man canoes tend to be between 5-8 meters long and less than a meter wide (Hutchinson 1984:202). According to numerous sources, widening the hull in the middle or creating composite boats by lashing canoes together with cross-timbers helped to make these vessels more navigable in deeper waters (2010:112). Historic sources do report double canoes traveling in the Bacalar Lagoon in the early 16th century (Ciudad Real 1873). E.H. Thompson (1949:70) argued that that if the people and canoes pictured in the Maya Seacoast Village mural from Chichén Itzá were drawn at the same scale, the canoes would be almost 4 meters in length, 30 cm in height in the middle with fore and aft portions raised to 60 cm. Ethnographic examples range from 5-6 meters long for the Lacandon to 10-11 meters long in Lake Atitlán, Guatemala and in the Usumacinta region, at times holding as many as 20 people (1949:71; Tozzer 1907). The few pre-Columbian depictions of Maya watercraft that exist do not show more than 5 passengers, certainly nowhere close to 40 individuals! Thus, I selected a size of 10 meters long and 1 meter wide as a representative example of a canoe used for transporting cargo along the coast with two paddlers / navigators based on an approximate mid-range between the ethnographic and ethnohistorical examples.

A rule of thumb for canoe passenger capacity is L x W/15, and if the average Maya boatman weight 68 kg, these canoes could hold around a maximum of 500 kg. Subtracting the weight of two individuals, this would leave 364 kg of cargo space / canoe trip. The average speed of a sea canoe ranges from 3 – 5 km/hour, and this provides the two velocity values for the

loaded and unloaded trips respectively. Based on first-hand experience loading and unloading supplies from the lanchas we used to carry our equipment two and from the island during excavations, I estimated that loading materials at Paso del Cerro and unloading them at Isla Cerritos would each take, at most, ½ hour, and this was practically a "null" value added to the transport coast in terms of overall PDs.

Most of the raw materials used in architectural construction, including heavy wood, earth, limestone, and sascab (and much of the base for lime plaster) is not readily available in the tidal zone and mangrove wetlands immediately along the north coast of Yucatán (Munro-Stasiuk et al. 2014:160). Thus, the builders of Isla Cerritos would have needed to travel beyond Chinalco, at least 5 km south into the central northern geological zone (near Panabá) where rock outcrops and deeper soils are present for quarrying. Based on Erasmus' (1965) estimates, an appropriate overland walking speed for porters carrying 25 kg of material is 4 km/hour, returning at 5 km/hour. The land transportation cost, then, for the raw materials that are not available in the coastal zone, involves moving them 5 km to the mainland node at Paso del Cerro, where all materials are loaded onto canoes and transported to the island, where they are unloaded and transported a maximum of 100 meters or less to any construction site within the island.

The following tables summarize the labor estimates for the architecture discussed in this thesis:

Table 4.2: Labor estimates for the construction of Structure 3 on Isla Cerritos.

Str. 3				**Total Person-Days**	**19244**
Platform and apron	**25x12x.7 meters**				
	Acquisition (PDs)	**Preparation (PDs)**	**Transportation (Land) (PDs)**	**Transportation (Sea) (PDs)**	**Construction (PDs)**
Cut limestone	364.5	94	2295	18	243
Earth	23	0	1390	10	677
Shell and Chich	4.5	0	37	4	
Sascab and/or conchuela	10	0	927	4	
Water	40	0	9	2	
Lime plaster	---	572	300	2	52
Totals	442	666	4958	40	972
Lower Terrace Platform	**20x9x.7 meters**				
	Acquisition	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Cut limestone	189	49	1189	9	126
Earth	13	0	834	6	403
Shell and Chich	3	0	21	2	
Sascab and/or conchuela	6	0	555	2	
Water	24	0	5	1	
Lime plaster	---	792	417	4	72
Totals	235	841	3021	24	601
Upper Terrace Platform	**16x4x1.6 meters**				
	Acquisition	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Cut limestone	153	39	962	7	102
Earth	11	0	672	5	326
Shell and Chich	2	0	18	2	
Sascab and/or conchuela	5	0	439	1	
Water	19	0	4	1	
Lime plaster	---	528	277	2	48
Totals	190	567	2372	18	476
Superstructure	**15.5x3.5x2 .5m Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Veneer limestone	85.5	22	537	4	57
Wall fill	14	0	231	1	13
Water	6	0	1	0	0
Wood/Huano Thatch (roofing)	115	0	142	1	---
Lime plaster	---	1232	648	6	112
Wattle & Daub	---	---	466	7	103
Const. features	---	---	---	---	17
Totals	221	1254	2025	19	302

Structure 3, as detailed above, consists of three sections, a basal platform with a talud apron (like a lateral ballcourt structure) leading to the plaza floor made of two layers of flat, faced limestone blocks. Above this a second terrace and above that (1.6m) is a third on which was constructed the superstructure. Access to the temple was provided by a small (50cm wide) stairway on the east side. The excavations suggest part stone-part perishable walls existed on three sides of the superstructure. Three large columns were inset into a 1.5m wide bench and are heavily stuccoed (2cm thick). These supported the perishable portico like roof.

Table 4.3: Labor estimates for the construction of Structure 5, colonnaded hall, on Isla Cerritos.

Str. 5				**Total Person-Days**	**27620**
Platform	**31x11x1 meters Acquisition (PDs)**	**Preparation (PDs)**	**Transportation (Land) (PDs)**	**Transportation (Sea) (PDs)**	**Construction (PDs)**
Cut limestone	468	121	2945	24	312
Earth	34	0	2040	15	984
Shell and Chich	7	0	53	7	
Sascab and/or conchuela	14.5	0	1344	6	
Water	58	0	13	4	
Lime plaster	---	4400	2317	22	400
Totals	582	4521	8712	78	1696
Colonnaded Gallery	**Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Veneer limestone	409.5	105.5	2577	21	273
Wall fill	63	0	1042	8	57
Water	23	0	5	1	---
Wood/Huano Thatch (roofing)	900	0	1129	10	---
Lime plaster	---	1540	810	7	140
Wattle & Daub	---	---	2289	36	549
Const. features	---	---	---	---	36
Totals	1395.5	1645.5	7852	83	1055

Table 4.4: Labor estimates for the construction of Structure 8 on Isla Cerritos.

Str. 8				**Total Person-Days**	**10122**
Platform	**14x8x.5 meters Acquisition (PDs)**	**Preparation (PDs)**	**Transportation (Land) (PDs)**	**Transportation (Sea) (PDs)**	**Construction (PDs)**
Cut limestone	90	23	566	4	60
Earth	6	0	370	2	178
Shell and Chich	1	0	10	1	
Sascab and/or conchuela	3	0	231	1	
Water	10	0	2	0	
Lime plaster	---	2552	1344	12	232
Totals	110	2575	2523	20	470
Superstructure	**6.5x12x2.5 m Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Veneer limestone	112.5	29	707	5	75
Wall fill	17.5	0	289	2	16
Water	6	0	1	0	---
Wood/Huano Thatch (roofing)	210	0	262	2	---
Lime plaster	---	1188	625	6	108
Wattle & Daub	---	---	611	9	129
Const. features	---	---	---	---	14
Totals	346	1217	2495	24	342

Table 4.5: Labor estimates for the construction of Structure 9 on Isla Cerritos.

Str. 9				**Total Person-Days**	**6124**
Platform	**10x7x1meters Acquisition (PDs)**	**Preparation (PDs)**	**Transportation (Land) (PDs)**	**Transportation (Sea) (PDs)**	**Construction (PDs)**
Cut limestone	103.5	27	650	5	69
Earth	7	0	463	3	230
Shell and Chich	2	0	12	1	
Sascab and/or conchuela	3.5	0	324	1	
Water	14	0	3	1	
Lime plaster	---	484	255	2	44
Totals	130	511	1707	13	343
Superstructure	**Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Veneer limestone	155	40	977	8	104
Wall fill	24	0	393	3	21
Water	8	0	1	0	---
Wood/Huano Thatch (roofing)	190	0	237	1	11
Lime plaster	---	770	404	3	70
Wattle & Daub	---	---	0	0	0
Const. features	---	---	---	---	0
Totals	377	810	2012	15	206

Table 4.6: Labor estimates for the construction of Structures 10a and 10b on Isla Cerritos.

Strs. 10a & 10b				**Total Person-Days**	**20805**
Platform	**10x8x1meters Acquisition (PDs)**	**+12x14x1meters Preparation (PDs)**	**Transportation (Land) (PDs)**	**Transportation (Sea) (PDs)**	**Construction (PDs)**
Cut limestone	373.5	96	2351	19	249
Earth	27	0	1645	12	792
Shell and Chich	5	0	43	5	
Sascab and/or conchuela	11.5	0	1065	4	
Water	46	0	10	3	
Lime plaster	---	1496	787	7	136
Totals	463	1592	5901	50	1177
10a Superstructure	**Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Veneer limestone	396	102	2492	20	264
Wall fill	60	0	996	7	54
Water	22	0	5	1	---
Wood/Huano Thatch (roofing)	720	0	902	7	29
Lime plaster	---	1100	579	5	100
Wattle & Daub	---	---	0	0	0
Const. features	---	---	---	---	0
Totals	1198	1202	4974	40	447
10b Superstructure	**Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Veneer limestone	180	46	1133	9	120
Wall fill	27	0	451	3	25
Water	10	0	2	0	---
Wood/Huano Thatch (roofing)	235	0	293	2	13
Lime plaster	---	748	393	3	68
Wattle & Daub	---	---	0	0	0
Const. features	---	---	---	---	0
Totals	452	794	2272	17	226

Structures 10a and 10b share a platform and so are presented together as separate superstructures. Really, they may represent different rooms in the same building. Located south of the main civic-ceremonial group, these structures might form the west side of a residential group with Structures 8 and 9. These structures have not been excavated to date.

Table 4.7: Labor estimates for the construction of Structure 12 on Isla Cerritos.

Str. 12				**Total Person-Days**	**5890**
Platform	**15.5x8.3x.7meters Acquisition (PDs)**	**Preparation (PDs)**	**Transportation (Land) (PDs)**	**Transportation (Sea) (PDs)**	**Construction (PDs)**
Cut limestone	140	36	878	7	93
Earth	10	0	625	4	288
Shell and Chich	2	0	15	2	
Sascab and/or conchuela	4	0	370	1	
Water	16	0	3	1	
Lime plaster	---	748	393	3	68
Totals	172	784	2284	18	449
Superstructure	**Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Veneer limestone	13.5	3.5	84	0	9
Wall fill	3	0	45	0	3
Water	2	0	0	0	---
Wood/Huano Thatch (roofing)	10	0	12	0	---
Lime plaster	---	1188	625	6	108
Wattle & Daub	---	---	65	1	3
Const. features	---	---	---	---	2
Totals	28.5	1191.5	831	7	125

The following three structures form the West Patio Group with Structure 19 and have not been excavated. Structure 18a was tested in 1985 and appears to have been a late addition to the group.

Table 4.8: Labor estimates for the construction of Structure 18a on Isla Cerritos.

Str. 18a				**Total Person-Days**	**15263**
Platform	**10x6x.7meters Acquisition (PDs)**	**Preparation (PDs)**	**Transportation (Land) (PDs)**	**Transportation (Sea) (PDs)**	**Construction (PDs)**
Cut limestone	126	33	794	7	84
Earth	9	0	556.5	4	269
Shell and Chich	2	0	14.5	2	
Sascab and/or conchuela	4	0	371	2	
Water	16	0	4	1	
Lime plaster	---	748	394	4	68
Totals	157	781	2134	20	421
Superstructure	**Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Veneer limestone	0	0	0	0	0
Wall fill	0	0	0	3	0
Water	---	0	---	.5	---
Wood/Huano Thatch (roofing)	270	0	339	0	0
Lime plaster	---	1364	719	7	124
Wattle & Daub	---	---	8726	20	177
Const. features	---	---	---	---	0
Totals	270	1364	9784	30.5	301

Table 4.9: Labor estimates for the construction of Structure 18b on Isla Cerritos.

Str. 18b				**Total Person-Days**	**11415**
Platform	**21x7x1meters Acquisition (PDs)**	**Preparation (PDs)**	**Transportation (Land) (PDs)**	**Transportation (Sea) (PDs)**	**Construction (PDs)**
Cut limestone	221	57	1388	11	147
Earth	16	0	2119	8	470
Shell and Chich	3	0	26	3	
Sascab and/or conchuela	7	0	649	3	
Water	28	0	6	2	
Lime plaster	---	880	463	4	80
Totals	275	937	4651	31	697
Superstructure	**Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Veneer limestone	0	0	0	0	0
Wall fill	0	0	0	0	0
Water	0	0	0	0	---
Wood/Huano Thatch (roofing)	450	0	565	5	---
Lime plaster	---	1188	626	6	108
Wattle & Daub	---	---	1620	26	230
Const. features	---	---	---	---	0
Totals	450	1188	2811	37	338

Table 4.10: Labor estimates for the construction of Structure 18c on Isla Cerritos.

Str. 18c				**Total Person-Days**	**7396**
Platform	**15x7x1meters Acquisition (PDs)**	**Preparation (PDs)**	**Transportation (Land) (PDs)**	**Transportation (Sea) (PDs)**	**Construction (PDs)**
Cut limestone	157.5	41	991	8	105
Earth	11.5	0	696	5	336
Shell and Chich	2	0	18	2	
Sascab and/or conchuela	5	0	464	2	
Water	20	0	5	2	
Lime plaster	---	616	325	3	56
Totals	196	657	2499	22	497
Superstructure	**Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Veneer limestone	0	0	0	0	0
Wall fill	0	0	0	0	0
Water	0	0	0	0	---
Wood/Huano Thatch (roofing)	310	0	389	4	---
Lime plaster	---	924	487	5	84
Wattle & Daub	---	---	1145	18	159
Const. features	---	---	---	---	0
Totals	310	924	2021	27	243

Table 4.11: Labor estimates for the construction of Structure 19 on Isla Cerritos.

Str. 19				**Total Person-Days**	**9519**
Platform	**16x7x.8 meters Acquisition (PDs)**	**Preparation (PDs)**	**Transportation (Land) (PDs)**	**Transportation (Sea) (PDs)**	**Construction (PDs)**
Cut limestone	140	36	878	7	93
Earth	10	0	601	4	283
Shell and Chich	2	0	15	2	
Sascab and/or conchuela	4	0	370	1	
Water	16	0	3	1	
Lime plaster	---	1804	949	9	164
Totals	172	1840	2816	24	540
Superstructure	**Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Veneer limestone	2	0	13	0	1.5
Wall fill	1	0	11	0	1.5
Water	2	0	0	0	---
Wood/Huano Thatch (roofing)	360	0	450	3	---
Lime plaster	---	1057	555	5	96
Wattle & Daub	---	---	1356	21	191
Const. features	---	---	---	---	1
Totals	365	1057	2385	29	291

Table 4.12: Labor estimates for the construction of Structure 23 on Isla Cerritos.

Str. 23				**Total Person-Days**	**23508**
Platform	**21x31x.9meters Acquisition (PDs)**	**Preparation (PDs)**	**Transportation (Land) (PDs)**	**Transportation (Sea) (PDs)**	**Construction (PDs)**
Cut limestone	441	114	2776	22	294
Earth	32	0	1947	15	936
Shell and Chich	6	0	51	6	
Sascab and/or conchuela	14	0	1251	5	
Water	54	0	12	3	
Lime plaster	---	1892	996	9	172
Totals	547	2006	7033	60	1402
Superstructure	**Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Veneer limestone	221	57	1388	11	147
Wall fill	35	0	579	4	31
Water	12	0	2	1	---
Wood/Huano Thatch (roofing)	1310	0	1642	14	---
Lime plaster	---	3080	1621	15	280
Wattle & Daub	---	---	1618	25	353
Const. features	---	---	---	---	14
Totals	1578	3137	6850	70	825

Table 4.13: Labor estimates for the construction of Structure 30 on Isla Cerritos.

Str. 30				**Total Person-Days**	**4588**
Platform	**10x7x.7meters Acquisition (PDs)**	**Preparation (PDs)**	**Transportation (Land) (PDs)**	**Transportation (Sea) (PDs)**	**Construction (PDs)**
Cut limestone	72	19	452	3	48
Earth	5	0	324	2	163
Shell and Chich	1	0	9	1	
Sascab and/or conchuela	3	0	231	1	
Water	10	0	2	0	
Lime plaster	---	374	196	1	34
Totals	91	393	1214	8	245
Superstructure	**Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Veneer limestone	0	0	0	0	0
Wall fill	0	0	0	0	7
Water	14	0	3	1	---
Wood/Huano Thatch (roofing)	190	0	237	1	---
Lime plaster	---	748	393	3	68
Wattle & Daub	---	---	845	13	114
Const. features	---	---	---	---	0
Totals	204	748	1478	18	189

Table 4.14: Labor estimates for the construction of Structure 31 on Isla Cerritos.

Str. 31				**Total Person-Days**	**3755**
Platform	**10x6x.6 meters Acquisition (PDs)**	**Preparation (PDs)**	**Transportation (Land) (PDs)**	**Transportation (Sea) (PDs)**	**Construction (PDs)**
Cut limestone	54	14	339	2	36
Earth	3	0	231	1	110
Shell and Chich	1	0	6	0	
Sascab and/or conchuela	2	0	138	0	
Water	6	0	1	0	
Lime plaster	---	308	162	1	28
Totals	66	322	877	4	174
Superstructure	**Acquisition**	**Preparation**	**Transportation (Land)**	**Transportation (Sea)**	**Construction**
Veneer limestone	0	0	0	0	0
Wall fill	0	0	0	0	6
Water	12	0	2	0	---
Wood/Huano Thatch (roofing)	140	0	174	1	---
Lime plaster	---	704	370	3	64
Wattle & Daub	---	---	729	11	96
Const. features	---	---	---	---	0
Totals	152	704	1275	15	166

The combined architectural energetics estimates (including the features not listed here) result in a maximum labor investment of nearly 2 million PDs for the entire island port if it was expanded artificially to its maximum distance. This is almost a quarter of the investment required to build a large inland ceremonial center like Uxmal (Erasmus 1965:295). When we compare the estimated resident population range for the port from Section 4.5.1, we can calculate the minimum required labor investment in PDs for gradual island construction over the site's long history of occupation. While we now know human occupation continued after the 13th century, this estimate assumes that all of the prehispanic architecture currently documented on the island was in place by c.1250 CE, giving a maximum period of 1550 years for construction since the end of the Middle Pre-Classic period. In Table 4.15, the low, median, and high resident

population estimates are given in the left column, as well as how many PDs per year would be required per individual resident if the only available labor pool was the island resident population itself. Estimates are also given for half the population, assuming that not everyone living on the island at any one time is able to work on construction. For a hypothetical construction rate this gradual, no one would need to work more than 60 PDs/year on construction if only half the population was available as laborers.

Table 4.15: Labor requirements for the gradual construction of the port of Isla Cerritos over its construction history based on a resident only labor pool.

Isla Cerritos Labor and Population Estimates 300 BCE – 1250 CE		**Maximum Labor Investment in Island and Port Construction: 1,997,156 (c.2 million) Person-Days**		
IC Resident Population Range	**Min. Individual Person-Days/Year Required***	**Annual corvée labor required from each family (approx. PDs)****	**Person-Years (PY) needed with max. labor input*****	**52-year "generations" of labor required**
Low#: 44	29.5	161	216	4
Median: 59	21.5	117	161	3
High: 112	11.5	64	85	1-2
1/2 Low##: 22	59	161	432	8-9
1/2 Median: 30	43	117	322	6
1/2 High: 56	23	64	170	3-4

*Minimum number of PDs of labor required of each laborer to build the entire site gradually over its entire history of occupation with construction.
**Uses the standard variable for average Maya family size of 5.6p.
***For construction labor and resource estimates, a Person-Year (PY) is assumed to consist of only 210 days, or the typical length of the dry season in the northern Maya lowlands, when construction would have been most likely to have taken place. This figure = PYs needed to build the entire island port, if resident labor is maximally invested in construction.
Represents the low, median, or high estimates of the resident population of Isla Cerritos. This estimate is based only on the island and does not consider the larger coastal community encompassing the mainland sites of Paso del Cerro and Chinalco.
Represents half of the population estimate, or a conservative estimate of the available labor pool within the island population at any one time.

The following three columns in Table 4.15 provide 1) the estimates for annual construction labor requirements per family based on population and the standard 5.6 person/family size. The "annual" estimates assume that a Person-Year (PY) consists of only 210 available days (the dry season only) for construction labor. 2) The minimum number of years required to build the

entire island, given the population and available labor pool sizes. 3) How many "generations," here defined as a 52-year period corresponding to both the Maya Calendar Round and the average life span in ancient times, it would take to see the island port constructed from the ground up. Again, this scenario assumes a hypothetical case in which the resident population is stable[5] and the construction is gradual with maximal investment in construction labor per year over the course of 1550 years. In this case, if even half of the highest resident population devoted the entire dry season annually to construction, the port could have been constructed in four generations or less. If only 22 island residents were ever conscripted for construction labor full time during the dry seasons, all the structures, port facilities, and island expansion would have been completed within 432 years (e.g., well within the Classic period).

Of course, we know that the rate of construction, like the population, on the island was not constant. For example, the artificial expansion of the southern portion of the island that required approximately 647,888 PDs of labor did not begin until at least 800 CE, and significant architectural renovations that supersede much of the previous construction on the island take place during the overlap between the Chacpel and Jotuto ceramic complexes, or between 800 and 900/950 CE). Table 4.16 estimates the PDs and PYs of labor investment required for the low, median, and high resident populations to complete the 915,265 PDs of construction labor for the Terminal Classic renovations to the port.

[5] While it is clear that population at the port is not stable over time, we currently have no way of accurately estimating the population range before the Terminal Classic period. Therefore, the population range estimate for the height of island occupation during the Terminal Classic period is used in this analysis for the entire history of the port.

Table 4.16: Labor cost requirements for Terminal Classic period construction at Isla Cerritos (800-1100 CE), based on a resident only labor pool.

Isla Cerritos Labor and Population Estimates 800 – 1100 CE		Labor Investment in Island and Port Construction During the Jotuto Ceramic Complex (Terminal Classic Period): 915, 265 Person-Days		
IC Resident Population Range	**Min. Individual Person-Days/Year Required**	**Annual corvée labor required from each family (approx. PDs)**	**Person-Years (PY) needed with max. labor input**	**52-year "generations" of labor required**
Low: 44	70	381	99	2
Median: 59	52	277	74	1-2
High: 112	28	153	40	< 1
1/2 Low: 22	139	381	198	4
1/2 Median: 30	102	277	145	3
1/2 High: 56	55	153	78	1-2

The estimated population range above also more accurately reflects the situation at this time, during the height of activity and occupation of the coastal port community. With the lowest resident population labor pool (p=22) working, this construction could have been completed well within the Jotuto period in less than two centuries. If the highest resident population participated fully in construction efforts during the dry seasons, the Terminal Classic architecture would have been completed in 40 PYs, or less than a single generation. The corvée labor requirements for each resident family are increased substantially at this time, and this would have required more top-down organization (i.e., administration) within the community. This correlates well with the evidence we will examine in Chapter 5 for a hierarchical social organization even within the broader "non-elite" socioeconomic class. However, these data also indicate that economic investment in the form of additional labor brought directly from (and administered by) a larger, inland city such as Chichén Itzá or Ek Balam was not needed to construct the island port.

Still, what if the labor pool for construction did exceed the resident population of the island portion of the coastal community? Table 4.17 provides estimates of PYs of labor required to build the entire island port and just the Terminal Classic constructions, if the labor pool exceeded the resident population with assistance from the mainland.

Table 4.17: Estimates of Person-Years and generations of labor required for the construction of the port of Isla Cerritos if the labor pool exceeds resident population.

Isla Cerritos Labor Pool		Labor Investment in Island and Port Construction	
Population of laborers with Mainland Assistance (P)	**Person-Years (PY) needed for Jotuto Complex construction (800-1100 CE)**	**Person-Years (PY) needed for whole island (Max. building estimates)**	**52-year "generations" of labor required**
200	22	48	< 1
500	9	19	< 1
1000	4-5	9-10	< 1

A labor pool of 200, or about double the maximum workforce that could have been provided by island residents alone, would have been able to construct the entire island port in 48 PYs (less than a generation) if they worked throughout the dry seasons of these years. If a major inland center, such as Chichén Itzá, invested 1000 laborers in port construction, the entire island could have been built in 10 PYs or less, and the Terminal Classic period renovations completed in 4-5 PYs. In every scenario in which there is a labor force of at least 100 workers, the entire site of Isla Cerritos could have been constructed in less than one century.

We can, therefore, eliminate some of these scenarios from consideration. First, we know that the whole island port complex was not built from scratch as quickly as possible, or even in a century, but evolved as a trading center for over a millennium with a general increase in occupation and activity between 600 and 1200 CE and an apogee between 900 and 1100 CE. Thus, the maximum labor investment in terms of PDs and workforce size is unlikely before 600 CE. By this time, a version of the civic-ceremonial center on the "acropolis platform" and most of the pyramidal structures on the island were built, and this would have been the principal Maya ceremonial precinct along the north coast salt zone between the port of Dzilam to the west and Vista Alegre to the east, and south to Panabá. Raw materials needed for construction were accessible to coastal populations without necessarily having to cross into the settlement spheres

of inland centers like Aké or Ek Balam. It seems probable that a 200+ person workforce would not have been difficult to amass from people on the island, the nearby mainland coast, and along the Río Lagartos Estuary for the construction of port facilities and the civic-ceremonial center. It is not until at least the 8th century CE that Chichén Itzá begins to flourish as a regional political, economic, and military power. By 950-1050 CE, when the throne room in the Temple of the Warriors at Chichén Itzá is decorated with the Maya Seacoast Village mural, most of the residential structures identified so far on Isla Cerritos were already occupied, and the social, political, and economic influence of this inland center extends significantly in the northern Maya lowlands and along the Gulf coast. Currently we are limited until we have more excavations of earlier architecture and absolute dates from Isla Cerritos in how specific our architectural construction and burial sequence can get (and thus how accurate our interpretation of the settlement construction sequence is). We also lack archaeological data from the mainland sites of Paso del Cerro and Chinalco to help fill in the picture. However, we do know that the southern plain is being extended by 903 CE. Structure 8 undergoes significant renovations after 1000 CE, and calibrated C-14 dates of 1060 and 1075 CE associated with a group burial in that structure with strong ceramic and material culture associations with Chichén Itzá and long distance trade were recovered from the 1985 and 2006 excavations of this house mound. This suggests that the Jotuto complex constructions and renovations (where we find Chichén Itzá influence most prominent) occur over the course of 1-2 centuries, much longer than would have been necessary for a massive inversion of labor (e.g., a 500-1000 person workforce) from the hinterland kingdom to rapidly transform the port. With current dating resolution and population estimate limitations acknowledged, this pattern suggests several waves, or periods, of increased social interaction between the maritime Maya of the north coast and the urban elite at Chichén Itzá in

the Late and Terminal Classic, resulting (in part) in some of the architectural renovations at the port over 20-50 years within this broader period. I do not see evidence for a rapid colonization event or military invasion of the coastal port by Chichén Itzá during the Terminal Classic period.

The implication of these population and architectural energetics estimates drawn from recent excavation data from Isla Cerritos is that the construction costs of the island settlement and port complex translated into Person-Days and Person-Years of labor was not greater than the island and nearby mainland coastal population could have provided over the period of time the site was built and occupied. This does not mean that Chichén Itzá or other interior centers did not invest economically or did not otherwise influence port activities politically (administratively) and socially. Rather, the archaeological evidence indicates that the existence and construction of the island port was not predicated on the labor and resource investment of any inland polity.

In the next chapter, I present a microlevel analysis of the architectural and material culture patterns from the excavation of domestic structures at Isla Cerritos in 2006 and 2010 that provide insight into the social organization and daily life in the port community during this dynamic period of time between the Chacpel and Jotuto ceramic complexes when the relationships between the maritime Maya living on the north coast and the Late Classic inland cities were evolving. Then, in Chapter 6 we will return to the question of the relationship between Isla Cerritos and the inland polity of Chichén Itzá.

CHAPTER 5:

MICRO-LEVEL ANALYSIS: HOUSEHOLD ARCHAEOLOGY, ARTIFACT DISTRIBUTION AND PROVENIENCE

5.1 Introduction

In this chapter, I present a micro-level analysis of the findings from the archaeological excavations of domestic contexts at Isla Cerritos. This consists of basic quantitative and distributional analyses of the artifacts and ecofacts excavated from residential structures 19, 23, 8 and the areas in between structures, including the patio of the West Patio Group and the alleyways between structures 30, 31, and 19 on the north side of the island. With the assistance of a talented team of students and colleagues assembled for this project, we analyzed over 33,000 ceramic sherds, 850 cultural artifacts, 4,906 animal bones, and over 12,000 archaeological mollusks to the species level that were excavated from six domestic contexts in 2010. The laboratory analyses conducted in 2011-2012 contribute to the extensive database from which to build interpretations of daily life and social organization at Isla Cerritos after 600 CE, and certainly much more can be done in the future with these data using other methods of statistical and spatial analyses. Already these results also clarify any doubt about the existence of a permanent, though small, residential population on the island.

Eight human burials were also excavated in 2010, five located in the patio space and three associated with Structure 23. In Structure 8, two burials were excavated in 2006 and one (containing four individuals) was excavated in 1985. The material culture patterns associated with these funerary offerings, mortuary contexts, and some aspects of the bioarchaeology of

these domestic burials will also be discussed here as they relate to my interpretations of the social history of this coastal community.

An important aspect of these arguments is, of course, the domestic architecture and what it indicates about the use of space, distribution of material culture within and across residential spaces and over time. For these reasons, this chapter on the micro-level is organized into several sections. After describing the process of artifact cataloging and storage, five sections each present a brief overview of the methods and results of materials analysis for each artifact/ecofact class, including ceramics, lithics, zooarchaeology, archaeological mollusks, and mortuary contexts. This provides the reader with a broad view of variation within artifact classes, di stribution across structures and inter-structure areas, and change over time in addition to the fundamental methodological frameworks that organized the materials analyses in the lab.

The following sections provide a detailed view of each residential group and structure, beginning with the architecture and chronology and continuing through a description of the Late Classic (when applicable), Terminal Classic, and Postclassic contexts. These descriptions include material culture and spatial analysis subsections that provide a synchronic view, relating artifact classes to each other and the architecture. This allows for the identification of activity areas, as well as interpretations of artifact concentrations and the activities of daily life at the port. The burials that are associated with each architectural space are discussed in relation to the structure and group. For residential structures 19, 23, and 8, I also provide hypothetical architectural reconstructions using SketchUp 3D illustration software based on the data from excavations in 2010 and 2006, as well as ethnoarchaeological studies of Maya houses by Héctor Hernández (2011) and Robert Wauchope (1938). Structures 30 and 31 were only partially excavated in the

2010 ICAP season in order to delineate their form and size and, therefore, only very general descriptions of them are possible at this time.

In the final summary and discussion section, I outline the implications of these patterns for addressing the questions of social stratification and mobility within this small, non-elite residential population. Throughout the chapter, I integrate different sources of information and classes of data to flesh out our interpretations of the Terminal Classic coastal Maya. These include iconographic and ethnohistorical sources when available.

5.1.1 Cataloging and Artifact Storage

All materials recovered from ICAP excavations in 2006, 2007, and 2010 were separated by artifact class in the field and transported to the Faculty of Anthropological Sciences in Mérida, Yucatán for storage and curation. The human remains are stored in the Bioarchaeology Laboratory of the FCA, and the artifacts are stored in boxes shelved in the Archaeological Ceramics Laboratory of the FCA. A large sample of the ceramics from the 2006 and 2007 excavations have been incorporated into the Isla Cerritos type collection available for use in this lab. The faunal material is curated in the Zooarchaeology Laboratory of the FCA where there is a comparative collection of specimens.

In 2006-07, all cultural material was catalogued by archaeology students at the UADY after it was transported to Mérida. Materials were separated into class categories, including faunal remains, lithics, ceramics, shell, and organic samples and then distributed to the areas within the lab associated with the analysis of these materials under the supervision of specific professors who coordinate student research projects involving ICAP materials. These professors and the use of ICAP materials are generally overseen by Rafael Cobos, project director.

In 2010, we sought even more control over the registry of materials by initiating the cataloguing process in the field. Archaeology student Cecilia Soldevila Illingworth directed the soft-brush washing and inventory of artifacts at the field house in the port of San Felipe. She recorded all artifact bags that came in from the field by structure, cala, level, and lot and reviewed the information on the tags and bags, correcting errors. Once the materials returned to the laboratory in May 2010, the analysis process immediately began for ceramics, and the other artifact classes were separated.

For ten months between May 2011 and June 2012, I managed the materials analysis of artifacts from ICAP 2010 in the Archaeology and Ceramics labs of the FCA-UADY with financial support from Dumbarton Oaks Research Library and Collection and Harvard University. Assisted by a select team of nine archaeology students, I continued the ceramic analysis using the type collections at UADY, analyzed the lithics and small finds, and coordinated artifact photography, archaeological illustration, and mapping. I also coordinated with the Zooarchaeology Laboratory, Bioarchaeology Laboratory, and Prof. Cobos to integrate the preliminary faunal, physical anthropology, and shell analyses into the growing ICAP database.



Figure 5.1: Olaine Díaz, ICAP photographer, photographs select artifacts in the Archaeological Laboratory at FCA-UADY in 2011.



Figure 5.2: Archaeologists Cristina Vázquez Piña, Stephanie Miller, and the author conducting ceramic analysis in the Archaeological Laboratory of the FCA-UADY in 2011.

5.2 Ceramics Overview and Methods

All research in ceramics at the FCA is overseen by Professor Socorro Jiménez who is one of the leading specialists in Maya ceramics from the Late Classic period and a professor at the UADY. She has been involved with ICAP as the project ceramicist since 2006. Cecelia Soldevila is one of her students specializing in archaeological ceramics who studied both Isla Cerritos and Chichén Itzá. She assisted with the analysis of ICAP ceramics from 2007 to 2011 and maintained the 2010 artifact inventory in the field. Jiménez, Soldevila, and I worked together on the ceramic analysis in 2010 and were assisted by Eduardo Sansores Peraza in measuring rim diameters and weighing sherds. In 2011-2012, I continued the ceramic analysis of material from the 2010 excavations with the assistance of archaeology students Cristina Vázquez Piña, Damaris Coral López, Stephanie Miller, and Mauricio Germon Roche.

Beginning in the 1970s, ceramic material from Isla Cerritos has been analyzed using the type-variety classification system, the most commonly utilized classification method for sites in the northern Maya lowlands based on characteristics of paste and surface decoration (Smith, Willey and Gifford 1960; Smith 1971; Gifford 1976; Ball 1978; Robles Castellanos 1987, 1988; Andrews V 1988; Jiménez 2002; Cobos et al. 2007, 2010). This has been an important approach in developing regional chronologies for the Late Classic period and the site chronology at Isla Cerritos where ceramic groups have been correlated with absolute dates. As discussed in Chapters 1 and 3, Fernando Robles (1987, 1988) created the first ceramic chronology for the island, identifying the five ceramic complexes that correspond to periods of occupation at the site, and these have withstood the test of time with only minor alteration, such as new ceramic groups being added to specific complexes, by Jiménez in 2006 (Cobos et al. 2007, 2010).

For the purposes of my research questions related to domestic contexts and activity areas, I incorporated "vessel form" as an additional category as well, one of the main categories of interest in modal analysis, an approach more commonly used in Central Mexico. These two approaches to ceramic analysis were by no means ever intended to be diametrically opposed, and it makes the most sense to benefit from the strengths of both approaches whenever possible. Tables providing the ceramic chronology from the 2010 field season are located in Appendix B and the ceramic tables are located in Appendix C in digital form. Ceramics tables from the 2006 and 2007 field seasons are available in ICAP INAH field reports (Cobos et al. 2007, 2010). In this thesis, with few exceptions, I discuss ceramics at the level of the ceramic group and, at times, the type, rather than making more specific classificatory distinctions. The concept of "ceramic group" unifies type-varieties that are strongly related in terms of paste, decoration, and the range of forms the vessels commonly take (Robles and Ceballos 2003:39). The full type-variety identifications and quantities are available in the tables in Appendix B. The various ceramic groups that overlap in time at a particular site form the ceramic complex (e.g., Jotuto ceramic complex at Isla Cerritos), while groups that bear a strong spatial-temporal relationship at the regional level make up ceramic spheres.

With the addition of horizontal excavations in 2007 and 2010 in both domestic and non-domestic contexts of the site, the pre-Jotuto ceramic sample has increased, and we can now say more about ceramic connections along the north coast during the Pre-Classic and Classic periods. Dzudzuquil group ceramics indicate human presence on the north side of the island by the late Middle Pre-Classic period (c.300 BCE), and people constructed domestic architecture at the port by 150 BCE. It is currently unclear whether the pre-Xaumito ceramics are associated with extant architecture on the island (indicating human occupation) or if it was brought to the island as part

of the land-filling and leveling process in the construction of the earliest platforms during the Late Pre-Classic period.

The Trompillo ceramic complex groups (300-700/750 CE), such as Huachinango, Carolina, and Saban indicate participation in larger the larger lowland Maya Tzakol and Cochuah horizons. Tituc group polychromes found in domestic contexts indicate trade from eastern Yucatán (Robles 1990). The pattern of Late Classic Chacpel ceramic complex groups is quite similar to that found at Xcambó (Jiménez 2002).

Joseph Ball (1978) and, more recently, Socorro Jiménez Álvarez (2009) have defined (and refined) the Canbalam ceramic sphere as a Gulf coastal tradition consisting of a combination at least 24 ceramic groups that is commonly found in Late Classic contexts dating from the fall of Teotihuacan to about 900 CE. This tradition consists primarily of domestic and utilitarian pottery that is quite distinct from inland or east coast assemblages, reflecting in ceramics the trends we also see in other classes of material culture, such as the faunal record, that show coastal patterns remarkably different from those of contemporary inland communities. Fine gray ceramics, such as Chablekal gray represent the fancier imported groups of this sphere. Some of the major groups of this sphere include Tenabo, Teabo, Koxolac, Nimun, Encanto, Baca, Saxche, Cetelac and Comalcalco. The frequency of these groups is most significant on Isla Cerritos prior to 900 CE and then gradually fades, along with Cehpech slateware groups, such as Muna, Maxcanu, which are also tied to this sphere before they overlap with Cehpech-Sotuta groups. This represents a stronger west Gulf Coast network affiliation and cultural orientation, in terms of domestic ceramic preferences, than east toward the Caribbean.

Jimenez (2009) originally argued that this ceramic sphere as extends from Tabasco as far east as Dzilam de Bravo. Ball (1977 cited in Rice and Forsyth 2004:31) defines ceramic sphere

membership as sharing at least 60% of the affiliated groups in a complex. Based on the new analysis of the domestic ceramics from Isla Cerritos excavated in 2010, it is now necessary to extend the Canbalam ceramic sphere to the east to include this site, especially during the period from about 700 – 900 CE. In the ceramic sample from the ICAP excavations in 2006-07 that focused primarily on later Jotuto contexts, 67% of the identified Canbalam groups are represented. In the 2010 sample, this increased to above 70%.

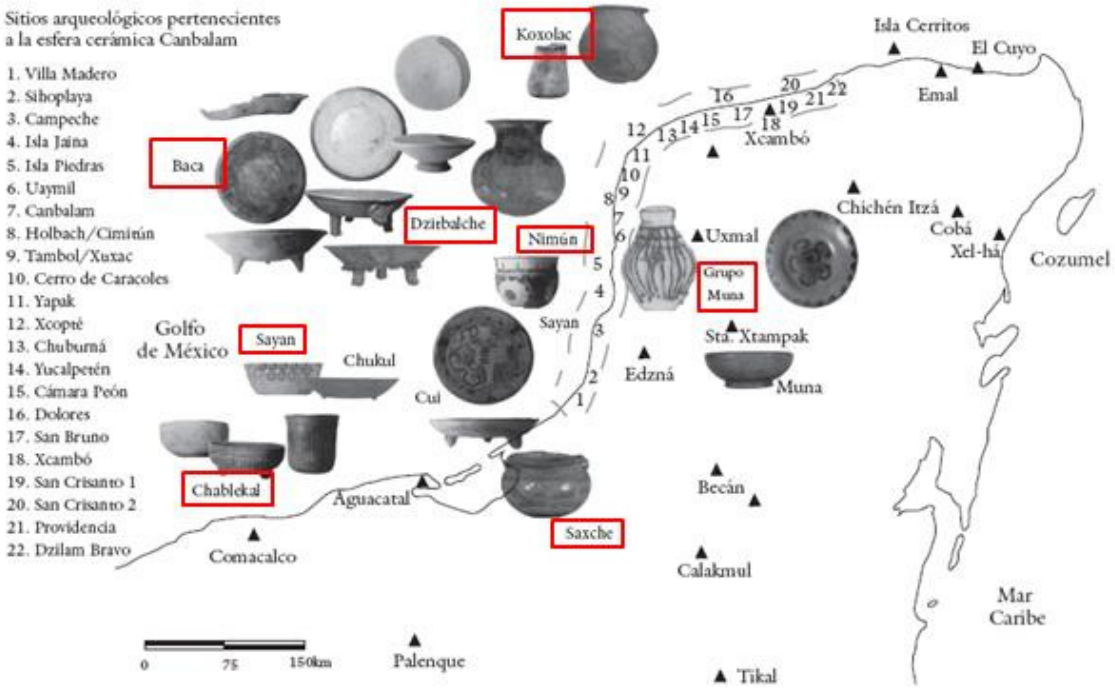


Figure 5.3: Modified map showing some of the main ceramic groups of the Canbalam ceramic sphere and the sites assigned to the sphere prior to this study. Base map from Jiménez Álvarez 2008:365.

Vista Alegre striated ceramics are also prevalent on Isla Cerritos during the Late Classic period and represent connections to the north coast around the salt zone of Las Coloradas, east to Vista Alegre (northern Yalahau). The use of these utilitarian types, especially large jars for storing and transporting liquids, is replaced by Sisal, Pisté striated jars in the Jotuto ceramic complex, one of the common utilitarian groups of the Sotuta sphere. Since our excavations focused primarily on

Jotuto contexts, the majority of the ceramic sample from all domestic contexts (50%+ for each structure) is made up of Cehpech-Sotuta slateware groups, such as Dzitas, Sisal, Dzibiac, and Silhó fine orange, which predominate at Chichén Itzá after 900 CE, or Kukulá group ceramics. As Kukulá groups become the overwhelming majority of the ceramics at the port, the western Cehpech groups decrease significantly in the archaeological record.

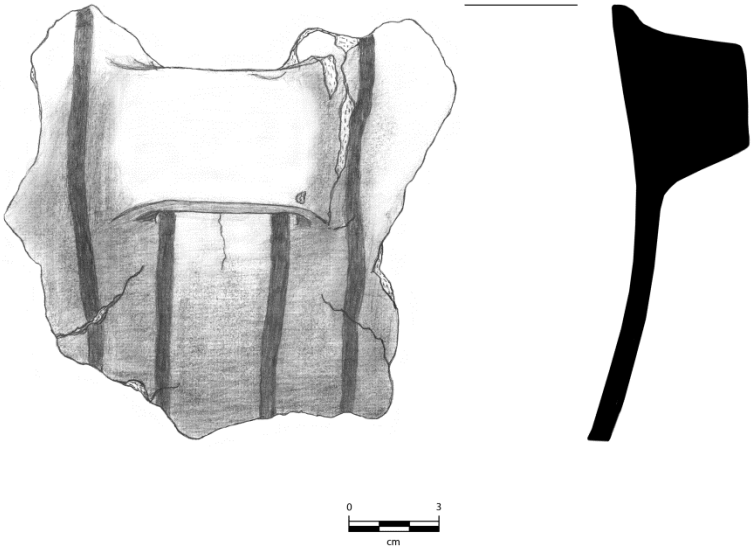


Figure 5.4: Illustration of a body sherd (with rim profile) of a typical Kukulá Group, Xcanchacan black on cream: red paste variety jar with handle. From Structure 23, ICAP 2010.

An interesting trend in the ceramic record at the coastal port is the strong preference of the Xcanchacan black on cream type over Kukulá cream that is very similar in forms and decoration. Both appear to have been more utilitarian versions of the Dzitas slateware (Sotuta) most popular in the interior of the peninsula after the rise of Chichén Itzá as a regional power. The Kukulá group ceramics are part of the Hocabá (Peto Cream) wares that predominate later at Chichén Itzá after 1000 CE, and both are found in abundance at Isla Cerritos, but the Xcanchacan black on cream seems to appear earlier and become much more popular at Isla Cerritos. We definitely need to further refine this chronology with absolute dates, but the

Xcanchacan ceramics have two paste varieties—a cream and a reddish paste. The red paste may be a local, north coast innovation and/or imitation of interior slatewares, or does a coastal Xcanchacan pottery influence the development of Kukulá in the interior? Petrographic analysis of these types/varieties may help us determine in the future whether these were produced on or near the north coast and how they compare in terms of source to other Kukulá types/Peto Cream. Regardless, large Xcanchacan jars, cooking pots, and smaller vessels are the greatest percentage of all pottery samples on the island and the most popular variety within Kukulá group ceramics in all contexts (Cobos et al. 2010:86).



Figure 5.5: Photograph of a reconstructed portion of a Xcanchacan black on cream: red paste variety jar from the excavation of Structure 23, ICAP 2007.

The 2010 excavations also recovered high quantities of fragments of large tecomates from Structures 19 and 23, very similar to the Navula Unslipped type of the Tomburro ceramic complex (Tases, Early Phase Postclassic) excavated in Structures 8 and 12 in 2006. However, we believe that these ceramics may be very late in Postclassic date (post-14th century), even contact-period. The reddish paste is identical to Navula, but these tecomates have increasingly restricted

and more deeply grooved rims. This pottery has been temporarily denominated Miscellaneous group, Unidentified type: late postclassic/colonial period variety (Figure 5.6), and Jiménez suggests that they were most likely deposited from the early 16th century. Confusingly, this type has been variously documented in all stratigraphic levels, around domestic structures, and at times in association with the re-use of architectural remains and sculptures from other buildings. The stratigraphic deposition is most likely a combination of the erosive processes described above that causes stratigraphic mixing on the north side of the island, as well as the common practices of later occupants digging trash pits into earlier midden areas and shallow pits to store large vessels containing water or other perishable materials meant to be kept cool. These ceramics, along with the appearance of Colonial period wares, including Yuncu and Undesignated Colonial Red groups, do demonstrate that the island was re-occupied, briefly, after the fall of Mayapán and the period that the island was used for ritual purposes (i.e., the late phase of the Postclassic period after 1441 CE).

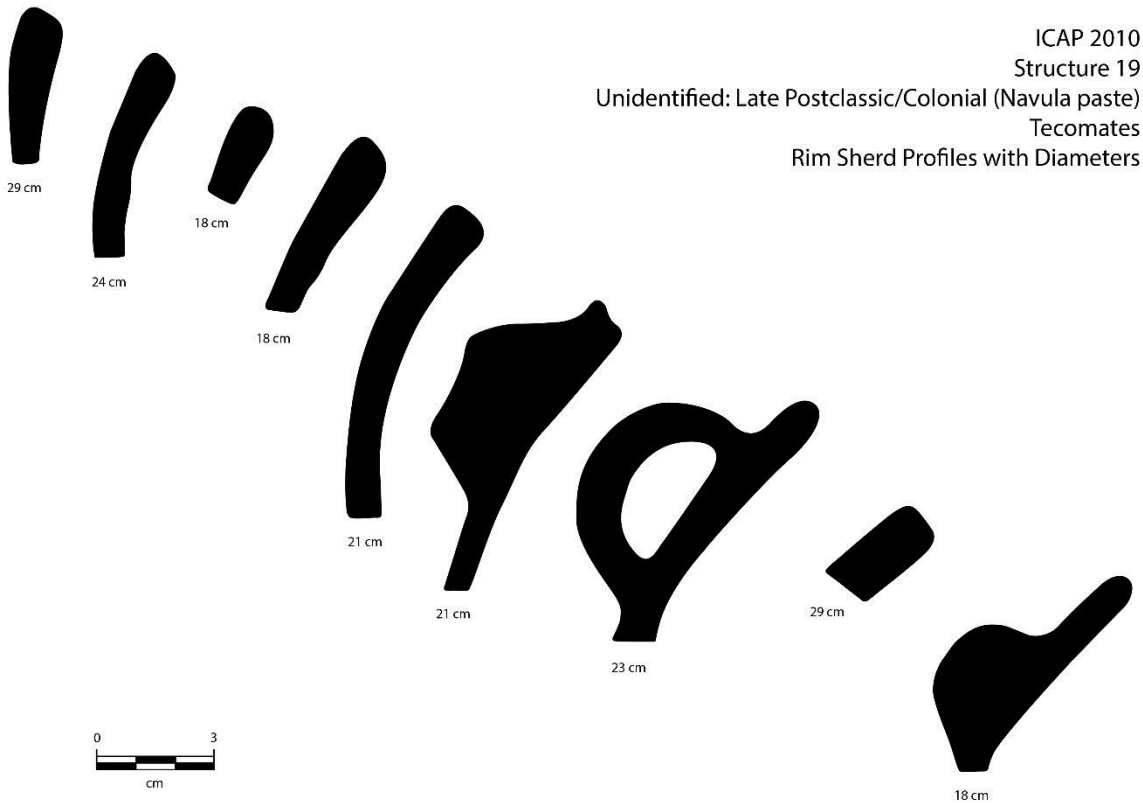


Figure 5.6: Illustration showing synchronic variation in rim sherd profiles from miscellaneous group (Navula paste) tecomates from the latest phase of the Postclassic period and early Colonial Period. These vessels indicate a contact-period reoccupation of Structures 19 and 23.

Overall, the distribution of material culture across the domestic contexts excavated in 2010 is relatively equal per number of units excavated, although the ceramic small finds are found in greater abundance and variety, as well as higher concentration in the fill of the west room of Structure 23. Lithics are the largest class of material (besides ceramic vessel fragments) across the domestic contexts, which is, in part, due to a preservation bias and part due to a sampling bias. Because of the amount of shell ecofacts and artifacts recovered from the north side of the island, we had to take representative samples, and this undoubtedly reduced the overall number of semi-worked shell objects recovered.

Table 5.1: Distribution of Material Culture by Class, Isla Cerritos 2010

Artifact Class	Structure 19	Structure 23	Structure 30	Patio/Test Pit 28	Total
Lithics	181	176	12	63	**432**
Ceramics*	34	79	10	34	**157**
Shell**	99	100	9	36	**244**
Bone***	3	9	0	6	**18**
Carbon	14	12	1	1	**28**
Stucco	13	0	0	3	**16**
Metal	1	0	0	0	**1**
Total	**345**	**376**	**32**	**143**	**896**

*This table does not include pottery sherds or vessels, but only non-vessel, ceramic small finds.
**This table includes only worked or semi-worked shell tools and not ecofacts.
***This table includes only worked bone tools.

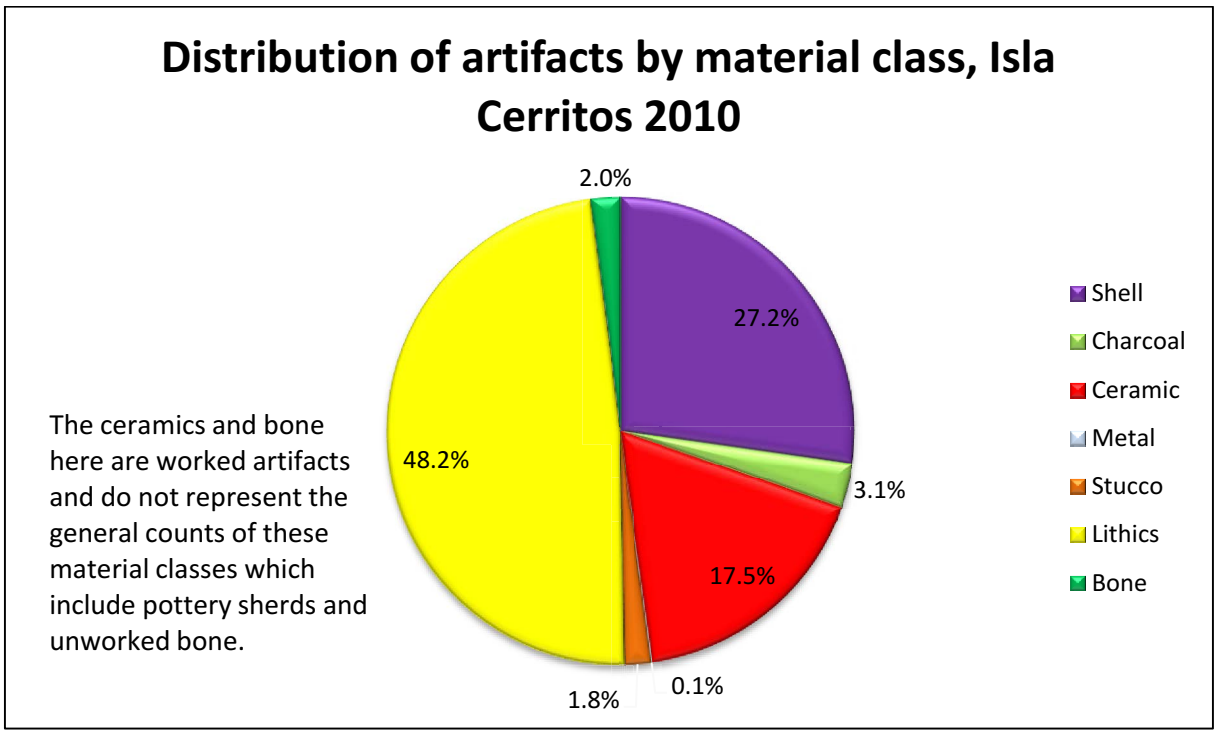


Figure 5.7: Pie chart showing the distribution of artifacts (small finds) by material class from ICAP 2010.

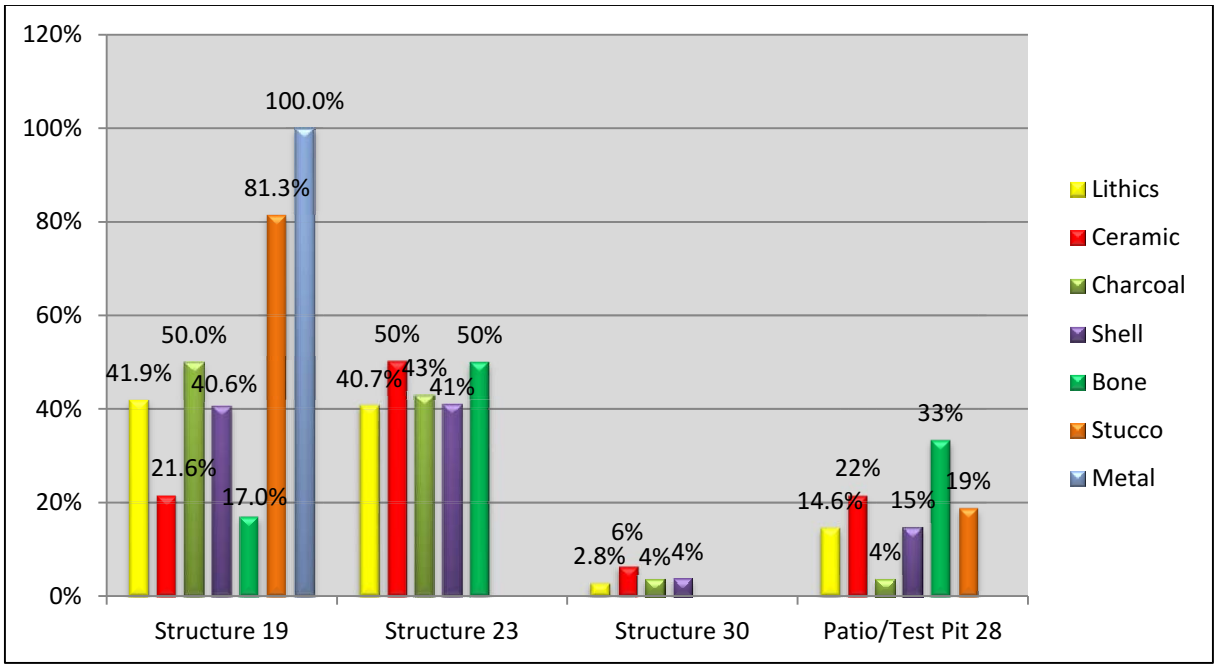


Figure 5.8: Distribution of material culture classes by excavated structure, ICAP 2010. Percentages for each structure are calculated from the total quantity of artifacts of each material type excavated in 2010.

Some examples of artifacts from each structure will be discussed below, however, it is interesting to note that among ceramic small finds, musical instruments (a figurine whistle and a drum fragment) were found in both Structures 23 and 19. Small clay balls, some perforated and others not, were recovered from the West Patio Group in Structure 19 and the patio, but not in Structure 23. The function of these objects is not clear, but they are associated in both fill contexts and as burial offerings with infant burials and were, perhaps toys. Another important fine paste ceramic artifact found inside Structure 19 was a round mirror base. Obsidian and pyrite mirrors were considered powerful objects in Mesoamerica and are sometimes associated with elite sumptuary goods and/or divination rituals.

Table 5.2: Non-lithic artifacts recovered from domestic contexts at Isla Cerritos in 2010.

Material	Type	Structure 19	Structure 23	Structure 30	Patio	Total
Ceramic	Adornment (beads)	1	0	0	0	1
	Mirror base	1	0	0	0	1
	Net weights	13	17	2	4	36
	Worked fragment (tejos)	13	57	7	21	98
	Figurine	0	0	1	0	1
	Spindle whorl	0	1	0	0	1
	Whistle	0	1	0	0	1
	Drum	1	0	0	0	1
	Ball of clay	4	0	0	6	10
	Unidentified technology	1	3	0	3	7
	Total	**34**	**79**	**10**	**34**	**157**
Shell	Adornment	2	3	1	0	6
	Burin	0	1	0	1	2
	Chisel	0	0	1	0	1
	Cornhusker/awl	0	1	0	0	1
	Spoon	1	0	0	1	2
	Ladle/lg. spoon	0	0	0	3	3
	Ax	10	8	0	6	24
	Scraper	0	1	0	0	1
	Perforator	0	2	0	0	2
	Polisher	1	0	0	0	1
	Awl	0	1	0	0	1
	Trumpet	3	2	0	0	5
	Unidentified technology	82	81	7	25	195
	Total	**99**	**100**	**9**	**36**	**244**
Charcoal	Fragment / Sample	14	12	1	1	28
	Total	**14**	**12**	**1**	**1**	**28**
Stucco	Floor fragment	13	0	0	2	15
	Unidentified technology	0	0	0	1	1
	Total	**13**	**0**	**0**	**3**	**16**
Bone	Cornhusker/awl	1	5	0	2	8
	Needle	0	1	0	0	1
	Tooth	0	1	0	2	3
	Manati rib (worked)	0	0	0	1	1
	Awl	0	1	0	1	2
	Unidentified technology	2	1	0	0	3
	Total	**3**	**9**	**0**	**6**	**18**
Metal	Unidentified technology	1	0	0	0	1
	Total	**1**	**0**	**0**	**0**	**1**
Total	**--------**	**164**	**200**	**20**	**80**	**464**

Excavations of domestic contexts have yielded a greater quantity and variety of artifacts than non-domestic contexts on the island, and have allowed for the identification of at least two middens, features which had not been identified in the 1985 excavations. These material culture patterns in combination with the architecture, described in more detail below, leaves no doubt that previous interpretations of the island as an empty necropolis, ritual shrine, or administrative trading port without an associated living settlement should be discounted.

5.3 Lithics Overview and Methods

Archaeologist Pura Cervera Rivero (1996) analyzed the lithics from the 1984-85 survey at Isla Cerritos, classifying them by raw material and tool type. Thirty-four specimens of black and grey obsidian were sourced at the Lawrence Berkeley Laboratory using X-ray fluorescence and Neutron Activation Analysis. Analysis of the lithics from excavations in 2006 and 2007 was carried out by hand by Nancy Peniche May, Geoffrey Braswell, and Dylan Clark at various times at the FCA-UADY. The phallic sculptures found in ritual contexts were both incorporated into the lithics classifications of 1985 (1996) and 2007, while architectural sculpture was treated separately. To date, no one has analyzed the very small sample of highly deteriorated architectural sculpture from Isla Cerritos.

The author conducted a basic classification of the 2010 lithic materials by raw material and tool type, using Cervera Rivero (1996), Whittaker (1994), and Castillo and Flores (1984) as guides. Subsequently, UADY archaeology student Andrej Andrejko (n.d.) specializing in lithic analysis and trade patterns has re-analyzed the ICAP 2010 material to discuss Terminal Classic economic networks. Some of our interpretations overlap, while others do not, and the reader is encouraged to consult Andrejko's thesis as well.

Table 5.3: Lithic raw material types excavated during ICAP 2010 field season.

Raw Material	Quantity ICAP 2010	% ICAP 2010
Sandstone	1	0.23%
Basalt	13	3.0%
Limestone	133	30.8%
Coral	10	2.3%
Jadeite	1	0.23%
Obsidian	193	44.7%
Quartzite	6	1.39%
River cobble	14	3.24%
Greenstone	2	0.46%
Pumice	1	0.23%
Chert	51	11.8%
Unidentified	7	1.62%
Total	**432**	**100%**

The most prevalent type of lithic material on the island, besides limestone used in architecture, is obsidian, which is used most often to produce blades used for cutting or slicing. The excavations we conducted in the domestic area on the north side of the island significantly increased the overall obsidian sample since tools made of this material had many uses around ancient Maya households. In previous excavations in 2006 and 2007, in which the majority of the excavated units were not in domestic contexts, the quantity of lithic material was quite low. The increase in sample size is useful for more accurate statistics related to lithic sources and trade networks.

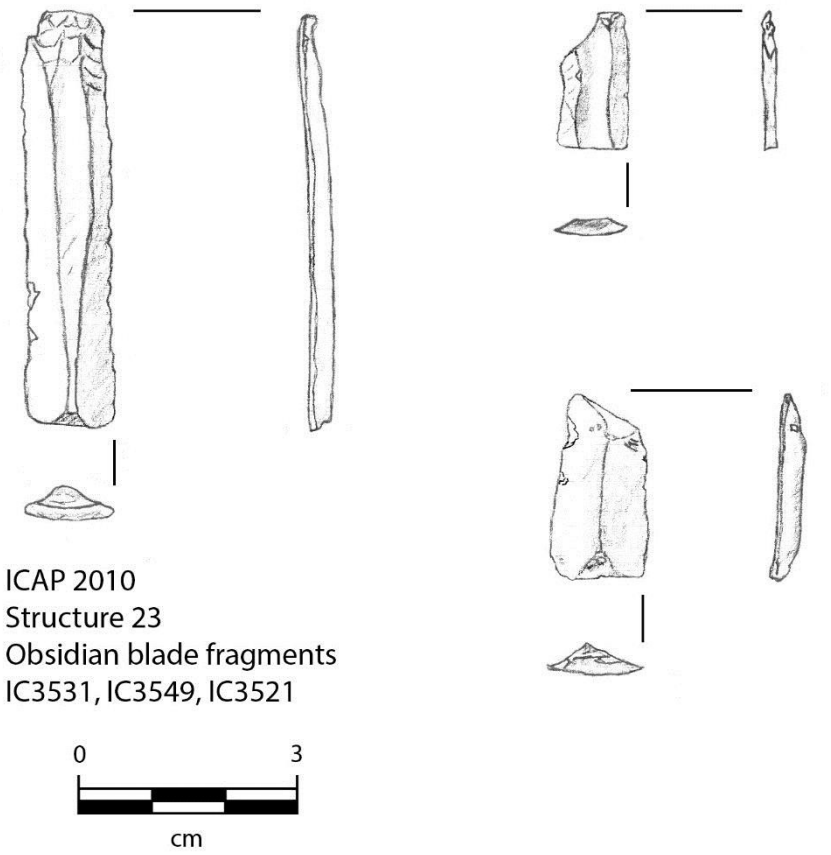


Figure 5.9: Illustration of obsidian blade fragments from Jotuto ceramic complex contexts in the west room, Structure 23, ICAP 2010.

Most of the obsidian artifacts from Isla Cerritos are prismatic blade fragments. We find very few worked cores of obsidian, chert, or any other lithic material. While there does appear to be retouch and recycling of tools, this suggests that most of the lithics were imported to the port in finished form.

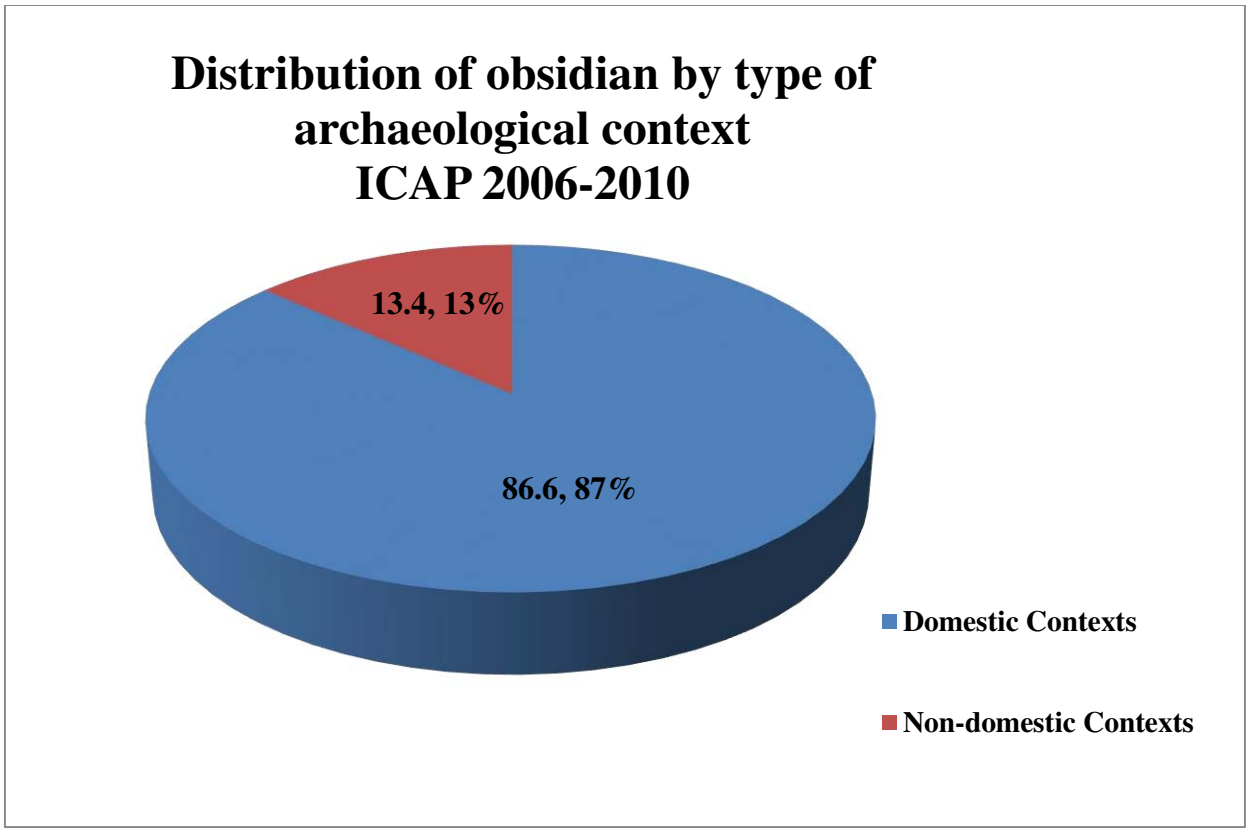


Figure 5.10: Pie chart showing that the amount of obsidian recovered from Isla Cerritos excavations in 2006, 2007, and 2010 from domestic contexts.

Table 5.4: Types of obsidian tools excavated at Isla Cerritos in 2010 categorized by structure.

Structure	Type of technology	Quantity	% of the total obsidian sample of the
19	Burin	1	1 %
	Flake	11	11.1%
	Percussion blade	5	5.1%
	Prismatic blade	82	82.8%
23	Burin	2	3.1%
	Flake	10	15.4%
	Percussion blade	4	6.1%
	Prismatic blade	49	75.4%
Patio	Burin	1	3.7%
	Flake	1	3.7%
	Percussion blade	3	11.1%
	Prismatic blade	22	81.5%
30	Percussion blade	1	50%
	Prismatic blade	1	50%
Totals 2010	**Burin**	**4**	**2.1%** (of the total sample of 2010)
	Flake	**22**	**11.4%**
	Percussion blade	**13**	**6.7%**
	Prismatic blade	**154**	**79.8%**

There were slightly more obsidian blades recovered from Structure 19 overall and very few found in burial contexts. Pachuca obsidian (discussed below) from Central Mexico was readily available at Isla Cerritos after 900 CE, and is not restricted to ceremonial contexts or caches as is more common at other Maya sites.

In the future, it will obviously be preferable to test the ICAP 2010 obsidian sample using XRF for definitive sourcing of the black and gray obsidian sample. The obsidian excavated in 2006, 2007, and 2010, however, could only be analyzed using visual sourcing techniques based on color, texture, and clarity, rather than chemical assay. Several of the leading lithicists in the field attest to the efficacy of this method, albeit with slightly increased error and under certain conditions, when constraints limit the ability to use chemical and molecular sourcing methods (see Braswell, Clark, Aoyama, McKillop, and Glascock 2000). At the FCA, we used a comparative type collection of compositionally sourced obsidian from Chichén Itzá prepared by

Braswell to help visually source specimens from Isla Cerritos. Importantly, if an identification was unclear, it was not forced into a category, but rather classified as "unidentified" (i.e., UNK). All obsidian from 2006-2010 has been incorporated into the general ICAP database, and in the following discussion I specify when the obsidian sample from Structure 23 excavated in 2007 has been combined with the sample from that structure excavated in 2010. We use the following abbreviations for Mesoamerican obsidian sources: UNK (unidentified), ZAR (Zaragoza, Puebla, Mexico), UCA (Ucareo, Michoacán, Mexico), PDO (Pico de Orizaba, Veracruz, Mexico), PAR (Paredón, Puebla, Mexico), PAC (Pachuca, Hidalgo, Mexico), OTU (Otumba, Mexico), SMJ (San Martín Jilotepec, Guatemala), IXT (Ixtepeque, Guatemala), CHY (El Chayal, Guatemala).

There has been much discussion in the literature about obsidian at Isla Cerritos because it all had to be imported to the island, and when the 1985 assemblage was visually and chemically sourced, the pattern was very similar to that at Chichen Itza, with a heavy reliance on central Mexican sources (75% was the argument) rather than the highland Guatemala sources (25%) of Ixtepeque, El Chayal, and San Martín Jiloptepec, traditionally accessed by the majority Maya settlements. Now that our sample size has increased with recent excavations, we still find that most of the obsidian came to Isla Cerritos from six different sources in Mexico and less from the three highland Guatemalan sources.

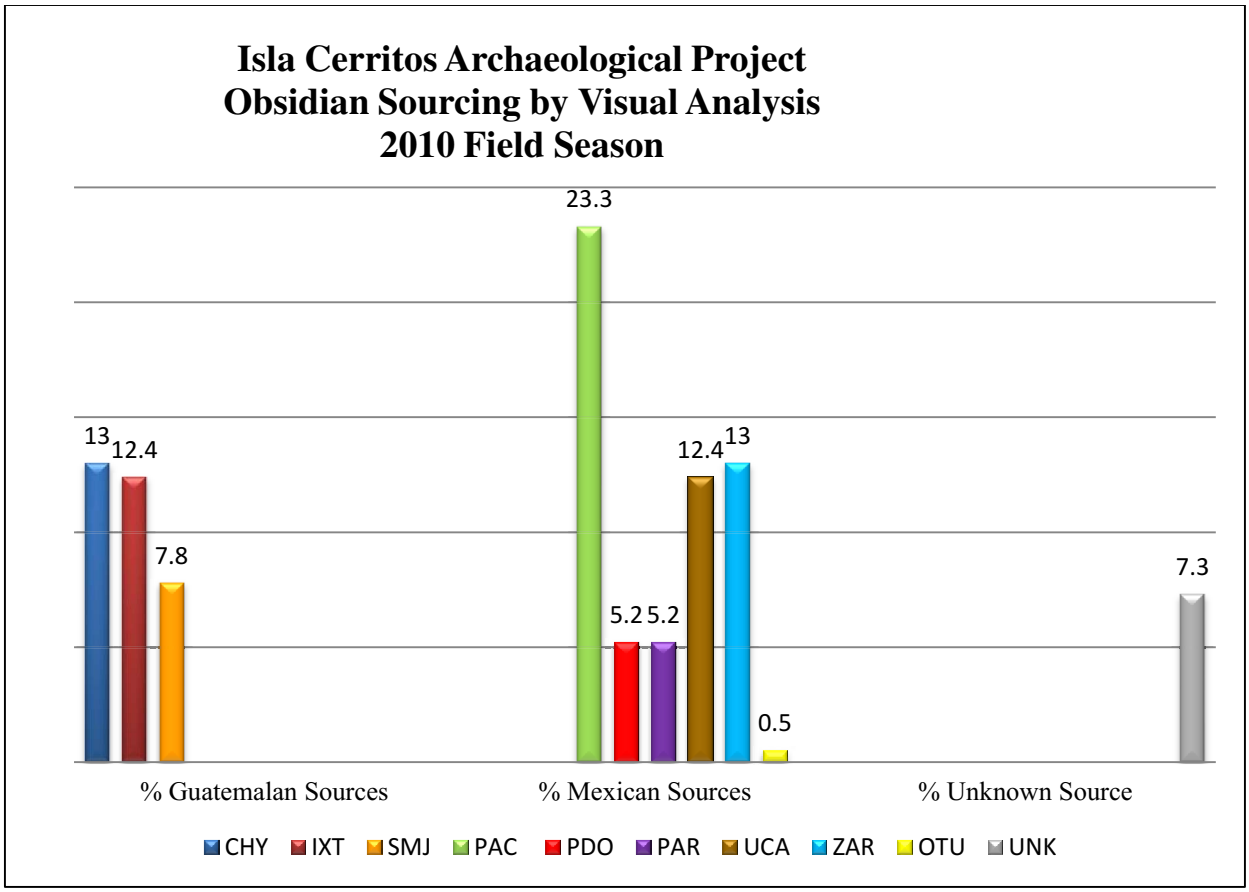


Figure 5.11: Graph showing the sources of obsidian from the sample excavated in 2010 only, sourced by visual analysis in the laboratory.

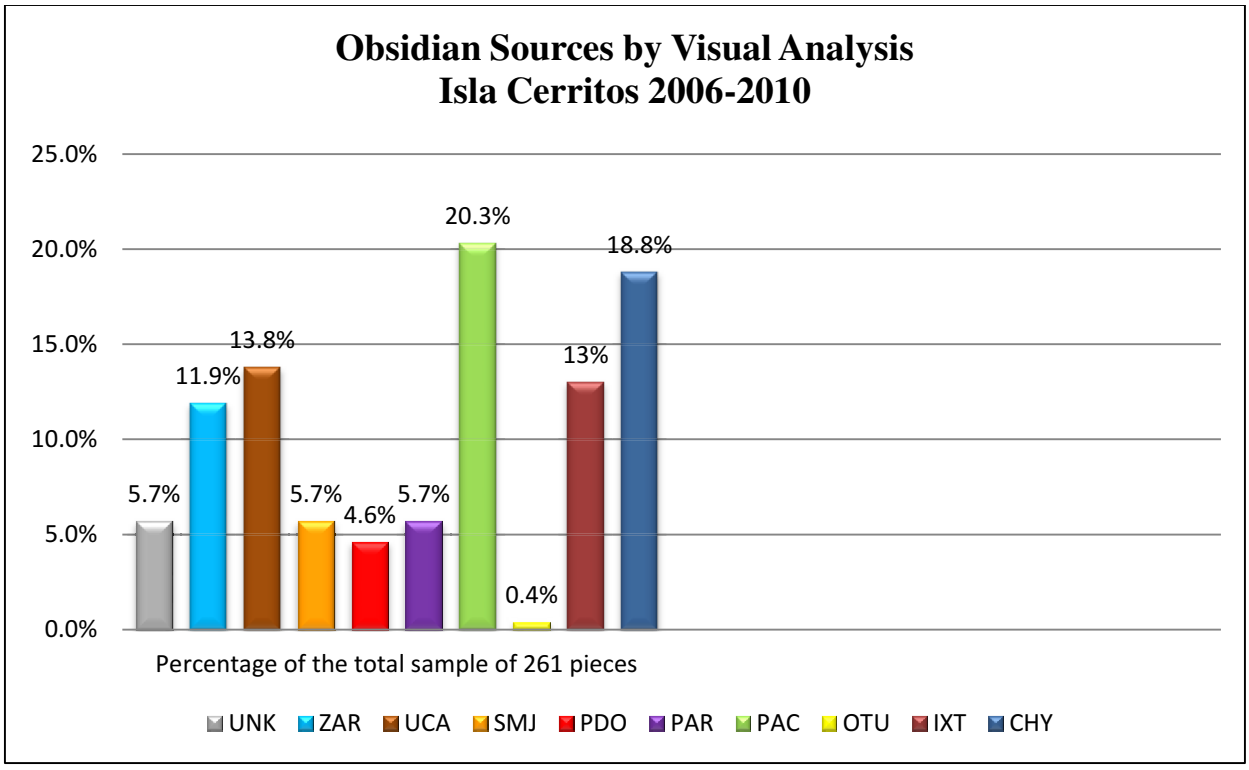


Figure 5.12: Graph showing the sources of obsidian from the combined sample, ICAP 2006-2010.

Taking into account the combined data from 2006-2010 (sample size = 261 fragments), the majority of the obsidian from the Isla Cerritos sample is green Pachuca obsidian from Central Mexico, which is the only green type and therefore identified with 100% accuracy. After Pachuca, the most frequent sources are El Chayal (Guatemala), followed by Ixtepeque (Guatemala), Ucareo (Mexico), and Zaragoza (Mexico). This suggests that at some point in the port's Late Classic – Terminal Classic history, the Guatemalan obsidian sources were also frequently utilized, and that Isla Cerritos was connected to Maya trade networks from the east and south. Combining the quantity of obsidian imported from all six highland Mexican sources and comparing it to the combined amount from Guatemalan sources in the 2006-2010 sample, provides a ratio more like 60% (Central Mexico) to 40% (Guatemala).

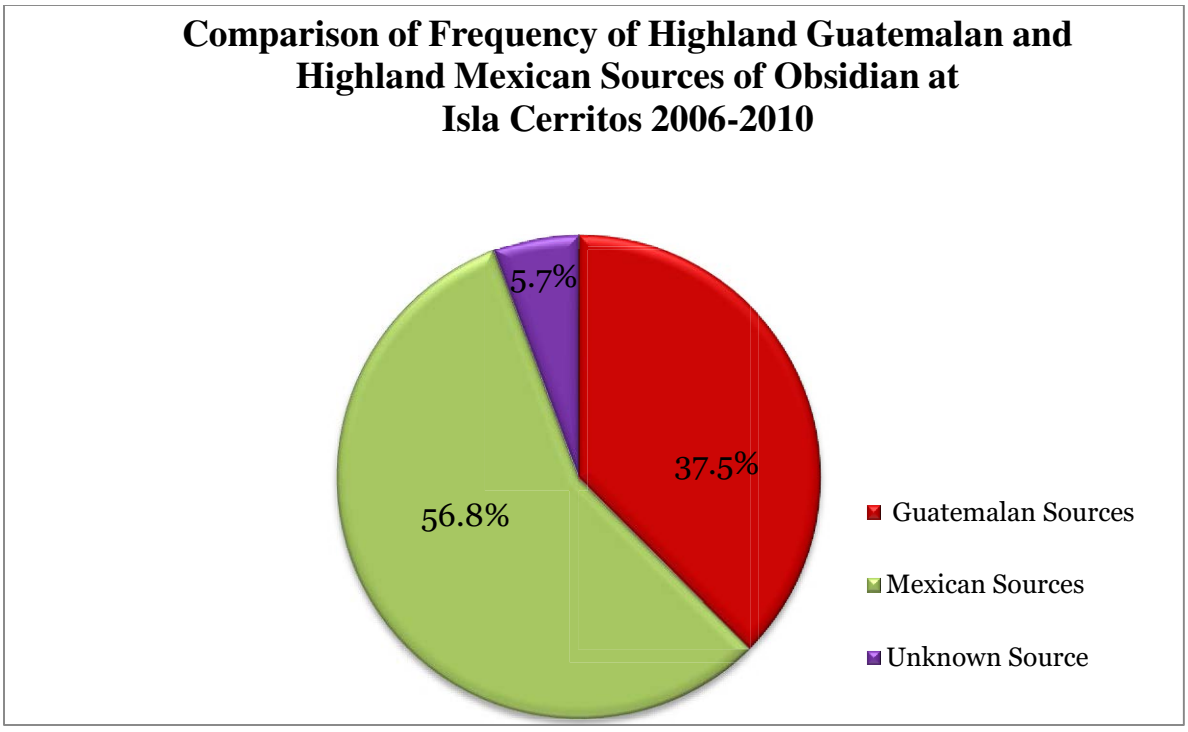


Figure 5.13: Pie chart showing the overall frequency of obsidian imported from highland Mexican versus highland Guatemalan sources during the Late Classic-Postclassic periods.

While any spatial variation in obsidian source distribution will be discussed in the sections pertaining to specific household structures, an important question is whether it is possible to detect any variation over time in this sample that might relate to trade networks or sociopolitical dynamics.

Examining the distribution of obsidian sources recovered from ICAP 2010 domestic contexts by stratigraphic level in Structures 19, 23, and the patio suggests that by the end of the Jotuto ceramic complex (c.1050 CE) and later, the overwhelming majority of obsidian arrived at Isla Cerritos from Central Mexico.

Table 5.5: Distribution of obsidian sources in Structure 19, Level I, ICAP 2010.

Structure 19, Level I

Structure	Level	Source	No.	% of the level (n=26)
19	I	CHY	2	7.7%
19	I	PAC	10	38.5%
19	I	PAR	2	7.7%
19	I	PDO	3	11.5%
19	I	SMJ	2	7.7%
19	I	UCA	2	7.7%
19	I	ZAR	3	11.5%
19	I	UNK	2	7.7%
TOTAL			26	100%

Percentage of sources from highland Mexico: 77%
Percentage of sources from highland Guatemala: 15%

Table 5.6: Distribution of obsidian sources in Structure 19, Level II, ICAP 2010.

Structure 19, Level II

Structure	Level	Source	No.	% of the level (n=59)
19	II	CHY	12	20.3%
19	II	IXT	6	10.2%
19	II	PAC	11	18.6%
19	II	OTU	1	1.7%
19	II	PAR	4	6.8%
19	II	PDO	1	1.7%
19	II	SMJ	3	5.1%
19	II	UCA	11	18.6%
19	II	ZAR	6	10.2%
19	II	UNK	4	6.8%
TOTAL			59	100%

Percentage of sources from highland Mexico: 57%
Percentage of sources from highland Guatemala: 36%

Table 5.7: Distribution of obsidian sources in Structure 19, Levels III and IV, ICAP 2010.

Structure 19, Levels III & IV

Structure	Level	Source	No.	% of the level (n=14)
19	III	IXT	2	14.3%
19	III	PAC	3	21.4%
19	III	PAR	1	7.1%
19	III	PDO	1	7.1%
19	III	SMJ	3	21.4%
19	III	UCA	1	7.1%
19	III	ZAR	1	7.1%
19	III	UNK	1	7.1%
19	IV	ZAR	1	7.1%
TOTAL			14	100%

Percentage of sources from highland Mexico: 57%
Percentage of sources from highland Guatemala: 36%

Table 5.8: Distribution of obsidian sources in Structure 23, Level I, ICAP 2010.

Structure 23, Level I

Structure	Level	Source	No.	% of the level (n=5)
23	I	IXT	1	20%
23	I	PAC	2	40%
23	I	ZAR	2	40%
TOTAL			5	100%

Percentage of sources from highland Mexico: 80%
Percentage of sources from highland Guatemala: 20%

Table 5.9: Distribution of obsidian sources in Structure 23, Level II, ICAP 2010.

Structure 23, Level II

Structure	Level	Source	No.	% of the level (n=44)
23	II	CHY	6	13.6%
23	II	IXT	12	27.3%
23	II	PAC	5	11.4%
23	II	PAR	3	6.8%
23	II	PDO	2	4.5%
23	II	SMJ	1	2.3%
23	II	UCA	3	6.8%
23	II	ZAR	6	13.6%
23	II	UNK	6	13.6%
TOTAL			44	100%

Percentage of sources from highland Mexico: 43%
Percentage of sources from highland Guatemala: 43%

Table 5.10: Distribution of obsidian sources in Structure 23, Level III, ICAP 2010.

Structure 23, Level III

Structure	Level	Source	No.	% of the level (n=16)
23	III	CHY	3	18.8%
23	III	IXT	1	6.2%
23	III	PAC	5	31.3%
23	III	PDO	1	6.2%
23	III	SMJ	2	12.5%
23	III	UCA	2	12.5%
23	III	ZAR	2	12.5%
TOTAL			16	100%

Percentage of sources from highland Mexico: 63%
Percentage of sources from highland Guatemala: 37%

Table 5.11: Distribution of obsidian sources in the Patio, Level I, ICAP 2010.

Patio, Level I

Structure	Level	Source	No.	% of the level (n=2)
Patio	I	ZAR	1	50%
Patio	I	UCA	1	50%
TOTAL			2	100%

Percentage of sources from highland Mexico: 100%

Table 5.12: Distribution of obsidian sources in the Patio, Level II, ICAP 2010.

Patio, Level II

Structure	Level	Source	No.	% of the level (n=3)
Patio	II	ZAR	1	33.33%
Patio	II	UCA	1	33.33%
Patio	II	PAC	1	33.33%
TOTAL			3	99.99%

Percentage of sources from highland Mexico: 100%

Table 5.13: Distribution of obsidian sources in the Patio, Levels III and IV, ICAP 2010.

Patio, Levels III & IV

Structure	Level	Source	No.	% of the level (n=22)
Patio	III	CHY	2	9.1%
Patio	III	IXT	1	4.5%
Patio	III	PAC	8	36.4%
Patio	III	PDO	1	4.5%
Patio	III	SMJ	4	18.2%
Patio	III	UCA	3	13.6%
Patio	III	ZAR	1	4.5%
Patio	III	UNK	1	4.5%
Patio	IV	PDO	1	4.5%
TOTAL			22	99.8%

Percentage of sources from highland Mexico: 64%
Percentage of sources from highland Guatemala: 32%

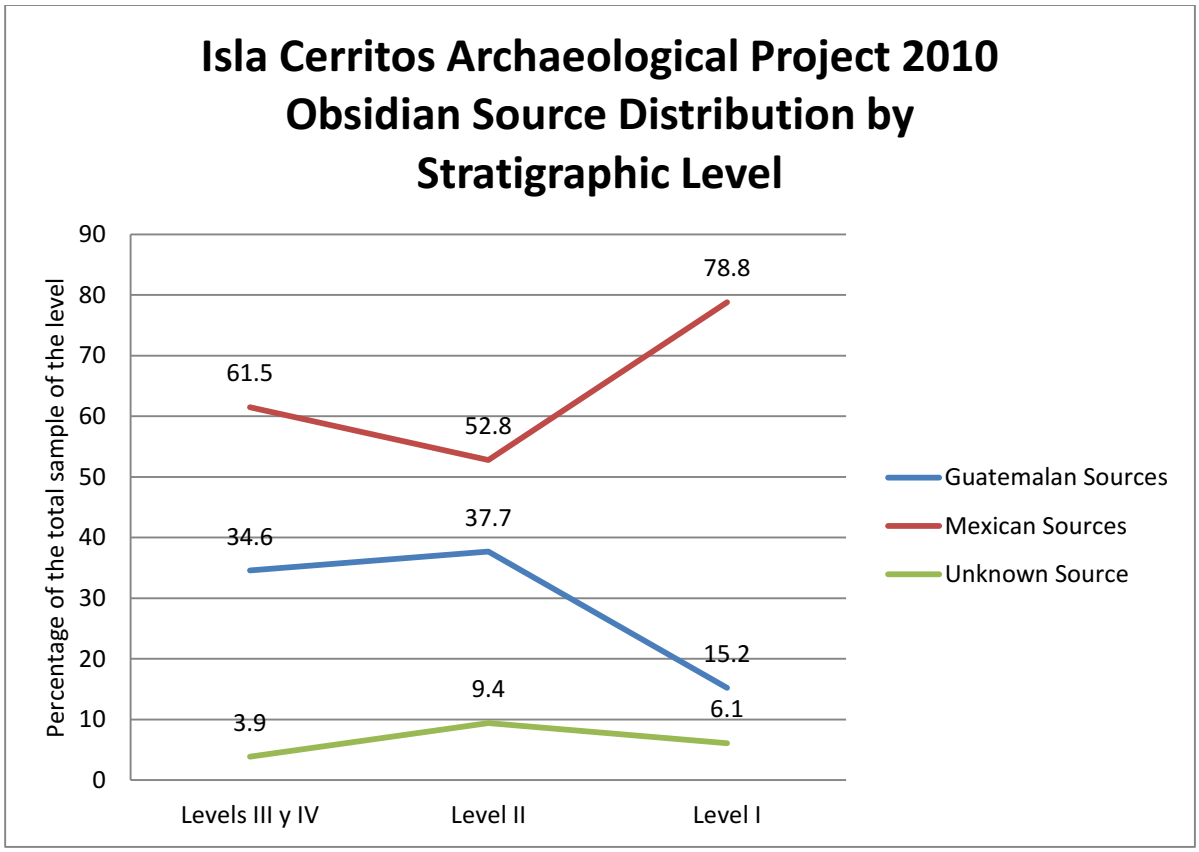


Figure 5.14: Chart showing changes in the frequency of obsidian sources across stratigraphic levels in domestic contexts excavated in 2010. Note: the identification of the sources is based on visual analysis (see Braswell et al. 2000) of 193 fragments excavated from Isla Cerritos in 2010, using the comparative obsidian collection from the Chichén Itzá Archaeological Project.

In contrast, during the early part of the Jotuto period (c.800-950 CE) corresponding to the political rise of Chichén Itzá, three sources in Central Mexico, along with El Chayal and Ixtepeque in Guatemala, were accessed most frequently. El Chayal is more common than Ixtepeque, corresponding to an inland trade route up the Usumacinta River to the west coast, where many of the imported goods that reach Isla Cerritos at this time originate (Cevera Rivero 1996:63; Jiménez 2009). Ixtepeque obsidian, less frequently found at Isla Cerritos, seems to have been traded up the eastern Caribbean coast, as indicated by patterns at Caribbean ports such as Wild Cane Cay (McKillop 2005b). Interestingly, the data from the 1984-85 survey shows that the earliest obsidian found on the island is from a burial context dating to the Late Pre-Classic

Period (c. 150 BCE), and that this piece originated in Zaragoza, Puebla. This suggests, though it does not confirm, that the West-East obsidian trade networks were functioning much earlier than the rise of Chichén Itzá to prominence (cf. Braswell and Glascock 2002).

Table 5.14: Obsidian technology found in funerary contexts excavated on Isla Cerritos in 2010.

Location	Burial	Type of Tool	Obsidian Source	Total
Patio	20	Prismatic blade	DES, SMJ, UCA, ZAR	6
Patio	21	Prismatic blade	PDO	1
Est. 23	22	Prismatic blade, percussion blade	IXT, UNK	2
Est. 23	24	Prismatic blade	UCA	1
				10

In ritual contexts in the domestic areas, such as mortuary deposits, we found very few obsidian offerings overall, and certainly no correlation between these specialized contexts and a particular source that we could identify.

Lithic technology made from limestone is found prominently in the domestic structures of the north side of the island. This is the most readily available raw material for construction and tool manufacture in the region, and the widest range of different tools fall within this category.

Table 5.15: Limestone artifacts excavated from Isla Cerritos 2010.

Type	Structure 19	Structure 23	Structure 30	Patio y Test Pit	Total
Polisher	1	12	1	2	**16**
Cobblestone	0	4	2	0	**6**
Sculpture	0	3	0	0	**3**
Flake	0	0	0	1	**1**
Bark beater	0	0	1	0	**1**
Grinding stone (mano)	10	13	0	10	**33**
Metate	0	0	0	0	**0**
Metate support	1	0	0	0	**1**
Hammerstone	0	1	0	0	**1**
Net weight	1	0	0	0	**1**
Flat stone	3	3	1	3	**10**
Pestle	2	1	1	1	**5**
Rounded stone	13	12	1	3	**29**
Retouched scraper	1	0	0	0	**1**
Unifacial knife	0	1	0	0	**1**
Unidentified technology	2	15	1	6	**24**
Total	**34**	**65**	**8**	**26**	**133**

Limestone grinding stones are ubiquitous in all domestic contexts throughout the site. Their sizes vary greatly and it is not clear whether all limestone metates were used specifically for corn grinding in food preparation. In the seacoast village mural discussed in Chapter 4, a male individual is depicted grinding some material at the water's edge (outside the house or patio spaces). In the preserved structures at the Maya village of Cerén in El Salvador, Sheets and Brown (2001) documented wooden bases that increased the height and angle of metates for better grinding. One of the preferred raw materials for grinding stones throughout ancient Mesoamerica was basalt from volcanic deposits. This material was traded far and wide from mountains of Veracruz to the west across the Gulf from Isla Cerritos and from the Maya Mountains of Belize.

Table 5.16: Basalt artifacts excavated at Isla Cerritos 2010.

Type	Structure 19	Structure 23	Structure 30	Patio / Test Pit	Total
Polisher	1	1	0	0	**2**
Metate	0	6	0	3	**9**
Metate support	1	0	0	0	**1**
Unidentified technology	0	1	0	0	**1**
Total	**2**	**8**	**0**	**3**	**13**

While basalt grinding stones and polishers are found in low quantities in both Structure 19 and Structure 23, there are slightly more metates made of this preferred material associated with Structure 23.

Table 5.17: Chert artifacts from domestic contexts excavated at Isla Cerritos 2010.

Type	Structure 19	Structure 23	Structure 30	Patio / Test Pit	Total
Flake	12	7	0	0	**19**
Grinding stone (mano)	3	4	0	0	**7**
Blade	2	1	1	0	**4**
Core	1	1	0	1	**3**
Point	6	4	0	0	**10**
Retouched scraper	0	1	0	0	**1**
Scraper	1	2	0	0	**3**
Unidentified technology	0	3	0	1	**4**
Total	**25**	**23**	**1**	**2**	**51**

The nearest chert sources to Isla Cerritos are located in western Yucatán near the Puuc hills region (Cobos et al. 2007). The distribution of chert artifacts is relatively equal across house structures (interiors) excavated in 2010, however small points and flakes were recovered in more abundance in Structure 19, perhaps suggesting that some production and re-use of chert objects

took place in the West Patio Group. A large complete chert spear point was recovered from the west room of Structure 23, just over the Jotuto floor level.



Figure 5.15: Photograph of a complete chert spear point recovered from Jotuto period contexts in Structure 23, ICAP 2010.

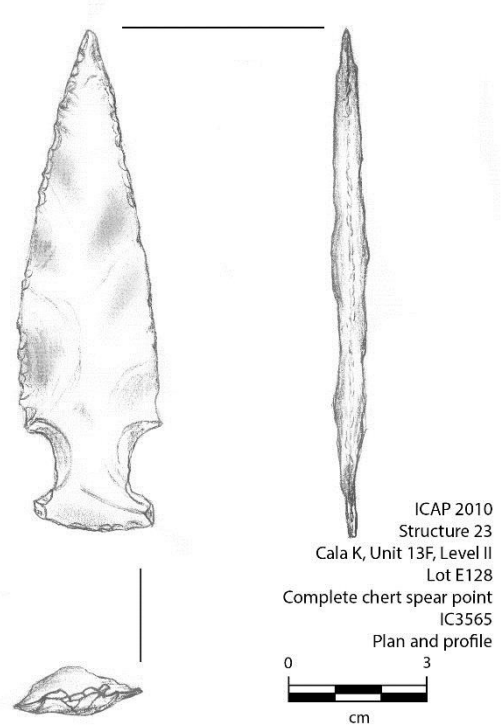


Figure 5.16: Illustration of complete spear point found in Structure 23, ICAP 2010.

Greenstone or jadeite was an elite sumpturary good valued across the Maya region and imported from the Motagua River Valley in Guatemala. Only three greenstone objects were recovered from recent excavations in the residential groups of the north side of Isla Cerritos. One a jade bead was most definitely a funerary offering (see below). Inside both Structure 23 and Structure 19 a small, ceremonial greenstone axe was recovered.

Table 5.18: Jadeite and greenstone artifacts from domestic contexts at Isla Cerritos 2010.

Material	Type	Structure 19	Structure 23	Structure 30	Patio / Test Pit	Total
Jadeite	Adornment (bead)	0	1	0	0	**1**
Greenstone	Axe	1	1	0	0	**2**
Total		**1**	**2**	**0**	**0**	**3**

Table 5.19: Coral artifacts from domestic contexts excavated at Isla Cerritos 2010.

Type	Structure 19	Structure 23	Structure 30	Patio / Test Pit	Total
Grinding stone (mano)	0	1	0	0	**1**
Unidentified technology	7	2	0	0	**9**
Total	**7**	**3**	**0**	**0**	**10**

Table 5.20: Artifacts made from quartzite, river cobble, pumice, sandstone, and unidentified minerals, ICAP 2010.

Material	Type	Structure 19	Structure 23	Structure 30	Patio /Test Pit	Total
Quartzite	Polisher	0	1	0	0	**1**
	Rounded stone	1	0	0	0	**1**
	Unidentified technology	0	1	0	3	**4**
	Total	**1**	**2**	**0**	**3**	**6**
River cobble	Polisher	4	1	1	0	**6**
	Round cobblestone	4	1	0	0	**5**
	Grinding stone (mano)	1	0	0	0	**1**
	Net weight	0	1	0	0	**1**
	Unidentified technology	0	0	0	1	**1**

Table 5.20 (Continued)

	Total	**9**	**3**	**1**	**1**	**14**
Pumice	Unidentified technology	1	0	0	0	**1**
	Total	**1**	**0**	**0**	**0**	**1**
Sandstone	Unidentified technology	1	0	0	0	**1**
	Total	**1**	**0**	**0**	**0**	**1**
Unidentified	Adornment	0	3	0	0	**3**
	Grinding stone	1	0	0	0	**1**
	Rounded stone	0	1	0	0	**1**
	Unidentified technology	0	2	0	1	**3**
	Total	**1**	**6**	**0**	**1**	**8**
Total	**--------**	**13**	**11**	**1**	**5**	**30**

*These beads are very likely hematite or pyrite, but further testing is necessary to confirm the identity of this raw material.

In the mortuary context of Burial 24 (Structure 23), which will be discussed in more detail below, two finely crafted beads of a mineral material were found, one slightly more globular in shape. Both are currently catalogued as "unidentified," but the raw material is almost certainly either pyrite or hematite. This material was also imported from Central Mexico, but further testing will be required to confirm the source.

The general pattern of lithics from Isla Cerritos continues to demonstrate that port communities had increased access to imported stone tools and products overall, but some residential contexts, namely Structure 23, show slightly increased access to preferred basalt grinding stones in addition to limestone for basic food preparation. In terms of all other raw material types, Structures 19 and 23 demonstrate very similar patterns. There is a slightly higher quantity of chert flakes and point technology in Structure 19 that may indicate lithic production was one activity taking place more often in that house structure (Tables 5.17, 5.22). Structure 23, on the other hand, is where we encountered small quantities of exotic lithics with social value

as elite sumptuary goods generally in Maya society, including carved and polished jade, greenstone axes, and hematite/pyrite. The chert spear point from a weapon used in warfare or hunting (or both) is also associated with the occupants of the west room of Structure 23. The spatial distribution shows more lithics (in quantity and variety) in direct association with all house platforms and floors compared with the patio, shared common spaces, or burials. The exception, again, is obsidian, which has been found in higher concentrations along the edges of the island and in the southern plain.

Table 5.21: Lithics associated with special funerary contexts from Isla Cerritos 2010.

Material	Type	Burial 18	Burial 19	Burial 20	Burial 21	Burial 22	Burial 23	Burial 24	Burial 25	**Total**
Limestone	Grinding stone (mano)	0	3	0	0	0	0	0	0	**3**
	Unidentified	0	1	0	0	0	0	0	2	**3**
	Total	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**2**	**6**
Obsidian	Prismatic blade	0	0	6	1	1	0	1	0	**8**
	Percussion blade	0	0	0	0	1	0	0	0	**2**
	Total	**0**	**0**	**6**	**1**	**2**	**0**	**1**	**0**	**10**
Chert	Retouched scraper	0	0	0	0	1	0	0	0	**1**
	Scraper	0	0	0	0	1	0	0	0	**1**
	Unidentified	0	0	0	0	0	0	1	0	**1**
	Total	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**3**
River cobble	Polisher	0	0	0	0	0	0	1	0	**1**
	Net weight	0	0	0	0	0	0	1	0	**1**
	Total	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**

Table 5.21 (Continued)

Jadeite	**Adornment**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**
	Total	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**
Unidentified	Adornment	0	0	0	0	0	0	2	0	**2**
	Total	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**
Total	**------**	**0**	**4**	**6**	**1**	**4**	**0**	**7**	**2**	**24**

Table 5.22: Distribution of lithic tool types by excavated structure. Structures 19, 30 and the Patio were excavated in 2010. Structure 23 combines the lithic assemblage data from ICAP 2007 and 2010.

Lithic Technology	Structure 19	Structure 23 (2007 y 2010)	Patio	Structure 30 (1 Unit, 3 Lots)
Polisher (n=25)	24%	60%	8%	8%
Burin (n=4)	25%	50%	25%	0
Rounded cobblestone (n=11)	36.4%	45.5%	0	18.2%
Adornment (beads) (n=3)	0	100%	0	0
Sculpture (n=3)	0	100%	0	0
Axe (n=2)	50%	50%	0	0
Flake (n=42)	54.8%	40.5%	4.8%	0
Bark beater (n=1)	0	0	0	100%
Mano grinding stone (n=43)	34.9%	41.9%	23.3%	0
Metate (n=9)	0	66.7%	33.3%	0
Blade (n=4)	50%	25%	0	25%
Prismatic blade (n=156)	53.2%	32.7%	14.1%	0.64%
Percussion blade (n=11)	36.4%	27.3%	27.3%	9%
Core (n=3)	33.3%	33.3%	33.3%	0
Hammerstone (n=1)	0	100%	0	0
Net weight (n=2)	50%	50%	0	0
Flat stone (n=10)	30%	30%	30%	10%
Pestle (n=5)	40%	20%	20%	20%
Rounded stone (n=31)	45.2%	41.9%	9.7%	3.2%
Point (n=10)	60%	40%	0	0
Retouched scraper (n=1)	0	100%	0	0
Scraper (n=4)	50%	50%	0	0
Metate support (n=2)	100%	0	0	0
Unifacial knife (n=1)	0	100%	0	0
Unidentified technology (n=48)	22.9%	50%	25%	2.1%

There is barely any evidence for lithic manufacturing on the island. It is possible that this is due to the fact that it was more difficult for coastal people to access lithic raw material than previously supposed in the Terminal Classic period, and thus significant recycling of tools occurred. Also, it may be that lithic refuse was disposed of along with other midden material at the edges of the island where land expansion projects were underway to increase the size of the site. This might explain the increased frequency of surface lithics along the shore and exposed through erosion, as well as the higher frequencies found in the southern plain test excavations (Cobos et al. 2010). My analysis of the lithic data suggests very little core and flake production at the site (n=38) and mostly re-touch of tools, imported cores, and finished products. One exception is obsidian, which generally shows very little evidence of re-touch, and may have been easier to access for residents during the period the port was at its height of operation. Two types of household production involving lithics that do appear are fishing net weights and a single bark beater recovered from the test unit opened to expose the northeast corner of Structure 30. The former are ubiquitous in domestic contexts throughout the island and are key components of the coastal subsistence economy. They are mostly manufactured from discarded ceramic sherds, and less frequently from available small stones. These weights show characteristic wear and polish around the center and grooved edges where the net is wrapped tightly around them to keep them in place (Figure 5.19). The bark beater is a stone tool made of limestone that may have been used to pound tree bark or hide into thin paper (Figure 5.17, 5.18). It is not clear whether the production of paper was an activity that took place on or near the island port or Paso del Cerro. These objects may also have been brought into the port for redistribution to other areas or with individuals coming through the port. This object was located outside the corner of the Structure 30 platform, and may have been placed there ritually.



Figure 5.17: Photograph of lithic artifacts from Structure 30. The object in the upper left-hand corner is a limestone bark beater.

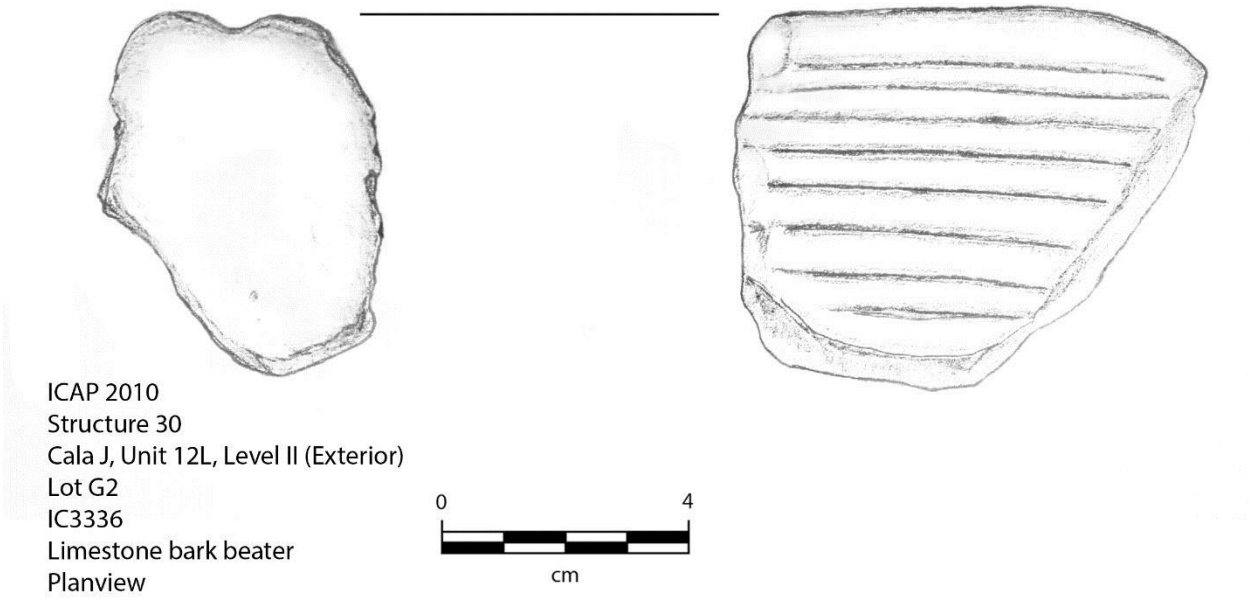


Figure 5.18: Illustration of the limestone bark beater found outside the northeast corner of Structure 30's platform.



Figure 5.19: Photograph of fishing net weights from Structure 23 made of ceramic. Stone weights are also found and typically made from smooth river cobble.

5.4 Zooarchaeology Overview and Methods

The first zooarchaeological analysis conducted on material from Isla Cerritos was that carried out by Helena Sorayya Carr in 1987. Starting in 2006, Christopher Götz of the UADY has directed the analysis of all faunal remains from the island with assistance from students specializing in this area of archaeological analysis. Once transported to the lab, the osteological and taxonomic identification of the faunal remains proceeds using the comparative collection of modern specimens from the lab, as well as several manuals on animal osteology (Olsen 1964, 1968,1982; Gilbert 2003; Gilbert et al. 1996; Hillson 1999). The taxonomic identification used in 2006, 2007, and 2010 employs the zoological terminology from recent studies by Götz (2012). In 2007, the total number of fragments analyzed increased to over 3,500, largely as a result of the excavation of domestic contexts beginning with the east side of Structure 23. That excavation produced the most important zooarchaeological specimen encountered to date, a fragment from the femur of Monachus tropicalis, or tropical seal, a species that is now extinct in North America and the Caribbean, but did at one time inhabit marine banks and reefs in the Gulf of Mexico and Atlantic Caribbean.



Figure 5.20: Tropical seal femur recovered from Structure 23 excavations in 2007. From Cobos et al. 2010; Photo by Christopher Götz

The assumption has always been that Mesoamerican civilizations hunted tropical seal, but no evidence from an archaeological context had yet been found in Mesoamerica before this specimen at Isla Cerritos and 11 others recovered at the Maya costal site of Xcambó, also located on the north coast of Yucatán (Cobos et al. 2010, Götz 2010).

In 2010, 4,906 faunal specimens were recovered from prehispanic contexts on the island, with most (n=2374) documented in Structure 19 and Structure 23 (n=1954) (Chávez and Götz n.d.). The NISP and specific observations regarding the spatial distribution of faunal remains and correlations with material culture are discussed below for each structure, but a few general

trends are worth mentioning here. Perhaps not surprisingly, the high quantities of fish, reptiles, crustaceans, and molluscs represented in Isla Cerritos domestic contexts reflect a marine subsistence orientation suited to the mangrove coast and estuary environment. In Structure 19, reptile (including sea turtle and crocodile) and fish remains occur in higher frequencies than any other class, while in Structure 23, reptiles occur less frequently in deposits and crustaceans and birds more in comparison to Structure 19. In the patio of the West Patio Group and the few lots excavated in Structure 30, marine resources (reptiles, fish, crustaceans) also predominate. As mentioned in Chapter 4, underwater archaeological surveys along the coast between the island and Paso del Cerro have documented enclosed stone alignments that may have served as fishing weirs to capture quantities of fish during tidal fluctuations.

Two recent undergraduate theses in zooarchaeology from UADY have analyzed faunal remains from excavations conducted in 2006-07 (Herrera 2011) and 2010 (Chávez 2014) in relation to architecture to discuss building function and activity areas (specifically Structure 19), resource use patterns, cuisine, and social identity. I will discuss some of their interpretations in relation to mine in sections below, but both of these projects are worth consulting, in addition to the INAH reports from field seasons in 2006, 2007, and 2010 (Cobos et al. 2006, 2010), for the comprehensive zooarchaeological inventories and statistics for each field season.

Recall that Isla Cerritos does not have any natural sources of fresh water, so large, meat bearing mammals and other terrestrial fauna, such as turkey, canines, and felines were not native to the island and must have been transported there. Larger marine mammals, such as the tropical seal and manatee (Trichechus manatus), were hunted along the coast (McKillop 1985). In the residential groups on the island, we find evidence that all residents within this community also had access to white-tailed deer, peccary, tapir, rabbit, dog, turkey and other inland species, albeit

in lower quantities than documented inland. These were hunted (or raised in some cases) and butchered inland, perhaps near Chinalco, with the meat-bearing parts imported by canoe to the island. These terrestrial mammals were preferred and consumed by elites in Maya society elsewhere (Pohl 1994), and the added expense of transport of these resources to the island portion of the coastal community is notable. We do not yet have evidence on the island for feasting activities (not apparent in Structures 5 or 3—superstructure), and food preparation areas (hearths and kitchen areas) have not been identified in any domestic structure excavated so far. As we continue to investigate the residential groups and civic-ceremonial structures, more evidence will hopefully shed light on this. Currently, there are no patterns that suggest certain residents or areas had increased access to meat, and it seems that residents and visitors alike benefited from the movement of these resources between Chinalco, Paso del Cerro and Isla Cerritos.

5.5 Archaeological Mollusca Overview and Methods

Just as was the case in 1985, 2006, and 2007, the overwhelming artifact class found on the island in terms of quantity continues to be archaeological mollusca. Having been used as a food source, construction material, and a raw material for tools for millennia, not to mention the amount that washes up naturally from the sea, it is no wonder that archaeology excavations at Isla Cerritos produce hundreds of kilograms of shell every season. Unless they are found in special contexts or middens, or show evidence of tool manufacture, we collect a sample of shells from each lot rather than collecting every mollusk exposed in excavations. Then, a representative sample of the overall collection from any given season is chosen by Rafael Cobos for analysis.

In the field and at the FCA-UADY, archaeological mollusca are separated from the rest of the faunal material and analyzed by Cobos and archaeologist Mauricio Germon Roche (consult Germon Roche 2011 for an analysis of ICAP 2007 mollusca sample). The identification and classification of each piece by class, gender, and species is carried out with reference to malacological guides for the marine littoral of the Yucatan Peninsula (Vokes and Vokes 1983). Comparative analysis with previously identified samples from Isla Cerritos is also frequently undertaken from samples collected in 1984-85 and 2006-07 (Andrews et al. 1988; Cobos 1989; Cobos et al. 2007). The two classes of mollusca most commonly found in the Maya region are univalves (gastropods) and bivalves (pelecypods), and from there, species may be identified depending on how much of the shell remains. A complete shell is defined as being 3/4 or more preserved, while anything less is considered a fragment (Andrews IV et al. 1974:185). The vast majority of archaeological molluscs from Isla Cerritos have been identified as gastropod species native to the Gulf coast littoral, including Busycon contrarium, Fasciolaria tulipa, and Strombus costatus. Pelecypod species, such as Mercenaria campechiensis, are also common and native to the Gulf coast (Cobos et al. 2010). Atlantic species are rare, but do appear in specialized contexts on the island. The data tables for shell from 2010 are reproduced in digital form in Appendix C (Table C.4).



Figure 5.21: Photograph of Prof. Rafael Cobos, Arqlgo. Maurico Germon Roche and Arqlga. Kena Canto analyzing ICAP 2010 mollusca in the Archaeological Laboratory (FCA-UADY).

In 2010, we recovered a sample of 14,419 shells. The total sample of unworked fragments collected was 12,637 and unworked whole shells consisted of 1,538. A total of 244 fully and semi-worked shell tools were documented and added to the artifact tables, which include worked fragments and trumpets made from whole shells (Table 5.2). This is strong evidence that shell tool production was important at this coastal site, and also for regional coastal-inland exchange networks. Quantitatively, the distribution of mollusca is very balanced between Structures 19 and 23 in the northern residential area of the island. However, a qualitative examination of the spatial distribution within individual structures, suggests that certain areas within Structure 23 were designated for activities associated with shell tool production and discard. This household also had increased access to exotic shell, including Spondylus americanus, from the Caribbean. Structure 8 also shows increased access to spondylus and other shells not native to the north coast. This will be discussed in more detail below. Shell

artifacts include a wide range of objects useful in domestic contexts and also left as offerings with the dead, including burins, chisels, perforators, awls, objects of personal adornment (beads and pendants), spoons, ladles, polishers, axes, scrapers, a polished net awl, and shell trumpets. Often unworked shell was also piled into dedicatory concentrations associated with ritual and burial contexts as well.

In summary, the distribution of non-lithic tools between Structures 23 and 19 (interior rooms) is quite similar, including for shell. We documented higher concentrations of shell in two spaces on the north side of the Structure 23 platform, and in either burial contexts or used as compact construction fill (with small gravel, chich) between floors.

Table 5.23: Distribution of non-lithic technology by excavated structure, ICAP 2010.

Technology	Structure 19	Structure 23	Patio	Structure 30
Adornment (n=7)	42.9%	42.9%	0	14.2%
Needle (n=1)	0	100%	0	0
Mirror base (n=1)	100%	0	0	0
Ball of clay (n=10)	40%	0	60%	0
Burin (n=2)	0	50%	50%	0
Chisel (n=1)	0	0	0	100%
Cornhusker (n=9)	11.1%	66.7%	22.2	0
Worked Manati rib bone (n=1)	0	0	100%	0
Sm. spoon (n=2)	50%	0	50%	0
Lg. spoon / Ladle (n=3)	0	0	100%	0
Tooth (n=3)	0	33.3%	66.7%	0
Figurine (n=1)	0	0	0	100%
Fragment / carbon sample (n=28)	50%	42.8%	3.6%	3.6%
Axe (n=24)	41.7%	33.3%	25%	0
Musical instruments / whistle (n=1), drum (n=1)	50%	50%	0	0

Table 5.23 (Continued)

Spindle whorl (n=1)	0	100%	0	0
Perforator (n=2)	0	100%	0	0
Net weights (n=36)	36.1%	47.2%	11.1%	5.6%
Floor (fragments) (n=15)	86.7%	0	13.3%	0
Polisher (n=1)	100%	0	0	0
Punch (n=1)	0	100%	0	0
Scraper (n=1)	0	100%	0	0
Worked ceramic fragments (tejos) (n=98)	13.3%	58.2%	21.4%	7.1%
Trumpet (n=5)	60%	40%	0	0
Unidentified technology (n=207)	41.5%	41.1%	14%	3.4%

5.6 Mortuary Analysis Overview and Methods

In 2010, eight human burials were identified and excavated in the northern residential area. Five of these were located in the patio of the West Patio Group and three were associated with Structure 23 during different occupational periods. In Structure 8, a burial containing four individuals was excavated as part of the test excavation conducted in 1985, and in 2006 two additional burials were uncovered, bringing the total burial population from confirmed domestic contexts on the island to 14 so far. In contrast to the 1984-85 field seasons, specialists from the Bioarchaeology Laboratory of the FCA directed the excavations and documentation of human remains during the 2006 and 2010 field seasons (in 2007, no human remains were recovered). In 2006, professors Vera Tiesler and Andrea Cucina (UADY) brought a small team of bioarchaeology students to assist in the excavation of three burials (Burials 15, 16, and 17), two of which were exposed in Structure 8 and one in Structure 12. In 2010, eight burials were

exposed by the archaeologists in association with the residential architecture and Tiesler returned to the island with several bioarchaeology students to assist with the excavations. In this section, I outline the basic methods, theoretical approach, and patterns documented in the residential burials excavated at Isla Cerritos (Figure 5.22).

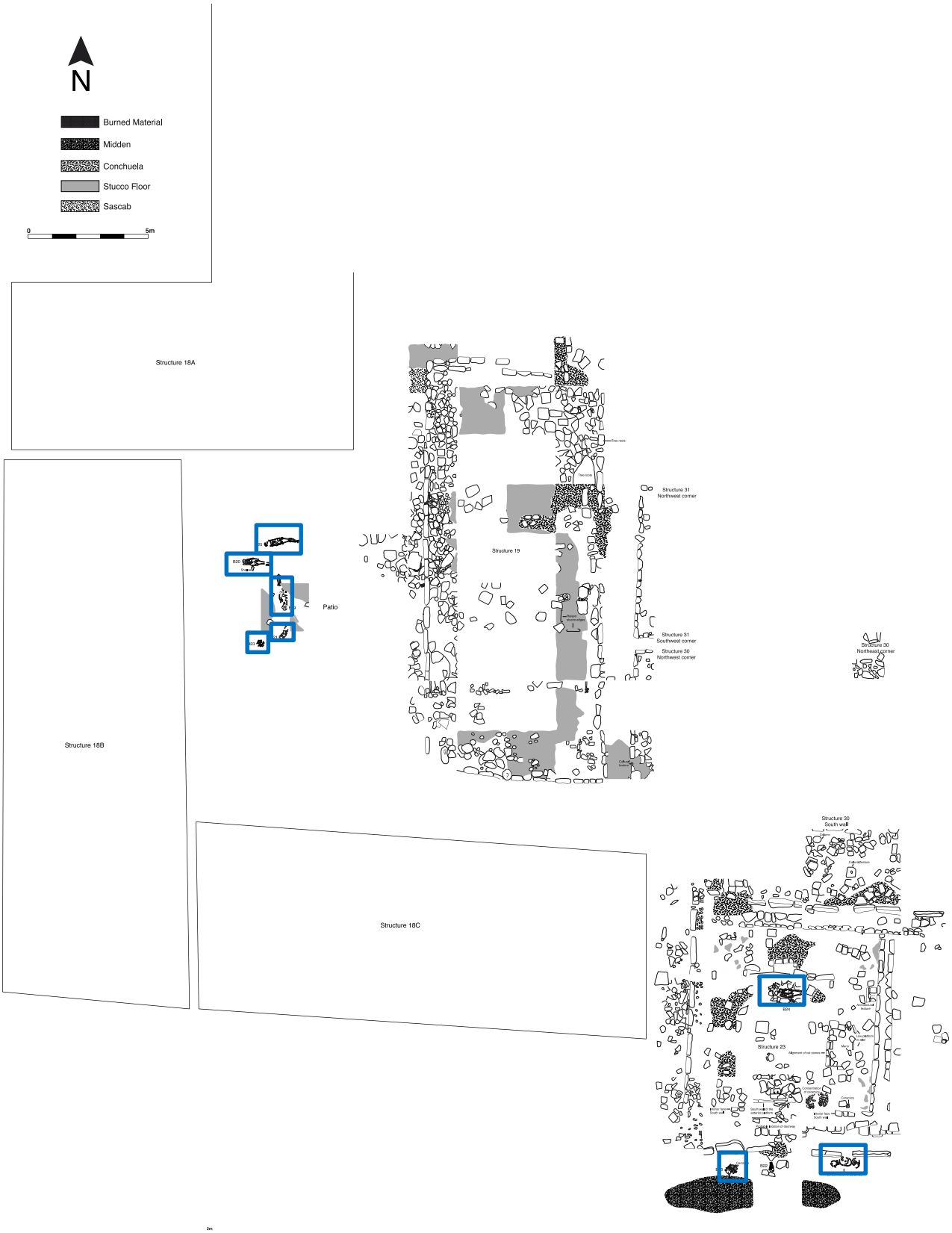


Figure 5.22: Plan map showing the domestic architecture excavated in 2010 with the location of eight burials associated with the West Patio Group and Structure 23 outlined.

The methods employed included both a "macro-excavation" of the remains in the field and a "micro-excavation" focused on the osteological features in the Bioarchaeology Laboratory in Mérida. In the field, the bioarchaeology team organized the excavation around the same grid system employed in the architectural excavation, using smaller, lighter brushes (2, 3, and 5-inch) and dental picks to carefully expose all human bone to its maximum extent in situ so that 1:5 scale taphonomic drawings in plan could be made and photographs taken. All human bone was tentatively identified and catalogued in the field, prior to being covered in foil and removed to the laboratory for micro-excavation. Soil samples were also taken from each burial for later analysis. Most human remains from the island must go through a process of gradual desalinization to prevent continued erosion as part of the conservation of the materials in the laboratory Micro-excavation of the human remains took place in the Bioarchaeology Laboratory under the direction of Dr. Vera Tiesler Blos and Dr. Andrea Cucina with assistance from undergraduate students in the skeletal biology program of the FCA-UADY.

The theoretical frameworks that structure the bioarchaeological method used at Isla Cerritos is outlined in Tiesler (2006), and she maintains the separate database of the osteological information for ICAP burials. What is reported below is a preliminary general description of each burial and mortuary context, with specific emphasis on the material culture and architectural context of the burials. In future collaborative publications with Cobos, Tiesler, and Cucina, we will examine the taphonomic and biological elements of the burial population in more detail.

Table 5.24: Non-lithic artifacts associated with funerary contexts, ICAP 2010. This does not include ceramic vessel fragments.

Material	Type	Burial 18	Burial 19	Burial 20	Burial 21	Burial 22	Burial 23	Burial 24	Burial 25	**Total**
Ceramic	Ball of clay	0	1	0	2	0	0	0	0	**3**
	Tejo	0	0	3	0	0	0	0	0	**3**
	Total	**0**	**1**	**3**	**2**	**0**	**0**	**0**	**0**	**6**
Bone	Needle	0	0	0	0	0	0	1	0	**1**
	Cornhusker	0	0	1	0	0	0	0	0	**1**
	Punch	0	0	1	0	0	0	0	0	**1**
	Manati rib (worked)	0	0	0	0	0	0	0	1	**1**
	Tooth	0	0	0	0	0	1	0	1	**2**
	Total	**0**	**0**	**2**	**0**	**0**	**1**	**1**	**2**	**6**
Shell	Burin	0	0	0	0	0	1	0	0	**1**
	Axe	0	1	0	0	0	0	0	0	**1**
	Unid. technology	0	1	1	0	0	0	0	1	**3**
	Total	**0**	**2**	**1**	**0**	**0**	**1**	**0**	**1**	**5**
Charcoal	Fragment	0	1	0	0	0	0	0	0	**1**
	Total	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Total	**------**	**0**	**4**	**6**	**2**	**0**	**2**	**1**	**3**	**18**

Overall, while preservation of human remains on the island is good, the mortuary contexts on Isla Cerritos are quite modest in terms of offerings, compared to contexts in larger structures and elite residential groups (whether found at coastal sites like Xcambó or inland sites like Chichén Itzá). The total amount of non-lithic, non-ceramic artifacts placed in burials is just 18 objects. There are subtle differences, however, among the burials that will be discussed below in relation to interpretations of social organization.

5.7 The West Patio Group

The West Patio Group at Isla Cerritos consists of four known structures around a central patio space, including structures 19, 18a, 18b, and 18c. During the 2010 field season there was only time to excavate Structure 19 and portions of the patio. The patio excavations began as a single test unit that was expanded when five human burials were exposed for adequate documentation and conservation. In the following subsections, I discuss the results of the archaeology of Structure 19 and the central portion of the patio.

5.7.1 Structure 19

I lead the excavation of 6 transects and 41 units on Structure 19, a low rectangular platform structure measuring 17 meters by 9 meters that forms the east side of the West Patio Group with Structures 18a, 18b, and 18c. It was tested in 1985 and found to have deep stratigraphy consisting of 5 plaster and 3 crushed lime floors dating to as early as 150 BCE. It is likely that part of this group was constructed upon the oldest remains of island settlement that pre-date Structure 23 and the plazuela group (Figure 5.23).

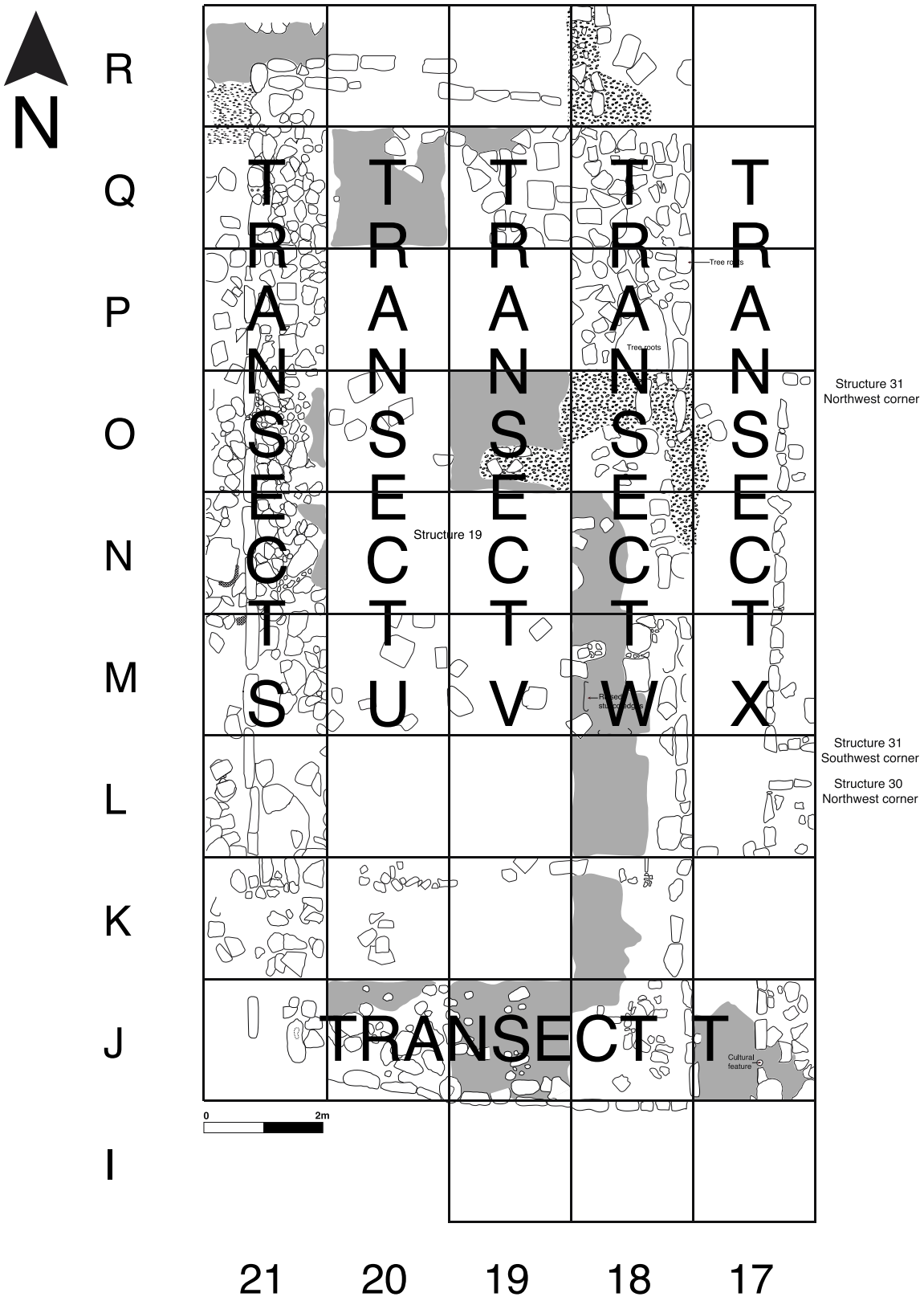


Figure 5.23: Map showing transects and grid outlining the excavation of Structure 19, ICAP 2010.

5.7.1.1 Architecture and Chronology

Our excavations in 2010 focused primarily on the latest occupation, and the ceramics associated with this structure are mostly typical of the Jotuto (Sotuta) complex from post-900 CE, with the exception of a few Canbalam groups that continue into later periods. Much of the ceramic assemblage of both structures 19 and 23 are pretty resistant to identification of forms, but almost all the diagnostic sherds belong to water storage, cooking vessels, bowls, and utilitarian serving vessels (high rimmed plates, or cajetes). Small quantities of fine Tohil Plumbate ceramics from Chiapas were also documented in Structure 19.

This structure is architecturally less complex than Structure 23, lacking stone basal walls above the platform or any extant interior spatial divisions. It would have been a single, large room with perishable walls and roof. One feature documented along the east wall was a low rectangular altar or platform raised just 30-40 cm above floor level that was later dismantled. Likewise, several large, limestone grinding stones were found along the platform of Structure 19, indicating corn or mineral processing on or near the platform. The only evidence of production associated with Structure 19 is a small quantity of semi-worked shell and a small amount of chert debitage.

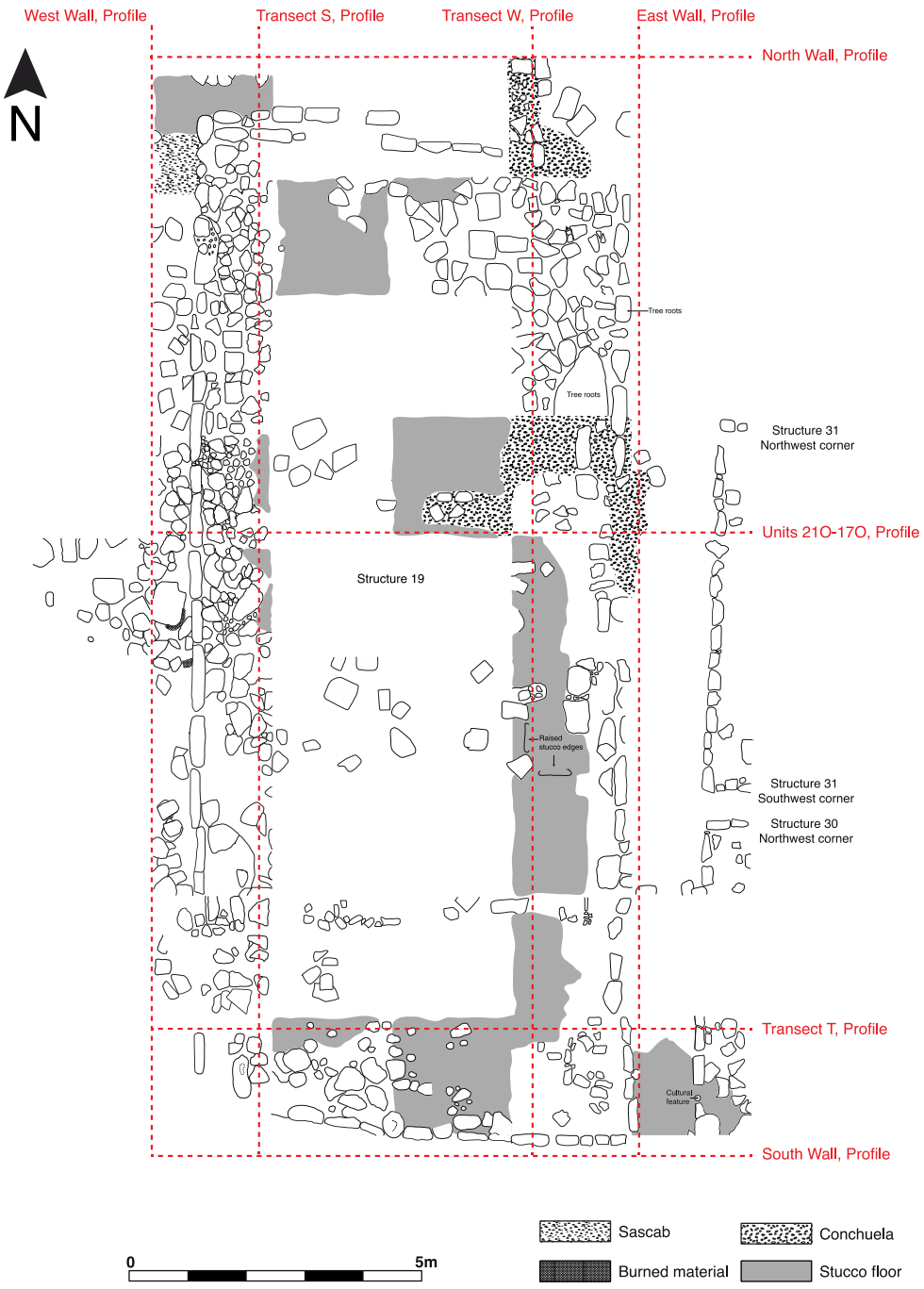


Figure 5.24: Map showing the location and direction of stratigraphic profiles documented for Structure 19, ICAP 2010.

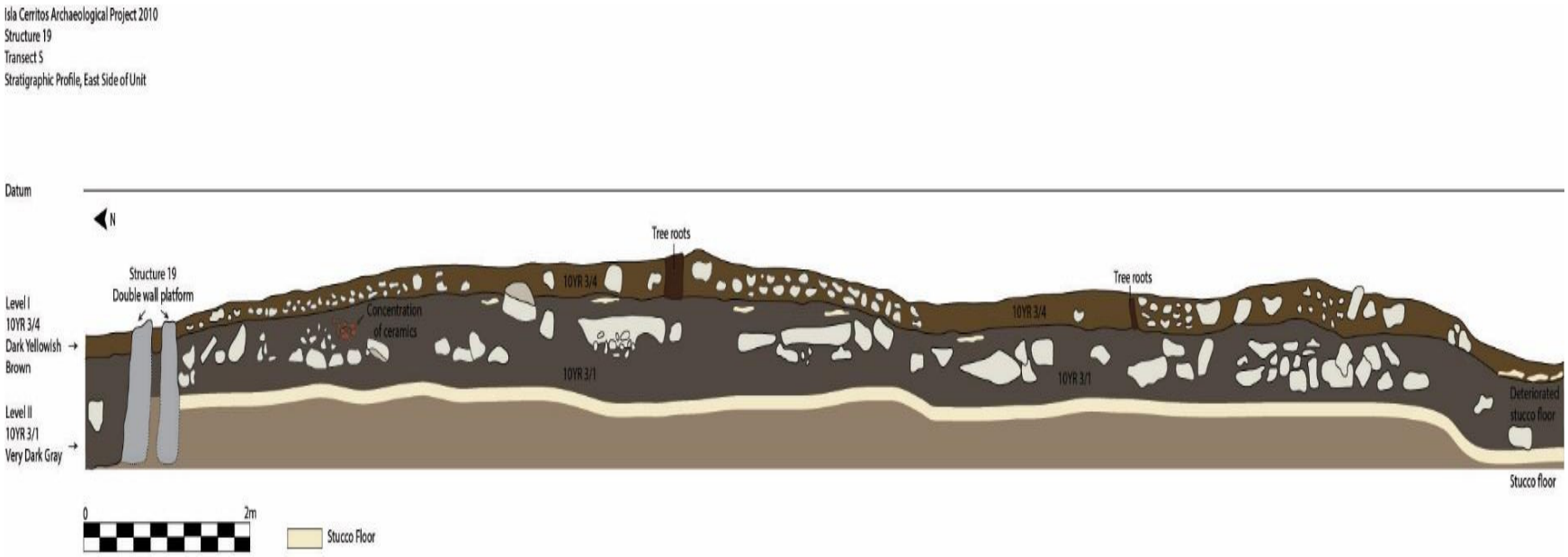


Figure 5.25: Structure 19, Transect S profile, facing east. ICAP 2010

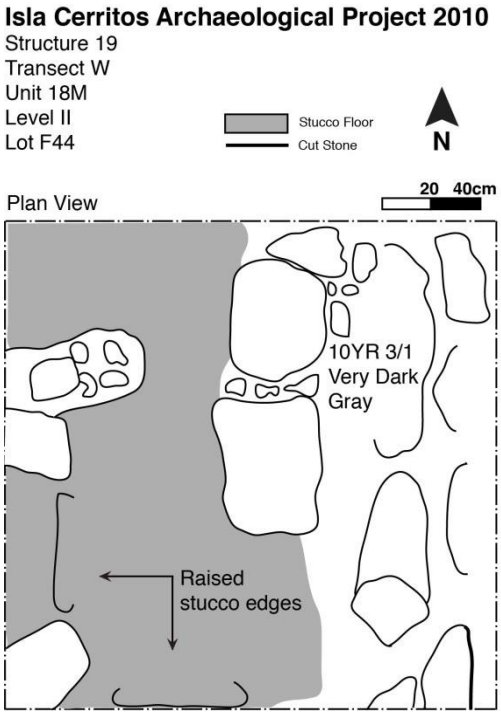


Figure 5.26: Plan view illustration of the raised plaster edges, perhaps originally the location of a low altar or platform on the floor inside Structure 19. ICAP 2010.



Figure 5.27: Photograph of Transect W, Unit 18M showing the lipped edge of a plaster feature, perhaps a low altar that was removed from Structure 19. ICAP 2010.

The building on top of this platform was constructed entirely out of perishable materials with no stone walls, most likely pole, thatch and wattle and daub. It is not the largest mound within the patio cluster, which is the most proximate to Structure 1 and the main civic-ceremonial plaza group on the island. This single-roomed building may have served a specialized function in addition to housing. Two other possible functions are storage facility (assuming no perishable walls or furniture restricted interior space) or shrine "house" on the east side of the group, but we have no material evidence from 2010 to support these functional interpretations. No burials have been excavated in association with this structure, though burials beneath the paved patio floors were interred nearby. We documented three stucco floors (repaving events)

during this excavation. The latest plaster floor was extremely eroded, while a second, earlier Jotuto complex floor remained in somewhat better condition. Neither represent truly sealed contexts. In only one unit on the north side of the platform did we expose a portion of a well-preserved, sealed plaster floor beneath this one that likely corresponds to the overlap between the Chacpel and Jotuto ceramic complexes (800-900 CE). The ceramic chronology for Structure 19 shows that around 65% of the ceramics from these contexts are Terminal Classic period groups dating to after 900 CE, and the majority are Kukulá groups (c.950-1100 CE), 15% are Chacpel ceramic complex groups. Sotuta utilitarian ceramics, such as Sisal Pisté striated vessels are quite common, and these gradually replace Vista Alegre striated vessels and western Cehpech slatewares like Muna slate (but they do overlap between floor levels). The other significant ceramic groups are Silhó fine orange, Dzitas slatewares, and Dzibiac (Sotuta groups common at Chichén Itzá). Just ten fragments of Plumbate ceramics were recovered – and these do represent late Terminal Classic exchange goods imported from Guatemala. Interestingly, both Tohil and San Juan Plumbate ceramics, the latter not common at all in the region, appear in the interior of this large, single roomed structure.

5.7.1.2 Late Classic Contexts

Because most of the excavated lots of Structure 19 were at least late Terminal Classic in date, we have very little information about the Late Classic contexts of this structure. The Chacpel ceramic groups that continue into the Jotuto complex are a combination of Vista Alegre (north coast) utilitarian vessels or fine, compact western Cehpech slatewares. Several Canbalam ceramic groups are represented, including Koxolac, Cetelac, and fine gray Chablekal imported from the western Gulf coast.

5.7.1.2.1 Material Culture and Spatial Analysis

Significant quantities of fragments of Tituc and Tancah group ceramics indicate trade with Cobá and the east coast during the Mid-Late Classic period, and Fango incised bichrome (Huachinango) indicates connections with Ek Balam. By the Late Classic period, island residents are trading extensively for ceramics popular at several of the major inland cities (Cobá / Yaxuná, Chichén Itzá, Ek Balam, and Uxmal). There are also remnants in small quantities of several different varieties of Late Pre-Classic and Early Classic lowland Maya ceramic groups that turned up in these unsealed contexts from the north side of the island.

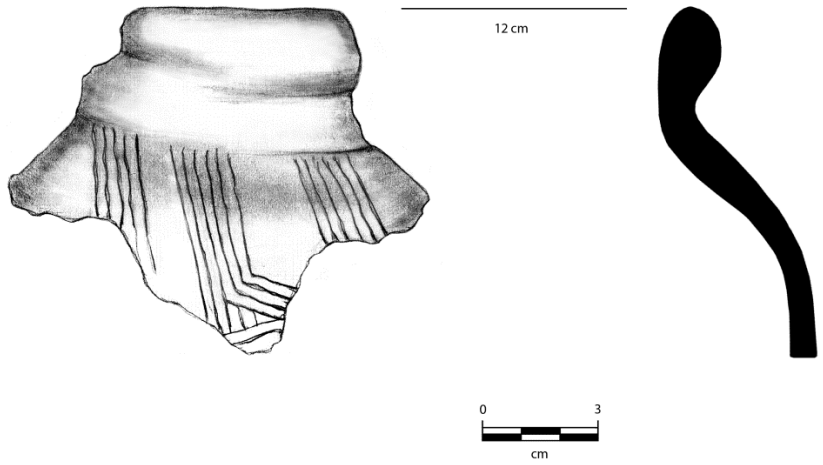


Figure 5.28: Rim sherd and profile illustration, Vista Alegre Striated: Vista Alegre. ICAP 2010.

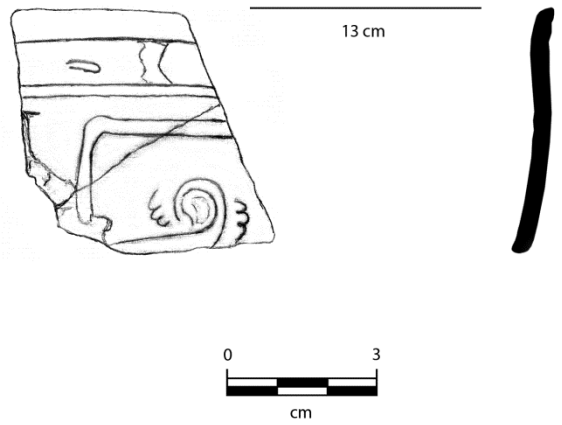


Figure 5.29: Rim sherd and profile illustration, Balancan group, Provincia Plain Relief: Provincia. ICAP 2010.

5.7.1.3 Terminal Classic Contexts

By around 900, the ceramic sample shifts heavily from a mostly western coastal orientation to a Cehpech-Sotuta orientation, and eventually the Kukulá utilitarian vessels statistically dominate the assemblage. Inside the building, we found fragments of cooking and serving vessels, high rimmed plates, as well as discarded cooked animal bones and fish, a good indication that food was consumed inside (see Chávez 2014), but it evidently was prepared elsewhere in the group since we found no evidence of a hearth. Moreover, fewer charcoal samples were recovered from Structure 19 than any other structure excavated in 2010.

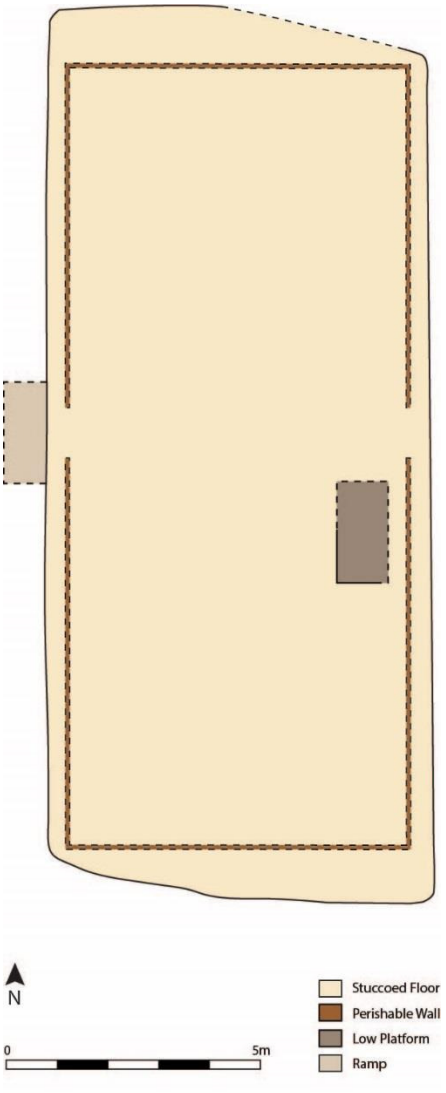


Figure 5.30: Basic reconstruction of Structure 19 architecture in plan.



Figure 5.31: Structure 19 after excavation, ICAP 2010. View from the north.

5.7.1.3.1 Material Culture and Spatial Analysis

Despite the fact that the architecture is more simple, the artifact class and type distribution is quite similar to Structure 23 during the Terminal Classic with fishing nets, grinding stones made from local limestone, but imported chert and basalt (unlike most inland households in the region). There are round clay balls or game pieces, musical instruments (a drum rim fragment made of Muna slate, shell trumpets), objects of personal adornment, greenstone or jade fragments and a small ritual ax, a metal object (possibly copper), and the ceramic base of a pyrite or hematite mirror mentioned above. Structure 19 contains a more diverse lithic assemblage that includes chert flakes, complete and fragmented points. We also recovered more obsidian from this structure, most imported from central Mexican sources



Figure 5.32: Large limestone mano (grinding stone) found just exterior of the north side of the basal platform of Structure 19, ICAP 2010.

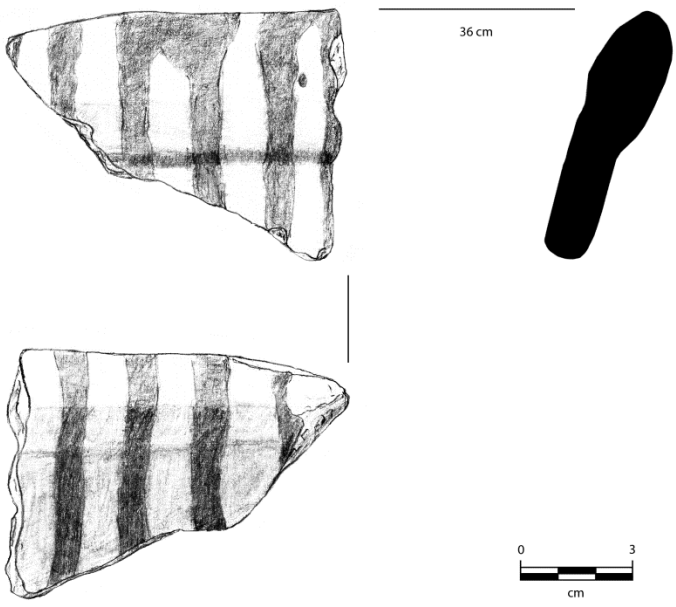


Figure 5.33: Rim profile of a Kukulá group, Xcanchacan black on cream: red paste variety cooking pot. Structure 19, ICAP 2010.

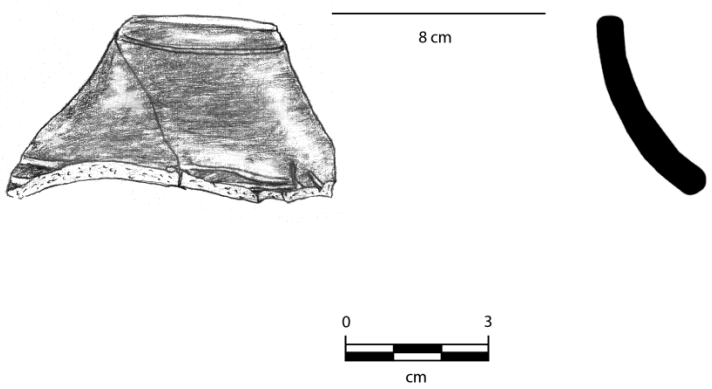


Figure 5.34: Rim profile and illustration of an incised Tohil Plumbate vessel. Structure 19, ICAP 2010

The artifact distribution also indicates that, just as we find at other Maya sites, many activities were taking place outside the structure and in the shared residential spaces. Concentrations of Kukulá group Xcanchacan and Sisal Pisté striated jars were recovered just outside the structure and the platform, again similar to the coastal village mural. Most likely, these water storage vessels were stored outside, in the shade of the platform or half buried in fill to keep them cool. A very large limestone mano, or grinding stone, was excavated on the north side of the platform.

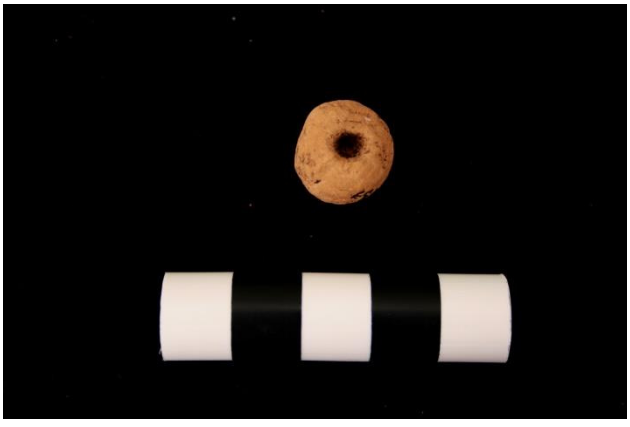


Figure 5.35: Small clay ball with gouged perforation. Structure 19, ICAP 2010.

The occupants of Structure 19 did have access to fine past ceramics, such as Silhó Fine Orange cajetes, that were imported in increasing frequency during the apogee of Chichén Itzá.

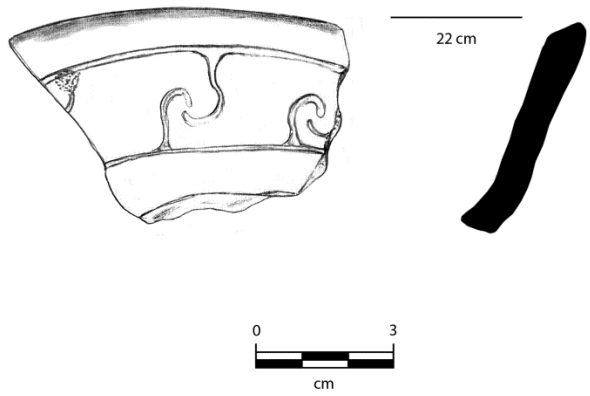


Figure 5.36: Rim sherd profile of an incised Silho Fine Orange cajete from Structure 19, ICAP 2010.

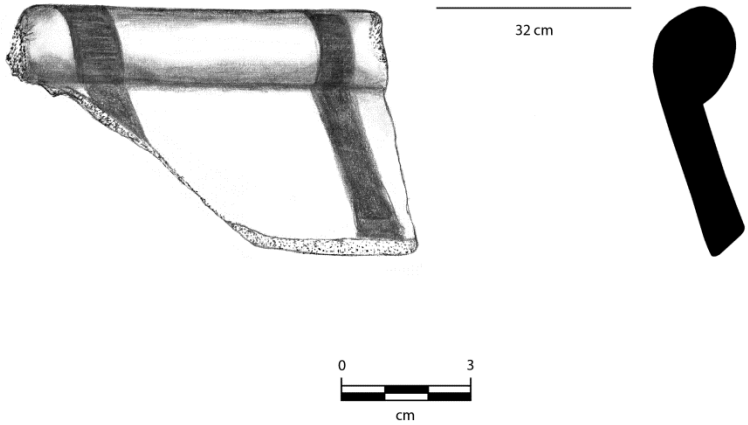


Figure 5.37: Rim sherd profile, Dzitas (Chichén Itzá, Sotuta) slateware vessel. Excavated just off the Structure 19 platform, ICAP 2010

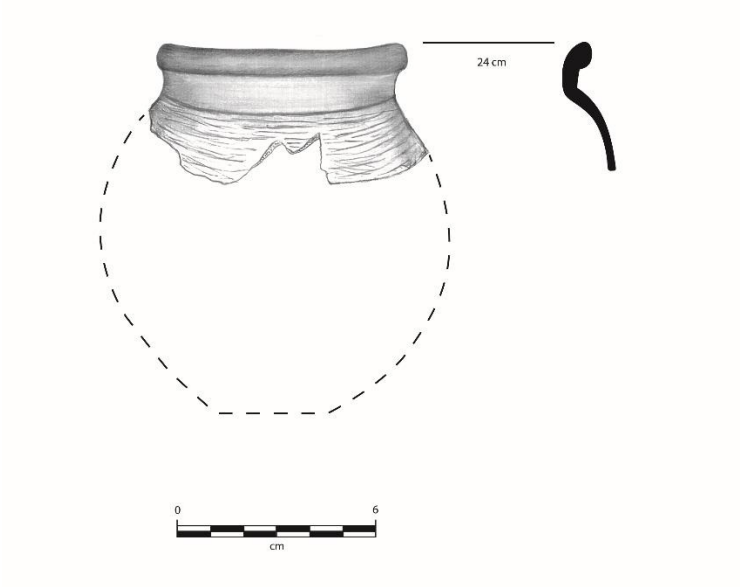


Figure 5.38: Illustration of a Sisal group, Pisté Striated jar rim, just outside Structure 19, ICAP 2010.

At the same time, the port residents continued utilize Vista Alegre ceramics (albeit in lower quantities) and import or bring in prestige goods from Isla de Sacrificios (Veracruz) for household use, such as this Cerro Montoso composite polychrome base, maintaining long-standing connections to Gulf coast trading networks and traditions.

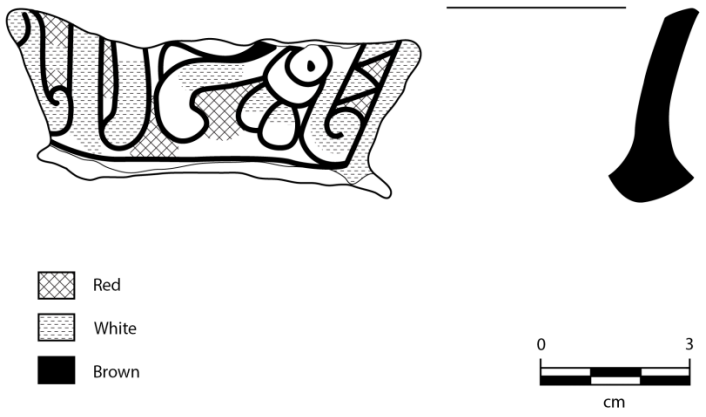


Figure 5.39: Tinum group, Cerro Montoso Polychrome (composite), pedestal vase sherd. Structure 19, ICAP 2010.

Although there is little material evidence to interpret the superstructure of Structure 19, especially since the floors are not well preserved, ethnoarchaeological studies (Wauchope 1938), and evidence from the site of Cerén (Brown and Sheets 2000) indicate that rectangular pole and thatch, wattle and daub structures often contain many interior features made of wood, including shelves, tables, and benches. Likewise, most of the artifacts (tools, supplies, ceramics, etc.) of Maya residents were stored high up in the rafters, hanging from walls or support beams, and sitting on the top of walls. These materials are later found mixed in fill above the floor level, after the structure has disintegrated. In this sketchup reconstruction based on archaeological evidence from Structure 19 at Isla Cerritos, the low altar that we believe was removed from the building is located on the east side, opposite the doorway leading to the patio of the West Patio Group. A large limestone block, partially plastered over, was excavated along the west side of the platform. This provided the base for a ramp leading up to high stone platform and, most likely, the entrance to the room.

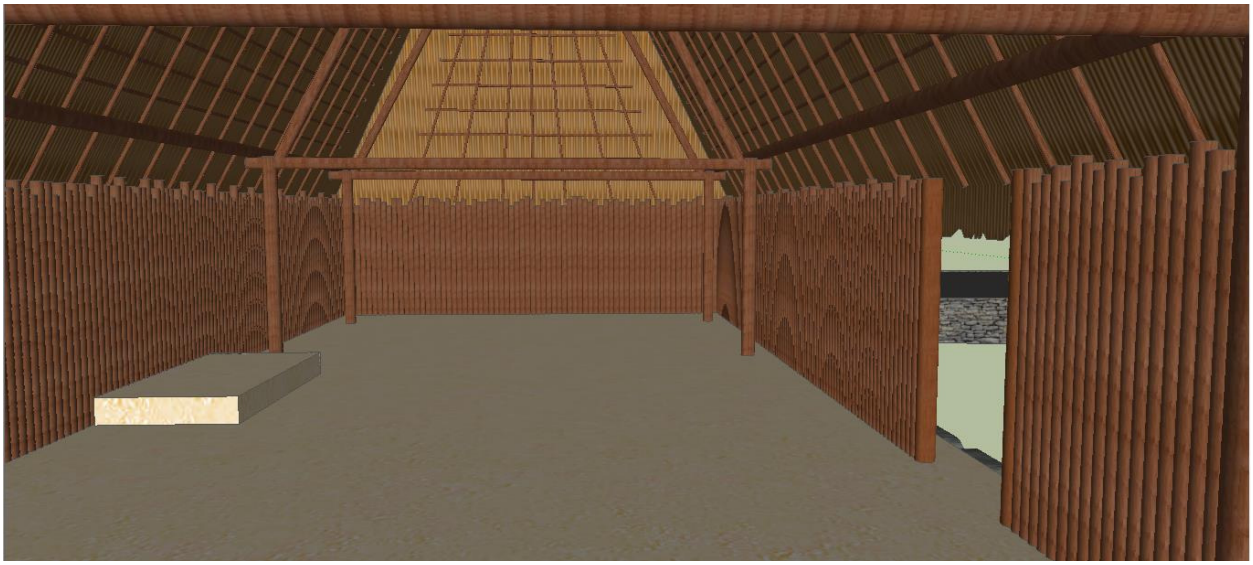


Figure 5.40: Sketchup reconstruction of the interior room of Structure 19, Jotuto ceramic complex.

The basal platforms for the structures in the north side of the island are quite high, to protect the interior from flooding, and the north side of Structure 19 was later reinforced by a second row of large limestone blocks to protect the platform from the open sea.

5.7.1.4 Postclassic Contexts

Just 5% of the assemblage recovered from Structure 19 indicates occupation in the Early and Late Phases of the Postclassic period, after 1100 CE. Much of the material from this time have probably been destroyed by erosive processes. There is architectural evidence, discussed below, that indicates that port residents attempted to join the platforms of Structures 19, 30, and 31 during renovations sometime in the Postclassic period (c.1200 CE or later).

5.7.1.4.1 Material Culture and Spatial Analysis

We did find Mayapán redware and Chen Mul modeled censer fragments just off the platform in the patio space that suggest continued ritual activity in the shared residential spaces. At the same time, Mama red and Navulá group ceramics in the first level of excavations indicate continued occupation of this group after the fall of Chichén Itzá around 1050 CE until at least the early 15th century.

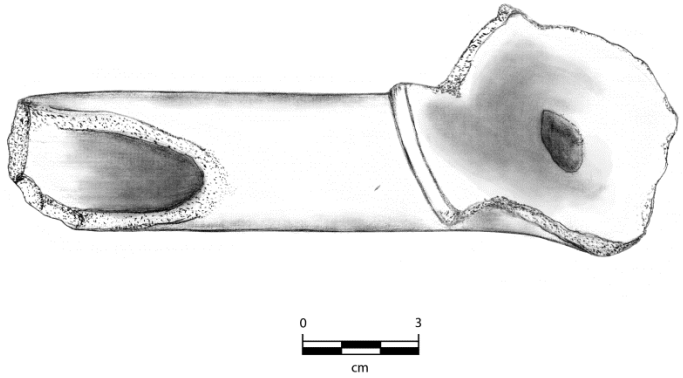


Figure 5.41: Illustration of the fragmented base and handle of an incense burner from the patio outside Structure 19, ICAP 2010.

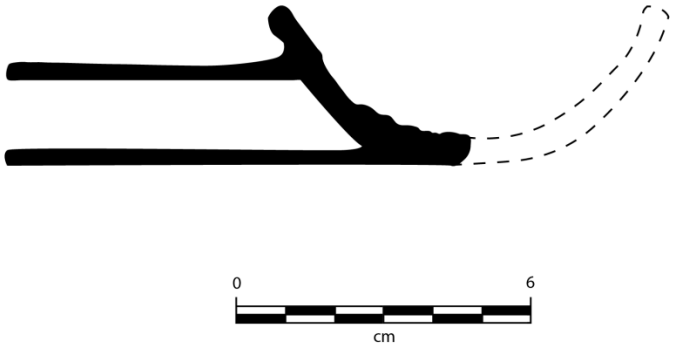


Figure 5.42: Profile illustration of the fragmented base and handle of an incense burner, Structure 19, ICAP 2010.

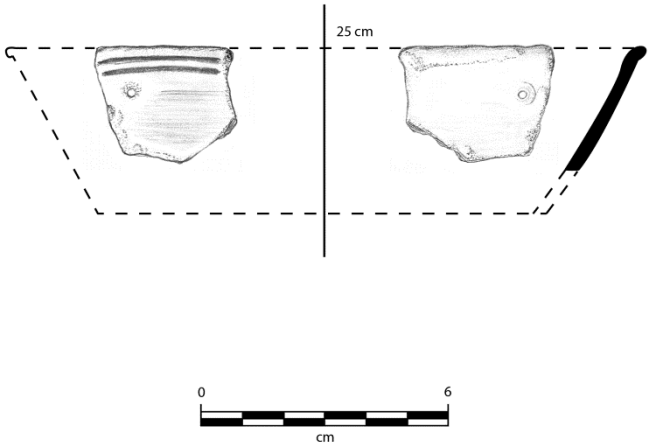


Figure 5.43: Matillas group, Nacajuca black on orange cajete rim with perforations for hanging in Structure 19, ICAP 2010.

Structure 19 also contains the very late tecomates described above that may date to the early colonial period, or just before the cultural encounter (Figure 5.44). This technology had significant utility over a considerable period. Moreover, a few fragments of Yuncu colonial ceramics, glazed wear, and a rim fragment from a Spanish olive jar were recovered from the north side of the structure.

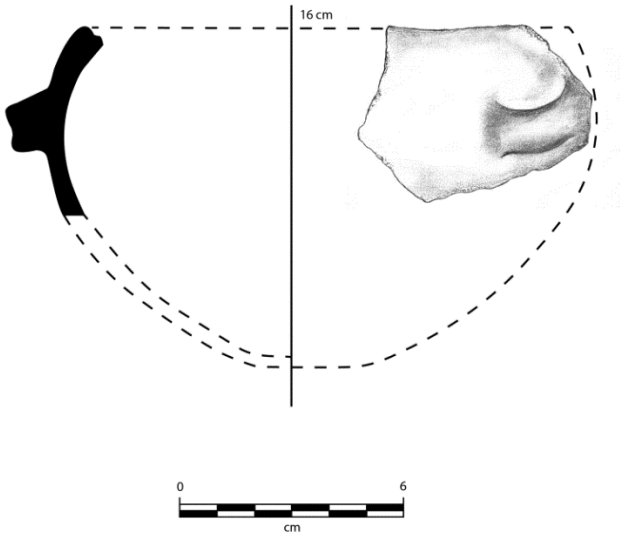


Figure 5.44: Reconstruction of a Navula unslipped tecomate, Late Phase Postclassic (Tomburro ceramic complex), Structure 19, ICAP 2010.

5.7.1.5 Summary

Structure 19 at Isla Cerritos presents a very basic rectangular architectural pattern of a large platform that supported a perishable structure, positioned on the east side of the West Patio Group. The ceramics from the Late and Terminal Classic period contexts, along with artifact patterns confirm that this was a domestic space, probably a living space connected to the other three structures around the shared patio. Food was consumed in the structure, but prepared outside of that space nearby, and no evidence for a hearth was recovered.

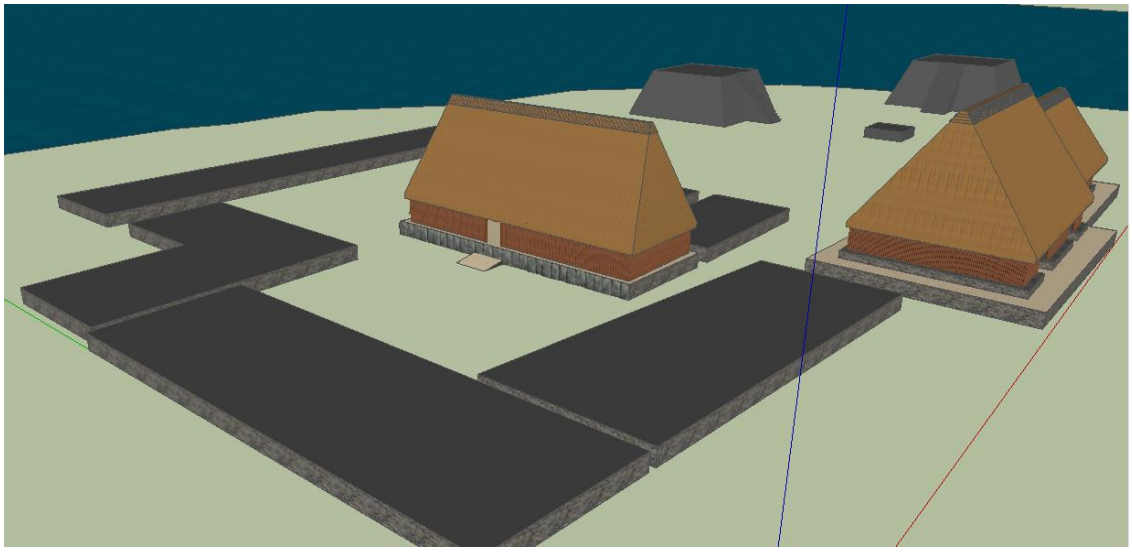


Figure 5.45: Sketchup reconstruction of the northern residential groups at Isla Cerritos. Unexcavated structures appear dark. Structures 19 and 23 are pictured here with perishable pitched roofs.

While we do not know exactly what the superstructure was like, there is evidence for a low altar along the east wall that was removed in prehispanic times. There is no clear evidence for other interior features or spatial divisions, but the west side of the platform was accessed by a ramped step, probably leading to the doorway.

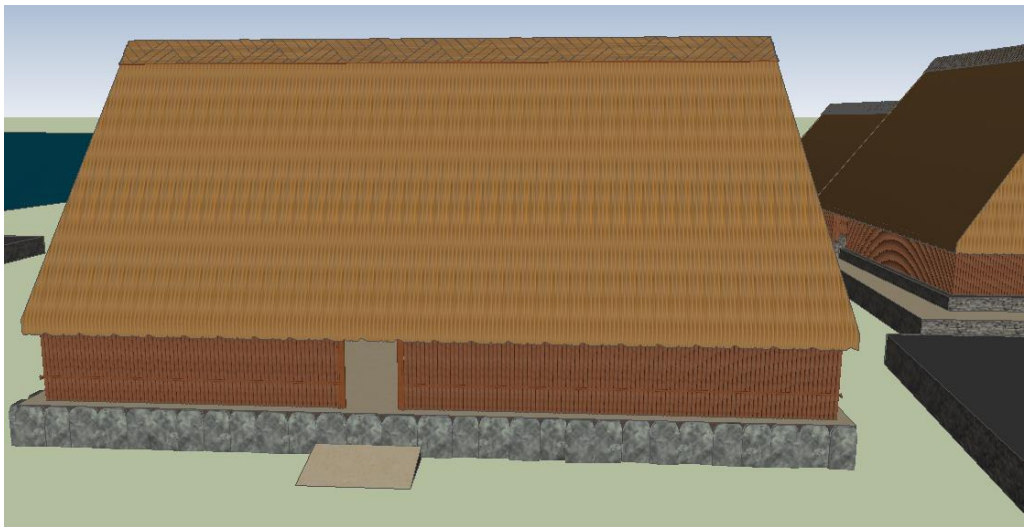


Figure 5.46: Sketchup reconstruction of Structure 19, east side of the West Patio Group on Isla Cerritos.

While the structure is the most simple, architecturally, of the group, the ceramics indicate a very long occupation extending from the Late Pre-Classic period through the early Colonial period, and the large platform was probably reoccupied several times during the ensuing centuries. Three remodeling "events" were documented from c.800-1500 CE, including the addition of large limestone blocks to reinforce the north side of the platform, the removal of the low altar feature inside the spacious room, and a joining and reorientation of the Structure 19, 30, and 31 platforms during the Postclassic period. The energetics estimate for the investment in construction of Structure 19 is 9,519 PDs. This might have been just part of the entire patio cluster construction, which would have cost about 43,600 PDs.

5.8 West Patio "Cala AA"

5.8.1 Architectural Layout

Our investigations of a portion of the patio space between Structures 19, 18a, 18b, and 18c first documented the remains of a deteriorated stucco floor from around 900 CE with a shell and pebble foundation (Littmann 1967). Five primary human burials were discovered below —

all juveniles, including 1 infant. All five burials were extended in the prone position. Three of the five, including the infant, had modest offerings, indicating some form of ascribed, or ritual status.

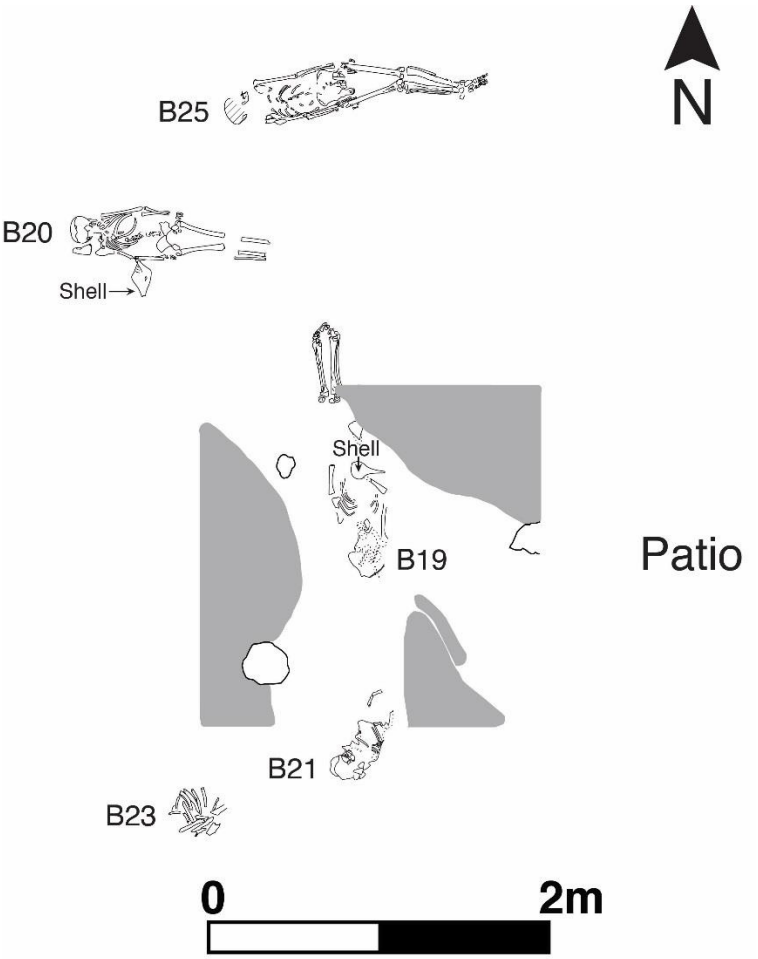


Figure 5.47: Plan view of Test Pit 28 and the West Patio showing the location of patio burials. The gray areas represent remnants of the plaster floor that have been preserved. ICAP 2010.

While the patio space was originally paved with lime plaster, it has eroded significantly, and unfortunately this cannot be considered a sealed context. The ceramic assemblage for this space includes the earliest known ceramics on the island dating to around 400-300 BCE (Late Middle Pre-Classic), and our test excavations did not reach bedrock because human remains

were uncovered. The relative chronology is based on 29% Chacpel ceramic complex groups and 33% Jotuto ceramic complex groups. There is relatively little trace of activity in this part of the patio after 1100 CE. The patio burials have not yet been directly dated. Until such time, I rely on stratigraphy and diagnostic ceramics to place them in relative chronological sequence. Because of the unsealed nature of these contexts, the narrowest dating resolution possible today is around 200 years.

Human burials were placed in this patio over several generations in simple inhumations in extended, prone positions. Burial 20 (the latest in the sequence) was partially surrounded and covered by small, uncut stones, but we did not document any formal cist or tomb architecture in this patio. This also creates uneven, heterogeneous preservation of remains, and allows for disturbance through bioturbation and coastal erosion processes (flooding, wind, reverse stratigraphy in some places). We can say that four of the five burials from the 2010 excavations date to the transition between the Chacpel and Jotuto ceramic complexes (between 700 and 900 CE, while one individual was interred later in the early phase of the Postclassic period (1050/1100-1400 CE).

5.8.2 Burial 19

Burial 19 was placed in the center of the patio and is aligned with Burial 21 along a north-south axis. The individual is a juvenile, too young to determine sex. The diagnostic ceramics in association with the burial suggest a date of 800-1000 CE.

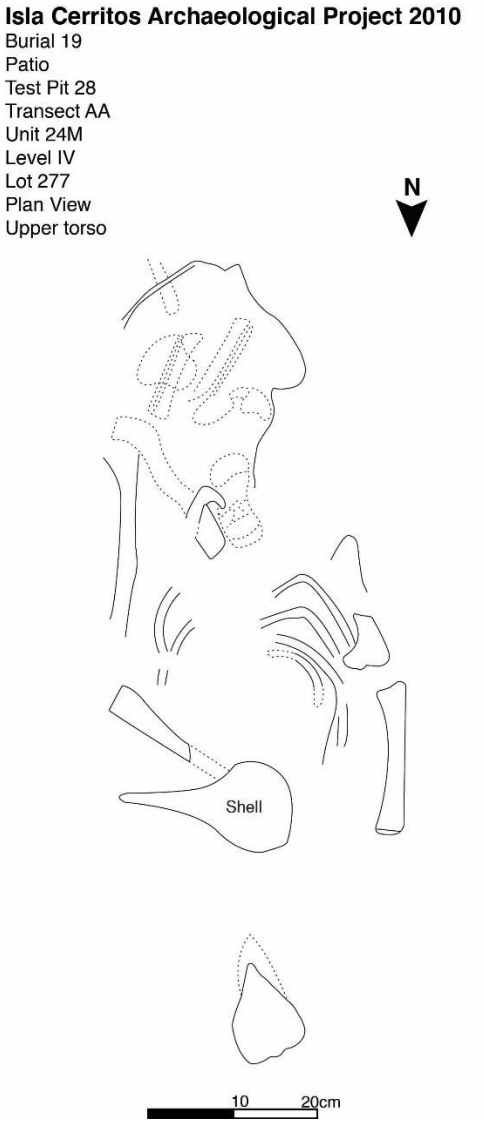


Figure 5.48: Burial 19, West Patio, ICAP 2010.

The individual was placed in an extended, prone position and somehow the lower portions of the legs and feet were separated, possibly through bioturbation or erosion, from the upper torso.

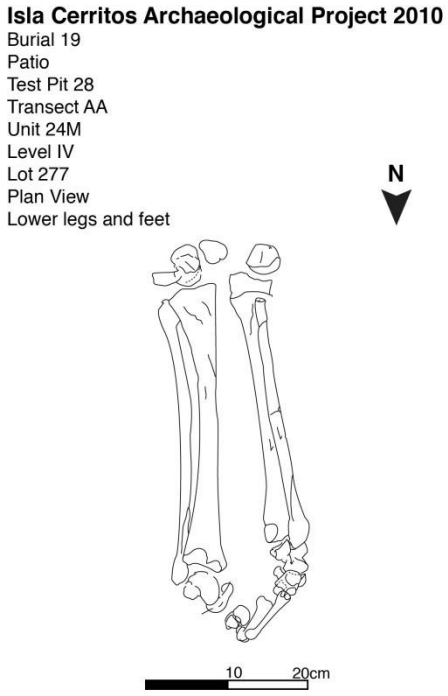


Figure 5.49: Tibiae, fibulae and tarsals of Burial 19, West Patio Group, ICAP 2010.

A concentration of unworked shell was placed in the pelvic area, and it is not clear of all of the shell placed in the burial is related to the offering or to the subfloor of the patio. Artifacts associated with the burial include worked shell (including a small shell axe), limestone mano/metate fragments, and one ball of clay (or a game piece). The associated ceramics heavily favor a chronological interpretation of 800-900 because there is no Kukulá or Postclassic ceramics and very little Terminal Classic. The mortuary context is strongly coastally oriented with Canbalam ceramic sphere groups from the Early and Late Classic (Tepeu horizon ceramics) and 69 pieces of shell.

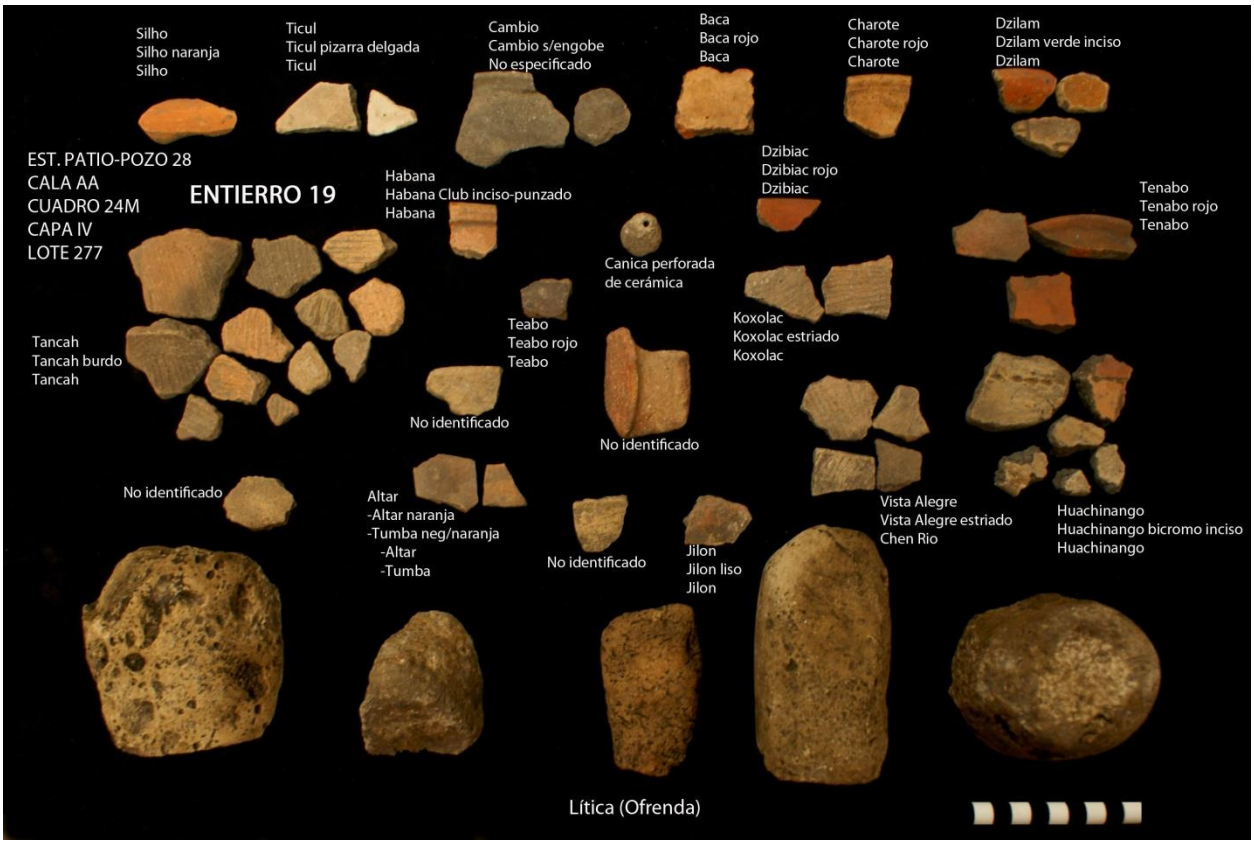


Figure 5.50: Artifacts associated with Burial 19, West Patio Group, ICAP 2010.

5.8.3 Burial 20

In contrast to Burial 19, Burial 20 (c.1050-1400 CE) has a different pattern, indicating a later date and a change in inhumation practice, while the type of funerary offerings remains categorically similar across the patio sequence. This burial, again of a juvenile individual laid out in an extended prone position, was partially surrounded and covered by uncut stones of small-medium size (but not a complete, formal cist) delineating only the upper part of the body. No evidence for cranial deformation or dental modification is present with this burial either. While no complete vessels were found, there were significantly more sherds (n=263) present in the fill than in the other patio burials with a greater variety of types and varieties, including Puuc Cehpech slate wares and utilitarian wares diagnostic of the Sotuta-Hocabá phase corresponding

to the height of activity at the island port and the extent of Chichén Itzá's regional influence in the area (c.1000/1050). There are a few sherds diagnostic of Mayapán (Mama red), but this burial most likely does not date any later than 1200 AD.

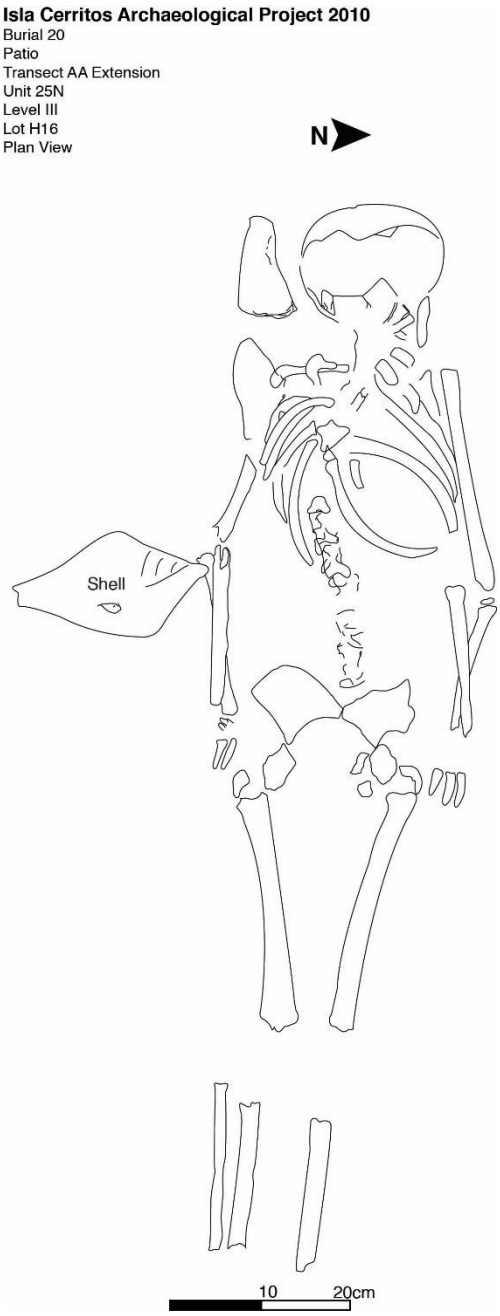


Figure 5.51: Illustration in plan of Burial 20, West Patio Group, ICAP 2010.

A large Strombus costatus shell with a circular "kill hole" where the mollusc was stabbed with a tool before being removed was positioned on the south side of the body near the humerus. Other offerings positioned near the individual included a bone awl, a flat bone tool that could be a needle for net weaving or a cornhusker, partially worked shell, and six obsidian blades from both central Mexican and Guatemalan sources. These small offerings of utilitarian objects found in the burial represent both marine / coastal "themes" (or cultural symbolism) (e.g., shells, large fish and sea mammal bones, Canbalam ceramics, trade goods) and inland lifestyle (e.g., objects associated with maize agriculture and consumption – grinding stones, cornhuskers). Yucatecan slateware ceramics and coastal copies of Chichén Itzá domestic pottery (Kukulá Xcanchacan in forms that mimic Dzitas) are mixed together.

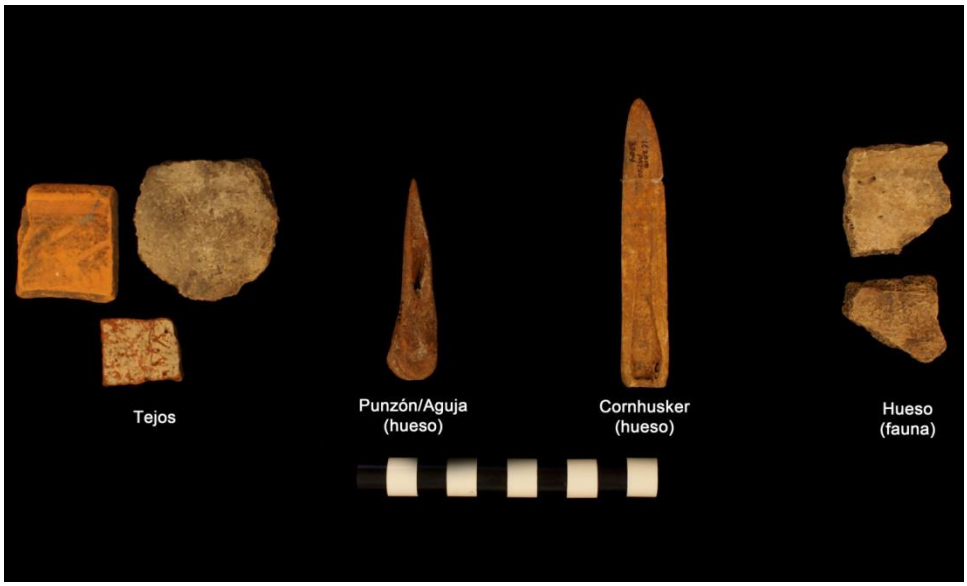


Figure 5.52: Bone artifacts including a needle and cornhusker/awl recovered from Burial 20, West Patio Group, ICAP 2010.

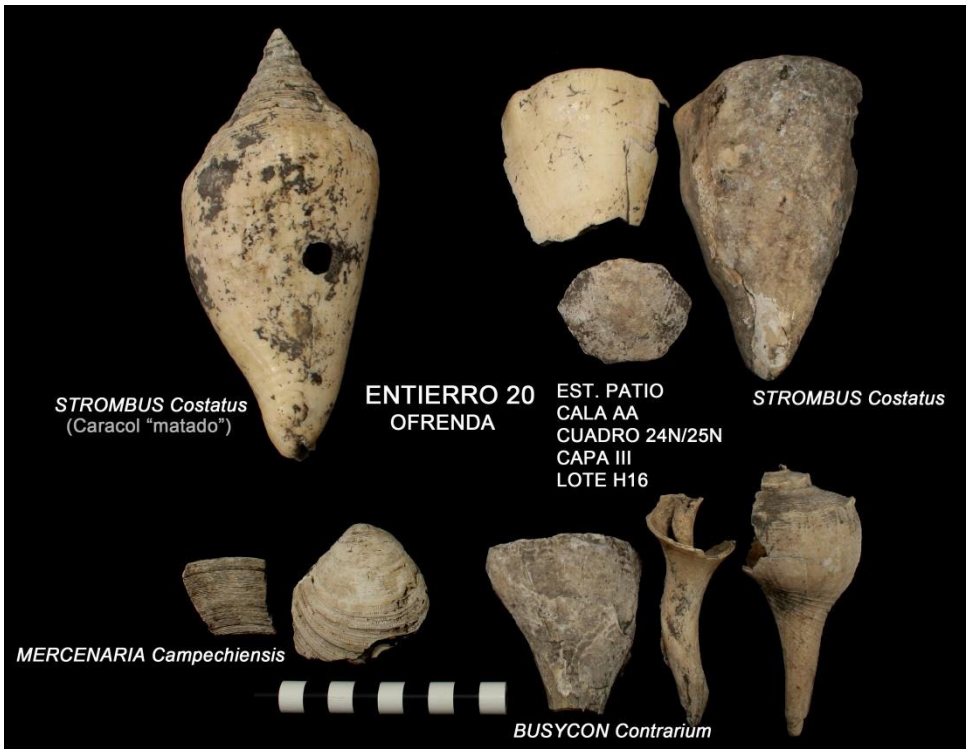


Figure 5.53: Shell offerings from Burial 20, West Patio Group, ICAP 2010.

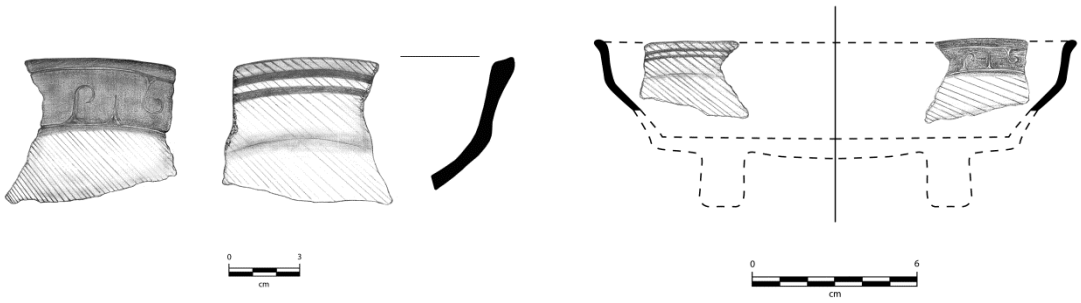


Figure 5.54: Rim sherd illustration and body reconstruction of a Silhó Fine Orange group Kilikan composite polychrome cajete, Burial 20, Patio, ICAP 2010.



Figure 5.55: Green Pachuca obsidian prismatic blade fragments, Burial 20, Patio, ICAP 2010.

In this case, while the mourners who inter this individual are following long traditions of extended prone burials in the communal space, just one century removed from Burial 19, the associated modest offerings have changed. The amount of grave goods has increased slightly and the orientation appears to have shifted to a combination of coastal and inland Maya practices, including green obsidian from Central Mexico. The individual is also a juvenile, and too young to determine biological sex.

5.8.4 Burial 21

The infant in Burial 21 was spatially aligned along the same axis as Burial 19, and the relative date within the sequence overlaps with the other Chacpel burial at c.700-950 CE.

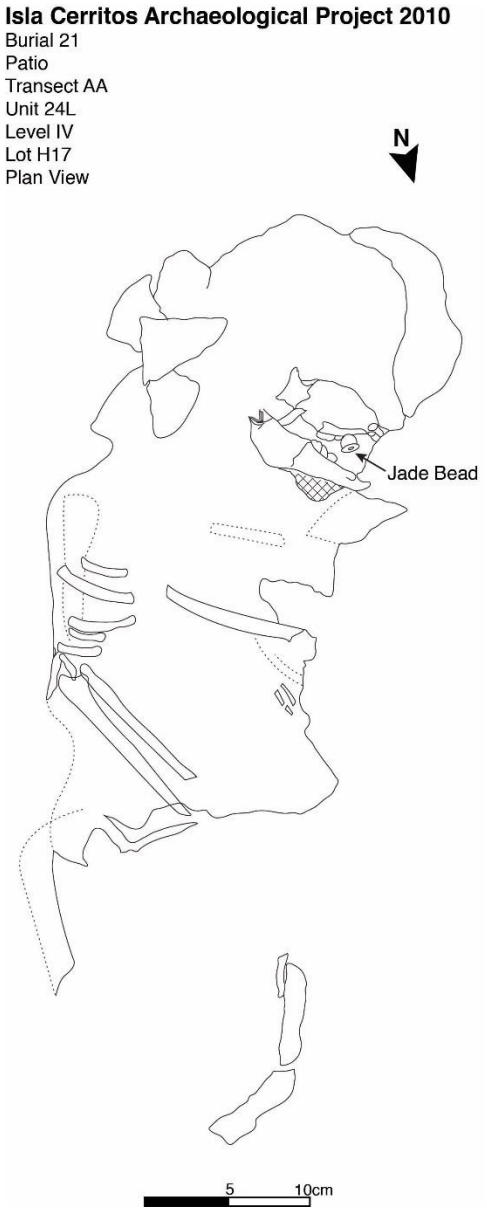


Figure 5.56: Illustration in plan of Burial 21, West Patio Group, ICAP 2010.



Figure 5.57: Artifacts from Burial 21, West Patio Group, ICAP 2010.

While this was the youngest child interred in the patio, this burial contains the most ceremonial offerings, including a fine grey Chablekal incised vessel (nearly complete), 2 small clay balls or round game pieces, one jade or greenstone bead placed near the head (probably in mouth as symbol of breath/life), one prismatic obsidian blade visually sourced to Veracruz, Mex. No unworked shell was found in association with this burial.

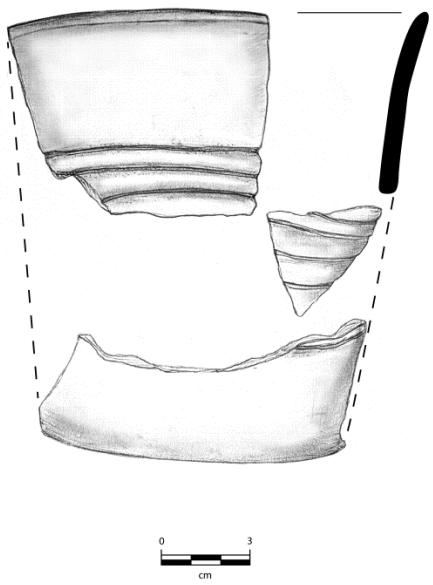


Figure 5.58: Reconstruction and profile of a fine gray Chablekal group vessel offering from Burial 21, West Patio Group, ICAP 2010.

This is a strongly coastal burial with nearly all the ceramics making up the Canbalam ceramic sphere and western Gulf coast domestic tradition. The jade bead placed near the mouth is a powerful symbol that would have resonated with Late Classic Maya people across all regions. The jadeite is also a sumptuary good associated with elite status, and its presence in an infant's grave indicates some kind of ascribed social status.

5.8.5 Burial 23

Bioturbation has left this juvenile burial extremely disturbed and highly deteriorated. The ceramics are entirely Late Classic (Cochuah, Tepeu, and western Cehpech groups) and Canbalam sphere with almost no Sotuta groups represented in the associated context, and the date of burial is probably c.750-900 CE.

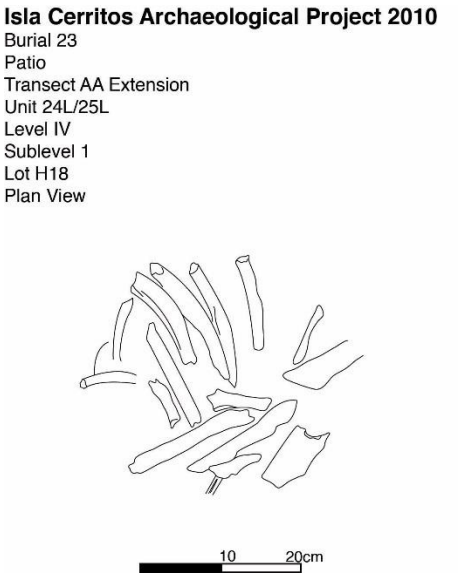


Figure 5.59: Illustration of a heavily deteriorated Burial 23, West Patio Group, ICAP 2010.

One unworked shell and one shell drill are the only objects that can be positively associated with this burial event.



Figure 5.60: Artifacts associated with Burial 23, West Patio Group, ICAP 2010.

5.8.6 Burial 25

Burial 25 is oriented east-west across the patio and placed in an extended and prone position as well. The ceramics suggest that this burial dates to the transitional period between 700 and 900 CE, and include groups with ties to the east coast, Cobá, Ek Balam, western slatewares (the Puuc), the Canbalam sphere, and Chichén Itzá (Sotuta). This slightly older juvenile was also buried with 77 pieces of unworked shell, a few worked shell tools, a manatee rib, and a mammalian tooth.

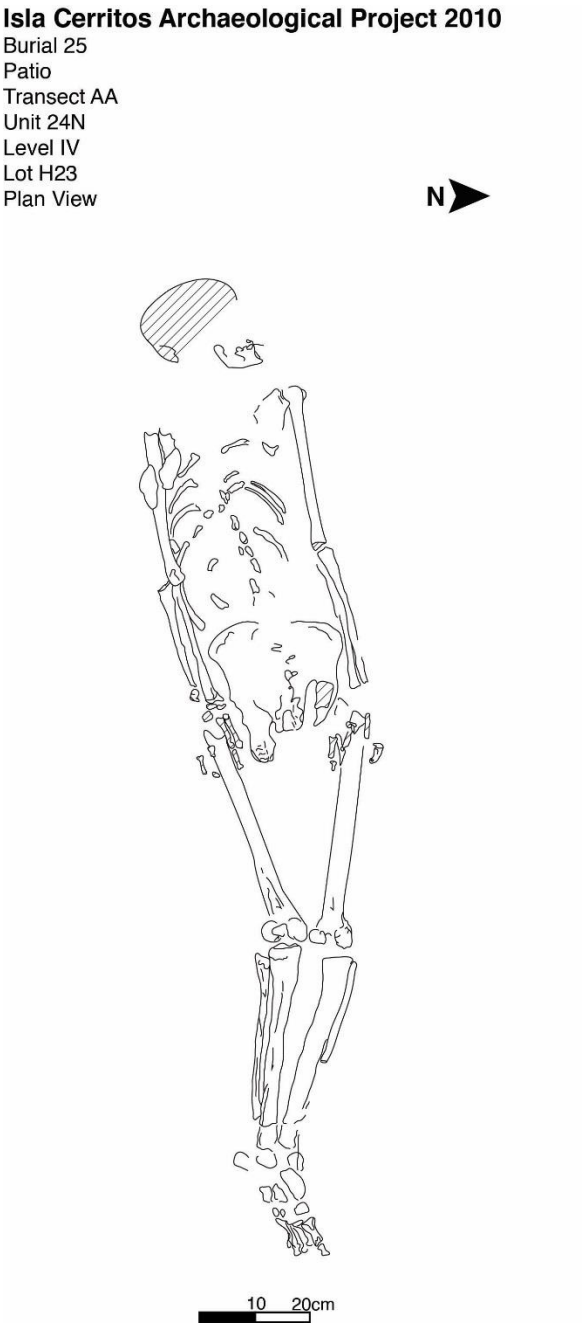


Figure 5.61: Illustration of Burial 25, West Patio Group, ICAP 2010



Figure 5.62: Ceramics and faunal remains associated with Burial 25, West Patio Group, ICAP 2010.



Figure 5.63: Shell remains from Burial 25, West Patio Group, ICAP 2010.

This tooth, labeled “hueso” or bone/tooth in Figure 5.62, is very similar in size and shape (though it is significantly worn) to a Pleistocene New World horse species, Equus conversidens. Further testing will be necessary to definitely identify it as such, but if so, this ecofact may have been found by the Late Classic portkeepers in an inland cave and curated in a residence on the island.

5.8.7 Summary Late Classic-Terminal Classic Transition

In summary, the archaeological analysis of five burials found in the patio of the residential cluster on the north side of the island (the West Patio Group) are all juveniles too young to determine biological sex. All are primary burials and show similar practices of inhumation that were maintained in the space for somewhere between 300-500 years, if my interpretation of the relative ceramic sequence is accurate, straddling the end of the Late Classic and early Terminal Classic periods. This may have been a Gulf coast Maya practice shared with people living farther west. The ceramics from these burials include mostly utilitarian wares along with low quantities of fine paste imports. Many of the ceramic groups and forms correspond to the Canbalam ceramic sphere. Over time in the burial sequence, we do see some diachronic variation across this small (admittedly not statistically significant) sample. Canbalam groups are combined with eastern Cehpech sphere ceramics and Caribbean coastal groups, such as Vista Alegre. A punctated incised Huachinango polychrome from the Late Classic period is an example of connections to the east and west (Figure 5.64).

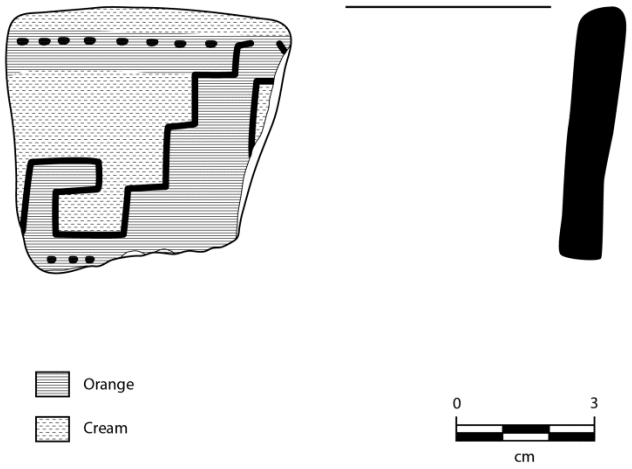


Figure 5.64: Rim sherd from a Huachinango incised bichrome vase (Classic period) found in the patio of the West Patio Group, ICAP 2010.

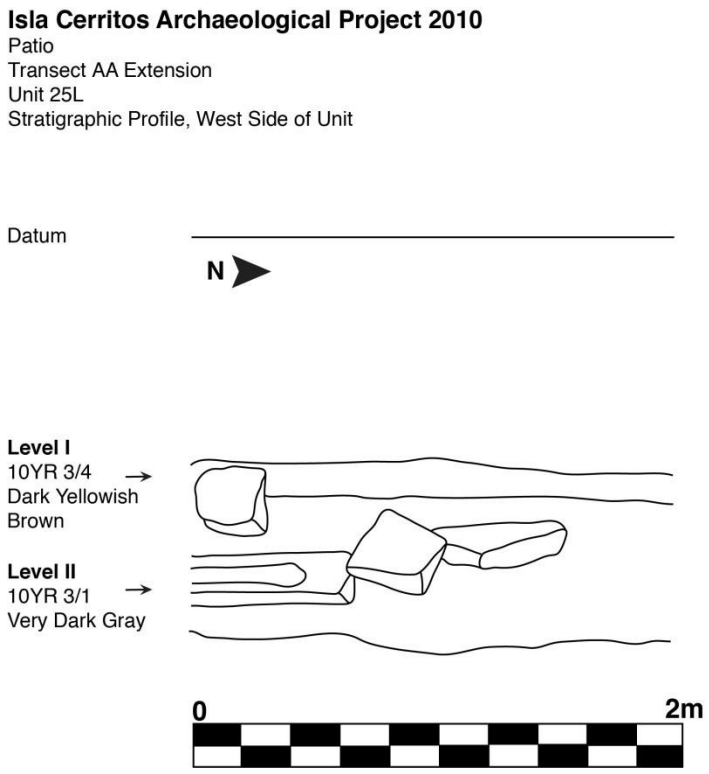


Figure 5.65: Profile from Unit 25L in the patio of the West Patio Group with a sculpted block that may have served as a water drain (see Chapter 4).

The latest burial in date, Burial 20 contains a greater amount of Cehpech-Sotuta ceramics that become popular in the interior plains of the northern Maya lowlands with the apogee of the Puuc centers and especially Chichén Itzá's rise as a regional power. Most of the modest offerings associated with the burials consist of marine resources, like shell, fish or sea mammals, Gulf coast ceramics, or other objects in some way linked to maritime cultural traditions. Some burials, like Burial 20, combine these types of objects with cornhuskers, grinding stones, obsidian and other objects consistent with inland agricultural life and/or a broader Maya cosmovision.

Offerings range from simple to modest, including a semi-complete fine gray ceramic vessel and a jade bead associated with Burial 21, the youngest infant. Both worked shell and large unworked shells are frequently present, and concentrations occur in some burials but not others. All shell in these burials, however, are native Gulf coast species. Regardless of age, artifacts occur in association with each of the burials, indicating that some social group affiliation and status is ascribed within this community. No cranial deformation, dental modifications, or other biosocial markers were documented in these burials. We will have to await comprehensive laboratory analysis by Tiesler, Cucina and the UADY team to see if any evidence for pathologies or other health factors might be discerned.

The port residents also appear to be curating older objects, such as Classic period ceramics and trade wares and the possible Pleistocene horse tooth, keeping them in the family/community and incorporating them into ritual offerings in the household group. In my opinion, this is evidence for permanent residence on the island, and roots in the community, rather than outsiders or temporary visitors. All the burials contain a combination of both coastal and inland markers, but the diachronic differences are in the emphasis that can be observed

between them. Once the burials are directly dated, we will have a much better idea of the chronological sequence in this area.

5.9 Structures 30 and 31: The Plazuela Group Platforms and Alleys

Structures 30 and 31 that likely faced east during the Terminal Classic period were only confirmed through excavation of the eastern wall of Structure 19.

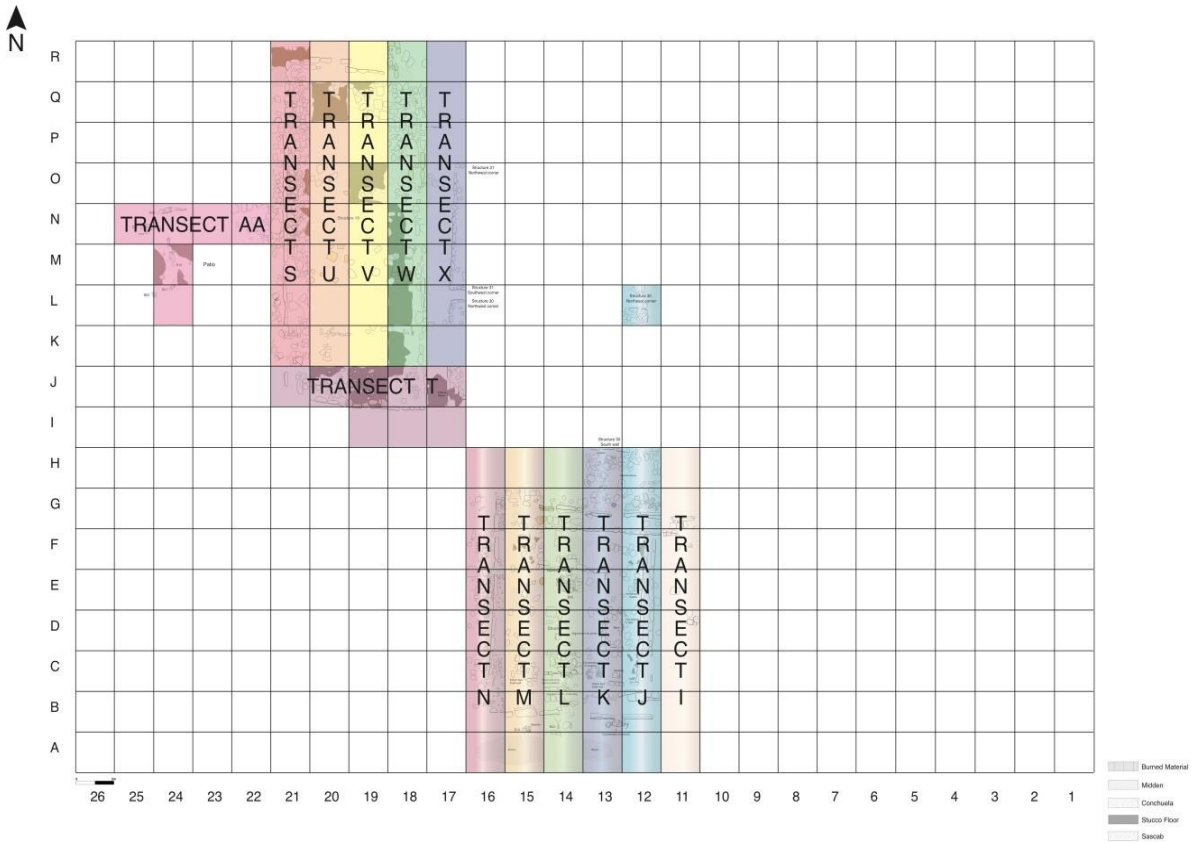


Figure 5.66: Map of the excavation grid, showing the transects extending from Structure 19 and 23 that exposed portions of Structures 30 and 31.

We then extended Transect J from Structure 23 to positively identify the northeastern corner of Structure 30 and the southeastern corner of Structure 31 to document the size of the platforms. Small corridors, or alleyways, existed between these structures and were paved with multiple stucco floors. The midden-like fill in the alleys contained a higher variety and quantity of cultural material than the patio side of Structure 19 that was likely swept clean.

5.9.1 Structures 30 and 31

Only three lots were excavated on the east side and the western walls of these platforms were exposed, so additional archaeological investigation of these structures will be important to learn more. From the small sample of ceramics we have, the occupation appears to be later than the other platforms on the north end of the island.

5.9.1.1 Architecture and Chronology

Almost 65% of the ceramic sample is Jotuto, and most are Pisté striated and Kukulá Xcanchacan vessels, suggesting these contexts date to at least 950 CE. Early phase Postclassic ceramics make up 15% of the sample, correlating with a later occupation that postdates Chichén Itzá.

5.9.1.2 Terminal Classic Contexts

Faunal remains swept off the platform gathered in these side alleyways and show that port residents had primarily a fish, crustacean and marine mammal diet, although imported

white-tailed deer does appear in association with both modest structures. A single bark beater recovered from the corner of Structure 30, may indicate household production of hides or paper.

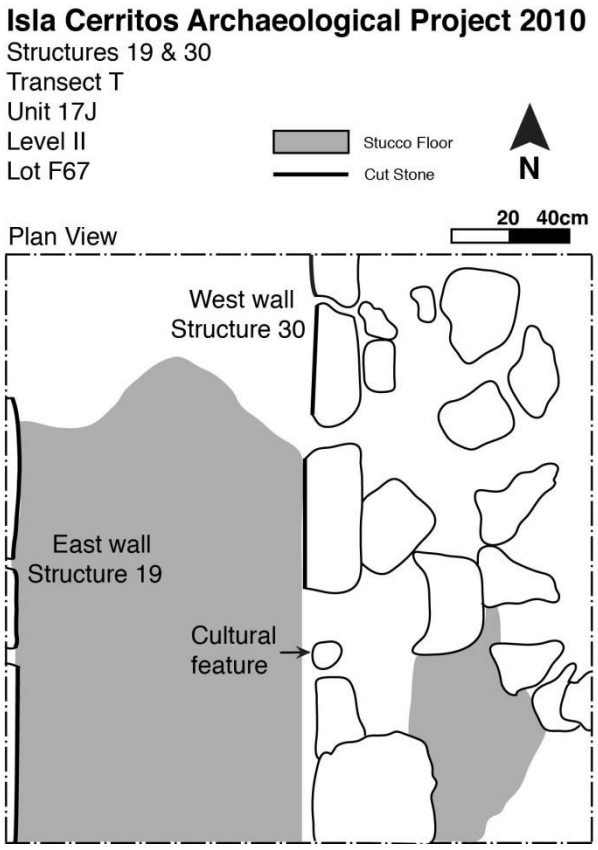


Figure 5.67: Plan drawing of the paved alleyway behind Structure 19 and Structure 30.

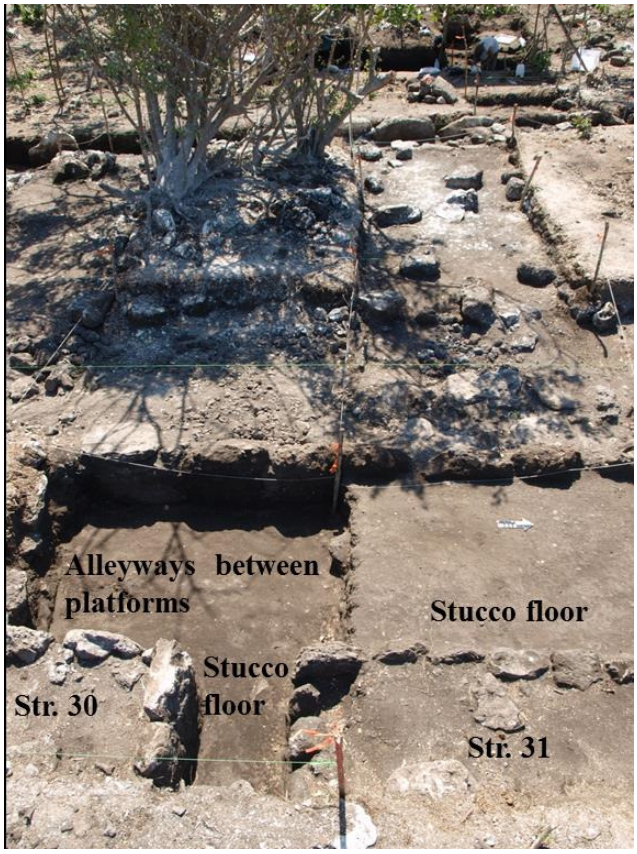


Figure 5.68: Photograph of the floor levels exposed in the spaces between Structures 19, 30, and 31.

The faunal remains indicate that island residents had access to white-tailed deer, peccary and other inland mammals in addition to marine mammals that were hunted from the sea. Large fauna was hunted and butchered inland (perhaps near Chinalco) with meat-bearing parts transported to the island via canoe. While white tailed deer and peccary were considered to be high status foods in Maya society (Pohl 1994), these structures do not appear to be elite residences. Moreover, much larger meat bearing mammals were available in the sea, including tropical seal and manatee.

5.9.1.2.1 Material Culture

The fact that the corners of these basal platforms were exposed in excavation meant

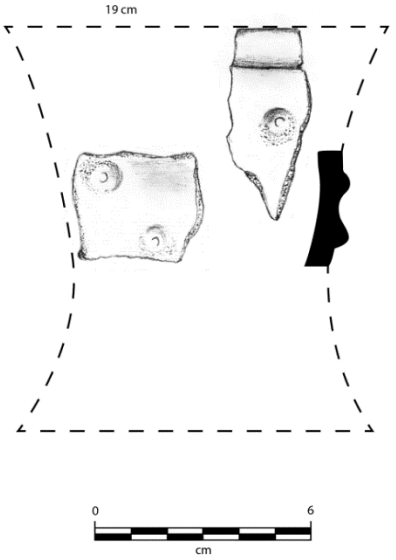


Figure 5.69: Illustration showing fragments of a Sisal group ceramic brazier found behind Structure 19 in the alleyway between Structure 30.

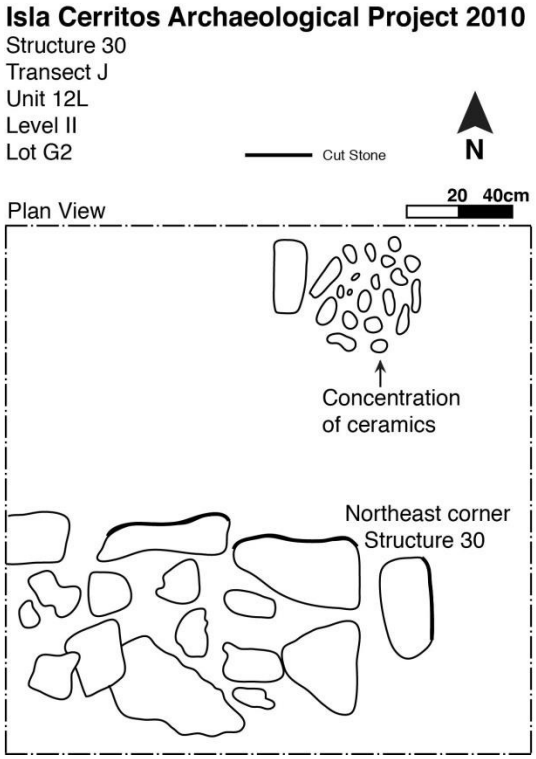


Figure 5.70: Plan view of the northwest corner of the platform of Structure 30.

meant that architectural offerings would possibly be exposed. A small concentration of ceramic fragments and a metate appeared just north of the northeast corner of Structure 30, near Structure 31 and the shared space of the plazuela group.

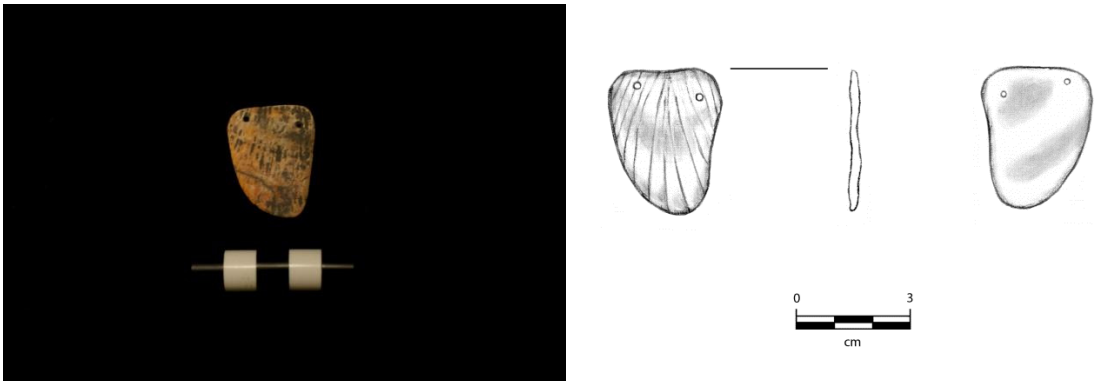


Figure 5.71: Photograph and illustration of a perforated shell pendant excavated in association with Structure 30, ICAP 2010.

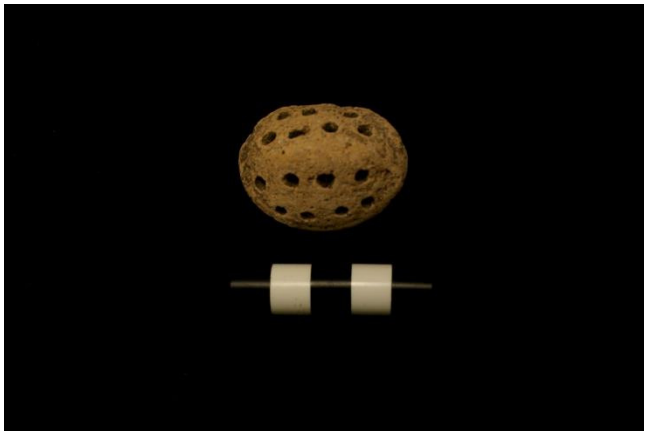


Figure 5.72: Photograph of a ceramic artifact with perforations from Structure 30, ICAP 2010.

Fragments from an early phase Postclassic Sisal brazier were recovered from the alley between Structures 19 and 30. From the corner of the Structure 30 platform, a perforated, incised shell pendant and curious ceramic artifact appeared. We know that in the Terminal Classic period,

these two structures were oriented away from Structure 19. Even the alleyway between these structures and Structure 23 were kept plastered (with multiple repaving events), eventually, during the Postclassic period, the back alley between Structure 19 and the plazuela group was filled in with stones and an effort was made to join the platforms. By this time, the original superstructures on these platforms were either razed or in the process of being re-oriented and conjoined.

5.10 Structure 23

5.10.1 Architecture and Chronology

Structure 23 represents one of the most interesting archaeological contexts on the island. A rectangular range structure on an east-west axis, Structure 23 is located on the north end of the island between the twin pyramid structures 20 and 21 on the northeastern corner and Structure 1 to the west. Canto Carrillo, assisted by Clark, excavated and consolidated the eastern half of this structure in 2007 in 9 calas with 66 units. Germon Roche lead excavations on the west side of Structure 23 in 2010, consisting of 6 calas and 50 units, one of which was a test unit.

This structure was tested in 1985 with a large 4 meter by 4 meter test unit (Test Pit 7) excavated to bedrock that documented a well-preserved stucco floor dated to the Jotuto period, 70 cm above a layer of packed lime sascab that may be associated with an earlier structure almost wholly displaced by the 10th century construction. Below this, a packed earth layer likely represents the original ground surface of the island upon which the building was constructed (Cobos et al. 2010:52). In 2007, Canto Carrillo sought to examine the construction sequence and expose architectural features associated with the well-preserved Jotuto floor (Figure 5.73). Only

two natural stratigraphic layers (the humitic layer and the interior fill above the floor) needed to be removed to reach the preserved Terminal Classic features.

What appeared below these layers was a significantly well-conserved domestic context, confirming the idea that a small population resided at the port, at least temporarily, if not permanently, in Late and Terminal Classic times. The east side of the structure consists of a platform accessed from the south by a short stairway covered by a thick stucco floor. Aligned postholes appear in the floor on the south side of the structure, indicating where walls made of wood or other perishable material were once constructed. Four defined spaces within the structure are separated by low masonry walls, one of which has a circular column still sitting in the middle. The entire structure was likely covered by a roof made of perishable materials (either flat or pitched) to protect the inhabitants from the elements, but the far eastern side of the platform was always a relatively open space not confined by walls and may have served as a kind of porch / patio facing the eastern shore.

Material culture patterns throughout the structure indicate that it served as a living space, including basalt manos and metates sitting on the floor in various rooms, decorated and undecorated ceramic spindle whorls, a shell midden filled with edible north coast mollusca in one room, and concentrations of charcoal, which were collected in a soil sample. In six separate loci the excavation exposed concentrations of layered ceramic vessel fragments sitting on the floor.



Figure 5.73: Photograph showing the Jotuto floor of an interior (east room) of Structure 23 after excavation in 2007. Note the concentrations of ceramic vessels along the wall and the round column drum in the middle of the floor. Photograph by R. Canto Carrillo, from Cobos et al., 2010:61



Figure 5.74: Photograph of stacks of ceramic jars placed outside the platform of Structure 23 (east side ICAP 2007. Photograph by R. Canto Carrillo from Cobos et al., 2010:57.



Figure 5.75: Photograph of Jotuto floor spaces on the "porch" of Structure 23 with metates, a low bench, and square pillar drum. Photograph by R. Canto Carrillo from Cobos et al. 2010:67.

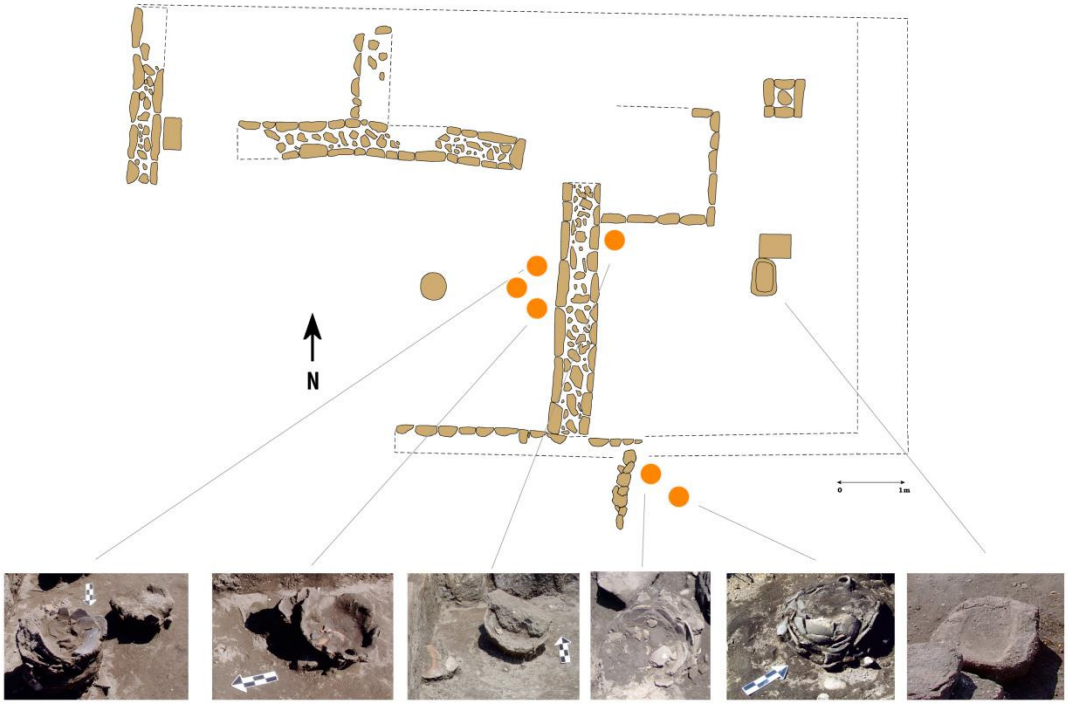


Figure 5.76: Plan map of the floor spaces uncovered on the east side of Structure 23, ICAP 2007. From Cobos et al. 2010:72.

In some cases, these were the fragments of a single large Kukulá olla with thick lugs on two sides and decorated with irregular black lines "dripping" (in chorreadas) from the rim. Other concentrations appeared to be a stack of more than one vessel. These were found both inside Structure 23 and just outside the superstructure walls and the platform (Figure 5.76). Whether the in situ position of these concentrations signifies an intentional termination ritual associated with the space or a hasty exit at the end of the Jotuto complex, or storage has yet to be ascertained. The position of these vessels is provocatively reminiscent, however, of the mural painting from the Temple of the Warriors at Chichén Itzá discussed in Chapter 4 (Figure 4.10) in which houses are depicted on stone platforms complete with large, high-necked ceramic jars with lug handles sitting outside and along the walls of houses. This is also similar to the neighboring West Patio Group where large jars were also found exterior to the platform in shared patio spaces.

In the elite residential groups of Las Sepulturas in metro-Copán, Julia Hendon (1987:526) identified six types of activity areas based on artifact distribution within and outside the structures, including areas for food preparation, food serving and eating, manufacturing, ritual observances, storage, and sleeping. After exposing just the eastern half of Structure 23 at Isla Cerritos in 2007, we had already documented evidence for at least three of these activities, including food preparation and serving, storage, and possibly craft production in the form of weaving (spindle whorls) and shell tool production. The emergent pattern suggested that we had securely identified at least one household very near another multi-structure residential group with the potential to provide fascinating insights into the social organization and daily life of an ancient Maya port community. Thus, it made a good deal of sense to organize an additional field season in 2010 to explore the west side of the structure.

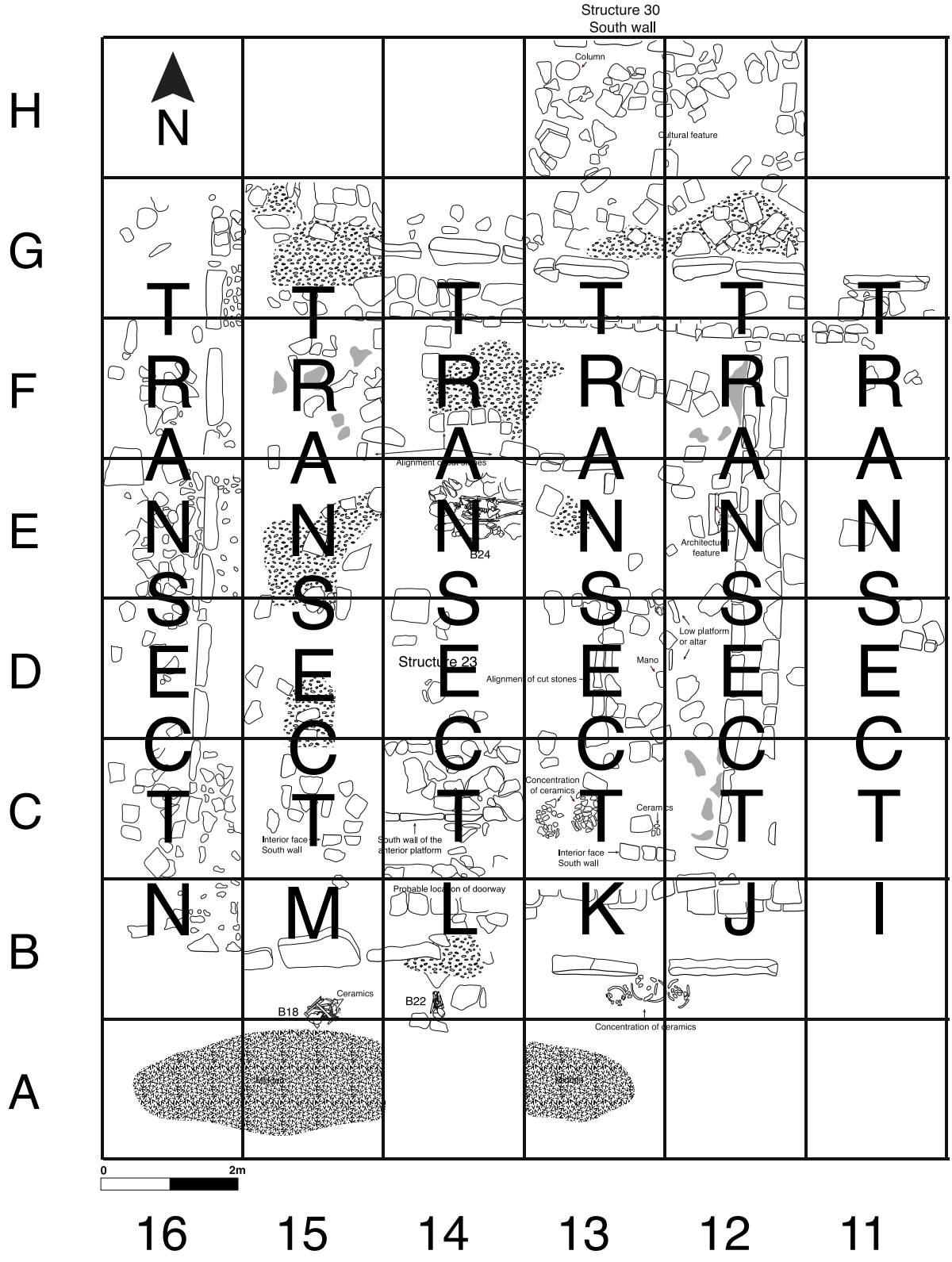


Figure 5.77: Plan map showing the excavation grid for the west side of Structure 23 excavated in 2010.

On the west side of the platform, a single square room occupied the entire space. It was excavated to the level of the same Jotuto floor as that studied on the east side in 2007. This room was constructed at the same time as the east side, although this half of the foundation contains larger limestone blocks positioned vertically and stands, in some cases, more than one meter high. The west room consists of four low exterior walls sitting on the platform similar to those present on the east side of the structure. These served as the stone base for upper courses constructed of perishable materials. There is no doorway in the eastern wall that directly connects this private dwelling space to the more open areas on the east side, nor are there steps leading up the platform from the alleyway on the north side between this structure and Structure 30. Anyone wishing to enter this room would have had to follow the platform from the east and enter via the south side where a doorway must have existed but is no longer preserved.

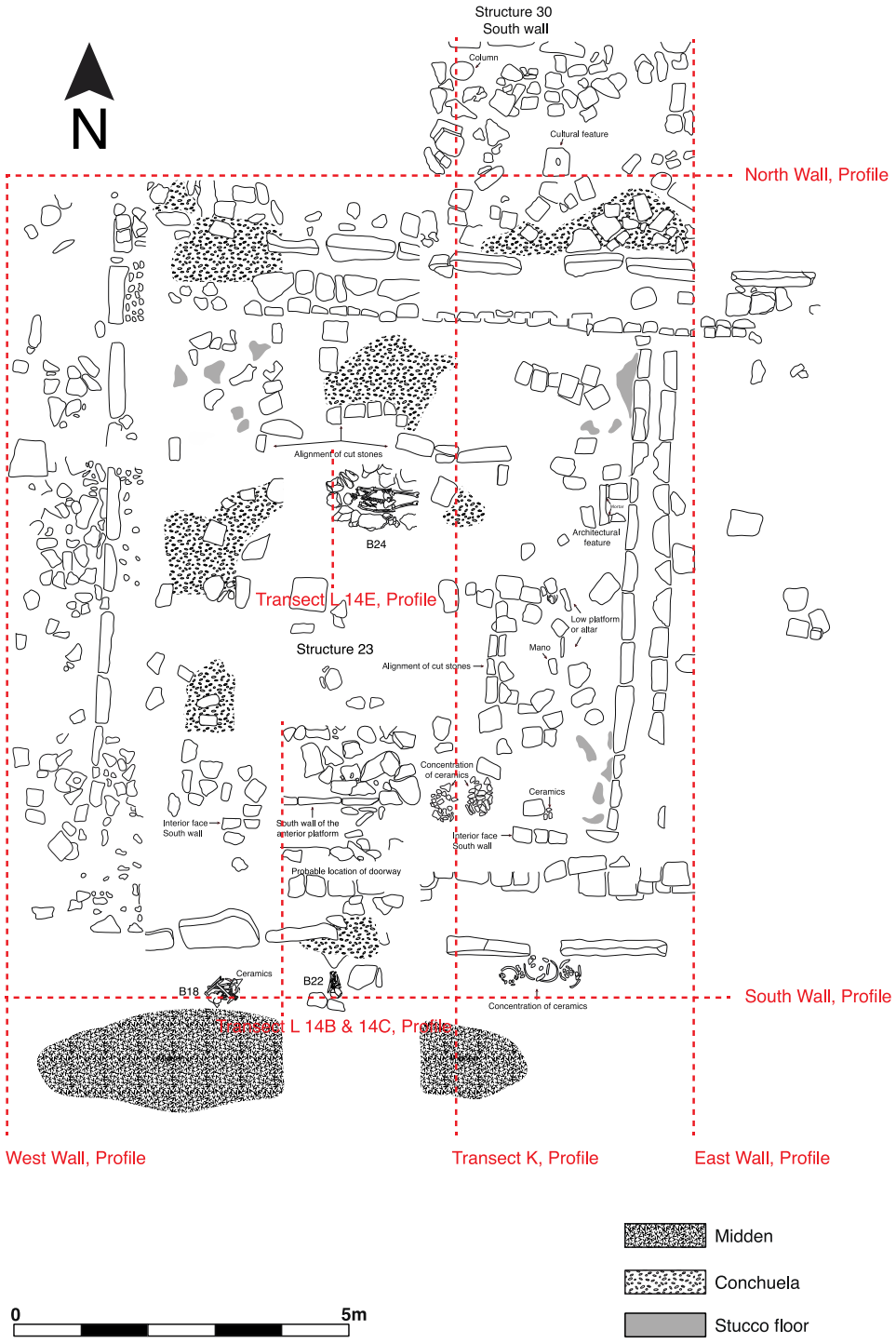


Figure 5.78: Map showing the location of stratigraphic and architectural profiles drawn during excavations of Structure 23 in 2010.

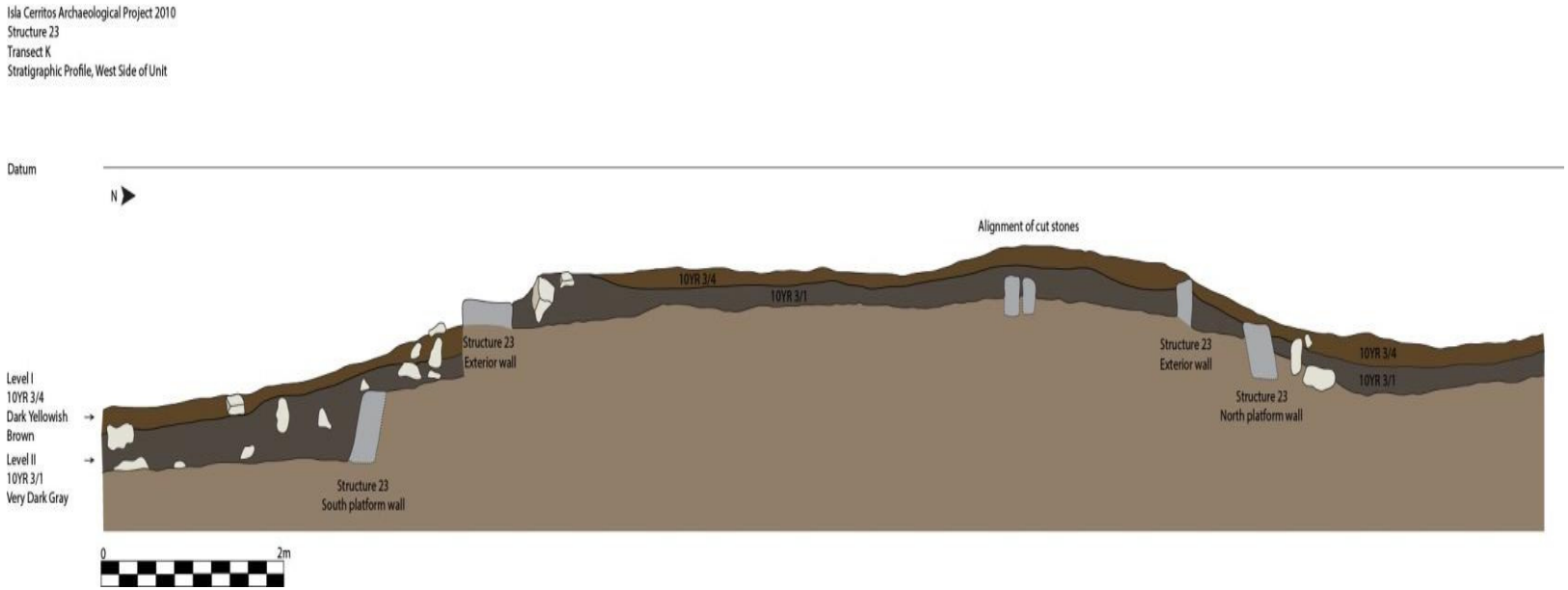


Figure 5.79: Stratigraphic and architectural profile of Transect K, west side, Structure 23, ICAP 2010.

The ceramic sample from these excavations consists of over 15,000 sherds, and very early Middle and Late Pre-Classic material appears in association with this structure and area of the site. The existing architecture, however, appears to be of a much later date, with over 50% of the sample on and near the platform dating to the Jotuto ceramic complex and 9% associated with the Chacpel ceramic complex. While the Jotuto ceramic groups also show the widest variety of types, nearly 1/5 of the total assemblage from 2010 excavations consists of the Kukulá group ceramics, dating to at least 950.

In part due to this situation, two test units were excavated vertically in order to determine whether any evidence remained of substructures beneath the Terminal Classic building, or if all of the anterior architecture had been razed by subsequent construction. One of these units was located along the south wall of the room where we thought evidence for a doorway might appear, and the other was located just south of an interior feature described below (a dismantled bench) near the center of the room. While these units provide only a small window into earlier contexts, an alignment of cut stone was documented below the southern wall dating to the Jotuto complex.

5.10.2 Late Classic Contexts (Structure 23-sub)

Figure 5.80 shows the Unit 14C excavation beneath the Jotuto floor and into the substructure of 23 (23-sub) where an alignment of faced stones provided the footprint of an earlier platform that was later covered over with limestone, shell, sand, chich and conchuela to create the core for the subsequent, larger platform. Like most coastal sites, Isla Cerritos has what I refer to as a coastal core and inland veneer. In architectural terms, this is expressed when, for

example, shell is used as subfloor architectural fill and a compact mix of shell, sea stones, fossils and sand referred to as "conchuela," is used to create blocks or as core fill in construction. This may also occur as the inner core benches, pillars, and other features and later covered by exterior layers of cut stone, plaster, and/or sculpture and painted over in lowland Maya style.

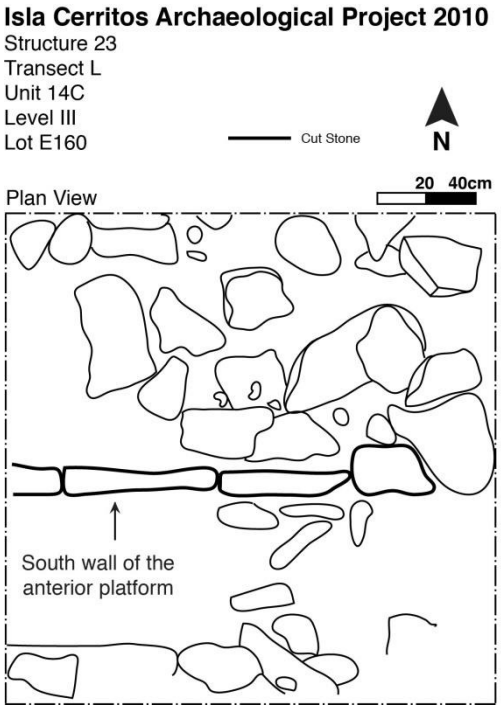


Figure 5.80: Illustration in plan of a portion of the south wall of Structure 23-sub platform. Unit 14C of Transect L.

A similar palimpsest can be seen in the mortuary contexts discussed above from the patio that contain a complicated blend of coastal elements and peninsular elements. The 23-sub platform was probably longer and less wide than the Terminal Classic/Postclassic building. When the platform was remodeled with the west room, this side was expanded both north and south. This earlier platform may have been a long, rectangular colonnade similar to Structure 5, as single pillar bases and round column drums appear in the superstructures above. In the subsequent

remodeling of Structure 23, the columns might have been incorporated as interior room features, such as tables, altars, and/or benches.

5.10.2.1 Material Culture and Spatial Analysis

The few associated ceramics that remained in the 23-sub fill are mostly Vista Alegre striated and western Cehpech slatewares, Muna in particular. Smaller quantities of Canbalam ceramics do appear. The context probably dates to around 850-950 CE. The ceramics are all domestic types and forms, however, and do not resemble the pattern in Structure 5.

5.10.2.2 Burial 24

The other test unit (Unit 14E) in the center of the room exposed a relatively well-preserved primary burial beneath the Jotuto floor and a 75 cm layer of fill and large, flat uncut stones mixed with shell and chich. The burial consists of an adult male individual buried in an extended prone position laid to rest in a stone cist with his head oriented to the west. The cist was inserted into a packed earth floor at the base of 23-sub.

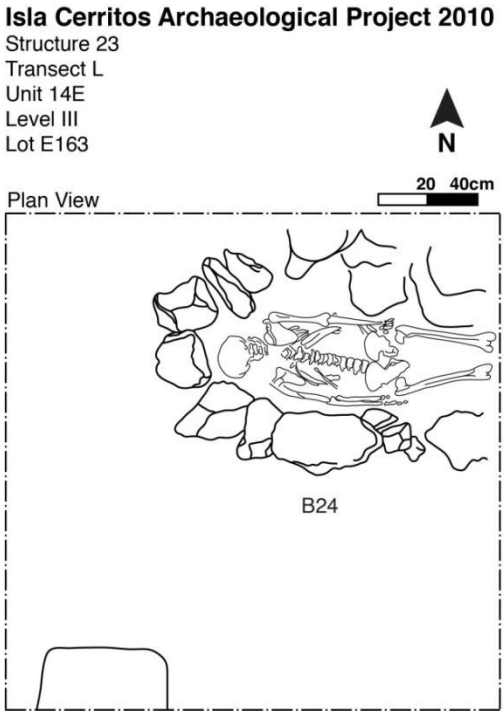


Figure 5.81: Plan view illustration of Burial 24 located beneath the center of the west room of Structure 23, ICAP 2010.



Figure 5.82: Artifacts associated with Burial 24 beneath the west room of Structure 23. ICAP 2010.

Offerings associated with this burial include two mineral beads found along the torso, perhaps once part of a necklace or pectoral, and an incised tubular jade bead placed in the mouth. North coast shells were also found in the burial, along with ceramic fragments. The cranium was partially in-tact.



Figure 5.83: Partially deteriorated cranium of Burial 24 prior to cleaning and desalinization in the laboratory. Note the incised tubular jade bead in situ between the maxilla and mandible.

This robust adult displays evidence of intermediate tabular erect cranial modification as a biosocial marker (Tiesler 2014) that is more clearly visible in the angle of Figure 5.84.



Figure 5.84: Burial 24 cranium in the laboratory during the process of micro-excavation and conservation. Photo courtesy of Vera Tiesler Blos, 2015.

This style of cranial modification is quite different from the tabular oblique form more common in the southern Maya lowlands. It is more similar to the superior flattening occurring in contexts from Chichén Itzá, Isla de Sacrificios in the southern Gulf coast, and at Uaymil. We do not see evidence for dental modification in this individual. Additional laboratory analysis will surely shed more light on the individual in Burial 24.

While this burial cannot be considered "lavish" compared to other Maya sites, a burial is often the first act of construction in a household and serves as a way of activating the space and signaling continuity of occupation by, perhaps, the descendants of the ancestor interred (Haviland 1981:105). It seems clear that this burial represents a significant residential group offering that includes objects, such as this carved tubular jade bead in pyrite or hematite beads that were exotic and elite sumptuary goods in Maya society.



Figure 5.85: Tubular jade bead, incised, from Burial 24, Structure 23, ICAP 2010.



Figure 5.86: Pyrite or hematite beads associated with Burial 24, Structure 23, ICAP 2010.



Figure 5.87: Bone needle, fragmented and with perforation. Burial 24, Structure 23, ICAP 2010.

Artifacts in this assemblage include a bone needle placed between the left arm and waist, a stone polisher, a stone net weight with rope wear, small animal bones, a worked chert core tool, four large unworked strombus costatus shells. Near the neck, we recovered two polished black stone beads that are most likely hematite (Zach Hruby, pers. comm. 2012) or less likely pyrite, but this cannot be confirmed until further testing is conducted. An obsidian prismatic blade fragment

was visually sourced to Ucareo, Michoacan, Mexico. No complete ceramics vessels were found as offerings in this burial. Of the ceramic fragments found in the burial fill, 76% were Late and Terminal Classic ceramic types (Chacpel and Jotuto ceramic complexes), suggesting a date of 850-950 CE.

Within the construction history of this house, this burial event must date to the transition between the use of the Structure 23-sub (west side) and the amplification of the platform and construction of the west room of Structure 23, perhaps as part of rituals related to termination events of the earlier structure's use or the end of one type of domestic occupation and beginning of another (most likely around 900/950 CE). The formal and careful construction of this cist to protect the remains, as well as the presence, in low quantities of imported luxury goods of personal adornment more commonly found in higher quantities in elite tombs at larger inland Maya sites, and the niche feature marking this location in the room above suggest that this individual was a revered ancestor or lineage head for the occupants of Structure 23. This funerary event sanctified the structure at a point of social transition.

5.10.3 Terminal Classic Contexts

The interior features of the west room suggest that it was used for a variety of household activities and that its functions may have changed during the Jotuto occupation. Originally, a 1.5 meter wide bench was constructed along the north wall that was associated with the Jotuto floor and is a good indication that this room once served as a large dwelling space. Also a square altar-like feature made of cut stone extends 60 cm from the east wall just over 2 meters south of the northeast corner of the room. This square feature is exactly the height of the basal course of the wall and flush with it, and it is unclear if something perishable, like the upper wall, may have

once been constructed on it or if it might have been part of a square pillar that supported the roof of 23-sub. Sometime after that north bench was removed a rectangular platform of rustic and cut stones was constructed in the southeast quadrant of the room and may have served as some kind of low altar.

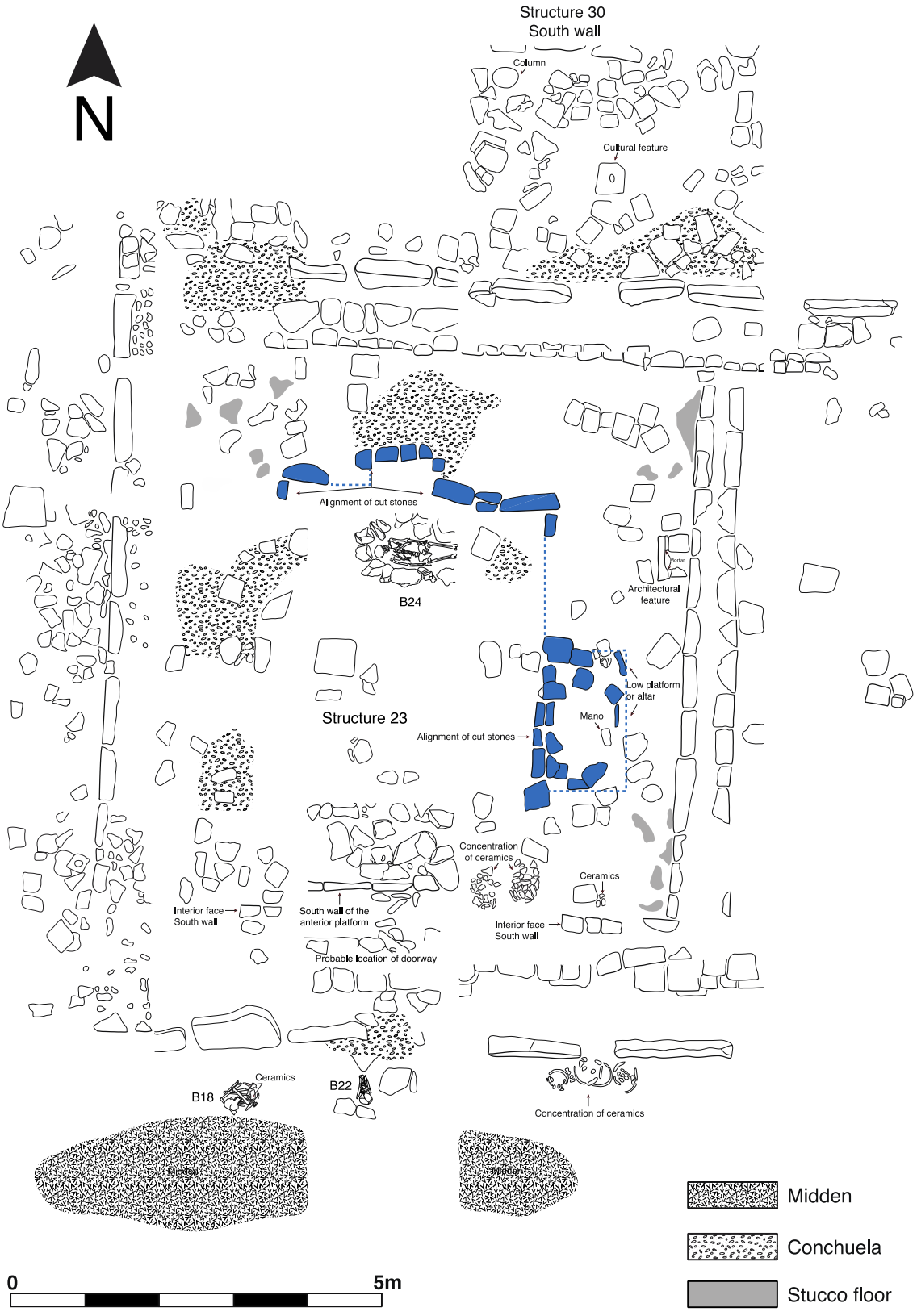


Figure 5.88: Plan view of the west room of Structure 23 with associated cultural and architectonic features.

In Figure 5.88, the stone alignments added to the interior of the structure after the removal of the bench along the north wall of the superstructure are highlighted in blue. These rustic features mixing cut and uncut stone are similar to the stone alignments documented by T. Kam Manahan (2004) in Early Postclassic period house platforms at Copán, Honduras. He describes interior divisions of space constructed out of recycled stone as not necessarily significantly high, but rather subtle divisions of space into corridors and activity areas that can be further augmented (if needed) by perishable constructions. Likewise, the low altar/platform contains a stone mano and fragments of an early phase Postclassic censer that may have been placed there in a ritual activity. The alignment of stones running east-west create a niche facing the area that we believe the doorway was once located. Burial 24 was found directly beneath this niche in the substructure.

5.10.3.1 Material Culture and Spatial Analysis

In addition to ceramics, high quantities of shell, a polished spondylus bead, two decorated spindle whorls, and a variety of faunal material were recovered from the fill just above the Jotuto floor where we expect artifacts stored in high places in the room to end up. The ceramics from the first two levels include Kukulá groups and early phase Postclassic Mama red ceramics, which may date the shift in function of the space from a dwelling to a ritual-ceremonial after 1100. The Jotuto floor and bench are also associated with late Sotuta domestic ceramics, especially Kukulá Xcanchacan black on cream.

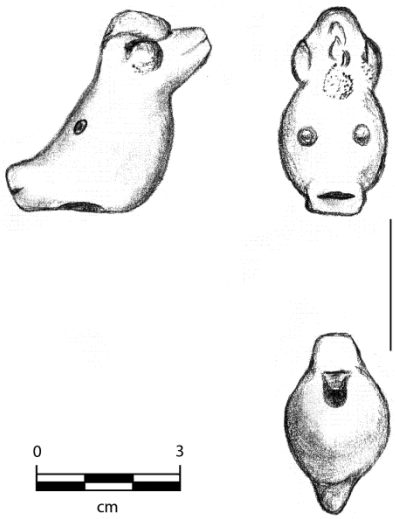


Figure 5.89: Illustration of fine orange ceramic bird whistle from the west room of Structure 23, ICAP 2010.



Figure 5.90: A ceramic spindle whorl, decorated with an incised sea bird from the interior of the west room, Jotuto ceramic complex, Structure 23, ICAP 2010.

The fine orange ceramic whistle and the spindle whorl both feature sea bird decoration. Several objects of personal adornment found inside this room reinforce the interpretation of it as a dwelling space for a leading individual or individuals of a family. One of the most interesting objects is a small piece of pottery (probably originally a "tejo" for weaving) that appears to have

been "knapped" or carved in a fashion similar to lithic into the form of a projectile point. Its location in the interior of the same space that the complete chert spear point was recovered (Figure 5.16) evokes the notion of a child mimicking the weapon of an elder, or learning how to create a point.

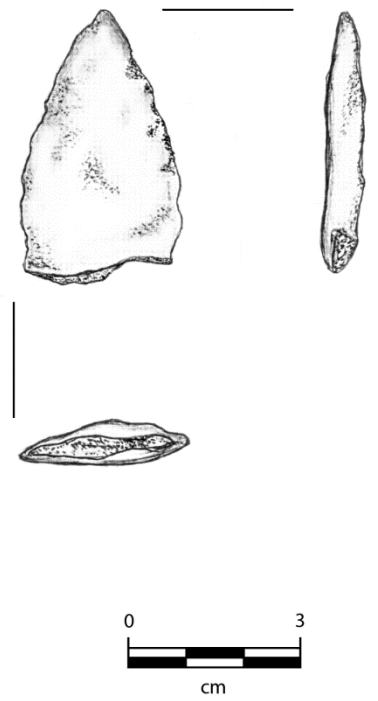


Figure 5.91: Illustration of a ceramic "projectile point" that may have been "knapped," possibly a child's toy. Structure 23, ICAP 2010.

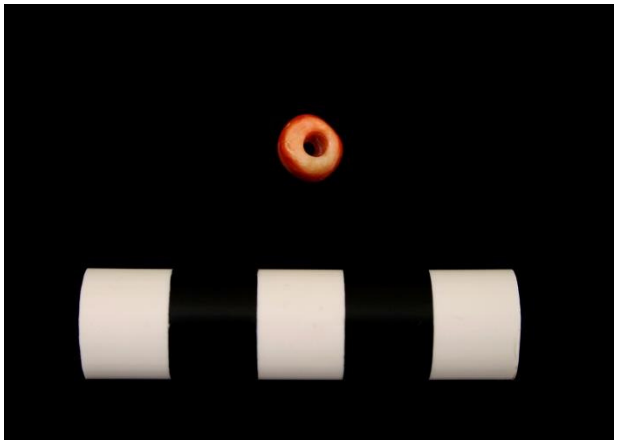


Figure 5.92: A polished red spondylus shell bead excavated inside the west room of Structure 23, ICAP 2010.



Figure 5.93: Polished shell tool from Structure 23, ICAP 2010.



Figure 5.94: Polished shell whistle and/or personal adornment from Structure 23, ICAP 2010.



Figure 5.95: Perforated feline tooth for personal adornment, from the west room of Structure 23, ICAP 2010.

The perforated feline tooth that was probably worn or attached to the body is another small status symbol, as feline skins and bones had many powerful symbolic associations in Mesoamerican societies (Pohl 1994).



Figure 5.96: Illustration of a fragment of a limestone ring base, or support. Structure 23, ICAP 2010.

Fragments of thick limestone rings, such as that pictured above in Figure 5.96 are found in all of the domestic contexts excavated at Isla Cerritos so far. These may have been used as bases or supports for ceramic cooking vessels, holding them steady over a hearth. Some show wear in the interior that might be caused by rope or cord. If so, an additional function for these artifacts is as anchors for watercraft.



Figure 5.97: Deteriorated basalt metate fragment with support, Structure 23, ICAP 2010.

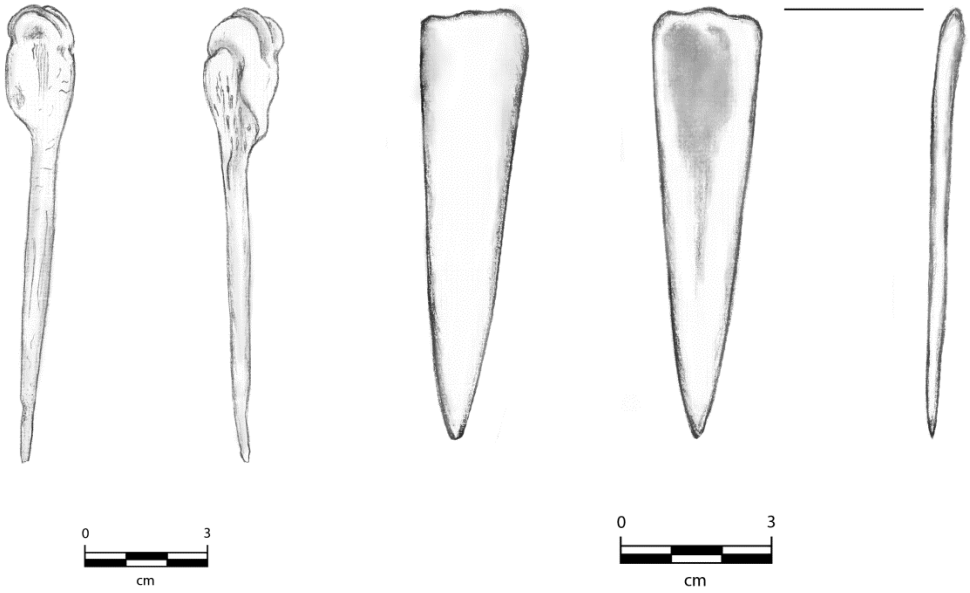


Figure 5.98: Illustrations of bone tools from the west room of Structure 23, including an awl (left) and a cornhusker (right). ICAP 2010.

Structure 23 ceramics from the west room are overwhelmingly domestic Jotuto ceramic types either copying Sotuta/Cehpech/Hocabá forms popular in the interior of the peninsula using local pastes (such as Xcanchacan) or imported tradewares associated with Chichén Itzá. The west room has an increased variety of Silhó Fine Orange X group ceramics, ranging from small, carved composite vessels of the Kilikan type to large jars for liquids--a more decorative serving container.

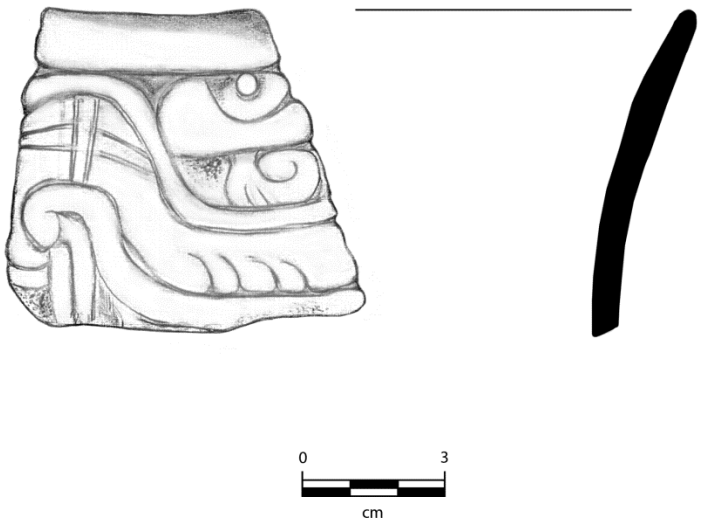


Figure: 5.99: Silhó Fine Orange, Kilikan composite, vessel rim with perforation, Structure 23, ICAP 2010.

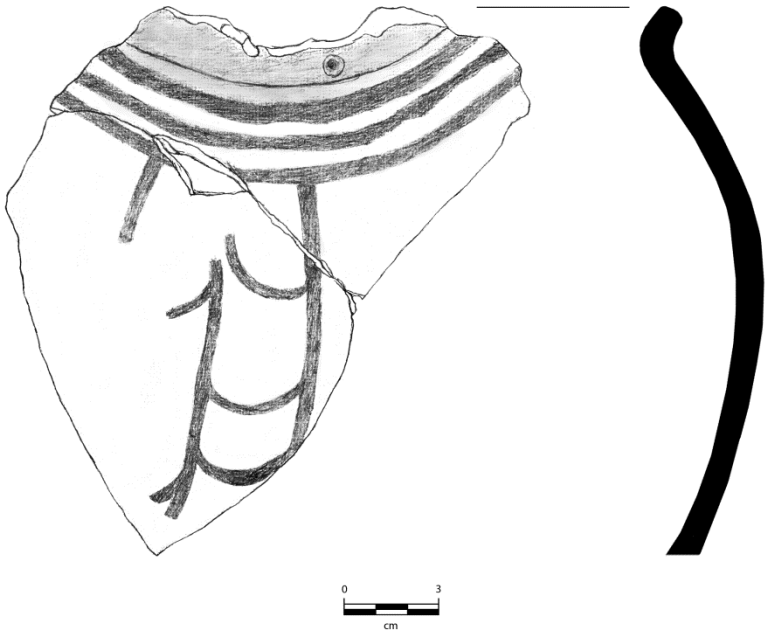


Figure 5.100: Illustration of large, Silhó Fine Orange jar neck and body fragments, Yalton black-on-orange type. Structure 23, ICAP 2010.

The west room of Structure 23 is just one addition to a multi-room domestic structure with both private and more open or public spaces. The doorway to this space is oriented to the south and Structure 3, but the central and eastern rooms of the superstructure face north toward the plazuela between Structures 20, 21, 30, and 31.

5.10.3.2 Burial 18

Two additional adult burials were excavated in association with this structure in 2010. Burial 18 is located just south of the west room and Structure 23 platform, underneath a midden. This is a primary burial of an adult placed in a flexed, seated position facing southwest. All flexed burials were originally placed in textiles or shrouds prior to deposition. Large fragments of a once-complete Silhó Fine Orange composite dish represent the only clear offering. These and other ceramic fragments date primarily to 1000-1200, Cehpech-Sotuta and Sotuta-Hocabá mostly and the styles of the Chichén Itzá domestic suite; no Mayapan reds are present (so, this burial probably predates 1200). Here the inland cooking and water jars appear instead of coastal groups (Piste Striated instead of Vista Alegre). There is evidence of dental modification in the form of filing.



Figure 5.101: Illustration of Burial 18 off the south side of the Structure 23 platform. ICAP 2010.



Figure 5.102: Artifacts associated with Burial 18, Structure 23, ICAP 2010.

5.10.3.3 Burial 22

Burial 22 is also located off the south side of Structure 23 below a midden. This is a secondary burial of an adult that was disarticulated and moved to its new location. The bones may have been grouped in a textile that later disintegrated.



Figure 5.103: Illustration of Burial 22 off the south side of the Structure 23 platform. ICAP 2010.



Figure 5.104: Artifacts associated with Burial 22, Structure 23, ICAP 2010.

No complete vessels were documented, but ceramic sherds provide a Terminal Classic-early phase Postclassic date range with Cehpech-Sotuta and Hocabá ceramics mixed with coastal wares, but no evidence of Mama red. Fragments of fine grey and painted Silhó Fine Orange ceramics were documented. A few chert scraping tools and two fragments of obsidian blades were found in association with this burial (obsidian was sourced to Guatemala). This secondary burial probably also dates to c.1000-1200 CE.

5.10.4 Postclassic Contexts

Approximately 10% of the ceramics from the west room of Structure 23 date to the Postclassic period, but we know that there is a small occupation of Structure 23 that lasts up to around the time of European contact. In the early phase of the Postclassic period (1100-1400), the ceramic profile contains the late period tecomates common throughout the island, as well as Mama red vessels associated with the pottery of Mayapán. At the same time, Timun group Cerro Montoso polychrome demonstrates that residents maintained strong links to Isla de Sacrificios, Veracruz and Gulf coast trade networks.

5.10.4.1 Material Culture and Spatial Analysis

One large Mama red fragment is from a molcajete, or grater bowl, a form that becomes popular at the port after 1000 CE and represents a dietary change in which chile, achiote, and other types of condiments or spices from Central Mexico were integrated into local cuisine (Bey and Ringle 2007).

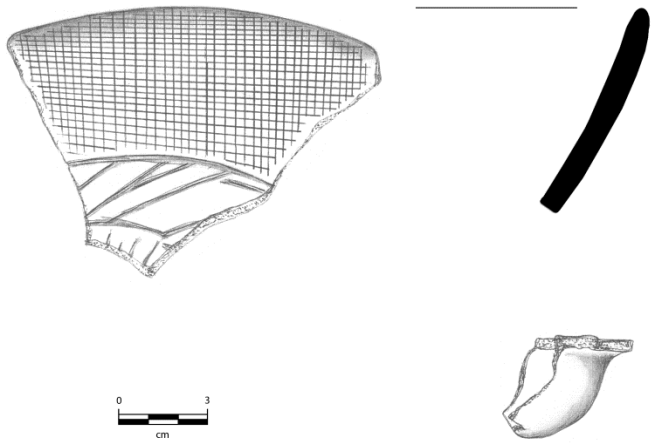


Figure 5.105: Illustration of a rim, profile, and support of a Mama red molcajete associated with the low altar or platform feature inside Structure 23, ICAP 2010.

5.10.5 Summary

Structure 23 of the plazuela group in the north neighborhood is larger and more complex than the other nearby structures with separate interior rooms with entrances and upper walls made partly of cut stone. The west room in the structure contained a stone platform that was later removed and low alignments of stone dividing spaces within the room, creating a niche. Renovations of this structure were more extensive and required greater labor input, planning, and importation of building materials. The first iteration of this structure in the Classic period may have been a colonnaded hall, or gallery, where some of the column drums were later re-used for tables, altars or other interior features. There are fragments of stone sculpture associated with this structure, but the fill contexts in which these are found suggest re-use rather than primary carving or commissioning.

Evidence for household craft production in the form of shell middens and spindle whorls for cotton textiles, as well as the preparation of fishing nets are all present in parts of this structure. One of two separate porch spaces that open out to the terrace of the north side of the structure and the plaza and another interior room had large concentrations of worked and unworked shell (Gulf coast species), indicating possible production and discard areas for shell tools.

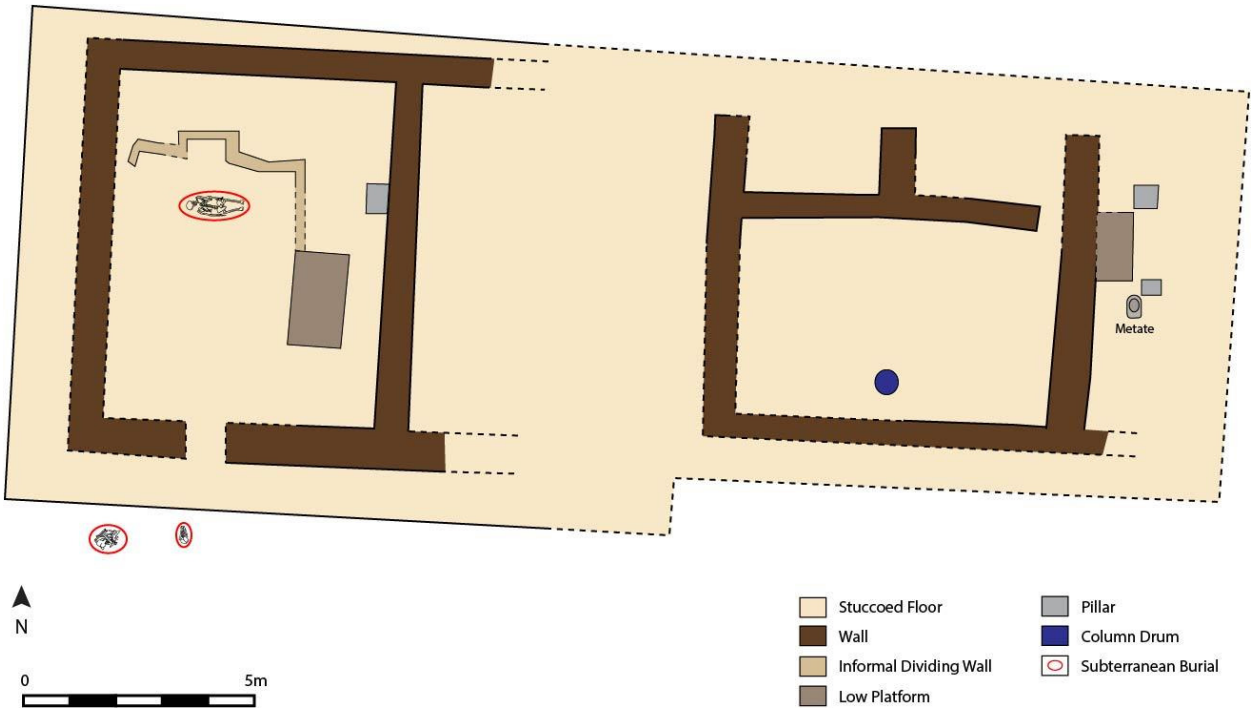


Figure 5.106: Simplified plan illustration of Structure 23 platform and rooms (Jotuto floor).

The delineation of activity areas and living spaces, as well as objects of personal adornment (spondyllus shell beads, jade, hematite or pyrite beads), musical instruments and decorated artifacts (e.g., spindle whorls with birds and fish carved in them), a polished greenstone ax for ritual use, are all material indicators social group affiliation as well as daily practice. Possible toys, for example the ceramic projectile point shows that families were installed on the island portion of the community, and that collective identity or group membership (however defined) spans generations. Beneath the floor of the west room and the substructure, a primary extended cist burial was placed of an adult male, possibly a lineage head or revered ancestor.

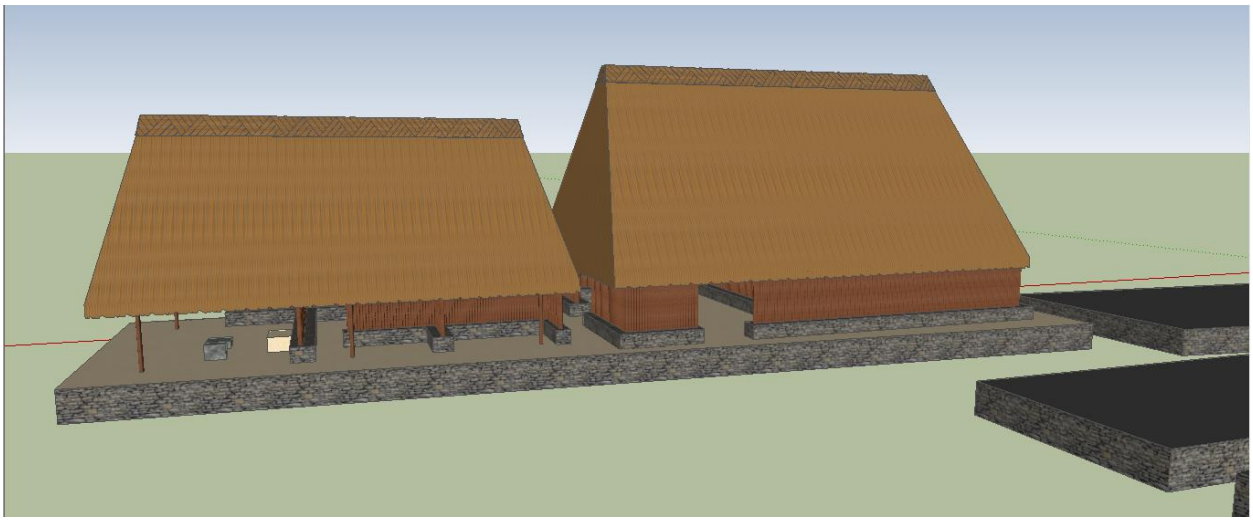


Figure 5.107: Sketchup reconstruction of Structure 23, in this case with a pitched hip roof. View of the north side of the structure.

The form of this multi-room residential structure is similar to that documented at contemporaneous Maya sites and to houses described in Diego de Landa's (1978) historical chronicle from the early colonial period that contained spaces that opened out to a wide terrace and a more restricted interior space. While the pitched roof in these reconstructions may not be as accurate (these structures may have actually had flat roofs), there are more public and private spaces in Structure 23. Some porch or terrace spaces and activity areas open to the north and east toward the plazuela space between the platforms, and at least one room (the west room) is restricted those entering on south side via the terrace. This is clearly a separate residential compound from the West Patio Group, which is oriented around the shared patio. Archaeological energetics estimates for the cost of construction of Structure 23 is 23,508 PDs alone, or over twice the estimated cost of Structure 19. This is a considerable investment for a single structure that, combined with Structures 30 and 31 to form a group, would increase to over 32,000 PDs.

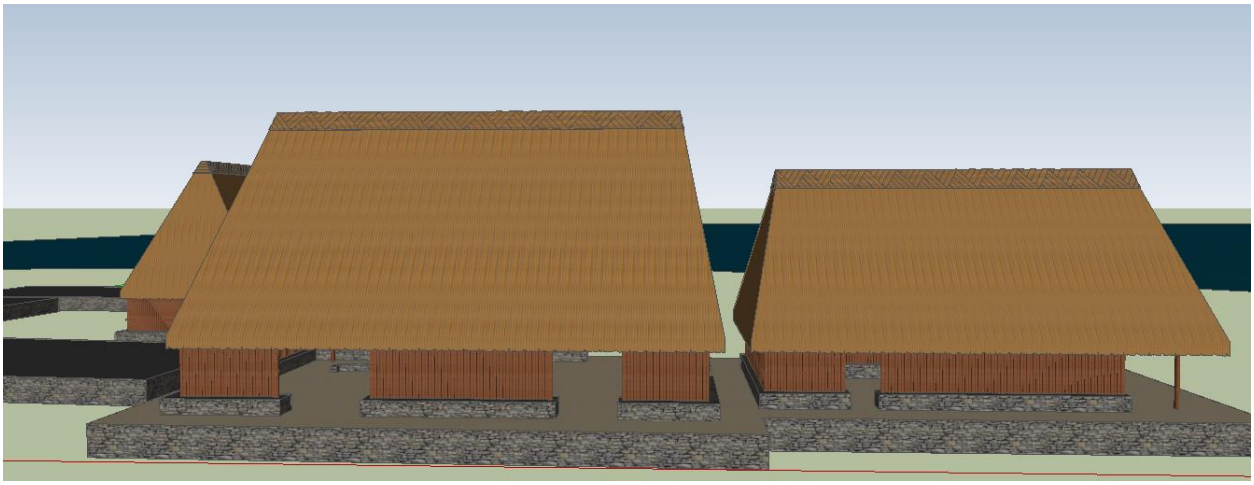


Figure 5.108: Sketchup reconstruction of Structure 23, view from the south toward the doorway of the west room.

The West Patio Group architecturally pre-dates Structure 23-sub and the plazuela group, as well as Structure 8, but all have occupations that overlap in the Terminal Classic and Postclassic periods. Three of the juvenile and infant burials discussed from the patio (21, 23, and 25) most likely predate Burial 24 in Structure 23-sub during the transition of overlap between the Chacpel and Jotuto ceramic complexes (800-900 CE). Burial 19 in the patio is coeval with the occupation of Structure 23-sub and, perhaps, its termination rituals and remodeling, which included Burial 24. Burial 20 in the patio is either contemporaneous with or postdates Burial 24.

Despite the clear age differences, the burial practices and offerings of the patio graves and Burial 24 are similar (extended, prone) with those post-dating 900 CE involving either slightly more (Burial 20) or significantly more construction (Burial 24), the latter featuring exotic objects of personal adornment in low quantities as offerings. The infant Burial 21 (700-950) and the adult Burial 24 (900-1100) represent the highest investment of the mourners in funerary rites. Burials 18 and 22 off the south side of Structure 23 date to at least 1000 CE, or the transition to the Tomburro ceramic complex, and are quite different in form (especially the

seated, flexed Burial 18) indicating either important social changes took place at the port over time (esp. 900-1000 CE), or these individuals represent a completely different sociocultural affiliation.

5.11 Structure 8 and a Western Neighborhood?

Structure 8 is located on the west side of the island and is interpreted here as a lone domestic structure. However, the unexcavated Structures 9, 10a, and 10b are similar in form and physically proximate and might have formed a residential group with an open plaza, or plazuela, to the south with R1 located east of the Structure 10 shared platform. Further archaeological investigation of these structures is required to determine their orientation, dates of occupation, and any mechanisms of social integration beyond physical proximity (i.e., shared ceremonial architecture, common spaces, resource/storage areas) that would allow us to identify this area as a kind of western neighborhood at the port (Hendon 2012:173). This stands in contrast to the northern residential groups that we can securely interpret as forming separate groups that overlap in time and are integrated by way of alleyways and nearby civic-ceremonial structures.

5.11.1 Architecture and Chronology

Structure 8 is a rectangular structure oriented along an east-west axis that measures 13.60 meters long and 7.30 meters wide, facing south. This structure was excavated by Lilia Fernández Souza in 2006 with the goal of determining the structure's function, activity areas, and architectural history from the Terminal Classic period on. In 1985, Test Pit 12 was excavated in the center of the structure that extended to a depth of 3.12 meters and exposed six floors, including a well-preserved stucco floor at 1.67cm BD, dating to the Late Classic period. Fortunately, this excavation provided two radiocarbon dates. Remains of earlier construction was

documented in Xaumito (150 BCE-300 CE) and Trompillo (300-700 CE) contexts, but it is not currently clear kind of building existed in this area prior to the Late and Terminal Classic period structure that obliterated earlier architecture. The test unit also exposed Burial 7 (Figure 5.112), radiocarbon dated to the late Terminal Classic period (1075 CE). In 2006, the purpose of the excavation was to expose the majority of the structure to the level just above this burial, corresponding to the packed earth and gravel floor visible in the test pit profile. Earlier occupations were not explored in 2006.

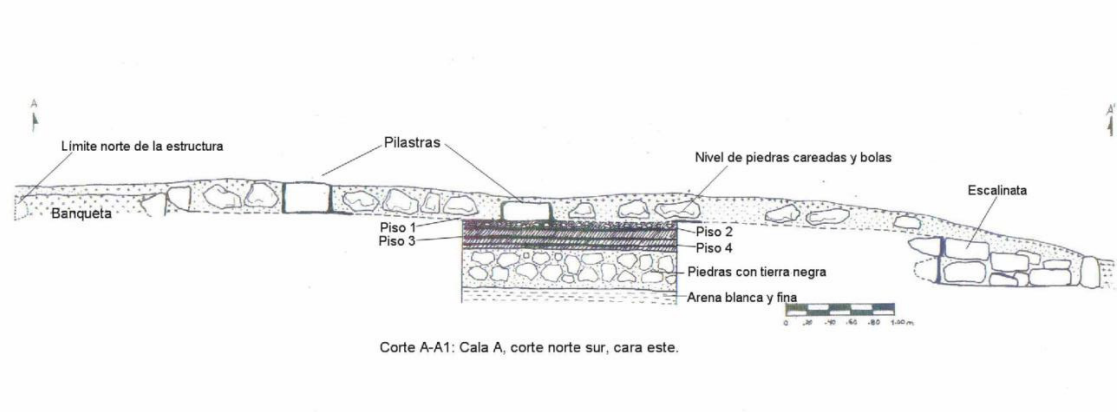


Figure 5.109: Architectural profile of Structure 8, ICAP 2006. From Cobos et al. 2006:68

5.11.2 Terminal Classic Contexts

Based on the ceramics recovered from this excavation in concert with natural stratigraphy and absolute dates, it appears that the Structure 8 platform and superstructure changed in design and function four times starting at around 900-1000 CE. First, the superstructure was used as an open dwelling space with four entrances built into half-masonry walls, one on each side, with the southern door being the largest. In the second phase, a short bench (seat) was constructed against the north wall, facing toward the south entrance. Columns and pillars were constructed in the interior of the structure that did not obstruct the view, but created a direct passage between the

bench, the south entrance, and the eastern and western entryways. A small door next to the bench on the south wall provided a rear entrance to the space alongside the bench.

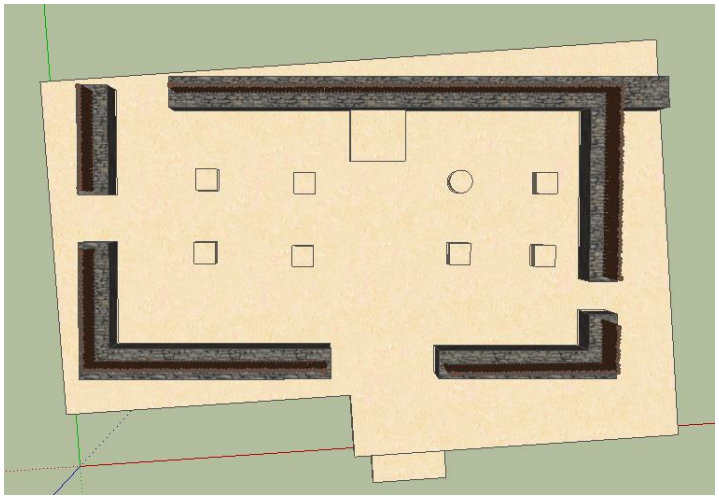


Figure 5.110: Sketchup reconstruction in plan of the interior of Structure 8 during the second construction phase.

In this second phase, the function of the structure appears to have shifted to a semi-public administrative function, perhaps, as Cobos et al. (2007) hypothesize, a space devoted to reception or presentation activities. A generation later, the bench seat was incorporated into a larger bench that spanned the entire south and east walls with smaller benches constructed on each side of the main entrance (south wall) and the other doors. With the increased bench space and reduced access, the area appears to have been transformed into a more private domestic space (Figure 5.111).

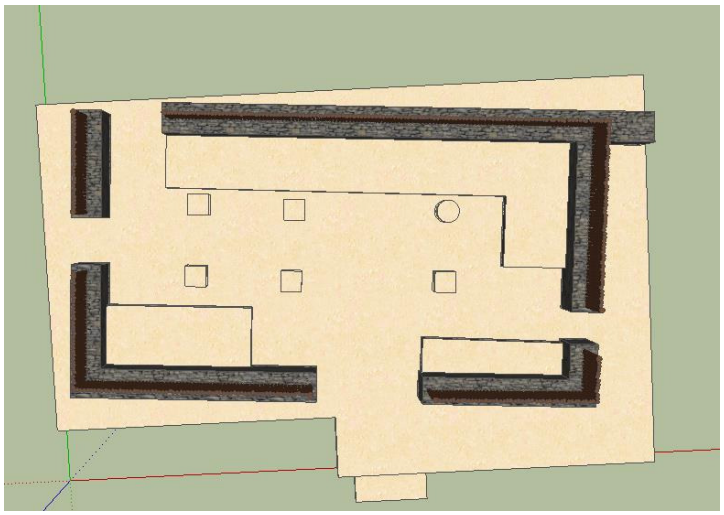


Figure 5.111: Sketchup reconstruction in plan of the interior of Structure 8 during the third construction phase.



Figure 5.112: Photograph of the plaster floor in the interior of Structure 8 with a preserved posthole. From Cobos et al. 2006:62.

5.11.2.1 Material Culture

Most of the artifacts from the 2006 horizontal excavations of Structure 8 have yet to be analyzed fully. There are seven burials associated with this structure, and the artifact types include local utilitarian ceramics in low quantities and fine paste ceramics (Silhó Fine Orange

X), as well as serving vessels in higher quantities. Whole vessels were excavated as part of ritual and mortuary offerings, including a complete Tohil Plumbate effigy vessel. Elite sumptuary materials available only through long-distance exchange are found in quantities that are, while generally small, greater than the amounts of luxury goods associated with the residential structures excavated to the north. Examples include: turquoise, gold, spondylus shells, Caribbean shells, jade beads and pendants, and green obsidian from Central Mexico. On one hand, this material culture represents portable wealth and status across prehispanic Mesoamerica. At the same time, these are all examples of exotic imports that are also found in elite contexts and the cenote at the inland center of Chichén Itzá.

5.11.2.2 Burial 7

Burial 7 is a primary deposition pit burial located in Level VI that was excavated in a test unit in 1985 and contained the remains of 4 individuals, 2 adult males and 2 adult females. All individuals exhibit tabular oblique cranial modification. This is an older, Classic style documented in the southern Maya lowlands (Tiesler 2014:172) that the group associated with this structure may be reviving or imitating (V. Tiesler, pers. comm. April 2015). While it is not clear exactly what this biosocial marker means, it indicates some kind of close affiliation (e.g., kinship, ethnicity, ascribed status, religion, or a combination of these) that is distinct from Burial 24 on the other side of the island, which shows tabular erect cranial modification. A radiocarbon date from organic material in the burial provided a date of 1075 CE, while another from level IV provided a date of 1060 CE. The ceramics correspond to the Jotuto ceramic complex, Cehpech-Sotuta and Sotuta-Hocaba ceramic spheres associated with the region between Chichén Itzá, and these dates correlate to the political collapse of the urban center. The burial offerings described

above would be interpreted as semi-elite or elite in most archaeological contexts of the northern Maya lowlands (Figure 5.113).



Figure 5.113: Photograph of Burial 7, Test Pit 12, ICAP 1985 with offerings in situ. From Andrews 1995:19 and ICAP Archive, FCA-UADY.

5.11.2.3 Burial 16

Burial 16 corresponds to Levels VII+VIII and was placed intrusively into the 5th floor (sequentially) of the structure. This is the earliest lime plaster floor that was covered with a black soil (at 90-160cm BD). The individual interred was a male subadult, 15-16 years of age, buried in a seated flexed position (originally in a shroud) facing south (Figure 5.114). He had oblique tabular cranial deformation, and only one offering was placed in the grave with him, a polished white round stone 4.5cm in diameter. This is burial similar in form to Burial 18 located just outside Structure 23, and dates to approximately 900-1060 CE.

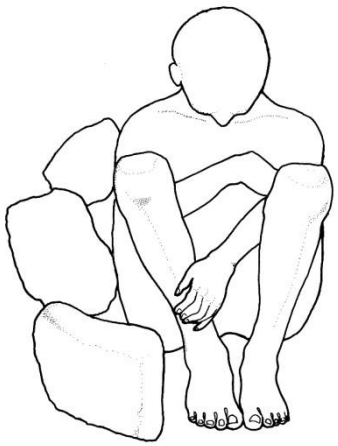


Figure 5.114: Illustration of the burial cist and flexed position of the individual in Burial 16, Structure 8, ICAP 2006. From Cobos et al. 2006:124.

5.11.2.4 Burial 17

Burial 17 is the latest burial excavated in Structure 8 in 2006 (c.1100-1200 CE). It consists of a secondary burial of a neonatal infant placed as part of an offering under the central bench in the penultimate construction phase of Structure 8 (Figure 5.111). The bones were disarticulated and spread over a layer of Gulf coast shells. This bench offering includes a complete Navula vessel with lid (Tomburro ceramic complex) and a large Cittarium pica marine shell of the Caribbean Sea (Figure 5.115). Large fish and manta ray were placed over this offering as well.



Figure 5.115: Photograph of the offerings associated with Burial 17, Structure 8, ICAP 2006. From Cobos et al. 2006:64.

5.11.3 Postclassic Contexts

During the early phase of Postclassic period (after 1200/1250 CE), the entire interior space of the superstructure was filled with both cut and uncut stone that had been taken from the benches, pillars, and walls that were carefully dismantled and placed inside the limits of the remaining enclosure. The entire structure was converted into an altar. Several alignments of stones inside created informal spatial divisions, and at least one niche was created in the space previously occupied by a bench along the western segment of the south wall of the earlier superstructure.

5.11.3.1 Material Culture

Cached in this was a stone box containing a small ritual offering containing a large fragment of a Chen Mul modeled effigy incensario lid in the form of the face of Ek' Chuwah, a patron deity of merchants, traveling ventures, and cacao documented around the contact period (Taube 1992:88; Tokovinine and Beliaev 2013; Figures 5.116, 5.117). A stone mano was also placed just outside the eastern access to the altar.



Figure 5.116: Photographs of the offering cache and effigy censer fragment found on the Structure 8 platform in 2006. The Chen Mul modeled censer fragment features the face of Ek' Chuwah, or God M. From Cobos et al. 2006:66.



Figure 5.117: Line drawing of Ek' Chuwah after the Postclassic Madrid Codex, Plate 51. Here he appears drilling fire on the road. Drawing by Hillary Olcott.

Sometimes referred to as God M (cf. Tokovinine and Beliaev 2013:193), Ek' Chuwah (or Ek Chuah) is a deity that does not coalesce in Maya cosmology until the Postclassic period in Yucatán. It appears to combine characteristics of the central Mexican god Yacatecuhtli and an earlier Classic Maya deity, God L (Taube 1992:90). In the Classic period, God L is sometimes depicted in iconography with bundles of cargo and a walking staff; he associated with the dual concepts of the deadly underworld and fertile riches of trade and merchants. Interestingly, Taube (1992:86) mentions a connection between this earlier deity and the western Maya coast of Tabasco and Veracruz, the moist, fertile cacao-growing region. Later, Ek' Chuwah appears in the Postclassic Maya codices as a foreigner on the road with his distinctive long nose and black skin, sometimes carrying a spear or sharp stick, symbolizing the association between trade and war (particularly in central Mexican imperialism). For the Gulf coastal Maya, this deity and his associations blended with those of God L surely resonated strongly and was quickly incorporated as a local patron. This small offering is illustrative of the ritual significance of the island port beyond its principal occupation, well into the Postclassic period. Moreover, its seems to be no coincidence that this offering is placed on Structure 8, above six burial offerings in which the house, its residents, and ancestors (and the island port itself?) are linked socially and materially to multiple forms collective identities tied to occupation (i.e., trade, commerce), as well as place, origins, ethnicity, religion, and possibly class.

5.11.4 Summary

Structure 8 provides a good example of the dynamic nature of the Terminal Classic port where significant remodeling and changes in activities associated with these spaces occur within just a few generations. While this structure was likely part of an open group or residential

neighborhood on the west side of the island, until such time as Structures 9, 10a, and 10b are investigated archaeologically, we must treat this as an outlying dwelling. Structure 8 is not large a large structure in area, but the architecture and its occupational history are more complex than the structures excavated in the northern neighborhood. Like Structure 23, the platform served as the foundation for a room with mixed masonry with perishable walls and a perishable roof supported by 8 pillars at most dividing the interior space. Entryways to the room shifted over time, but at one point there were three doorways, including a main entrance and two side doors providing access. All stone was covered liberally with lime plaster, and three benches were constructed and remodeled during the four major renovations of this structure's occupational life. My estimate for labor investment in this architecture at its maximal extent is 10,122 PDs, or about half the cost of Structure 23, which is a much larger multi-room structure. If Structure 8 did form part of a residential group with Structures 9, 10a, and 10b, the total cost would have been at least 37,051 PDs for the group.

Structure 8 also demonstrates the continued functioning of the trading port and the resident occupation beyond the waning of Chichén Itzá as a regional power and political center by the late 11th century. People continued to live in this structure and carry out renovations on the architecture into the 12th and early 13th centuries. Moreover, the funerary contexts in this structure that postdate 1050 CE are still linked symbolically to commerce, although the associations with the ceramics and exotic trade goods of the inland center are much reduced by the time Burial 17 and the shell offering is placed in the bench. Still, the placement of the Ek Chuah offering is an interesting connection as Chichén Itzá is one of the few sites that has produced iconography of this patron deity from the Postclassic period, his image being stamped on a gold disk recovered from the sacred cenote (Taube 1992:91). Is it possible that there is a

stronger sociocultural connection between Structure 8 and the inland city of Chichén Itzá? The cranial modification associated with this structure suggests not, as Itzá practices of the Terminal and Postclassic tend to be tabular erect, similar to the individual in Burial 24 in Structure 23-sub. More ceramic analysis of Structure 8 and the surrounding buildings, as well as strontium analysis of the human remains now curated at the FCA-UADY will no doubt shed additional light on this question.

5.12 Summary of Domestic Contexts and Implications

In this section, I discuss the implications of the excavations conducted in 2010 on domestic structures at Isla Cerritos and the subsequent micro-analysis of the material culture in relation to the primary research questions of this thesis.

5.12.1 The Social Practice of Daily Life in a Port Community

The micro-analysis of artifacts found and architecture exposed during the broad, horizontal excavations of three domestic contexts at Isla Cerritos has provided insight into the daily life activities of port residents and how the island portion of the community functioned during the Late and Terminal Classic periods. First, we are now able to update the construction and occupation history of two residential groups and the patio, identifying substructures from the Late Classic period beneath Structures 19 and 23, as well as burial offerings associated with remodeling and reorientation of the household groups occurring around 800-900, again around 950-1050, and after 1250 CE. The latest remodeling on the north side of the island closed the alleyways between Structures 19, 30, and 31 and unified the three platforms. We are also able to correlate a relative sequence of construction activities and burials associated with all domestic

contexts identified so far on the island. Future absolute dates from burials and carbon samples obtained from the 2010 excavations will help to increase the resolution of these sequences considerably.

Archaeological excavation in domestic contexts produces much more material culture overall than non-domestic contexts, and our analysis of over 60,000 artifacts and ecofacts permitted us to document numerous activities and activity areas at the ancient port, including subsistence, production, trade, ritual, and construction. The material culture patterns indicate that both Structure 23 and Structure 19 functioned as dwelling spaces for different families. Structure 8 was altered four times over the course of approximately three centuries, and at least two of the periods of occupation were domestic. It appears that food was served or consumed in Structure 19, but prepared elsewhere. In Structure 23, there is evidence for food preparation in the eastern rooms and patio spaces, but not in the west room. Burial patterns found in association with domestic groups support the idea that a small resident population (44-112 residents) lived permanently on the island with shared cultural traditions that developed and persisted over the course of centuries. The presence of infant, juvenile, and young adult burials, as well as artifacts that might be toys suggest that families groups lived on the island.

We do find archaeological evidence for production activity either carried out at the port or possibly carried out by island residents affiliated with the larger coastal community. Spindle whorls, needles, and tejos indicate weaving of textiles. Obviously fishing was a very important task, and the production and maintenance of fishing equipment, hooks, nets, and net weights was on-going and appear in all domestic contexts on the island. Gulf coast shells were an abundant resource in all coastal communities, and in Structure 23, we found evidence for the use of

mollusca for subsistence, discard, and re-use of shell in household production of shell tools and instruments.

My very basic analysis of the 2010 lithics suggests that very little core production took place at the port, and mostly re-touch of imported cores and finished products was the norm. However, future investigation into household lithic production is certainly warranted. The presence of a bark beater near Structure 30 begs the question of whether this product was imported from elsewhere and redistributed from the island to inland markets, or if the production of paper or hides was a coastal activity. Likewise, research questions regarding the sourcing and production of the red paste variety of Xcanchacan black on cream domestic ceramics will need thorough investigation that is already underway by students at UADY to determine whether this widely used utilitarian ware was produced on the north coast and distributed from there beginning around 1000 CE.

More specialized production of salt was surely an important activity as prehispanic salt evaporation pans mapped at Paso del Cerro and all along the estuary attest. While this community must have been involved in salt production and distribution, direct evidence is lacking for island residents' participation in this activity. This was a product and activity centered on the mainland coast that moved through ports, so the mainland portion of the community at Paso del Cerro would be a logical place to investigate this question further.

While trade is not the specific focus of this dissertation research, the 2010 project did produce some data relevant to economic questions. Our excavations increased the obsidian sample size considerably from the 1984-85 survey, and I found through visual sourcing that while multiple central Mexican sources were still predominant during the Late and Terminal Classic periods, a significant amount of obsidian was also imported from the highland

Guatemalan sources of Ixtepeque and El Chayal. Then, by the early phase of the Postclassic period, after the fall of Chichén Itzá, the obsidian from domestic contexts appears to come almost exclusively from Mexican sources. We will need to analyze this collection with XRF to really confirm these preliminary conclusions.

Local trade with inland sites was probably always even more important for coastal communities than long-distance exchange. On the island, and even at Paso del Cerro, residents would have needed to import huge blocks of quarried stone, hunted and butchered meat, agricultural staples, chert for spear points and weapons, cotton for weaving or finished textiles, huano and trees for thatch roofs, fuel to produce lime plaster, polishers, and even fresh water had to be transported to the island from sources at Paso del Cerro. In exchange for these staples, the three northern nodes would have facilitated access to marine resources – fish, crustaceans, mollusks, salt, worked and unworked shell, possibly cacao, and ritual objects from the sea, in addition to port access and/or a regional ceremonial center. Ceramic analysis from these domestic contexts show that the island was a full participant in the Canbalam ceramic sphere during the Late Classic period, and port residents had strong connections to southern Gulf coast life styles and cultural traditions. In addition, island residents had access to the eastern and western Yucatecan ceramic spheres and inland polities such as Ek Balam, Cobá, and Uxmal (the Puuc region) during the Classic Period. Over the two centuries between 800 and 1000 CE, two significant shifts in domestic ceramic consumption signal important transitions in the port community. First, there is a gradual replacement of Canbalam and western Cehpech groups with a suite of Cehpech-Sotuta groups that also become popular in the agricultural region between the north coast and Chichén Itzá. Also, there is a significant increase in the amount of Silhó Fine Orange imported to and used on the island, a prestigious trade good associated with the Itzá elite.

After c. 950-1000 CE, Kukulá Xcanchacan black on cream (and other Kukulá groups) become the predominant utilitarian ceramics used in the households at the port. These are quotidian copies of the form and decorative styles of Chichén Itzá slateware, and it is possible that north coast potters began to produce and distribute a lower quality reddish paste version to meet popular demand. This period represents the height of activity at the port and the social, political, and economic relationship with the Chichén Itzá polity. Throughout this time and after, the previously established connections between port residents and southern Gulf coast (Veracruz) networks remained intact, as did regional interaction with north coast centers.

We also now have clear evidence that residential occupation, architectural renovations, and trade institutions at the port continue after 1100 CE when Chichén Itzá had collapsed politically. There now appears to have been some continuity in occupation during the 14th-16th centuries of some of the residential structures on the north side of the island and Structure 5, while other structures are converted into shrines or altars used exclusively for ritual purposes. Even in the Late Postclassic, however, when the coastal settlement pattern has largely shifted to the east, the offering placed in Structure 8 with the Ek Chuah effigy censer lid reflects the continued association of Isla Cerritos with maritime commerce in social memory.

5.12.2 Social Stratification within *the Maya "Non-Elite"*

I argue that in the context of broader Maya society, the households at the port of Isla Cerritos are all "non-elite" compared to domestic units studied at most larger Maya sites. The architecture at the site is relatively simple and combines perishable wattle and daub and thatch with cut stone. The interior features of rooms are typically low, rustic stone alignments and basic benches, and there is very little sculpture on the island. Offerings associated with

architecture or burials are quite modest, and the only cache-like concentrations of quantity involve north coast shell or marine life, already abundant in this area. The mortuary contexts in association with domestic architecture do not contain tomb architecture or capstones, and only one whole and one partial cist were documented in the 2010 excavations. However, this is not a socially undifferentiated commoner population or residential groups, as Rank IV-VI sites and outlying rural areas between cities are often characterized in archaeological settlement studies. In this chapter, I presented material evidence for social status differentiation, as well as multiple expressions of collective identity affiliation (synchronic and diachronic) within this maritime Maya community. While all domestic contexts investigated demonstrate access to long-distance imports, sumptuary goods and food valued by Maya elites in low quantities, there are qualitative differences discernable in these patterns across domestic spaces and funerary contexts that relate to social rank. The picture is complicated by the fact that in all societies, simple or complex, individuals simultaneously belong to multiple communities and social groups, some of which are more readily expressed materially and others "imagined" (Anderson 1983). Since material culture can cross-cut certain collective identities as often as it may represent them, at times the patterns may only indicate differentiation, rather than rank or significance which cannot be determined.

In terms of domestic architecture at the port, there is variation in size, quality and expense (labor cost) between contemporaneous individual structures and residential groups that correspond to patterns documented on a larger scale at inland Maya sites. The architectural energetics estimates in Chapter 4 provide a method of comparison of a households' access to labor and resources. The larger and more complex interior of Structure 23 translates into an estimated 23,508 PDs compared to a cost of 9,519 PDs for Structure 19, and 10,122 PDs for

Structure 8. As a single multi-room structure, Structure 23 costs over half the PDs required to build the entire West Patio Group or the group to which Structure 8 may have belonged. Structure 8 is a smaller house and may have served non-dwelling function if it was part of a residential group, but it has more elaborate architectural features within its single room.

The domestic mortuary contexts complicate our understanding of port social organization even more. The burial patterns indicate that members of this coastal community shared multi-generational traditions that gradually changed over time. One general pattern noted above is the combination of offerings of marine resources with sea symbolism and objects related to agricultural subsistence and fertility (e.g., grinding stones, etc.), perhaps representing a sustenance-based dualism symbolic of lowland coastal lifeways. Also, there is synchronic variation in funerary customs and mortuary offerings that indicate status differentiation, both ascribed and achieved around 950-1050 CE. Burials 19, 20 (Patio), 24 (23-sub), and 7 (Structure 8) are close in date, but the Patio and Structure 23 burials are individual extended, prone inhumations, while Structure 8 features a group bundle burial. Burials 24 and 20 are the only two with informal cist construction, but the objects in Burial 24 include rare jade, spondylus, and mineral beads and more artifacts overall. We also documented diachronic variation in funerary customs, with primary extended prone burials pre-dating 1100, while secondary bundle flexed burials are mostly Postclassic. There are also diachronic shifts in the quantity and type of long-distance prestige offerings, with Chablekal fine gray vessels associated with more modest Late Classic, Chacpel burials (Canbalam) and Silhó Fine Orange, Tohil Plumbate, and exotic, long-distance products associated with Terminal Classic, Jotuto burials (Cehpech-Sotuta) indicating changing access to resources over time and social affiliations.

Finally, we also noted variation in biosocial markers in the form of cranial deformation, dental modification, and, possibly, age across domestic contexts. Further laboratory analysis by physical anthropologists at FCA-UADY will provide even more information about these markers and their possible meaning. The patio burials include infants and children that were too young or had suffered too much erosion to identify any type of cranial modification. Burial 24 was an adult male with an intermediate tabular erect cranial modification and no dental modification. Five burials in Structure 8 show evidence of oblique tabular cranial modification. While we do not know what these biosocial markers mean with regard to collective identity or social rank (if they have anything to do with status), they do represent shared, ascribed social groups of some kind. Interestingly, the wealthiest Terminal Classic burial found on the island, Burial 7, with the most artifacts associated with Chichén Itzá features head shapes most similar to those of the southern Maya lowlands, while Burial 24's tabular erect shaping is more commonly associated with Itzá presence in the northern Maya lowlands.

These data from domestic contexts, when combined, show surprising variability in social group inclusion and exclusion within this small resident population. The most materially modest burials occur in the patio across all time periods and the secondary burial (22) off the south side of Structure 23. The exception is one of the earliest (Late Classic) infant burials, Burial 21, which has a finely carved jade bead, small clay balls, important obsidian, and a ceramic vessel offering. Burial 24 beneath the Jotuto floor level of Structure 23 represents the burial with the most architectural investment (complete cist) in the substructure of the building with the highest estimated labor cost. This individual likely represents the ranking ancestor of his lineage and the burial an important ceremonial event marking the expansion and remodeling of Structure 23. This contrasts with a much smaller, yet architecturally elaborate, Structure 8 where we find the

most elaborate Burial 7, representing a completely different funerary practice than that preferred in the northern residential groups. The offerings discussed above are strikingly similar to the kinds of exotic items excavated in elite contexts at Chichén Itzá, and much of the material is symbolic of long distance trade and commerce across Mesoamerica. This may be an example of an occupational social status related to trade that may or may not translate into social rank that can be integrated with other ascribed statuses evident on the island.

5.12.3 Social Mobility and Transgression on the Coast

As social historian, Amino Yoshihiko (2010), cogently argues is the case in Japan, there is also tendency in Maya historical studies to overstate the agrarian base of a society that has developed for three millennia within a peninsular setting, surrounded by seas and wetlands. In the Classic period, Maya coastal port communities were strategically located in places outside the immediate purview of the seats of administrative power couched within the royal courts/houses of competing inland city-states. This created liminal contexts favorable for innovation and experimentation, where social norms were more relaxed than in urban population centers, creating other avenues for social mobility and opportunism than proximity to political power centers.

Ethnohistorical sources from the early Colonial period (Landa 1978 [1660]; Sahagún 1981 [1585]) describe in full complexity the sumptuary laws that theoretically structured public behavior and sanctioned what Yoshihiko (2012:21) would call "social transgression," in Mesoamerican cities. As is so often the case in ports, however, "the arithmetic and rules did not apply" (Dening 1980:159). Along the Maya coast, the constant flow and interaction of people and commodities encouraged more flexible engagement between different social, linguistic, and

ethnic groups and "their" material culture. Cross-culturally, ports that are located at major intersections of trade routes are usually also centers for smuggling operations. Port-of-trade models (Polanyi 1963; Revere 1957; Rathje and Sabloff 1976) tie this to reduced military and "administrative" presence and increased religious plurality in order to maintain peaceful relations between traditional enemies and, subsequently, mutually beneficial economic systems. Even Chapman's (1957) early theoretical assessment of Mesoamerican ports based on ethnohistorical sources describes the Maya Gulf coast port of Xicalango as politically neutral rather than incorporated into the Aztec state, despite the association of Aztec pochteca with imperial military expansion.

The archaeological record from domestic contexts at Isla Cerritos provides material correlates for this kind of social flexibility and mobility, as well as the opportunism characteristic of the maritime Maya. Looking at this at the micro-level, within small dwelling spaces in Structure 23, for example, we find utilitarian tools like spindle whorls commonly found in non-elite domestic contexts in both rural and urban Maya sites of the interior. Often these are plain mass-produced objects, found in higher quantities in certain domestic groups (Ardren et al. 2010). On the island, three spindle whorls have been documented that are each intricately decorated with incised images of fish and sea birds carved by a skilled artist. The quantity is smaller, but the quality is analogous to examples from elite residences in the interior cities. The excavation of Structure 19 at Isla Cerritos produced typical domestic food preparation artifacts, such as grinding stones, located on or near the platform outside the superstructure. Rather than all being made of the same material, such as limestone, this sample includes limestone, chert, and basalt, the latter being more expensive imports also preferred by inland elites, but not typically found in non-elite households. These are found in association with a structure that

would be described at a lowland city like Copán as a "champa" (Gonlin 1993), or the most basic form of architecture. Other examples include single objects of personal adornment found in Structure 23, such as the jadeite and hematite beads in Burial 24 or the polished red spondylus bead in the west room. These are the same materials that are found in high quantities in elite burial caches and were used to make pectoral accoutrements worn by members of ruling lineages Chichén Itzá, here found in low quantities preserved in both ritual and non-ceremonial contexts. Located at the center of the setting of exchange, port residents had both the increased opportunity and social space to acquire objects of portable wealth and status.

Coastal people (in the past, just as today) also had access to specialized knowledge that was not necessarily shared by people living in the interior, but was indispensable for living along the Mesoamerican marine littoral. This knowledge facilitated access to goods, subsistence resources, and even supernatural powers valued by Maya elites everywhere. Examples include watercraft technology (construction, use, and maintenance), sea and wetland navigation, foreign and creole languages, weather patterns, marine subsistence resources that augmented protein and salt shortages in inland diets, and ecofacts harvested from the watery underworld such as stingray spines and fish cartilage used for bloodletting instruments, shells of various sizes, shapes, and colors for offerings, instruments, utensils, and small tools. In this sense, the maritime branch of Maya culture was exceedingly important in shaping the course of Maya history because interior kingdoms needed these people more than the reverse.

With the rise of Chichén Itzá as a political and economic power in the Late and Terminal Classic period (c.800-900 CE), variation in the material patterns in domestic contexts at the port reflect the growing role of the coastal port in the development of the inland center and the increasing investment of the inland center in the port community. In stratigraphic levels dating to

after 950 CE, there is a marked increase in the amount and variety of artifact types in domestic architectural and burial contexts. At the same time, increased construction activity, island expansion, and remodeling occur, and both trends indicate increased economic activity at the port. This correlates with more clearly delineated social differentiation after 1000 CE when multiple material expressions of collective identity (e.g., biosocial markers, domestic ceramics, house size, cost, and organization, culinary preferences and funerary ritual) co-exist across groups at the same time. Childrens' burials in the patio group from Jotuto contexts (ascribed status) show slight increases in the amount and variety of artifacts, including objects pertaining to the Chichén Itzá inland ceramic sphere and agricultural subsistence. Burial 7 in Structure 8 is significantly different from Late Classic (Chacpel-Jotuto transition) burials and most clearly represents occupational social status and identity markers related to maritime trade and Chichén Itzá. At the same time, these different mortuary contexts maintain a substrate of southern Gulf coast traditions (e.g., oblique cranial modification in Burial 7, inhumation practice and offerings in the northern residential groups) through time. Thus, port residents are opportunistically building alliances and benefitting (increasing portable wealth) from a strong relationship with Chichén Itzá and the larger inland and coastal economic networks of the Terminal Classic period. This is quite similar to trends documented at the port of Xcambó slightly earlier in the Late Classic period. There isotopic and strontium analyses conducted on a much larger burial population have shown how demographics shifted as people from the southern Gulf coast, northern Maya plains, and southern lowlands saw opportunities for social mobility and moved to the port, establishing roots there (Sierra Sosa et al. 2014:21). Additional bioarchaeological analysis of the human remains from Isla Cerritos will no doubt shed light on the question of social mobility along the north coast in the Terminal Classic period.

CHAPTER 6:

CONCLUSIONS: INSIGHTS INTO LIFE ON "THE EDGE," THE COASTAL MAYA, AND THEIR PORTS

6.1 Peopling Maya Ports: Social and Household Archaeology on the Maya Coast

The objective of this dissertation is to place the coastal Maya and their ports into a broader social context through household archaeology conducted at the island port of Isla Cerritos located just off the north coast of Yucatán, Mexico. Often archaeological studies of ports take a top-down approach by focusing on how these sites operated as economic nodes at different times within exchange or interaction spheres that linked states to each other, or hinterland production centers to peripheral distribution points. What I hope to have demonstrated through this study is that most ports are not simply empty beaches or walled emporia--the economic infrastructure only—somehow separated from human social worlds, but instead should be understood as communities that include within them a setting that facilitates the transfer and exchange of resources, products, people, and ideas as a result of its location and constructed environment. To "people the ports" as Christopher Loveluck (2013) puts it is to examine the complex social dimensions of the these types of settlements, including how these communities were structured and organized, the changing relationships between inland cities, patrons, and port settlements over time, perceptions of the sea and seafaring in the wider culture, and coastal lifestyles.

As we have seen in Mesoamerica, the sea was not often a barrier, but a facilitator of movement, access to vital resources, social mobility and development. Those who lived on the edge of the primordial waters of the Maya world and knew how to move through and harvest

from them had advantageous access to a variety of resources necessary for inland cities, yet to date coastal sites remain understudied in the Maya world, especially from a social archaeology perspective. In this chapter I conclude with a summary of what we have learned so far from this investigation of the domestic contexts in the port community of Isla Cerritos and what this analysis contributes to answering my research questions about maritime Maya culture and coastal ports. Finally, I suggest avenues for future archaeological investigation in this area.

I argue that the detailed archaeological investigation of residential spaces at a Maya coastal port community is the most useful approach for interpreting social organization and dynamics because households provide material settings for exchange, production, ritual, and subsistence that are integral to and affected by the formation, maintenance, and transformation of collective identities through time (Stein 1999). Fortunately, at the Maya island seaport of Isla Cerritos, my colleague Dr. Rafael Cobos (UADY) was carrying forward a project to investigate how this coastal community functioned during the Terminal Classic period (800-1100 CE), and I had a rare opportunity to conduct broad, horizontal excavations in two domestic contexts with colleagues in 2007 and 2010. Using this case study, I have attempted to address the four broad interrogative themes outlined in Chapter 1: 1) who occupied the port during the Terminal Classic period (800-1100 CE), and what does the household archaeology suggest about coastal lifestyles and social status within this port community? 2) How were this and other Maya port communities of the period 600-1250 CE organized socially and spatially, enabling Isla Cerritos to fit into the larger social history and maritime economy of the region? 3) What do the household architecture and domestic contexts of Isla Cerritos indicate about social mobility at ports and how the maritime branch of Maya culture relates to Maya society more generally? 4) What do the changing dynamics of this port community documented between the 9th and mid-

13th centuries indicate about the sociocultural (and political-economy) relationship between the island and the regional center of Chichén Itzá, and the role of ports as "catalysts of social change" (Loveluck 2013:144) in the ancient Maya world?

The interpretive strategies used in this study involve a multi-scalar approach that incorporates macro-level analysis of regional and site settlement patterns and micro-level analysis of the specific architecture, material culture, and mortuary contexts excavated within the domestic structures. One of the great advantages of household archaeology is that domestic contexts tend to produce a much higher quantity and variety of artifacts than non-domestic contexts, and as is clear from Chapters 4 and 5, our excavations in 2007 and 2010 in the "microuniverse" of Isla Cerritos generated a significant increase in new data of various types compared with previous seasons. A contribution I hope this study will provide is a basic organization and integration of the material culture databases for this project and their compilation here and at the FCA-UADY as useful tools for future students and researchers to analyze the materials in new and innovative ways. From the basic quantitative analyses of material culture by class and spatial distribution by structure and feature reported here, I also found qualitative comparison of microcontexts to be useful when sample sizes were too small (as is sometimes the case when working in smaller sites or structures) to perceive statistically significant trends.

The different types of data sets that I have attempted to integrate in this study include, at the macro-level, the ecological and economic context via regional coastal settlement patterns as summarized Table A.1.—a list of 531 Maya coastal sites organized by region with chronological information on occupation, when available, from published surveys. This information pertains to the second research question about how this and Late Classic Maya port communities (600-1250

CE) organized socially and spatially, enabling Isla Cerritos to fit into the larger social history and maritime economy of the region?

As discussed in Chapter 3, recent studies that involve more extensive excavations of coastal sites are helping us to refine chronologies, and coastal site occupation as early as the Middle Pre-Classic period (c.400/300 BCE) has now been documented at numerous sites, including Isla Cerritos. During the Classic period, settlement along the Gulf coast increased significantly, and beginning around 600 CE the consolidation of maritime trade networks, increasing scale and specialization in coastal salt production, and the increased demand for exotic sumptuary and marine products of inland city-states were all factors in the emergence of allied coastal polities, possibly centered at complex ports like Champotón, Jaina, Xcambó, and Dzilam that appear to have regional political influence. The southern Gulf coast of Veracruz and Tabasco appear to have been quite influential in the development and spread of coastal interaction spheres, as attested to by the wide spread of the Canbalam ceramic sphere until around 900 CE. We now know that Isla Cerritos was one of the sites connected to this cultural sphere, and that evidence of this influence continues to appear farther east as more archaeological data is unearthed. Meanwhile, Tancah and Xelhá on the east coast, along with the inland center of Cobá are serving as a kind of eastern corridor for trade from the southern lowlands, and Isla Cerritos is trading with Cobá, Ek Balam, and the Puuc. When Chichén Itzá's political and economic influence grows in the center of the peninsula after 900 CE, the ceramic pattern shows an initial reduction in Ek Balam, Cobá, and eastern Cehpech-related ceramics, a gradual replacement of Canbalam and western Cehpech groups with Cehpech-Sotuta (Chichén slatewares), and after 1000 CE, the predominant utilitarian ceramics on the island are coastal

copies of Peto Cream (Sotuta-Hocabá) with Chichén Itzá trade wares, and less but present southern Gulf coast trade wares.

Also at the macro-level, the site settlement pattern and survey data from the immediate mainland coast is discussed in Chapter 4 where I identify residential spaces and their forms, as well as their relationship to non-domestic structures (civic-ceremonial and port facilities). I argue that the island most likely formed one part of a multi-component community that extended to Paso del Cerro on the mainland shore 500m to the south, and Chinalco further inland, now registered as three distinct archaeological sites. The island portion of the community provided port facilities and a civic-ceremonial precinct, plaza groups, and altars and temples for religious ritual that may also have served the larger estuary region. At Paso del Cerro the nearest fresh water springs were available, and prehispanic salt pans, an artificial canal, transportation routes in the form of walking paths and a sacbé, and small plaza groups have been mapped, but not clearly dated. Chinalco to the south provided agricultural support for the community.

Once the wharf and harbor wall with its associated platforms were constructed, access to the island port complex from the mainland and waterways east and west could be controlled, with traffic either facilitated or restricted much like the case of walled trading emporia on the Mediterranean coast during the 1st Millennium BCE. This is similar to how other Late Classic Maya island and coastal port communities with integrated components are organized, such as the three related sites on Cozumel of San Miguel (port), Buena Vista (storage and residence) and San Gervasio (civic-ceremonial), Xcambó (harbor, salt, and civic-ceremonial-residence), Vista Alegre (wall, estuary harbor, walkways), and others. After 900 CE, the material culture and architectural connections to Chichén Itzá increase, while Canbalam sphere groups gradually decrease and links to other inland polities rapidly decline. However, traditional coastal

connections (both west and east) are not obliterated, and continue into the Postclassic period. The wharf / harbor wall of the island optionally facilitates or restricts access by altering sea traffic patterns or closing the island off from the mainland like a Norse *wik.* The harbor wall and at Vista Alegre can similarly serve such a purpose to restrict coastal access from inland sites.

Combining site survey, mapping, and excavation data permitted the identification of at least 8 domestic structures and 2-3 residential groups located in two main areas of the site, as discussed in Chapter 4. On the north side of the island between the main civic-ceremonial group and two temple structures (20 and 22), a group of platforms referred to in this thesis as the West Patio Group conforms to the typical pattern of a household patio cluster in the Maya lowlands (Structures 19, 18a, 18b, and 18c). Just to the east, Structure 23 is a multi-room domestic structure oriented east, north, and south, away from the West Patio Group. Because of this orientation, it may form an open plazuela residential group with two platforms directly to the north (Structures 30 and 31) that face east, also away from the patio group. Just southwest of the main plaza on the island, Structure 8 faces south and may have formed a second open plazuela group with proximate structures 9, 10a, and 10b. However, because the latter three structures have not been excavated to confirm their orientation or domestic function, I have considered Structure 8 an outlying house for interpretive purposes in this thesis. Thus, we can now say that the island port supported at least three separate groups of residences, two located on the northern end of the island and one located to the southwest. This eliminates any doubt that a permanent residential population, albeit small, lived on the island in ancient times.

Residential groups themselves indicate some form of shared social grouping, likely kin-based heterogeneous households or lineages. While the chronological information we have demonstrates that some residences are occupied earlier and longer than others, we know that all

of the identified residences were occupied during the Terminal Classic period, rendering the spatial proximity or distance of groups meaningful in some way, at least during that period. It is still unclear whether the concepts of neighborhoods or wards could be meaningful social constructs for this residential population (see Hendon 2012), but future investigation might delineate integrative mechanisms that support north and west spatial divisions as another layer of collective identity to consider at the port in terms of social organization.

Examining the architectural layout and settlement sequence at the site level, allowed me to calculate a conservative estimate for population range in the island portion of the community of 44-112 persons with a median of 59, or 8-20 families. This range could be narrowed with the identification of additional domestic structures and/or rooms within unexcavated structures, as well as refinement of the chronological sequence of architecture with more absolute dates from excavated contexts.

Recall that the excavations in 2010 also expanded the chronological sequence on the island back and forward in time, with ceramic evidence for human occupation as early as the late Middle Pre-Classic period (c.300 BCE) and continuing on in the domestic groups, by no means stably, through the initial Contact period. Since all of the extant masonry architecture on the island was in place by 1250 CE, I set a maximum of 1550 years in which construction of the port settlement could have taken place for the purposes of architectural energetics estimates. As outlined in Chapter 4, the north side of the island is the natural core upon which the earliest platforms were constructed that sustained the northern residential groups, Structures 20 and 21, and the acropolis platform for the main civic-ceremonial group. The southern part of the island was artificially expanded using soil and midden materials built up behind low retaining walls from the southern plain area and south of Structures 15. This process dates to the beginning of

the Terminal Classic period around c.800 CE. We also tentatively date the port facilities, such as the wharf/harbor wall and small docks to this same period.

Combining the methods used and revised by Abrams (1994), Gonlin (1993), and Carrelli (2004) for Copán and Erasmus (1965) for Uxmal for translating the architectural construction costs in materials, transportation, and labor into a value "Person-Days labor," I estimated energetics costs for the island prior to and during the Terminal Classic period. Even though the transportation cost of the building materials to the island represented a more significant investment than at other sites, the roughly 2 million PDs required to construct (and expand) the entire island port settlement could have been carried out by half the minimum population, working only during the dry seasons, in just over a quarter of the total period of occupation. Obviously, this estimate of construction is extremely gradual, but even with the best dating resolution currently available, the most rapid rate of construction and expansion of the port is 915,300 PDs over 250-300 years of the Terminal Classic (see Chapter 4). If the resident population was also the only available labor pool at that time, this could have been accomplished in as little as 40 or as many as 198 dry seasons—well within the three centuries of this period.

Augmenting the labor pool with help from Paso del Cerro and Chinalco, or with others living along the Río Lagartos estuary (through which the building materials needed to pass anyway), the Jotuto complex architecture could have been completed in 22 years (200 workers) or 9 years (500 workers). With a workforce of 1000 people, amassed from Chichén Itzá or a comparable large inland political center, the Terminal Classic architecture and island expansion would have taken at most 4-5 years.

At the macro-level of the site, architectural energetics are useful means to quantify "cost" and compare the required investment to the locally and regionally available resources. I was also

able to use energetics estimates for individual domestic structures and residential groups to augment the use of size or volumetrics alone as a proxy for "cost" in gauging social groups' differential access to resources. I will discuss the implications of both of these kinds of calculations for addressing my research questions about social organization and inland patronage in the following sections. In conclusion, the regional and site settlement patterns support the idea that Isla Cerritos served as a small seaport and coastal civic-ceremonial center by the Late Pre-Classic period, growing alongside other coastal ports on the north coast with the increasing demand for and specialization of evaporation salt production in the Early and Late Classic periods. While some ports, like Xcambó, declined during the Terminal Classic, Isla Cerritos flourished through a strong relationship of alliance and patronage with Chichén Itzá to which we will return in section 6.3.

6.2 Residential Spaces and Social Organization at Isla Cerritos

At the micro-level, the analysis of the architectural features, artifacts, ecofacts, spatial and mortuary contexts of Structure 19 and the patio excavated in 2010, Structure 23 in 2010 and 2007, and Structure 8 in 2006 provided the material evidence to support my interpretations of the social history and organization of the port, as well as the daily life practices of the coastal Maya. The results and implications of the micro-analysis presented in Chapter 5 are based on the laboratory classification and basic statistical analysis of the material culture by artifact class, as well as spatial distribution by structure and/or feature. Qualitative analysis between artifact classes, structures, and features is also judiciously integrated, as I argue that at times objects' meanings and observable characteristics may outweigh sample size, particularly for targeting specific research questions or forming hypotheses to be tested later. As Masson and Freidel

(2012:459) point out, the articulated market economy became more complex over time, and by the Terminal Classic period, elite control over the availability of luxury goods in markets was restricted to fewer and fewer objects, and all social groups had the option (though perhaps not the resources) to purchase exotic items. Thus, while there were "socially shared conceptions of value and real economic wealth" that could be expressed materially, it must be understood as a continuum where objects could be very basic or extremely fancy and ornate (2012:459). The objects that we see within the residential spaces at Isla Cerritos were available to the non-elite, and some of these items (e.g., shell beads, greenstone beads, copper bells, etc.) were used as currencies, so they must be examined qualitatively to document subtle differences.

My interpretation of the human burials excavated in 2010 incorporate the analysis of the material culture associated with each, spatial analysis in the field, inhumation practices, and the basic taphonomic description incorporated into the project database after macro-excavation. Data recovered from micro-excavation, detailed osteological analysis, and the study of pathologies that are all on-going in the Bioarchaeology Laboratory of the FCA-UADY will be discussed in future internal reports and publications.

Several lines of evidence allow us to approach the question of who lived at this port and what their lifestyles and social organization may have been like. The settlement pattern supports the interpretation of a multi-component coastal community with mainland (at Paso del Cerro) and island sections, the former only partly surveyed so far. The island portion of this community located 500 meters across the water from the mangrove coastline consisted of a small (44-112) permanent resident population, two civic-ceremonial plaza groups, including a "miniature acropolis" (compared to interior Maya cities), shrines/altars, a ballcourt-like temple structure, and port facilities. Besides many other resources and raw materials, the mainland coast provided

fresh water to sustain the island, and therefore, island residents must have formed a specialized group within a broader network of social and kin relations that extended across the water and movement to and from Paso del Cerro via watercraft must have been fluid most of the time. Locating a ceremonial precinct, temples, altars/shrines on the island may also have been strategic, not only considering the religious symbolism of islands in Mesoamerica (Clark 2012) and as part of port functions, but also because there were few centers along the north coast with civic-ceremonial architecture to serve the population between the Bocas de Dzilam and Tixchel or Emal to the east along the salt flats. These are good examples of how notions of "community" supersede the physical extent of geography or "sites" as archaeologists define them (Canuto and Yaeger 2000).

On the island port, confirmed residential spaces are located on the north side and west side. On the north side, the West Patio Group consists of four structures around a central shared patio space. Structure 23, a neighboring large multi-room domestic structure is oriented away from this group, with accesses facing south, east, and north. Two basal platforms east of Structure 19 of the patio group also faced east, possibly forming an open plazuela group. There are small, paved alleys and corridors between these structures that allowed people to move between groups. The two temples (Structures 20 and 21) in the northeast corner of the island frame these residential groups, and there is a round altar east of Structure 23. It is not clear yet whether these ceremonial structures may have served as the eastern shrines for the northern residential groups. On the west side of the island and south of the main civic-ceremonial group, Structure 8 is oriented toward the south and consists of a single room dwelling with benches and columns/pillars that supported the perishable roof.

The architecture and spatial layout of the residential spaces argue for at least three corporate kin groups, corresponding to the separate household groups that were occupied at the same time during the Terminal Classic period. This is one form of collective identity we have material evidence for. With the exception of the patio and Structure 19 of the West Patio Group, more than one structure per residential group has not been extensively excavated, so functional variation within groups is difficult to determine. If Structure 23 was associated with Structures 30 and 31 as part of an open group, it was clearly the largest and most complex structure in the group. The fact that it features open porch spaces with subdivided areas that can be accessed from the plazas to the north and east with private interior spaces behind makes it similar to Spanish descriptions from the early Colonial period of the houses of the heads of lineage groups (Landa 1978:Ch.20). The West Patio Group reflects a typical Maya household patio cluster pattern that has been documented throughout the region at all scales, from simple, outlying groups or rural villages to complex, physically imposing elite residential groups in urban centers.

I argue that architecturally, none of the domestic structures on Isla Cerritos would be considered "elite" residences compared to those documented at contemporaneous Maya sites of larger scale in the northern or southern lowlands. All of the structures contain a combination of cut stone masonry with pole and thatch and wattle and daub architecture, and there are no vault stones or medial molding blocks that would indicate the presence of stone roofs or lintels anywhere on the island. Likewise, the residential spaces lack sculpture, although small steps (lacking balustrades) were installed in Structures 23 and 8, as well as a ramp on the west side of Structure 19, to access the stone platforms. At the same time, the large and high basal platforms that supported the domestic rooms and kept them dry, as well as the well-maintained lime plaster

floors inside dwellings and in shared exterior residential spaces (patios, alleyways, etc.) in place by the Late Classic period represent more investment than packed earth platforms and floors.

Moreover, subtle differences within contemporaneous residential architecture, similar to the kinds documented by Manahan (2004) in Postclassic residences in Copán, are suggestive of differential access to resources among the residential groups. For example, Structure 19 consisted of a large, single room constructed completely of perishable materials on a large, well-maintained platform on the east side of the patio. It contained no conserved interior features, besides floors, except for a low altar that was removed during the Terminal Classic period. The construction cost of this building is estimated at 9,519 PDs. Comparatively, Structure 23 in the group just to the east had multiple rooms in which the superstructure walls were half masonry-half perishable constructions, supporting a palm thatch roof. Some of the doorways featured conserved stone door jambs (for the lower portion only), while others did not. In the west room, low alignments of stone delineated interior activity areas, a niche, and a low altar space, and we also documented the traces of a bench that had been removed late in the Terminal Classic period (Chapter 5). This structure represents an estimated 23,508 PDs of labor investment, over half of what I estimate the total construction cost of the entire West Patio Group might have been. This suggests that even within this very small settlement, these two social groups did not have equal access to "resources," here translated into labor cost.

The Structure 8 platform is smaller than both Structures 19 and 23 on the north side of the island, but its superstructure also had part-masonry, part-perishable walls and interior columns/pillars that supported a palm thatch roof. As described in Chapter 5, this one-room dwelling featured as many as 4 doorways at one time and also had more formal interior construction features, such as benches (larger and higher quality than any bench constructed in

Structure 23) and columns. This raised its construction cost slightly higher than Structure 19 at 10,122 PDs. These values do not translate into a straightforward social order like Rank 1 (23), Rank 2 (8), Rank 3 (19) because we do not have sufficient information about the other structures in the West Patio Group or whether Structure 8 is associated directly with Structures 9, 10a, and 10b. Additionally, my interpretation of social status is complicated even more by the material culture and burial patterns associated with each residential space. However, this does demonstrate that within a generally non-elite settlement at the port, residential groups were not all equivalent in terms of either collective identity affiliation or social status.

In Chapter 5, the results of the micro-level analysis of material culture and burial contexts from the residential groups at Isla Cerritos are discussed, and these add some information to our understanding of those who lived at this island port and their daily practices. We lack absolute dates from organic materials recovered from excavations and the osteological materials themselves, and until we have that information, the best chronological resolution we have from relative dating is about 200 years. That said, the human burials excavated in 2010, combined with the analysis of mortuary contexts from Structure 8 in 2006 and 1985 do show synchronic and diachronic variation relevant to my research questions.

In general, most of the mortuary contexts from the residential spaces are quite modest in terms of offerings and funerary architecture (i.e., just one formal cist burial in Structure 23-sub and one partial cist in the patio) compared with elite Late and Terminal Classic Maya residential groups elsewhere. The infant and juvenile burials in the patio of the West Patio Group are too young or poorly preserved to provide information about biological sex or biosocial identity markers, but all have modest material culture offerings association with them. The two with the most highly valued prestige goods (jadeite beads, long-distance trade goods) placed as offerings

by mourners in the northern residential groups are Burial 21, an infant, and Burial 24, the adult male cist burial beneath Structure 23. This is evidence for ascribed social status, as well as achieved within the community.

The West Patio Group is the earliest residential space documented on the island so far. Burials 21, 23, and 25 in the patio date to the Late Classic/Terminal Classic transition (Chacpel-Jotuto ceramic complexes) between 700 and 900/950 CE, and are not the earliest contexts in this area, but fall within the period of interest for this research. These are all primary, extended, prone burials, and the material culture patterns associated with them include a combination of majority Canbalam sphere ceramics from the southern/western Gulf coast (usually 1 semi-complete vessel and/or many fragments), marine fauna offerings, concentrations of north coast shell placed near the abdomen or pelvic area, fishing net weights and net weaving implements/cornhuskers, personal objects/tools, and 1-2 objects associated with maize agricultural subsistence (grinding stone manos). These offerings contain symbolic associations to both the sea and inland subsistence, characteristic of maritime lifeways at the time. After 900 CE, the substructure of 23 is occupied and Burial 19 is interred in the patio. Between 900-1100 CE, Structure 23-sub is terminated and Burial 24 is interred in a cist within the floor of the original platform, which would become the interior core of Structure 23's west room during the later Jotuto ceramic complex occupation. Burial 20 is then laid to rest in the patio in a partial cist.

There are subtle diachronic variations observed in the northern residential burials across the transitional period. Over time, there is a gradual shift in the ceramic patterns away from Canbalam domestic groups, southern Gulf trade wares, and eastern and western Cehpech groups to Cehpech-Sotuta and southern Gulf coast trade wares. Also there is a slight increase in the material culture associated with inland lifeways, status, and trade such as butchered meat,

grinding stones, obsidian, chert, etc. Also burials 20 and 24 contain partial or complete, though modest, funerary architecture.

Burial 24 was likely an important ceremonial event related to an architectural and social transition during the Jotuto ceramic complex, as this is the highest status burial found in the northern residential groups so far. The individual may have been a lineage member of rank that became a revered ancestor for the plazuela group with small offerings of objects of personal adornment (in low quantities) that included hematite/pyrite beads, a carved tubular jade bead, and imported stone tools. He displays intermediate tabular erect cranial modification, similar to human remains from Chichén Itzá and Terminal Classic contexts related to Itzá diaspora in the peninsula, but we cannot say what this biosocial means, other than it represents an ascribed status marker indicating another layer of shared group affiliation. No complete vessels or caches of high quantities of exotic materials are associated with this burial, however, and interestingly, the inhumation practice of extended, prone burial (possibly a southern Gulf coast tradition) is shared by Burial 24 and the patio burials over at least 300-400 years.

Additional synchronic variation is observed in Terminal Classic burial contexts across the island. Within Structure 8, Burial 16 of a subadult that dates to 900-1060 CE, overlapping in time with Burial 24, is a flexed, seated bundle burial. This individual has just a single, modest offering of a round, polished white stone. Slightly later time, Burial 7 is interred in a later floor. This burial, excavated in 1985, was dated by radiocarbon to 1075 CE and represents the most elaborate mortuary context ever found on the island. Two adult women and two men were interred together in seated, flexed burials—a completely different inhumation practice than documented in the northern residential groups prior to 1100 CE, but the same as the earlier subadult burial. Cranial modification in the four adults and the subadult (Burial 16) associated

with this structure is tabular oblique, a style documented more commonly in Classic and Late Classic period contexts of the southern Maya lowlands, and not at Chichén Itzá.

In contrast to the modest offerings on the north side of the island, this mortuary context approaches semi-elite in that it contains whole ceramic vessel offerings of Tohil Plumbate from Chiapas and finely carved Silhó Fine Orange X that are associated with Chichén Itzá elites. Spondylus shells and shell beads, gold, turquois, and other artifacts that have also been found in elite offerings the urban center occur in higher quantities here than in other residential contexts on the island, including Burial 24. The material culture pattern is highly skewed toward Chichén Itzá and the Cupul corridor in addition to objects specifically related to long-distance trade and commerce. This burial from about the time of the political collapse of the polity at Chichén Itzá is most certainly symbolizing some kind of occupational social status related to trade and the accruement of portable wealth from both the sea and inland contexts. This is reinforced by the later Postclassic offering that includes a fragment of the Ek' Chuwah, or God M, effigy censer lid, marking this place in social memory as pertaining to travel, merchants, and commerce. Curiously, the Burial 17 bench offering, postdating Burial 7 in Structure 8 by approximately a century, contains a secondary burial of an infant with strong local maritime symbolism again, with the bones placed on north coast shell, an imported Caribbean shell, and a complete Navel tecomate. The burials in Structure 8 share biosocial markers, spatial, and inhumation practices that suggest a kinship or ethnic as distinct from the contemporaneous burials in other residential groups. It seems that the occupational status symbolism related to trade and Chichén Itzá might be restricted in time to this century between 1000 and 1100 CE, couched between the modest burials 16 and 17, although the latter offering also references maritime themes and long-distance trade.

The latest two burials associated with Structure 23 are coeval with Burial 17 of Structure 8 and just postdate Burial 16 (c.1000-1200 CE). They reflect an overall diachronic trend within the island portion of the community toward seated, flexed inhumation practices and bundle primary and secondary burials. Burial 18 located near a midden off the south side of the west room of Structure 23 is a flexed/seated individual with a semi-complete Silhó Fine Orange X ceramics as an offering in addition to fragmented utilitarian wares associated with the late Sotuta-Hocabá horizon (Kukulá, Pisté groups). Burial 22, also located along the south side of this platform is a secondary bundle burial, like Burial 17 with a few lithic tools and some ceramic fragments associated with it.

The archaeological record provides insights, but also complicates the question of just who lived at this port. The burial traditions associated with the domestic spaces at Isla Cerritos show that port residents had long-standing roots within the coastal community. We documented continuity in inhumation practices over centuries within residential groups built upon earlier constructions and foundations. The infant and juvenile burials and the artifacts recovered from dwellings and graves that might have been toys demonstrate that families lived permanently at the port. The residential architecture and modest burials (overall) attest to the non-elite status of the port population compared to larger Maya society. However, social archaeology in a coastal Maya community contributes to dismantling the urban elite – rural commoner dichotomy in Maya studies, supporting a more nuanced view of social differentiation and hierarchy within non-elite contexts over time.

Artifact patterns across residential spaces at the port were quite similar overall, and included comparable variation through time in the few contexts exposed that associated with the Late Classic-Terminal Classic transition. All port residences were actively engaged in fishing

and maritime subsistence judging by the quantity of fishing net weights (ceramic and stone), bone needles/netting shuttles found in each structure, as well as shells, and sea turtles, reptiles, and sea mammals appearing in the faunal record in each domestic structure (Chávez and Götz, n.d.). At the same time, the meat-bearing parts of preferred (i.e., "status") mammalian species hunted inland, including white tailed deer, peccary, tapir, dog, jaguar, and others appear in the faunal record in significantly smaller quantities, but are present in patios, midden areas, and inside Structures 19, 23, and 8 (Chávez 2013; Herrera 2011). These species had to be imported to the island through the canal at Paso del Cerro, along with agricultural staples, including maize, that also made up a significant portion of the coastal cuisine as evinced by the variety of cornhuskers, manos and metates, and (later in time) molcajetes also found in these houses. Much of the cooking on the island appears to have involved boiling of soups and stews (Herrera 2011:57), much like the pot set to boil depicted in the Maya Seacoast Village mural, and the prevalence of large pots in the ceramic record and stone ring bases attest to this. We do not have strong evidence yet for feasting activities on the island---at least, this was not happening in the residential portions of the port—and there is not much variation in the zooarchaeology across the different houses or residential areas of the island (Chapter 5).

As discussed in Chapter 5, I believe that a "coastal core and inland veneer" analogy can be extended to many aspects of maritime Maya daily life, even beyond architecture. The artifact patterns, for example, include tools made out of shell (awls, scrapers) that are more often made out of lithics in inland agricultural villages. The iconography of decorated spindle whorls and the fine orange whistle figurine found in Structure 23 are sea birds and fish. Even the most prevalent form of Kukulá group utilitarian ceramics (Xcanchacan black on cream) decorated with dripping black paint to match the style popular in the Cupul Province of central Yucatán after 1000 CE

has had a red paste core along the coast. Similarly, the symbolism of the offerings associated with funerary rites at the port across time and space includes a combination of sea life and imagery (shells, large fish including sharks and rays, coral), imported trade objects, and objects related to agricultural subsistence (maize) in various proportions.

While coastal knowledge, traditions, resources, and subsistence practices are shared characteristics of the occupants of these residential spaces, what are the material expressions of social inclusion and exclusion that complicate the interpretation of social organization at the port? The separate residential groups themselves most likely formed around kinship connections (real or fictive) that may also have extended to the mainland components of the community. In fact, island residence may have always been linked to occupational specialization (including or not social status) because this population needed subsistence support (fresh water access) and, occasionally, refuge provided by the broader coastal region.

The inhumation practices documented in burials in the West Patio Group and Structure 23 on the north side of the island that date to between 700 and 1000 CE are similarly extended and prone and cardinally oriented, and differ from burial practices in Structure 8 on the west side of the island dating to 900-1100 (i.e., group, seated, flexed, bundled) and from later flexed bundle burials placed outside Structure 23 (1000-1200) at the beginning of the Tomburro ceramic complex.

The Chacpel ceramic complex at Isla Cerritos (700-900) shows a strong cultural and economic orientation toward the southern Gulf coast. This appears earlier and remains (though less strong) later in the domestic archaeological record, and as we continue to study this mortuary population, it may be valuable to compare contexts from Isla de Sacrificios in Veracruz and the Islas de los Cerros in Tabasco to further elucidate cultural origins. During the Jotuto

ceramic complex (800-1100), the Canbalam ceramics and Vista Alegre groups gradually fade and the Cehpech-Sotuta ceramics (domestic and imported) that are associated with Chichén Itzá become predominant. These groups are the highest percentage found in the cist burial (Burial 24) under the west room of Structure 23 and Burials 16 and 7 of Structure 8.

Regarding social status, the offerings in the infant and juvenile burials of the patio indicate an ascribed social status assigned at birth, and the infant in Burial 21 has a slightly increased amount and quality of offerings (jade bead and fine gray ceramics) than the other children. These children may well have been born on the island. Burial 24, also an extended and prone burial, had intermediate tabular erect cranial modification, a biosocial marker linked to an ascribed collective identity of some sort, though its possible meanings and relationship to social status are debated. This form is documented most often in populations from the region around Chichén Itzá in the Terminal Classic period.

In terms of offerings of items of prime intrinsic value and investment in burial architecture, Burial 24 (c.950-1050 CE) is the highest ranked thus far recovered from the northern residential groups. This adult male was interred in a formal cist on the floor of Structure 23-sub in a funerary event that sanctified the renovation of Structure 23 and construction of the west room. The few objects of personal adornment found in this burial include hematite/pyrite mineral beads and a carved tubular jade bead, materials considered to be sumptuary items of portable wealth in Maya society. This correlates with a higher cost/investment of some 23,500 PDs in the multi-roomed domestic architecture of Structure 23, compared with an estimate of just under 44,000 PDs for the entire West Patio Group. This suggests that the family or lineage affiliated with Structure 23 had a higher social status and more access to resources than the other household group on the north side of the island.

In Structure 8, Burial 7, which is dated squarely to the end of the Jotuto ceramic complex, is a larger group burial with four individuals that contains the most artifacts associated with elite social status, maritime trade, and Chichén Itzá. This is a higher status burial than Burial 16, a slightly earlier burial from the same structure. The individuals in Burials 7 and 16 show tabular oblique cranial modification, more typically associated with the southern Maya lowlands than the northern Maya lowlands. This inhumation practice of seated, flexed burials appears later in Burials 18 and 22 associated with Structure 23, so it probably represents a social change in funerary customs that spreads in the coastal community over time (after 950 CE). During the period 1050-1100, this family had increased resources, portable wealth, and access to elite sumptuary goods valued by elites in inland urban centers like Chichén Itzá. The complete Fine Orange and Tohil Plumbate vessels placed as offerings are symbolic of the commercial networks that the city and port participated in, and the pattern is very suggestive of an occupational social status / identity in addition to other group affiliations indicated by the biosocial marker of cranial modification, burial custom, and architectural investment in renovating the dwelling space three times. The time period of this burial coincides with the last decades of Chichén Itzá's extensive political power and influence in the northern lowlands.

Comparatively, the earlier and later burial offerings in Structure 8 are more modest and the patterns more similar to contemporaneous contexts in the northern residential groups. When we compare the artifact assemblages of the Jotuto period residential dwelling spaces in Structures 8, 19, and 23, they are quite similar, and Burial 7 may be tied to a specific period during the end of the apogee of Chichén Itzá when the alliance between the port residents and inland center was strongest and the political and economic relationship the most symbiotic. While this burial offering represents the highest "status" context so far excavated based on the

quantity and intentional placement of exotic, long-distance trade goods and whole vessels, many of the same types of artifacts are found in the Structure 23 and Structure 19 assemblages dating to after 900 CE. Despite the sampling bias due to our excavation emphasis, there is a clear increase in the quantity and variety of material culture, as well as the material expressions of social status that carried weight throughout the Late Classic Maya world, during the Jotuto period between 900 and 1100. This suggests that port families living on the island benefitted materially from port activities and occupational specialization, in addition to their ascribed statuses, resulting in social mobility even within a small "non-elite" community. Over time, the relationship between island residents and Chichén Itzá becomes stronger, and clearly the coastal residents of each of the household groups, regardless of kinship, social, or ethnic differences, were motivated to cultivate this alliance with the inland polity, just as the Itzá were.

Identifying the kinds of social identities or occupational subgroups based on the material remains of the residential spaces at Isla Cerritos proves to be much more difficult. An obvious question is whether these might be merchant residences or temporary housing for traders at the port, especially Structure 8, in which a connection to occupational status appears most evident. The material evidence suggests that these spaces, in particular, were permanent residences and that the groups occupying and investing in them had established connections to the community and the coast. Temporary housing has not been confirmed yet at Isla Cerritos.

Ardren and Lowry (2011:339) have argued that colonnades or gallery-patio constructions (similar to Structure 5) might have served this purpose at other sites in the Cupul region, but Structure 5 at Isla Cerritos, at least, does not present a domestic artifact pattern. In the ethnohistorical sources from the early Colonial period, such as Diego de Landa, people identified as merchants are often associated with an elite ascribed status, or a privileged social position in

cities of the interior (Andrews 1998:22). Ardren and Lowry (2011:440, citing Grube and Krochock 2007:223) point to hieroglyphic texts at Chichén Itzá that name high-ranking men that could be merchants, as well as warriors, married to prominent women to build alliances. The Aztec pochteca traders are famously associated with presaging military conquest of resource areas for the empire, and Aztec slave traders are also described in the sources from Central Mexico as wealthy, high-ranking leaders (Sahagún 1975:60). This seems to be a very late shift, however. In Classic Maya sources, tribute is the most common economic theme, and trading is not discussed in relation to elites, but hardly mentioned or, if depicted at all, as a middle class activity (Tokovinine and Beliaev 2013:194). Trade does not become associated with prestigious social status until the Postclassic period, after many of the elite royal houses have fallen, and even in Central Mexico there was often political suppression of merchant guilds (Masson and Freidel 2012:457).

The domestic architecture and material culture patterns at Isla Cerritos, so far, do not support the hypothesis that noble merchants lived at this coastal port, even during the Terminal Classic period when port activity and Chichén Itzá were at their height. Not only are the contexts not particularly elite, but the highest ranking merchants (slave traders and pplom) were based in cities where markets were located and under more centralized scrutiny by royal officials. However, there are a variety of activities and occupations that fall under the broad term of "merchants" or "traders" in the historical sources that would better apply to these social and domestic contexts on the coast. Iconography of Ek' Chuwah, the Postclassic patron of merchants and travelers, has been found at numerous coastal sites, like the censer lid offering in Structure 8 at Isla Cerritos. As described above, he is often depicted hefting a back rack laden with goods and carrying a spear for protection on the road (Andrews 1998:23). He was a popular deity in the

northern lowlands during the Postclassic period and had connections, as discussed in Chapter 5, to the central Mexican pantheon.

In the Florentine Codex, 16th century Nahua descriptions list at least four kinds of "merchants," including trade patrons who invest, direct and supervise trading, "the real mother, the real father of the common people" (Sahagún 1975:60). Also, "vanguard merchants" are the travelers, transporters of wares, discerning, observing, and recognizing the road (1975:60). These are the kinds of people that are depicted moving through, working, and living in the seacoast mural painting from the Temple of the Warriors. I have also discussed evidence for production of shell tools and weaving in the residential structures, and although these are household-level occupations, they may have been integrated into the larger activity of commerce through regional exchange. Finally, by the Terminal Classic period, salt production was specialized on the north coast and white salt from Las Coloradas may have been considered a luxury commodity (Kepecs 2007; McKillop 2002; Williams 2009:184). We cannot determine from the current evidence how involved port residents at Isla Cerritos were in the salt production process that was taking place on the other side of the water at Paso del Cerro and along the estuary. This occupation may also have influenced the interaction of social groups within the island settlement.

What we know is that the residents of Isla Cerritos were not elite merchants, but upwardly mobile in the social ranks of "the common people." They had specialized knowledge deriving from life on the coast, such as fishing and navigation, as well as substantial access to trade goods, and were involved in the distribution of these resources locally and regionally. These individuals would have also served in a specialized occupation such as stewards of the port, or "portkeepers," to maintain the setting for exchange and the civic-ceremonial center on

the island. They could also have been involved in protecting the peace in the trade setting, as the chert spear point in Structure 23 and the obsidian points found in Structure 19 signal. Their fortunes would have increased through their membership in these collective social, residential, and occupational groups, along with the success of Itzá patronage and commerce. Within the market economy, Maya elites had advantages through social connections to merchants, access to currency and proximity to markets and their administration (Masson and Freidel 2012:462). Port residents, though not particularly wealthy, also had advantages in the form of social connections to traders of multiple classes and other ports, as well as proximity to resource areas. Interestingly, Sahagún's general description of a "good merchant" in the 16th century Nahua view is "a maker of profits, a securer of increase, a multiplier [of his possessions]" (1975:59, brackets original). By Late Postclassic times, this speaks of an established association in Mesoamerica between commerce and the accumulation of personal wealth, or social mobility, which we are able to document on a small-scale through residences at Isla Cerritos.

6.3 Chichén Itzá and Isla Cerritos: The Dynamics of Inland-Coastal Relationships

The excavations of Structures 19, 23, and the patio in the northern residential groups provided limited views of port occupation pre-dating and post-dating Chichén Itzá, as well as the Chacpel ceramic complex occupation dating to 700-900 CE, the period when the inland city developed into the major political, economic, religious, and military center of the Yucatán Peninsula. One of the questions of this research project is what, if anything, the household archaeology at the port can tell us about the sociocultural and sociopolitical relationship between the island and the regional center of Chichén Itzá, and the role of ports as "catalysts of social change" (Loveluck 2013:144) in the ancient Maya world at this time. Relying on relative

stratigraphic dating sequences places a limit on what can be said with confidence about the social changes taking place at the port, but organic samples from architectural and burial contexts will hopefully soon provide more absolute dates to assist us.

From the first archaeological surveys of the island, Isla Cerritos has been interpreted as the primary northern sea port of Chichén Itzá during the Terminal Classic period (800-1100 CE) (Andrews et al. 1984; Eaton 1978). The close political and economic relationship between the island port and Chichén Itzá was initially modeled in top-down, center-periphery terms, in which the existence of the coastal port depended on strategic placement, patronage, and administration by the inland center. It has been variously interpreted as an example of Itzá political, military, and economic hegemony in the region and along the north and west Gulf coast littoral (Cobos 2010a, Cobos et al. 2005). Andrews and Gallareta (1986:47) argued that "the fate of the people of Isla Cerritos was ultimately and inexorably linked to that of the elite at Chichén Itzá." I argue that the new evidence we have from domestic archaeology at Isla Cerritos supports a gradual, negotiated alliance and waves of sociocultural interaction between the inland city and the maritime Maya that coalesced into a strong relationship of patronage that benefitted the coastal port stewards and salt traders, as well as the urban elite, particularly in the century before the political collapse of the Itzá polity in the late 11th century.

As discussed in Chapter 3, archaeological settlement surveys in the historical provinces of Cupul (Andrews et al. 1989) and Chikinchel (Kepecs and Gallareta 1995) in north-central Yucatán have provided settlement pattern evidence linking the sole Rank I site in the region at 900 CE to the three coastal nodes of Isla Cerritos, Paso del Cerro, and Chinalco via a series of secondary centers and rural villages. Archaeology at Xuenkal, one of these secondary centers on this route during the Terminal Classic period, shows evidence for increased non-local trade and

craft production (Ardren and Lowry 2011:433). The distances between the sites (or "way stations") within this settlement hierarchy are conducive to foot travel in a day, and viewshed analysis suggests that monuments visible in the distance may have been used to sight shipping routes (Andrews et al. 1989; Ardren and Lowry 2011:435). Thus, settlement pattern is one strong line of evidence for the significant economic relationship between the inland center and port developing by around 800-900 CE.

This settlement region also maps almost perfectly onto the distribution of Cehpech-Sotuta ceramics (Chichén slate, utilitarian, and elite fine paste and high fired imports) in the central portion of the peninsula. Robles (2006) points out that Sotuta slateware is the kind with the least similarity to other Cehpech slatewares popular in the northern lowlands during this period in terms of vessel form and slip. There are sociocultural implications in these changes. For example, the presence of forms like molcajetes (grater bowls) and comales (griddles) in Dzitas group ceramics (associated with the elite household ceramics of Chichén Itzá) are indicative of cuisine changes in how foods are prepared and spiced (Ardren and Lowry 2011:438; Bey and Ringle 2007). Also, some archaeologists argue that obsidian from central Mexican sources and Sotuta ceramics are related within the political economy, such that sites that use Sotuta ceramics and exhibit ties to Chichén Itzá participate exclusively in central Mexican obsidian exchange networks that the Itzá polity dominated (Braswell and Glascock 2002).

On the island, the evidence for Itzá political and economic influence has been documented through the sequence and layout of monumental architecture, port facilities, ceramics, obsidian, long-distance trade goods, and iconography from Terminal Classic contexts. However, from the residential area on the north side of the island we now have material culture dating to the late Middle Pre-Classic period (c.300 BCE), and there is evidence for architectural

construction and long-distance trade for jadeite, basalt, and obsidian chemically sourced to highland Mexico in a burial dating as early as 150 BCE (Cervera Rivero 1996). Both port functions and trade relations with larger Mesoamerican-wide networks pre-date Chichén Itzá.

By 600 CE, the port community has a strong maritime orientation, including economic connections to both the Caribbean coast and western Gulf, and with a heavy emphasis on the southern Gulf coast from Veracruz to the Laguna de Términos. The patio burials discussed above that date from 700-950 CE show that the suite of utilitarian pottery of Canbalam ceramic sphere was popular at the port, even while the Itzá state was developing to the south and Ek Balam and the Puuc centers were thriving inland. Ceramics from all of these centers appear in Chacpel complex contexts at the port (e.g., Huachinango, Muna slate, Vista Alegre striated, Pisté striated), and we even find a little sculpture carved in the Puuc style that survived later transitions and are re-used in civic-ceremonial structures. Maritime trade and the Gulf coastal lifestyle are integral parts of a sociocultural tradition shared by port residents in the Late Classic period. Canbalam ceramics are primarily utilitarian groups, and the burial contexts include these, offerings of shell and fish, and few tools or other objects. Inhumation practices are most similar to those documented at Isla de Sacrificios and along the southern Gulf coast, indicating that the strongest cultural ties are coastal rather than inland. It is possible that migrations to the area after 500-600 CE may have brought people from the southern Gulf who settled out along the mainland at Xcambó and then further beyond the Bocas de Dzilam to the salt beds of the Río Lagartos Estuary, eventually constructing port facilities and residential groups on the island. This is similar to the historical trajectory of Xcambó to the west (Sierra Sosa et al. 2014).

Around 800 CE, a lengthy period of major architectural renovations began at the port, including in all the residential groups. Structure 23-sub is transformed significantly and the

columns were removed, creating a multi-room domestic structure, and the plazuela group in the northern neighborhood is built. Burial 24 (c. 900/950-1000 CE) may have been part of sanctifying these architectural renovations. The adult male buried there displays a biosocial marker of cranial deformation most similar to human remains found at Chichén Itzá, but the extended prone inhumation is identical to the West Patio Group burials. This is also when Structure 5 is renovated and the colonnaded hall expanded to incorporate a turn and altar in the bench and additional rows of columns/pillars.

There is an increase in investment of resources and labor of over 900,000 PDs of architectural construction (just under half the total for the site), including the artificial expansion of the island to the south. Earlier stone architecture on the island is almost completely obliterated by these changes, which remain the foundation for all subsequent occupations of the island into historic times. Port facilities at Paso del Cerro and Isla Cerritos, which are exceptional examples in the Maya region, are estimated to have been built at this time as well, although the dating of these structures remains preliminary.

From this period forward, the main civic-ceremonial group at Isla Cerritos almost replicates in miniature scale the temple-altar-gallery-patio architectural configuration that is repeated throughout Chichén Itzá (Cobos 2004; cf. Lincoln 1990), with the colonnaded halls Structures 2 and 5 standing in for patio-galleries (simply galleries), and Structures 1 and 7, the temple and radial altar respectively. At Chichén Itzá, a ballcourt may also occur in association with the temple-altar-gallery-patio configuration, as is the case of the Great Ballcourt of the Great Terrace. Structure 3 at Isla Cerritos, which may replicate part of a Maya ballcourt or the Upper Temple of the Jaguars for ritual and performance purposes, was constructed to the south of the main plaza group at the end of the Jotuto ceramic complex. It is tempting to argue that this

represents the imposition of state civic-ceremonial architecture as part of a process of territorial expansion and/or a surge of economic investment by Chichén Itzá in constructing a sea port from which to administer salt production and long-distance exchange systems. However, the ceramic sequence indicates that this was a gradual renovation process over the course of at least 300 years.

As discussed in Chapter 5, the patio burials and 23-sub demonstrate that during the overlap between the Chacpel and Jotuto ceramic complexes around 800-900 CE, there is a gradual replacement of Canbalam ceramic sphere groups with Sotuta groups, including Silhó Fine Orange X, Vista Alegre striated with Pisté striated vessels (see Appendix B). Western and eastern coastal ceramics do continue to be used by residents throughout this period in low quantities, but it is not until after 950-1000 CE that the Cehpech-Sotuta groups make up over 50% of each structure's assemblage. What declines significantly are ceramic groups associated with large inland polities that are not Chichén Itzá, including Ek Balam, Cobá, and the Puuc. By then, the Jotuto ceramic complex features the highest quantity and variety of artifacts, indicating that this is the port community's apogee. At Chichén Itzá, this time is characterized by a period of stasis prior to launching extensive renovations of the Great Terrace structures after 950 CE (Volta and Braswell 2014).

In summary, around 800-900 CE increased investment in the infrastructure of the port community is visible, but it is reflected in steady growth, renovating pre-existing structures in the main plaza group and residences and an overall increase in material culture. An increasing engagement with Chichén Itzá by the coastal Maya is expressed in shifting ceramic patterns over two centuries, but the material patterns in the residential spaces show continuity in a maritime cultural orientation. Architectural energetics estimates for this period at Isla Cerritos (Chapter 4)

show that the labor investment needed for these changes does not exceed my resident population estimate for the period over which it took place. If the median population estimate was the labor pool, the Jotuto complex architecture could have been completed in 74 person-years, or 1-2 generations. With outside assistance from the mainland coast or beyond, this architecture could have been completed in anywhere from 5-22 years (Table 4.17). This means that outside investment in port community infrastructure (from Chichén Itzá or any Late Classic inland polity) was not required for its existence or function. Moreover, the civic-ceremonial architecture on the island was not constructed this rapidly, as test pits from the 1985 survey demonstrate the antiquity of constructions oriented in a similar pattern on the platforms and around the plaza in the site center. One would also expect the material culture patterns (especially the Canbalam-Sotuta transition) to change more abruptly if there was an Itzá incursion or colonization on the coast and rapid installation of administrative infrastructure to re-orient the system of long-distance trade. This does not mean that the Itzá did not invest in the port or were not involved in administering trade—they surely were. Rather, this favors an incremental process of growing social interaction and negotiated alliance through time, the first wave of which seems to date to c.800-900, where pre-existing exchange networks and markets were not rapidly altered.

The archaeological record of the residential spaces that dates to around 1000 CE indicates more significant cultural changes at the port related to a second wave of increased social interaction with the Itzá capital. The ceramic assemblages show that port residents overwhelmingly preferred local imitations of Chichén Itzá slate ware of the Sotuta and Sotuta-Hocabá traditions (e.g., Kukulá Xcanchacan black on cream instead of Kukulá [Peto] cream) for daily use. These ceramics may have been produced near the coast and traded to the interior of

the peninsula and include the large-lugged jars and pots found sitting on the floors of Structure 23 and outside the house platforms. Also inside Structure 23, Silhó Fine Orange ceramics increase substantially and appear in forms useful for preparation and storage in addition to serving vessels, perhaps another indication of increasing prosperity at the port (i.e., the use of fine pastes became more commonplace). Three different types of imported Plumbate ceramics, most commonly Tohil, are found, and the appearance of the grater bowls and other forms associated with dietary changes occur in post-1000 CE contexts as well.

Iconographic connections with Chichén Itzá appear at the port at this time, as well. The phallic sculptures in limestone excavated in Jotuto ritual contexts in Structures 5 and 13 are examples. Phallic sculpture is extremely rare in the northern Maya lowlands outside the Puuc region, except at Chichén Itzá where this iconography is prevalent in architectural sculpture. Structure 5 is the colonnaded hall documented in the main civic-ceremonial group, and Structure 13 is the southernmost structure on the island that faces the wharf. As the first stop on the island beyond the harbor wall, it likely had a port-related administrative function. Both structures had early and late-phase architecture related to the period 900-1000 and were designed for public activities in locations that visitors would access.

Also, as noted in Chapter 5, the majority of the obsidian sample at Isla Cerritos from this period was imported from five highland Mexican sources, mostly green obsidian from Pachuca. However, the second most common source of obsidian in the early Terminal Classic is El Chayal in highland Guatemala, while Ixtepeque obsidian becomes less common. In contexts post-dating 1100, practically all the obsidian is imported from Mexico. Several ports along the Gulf Coast and a few on the Caribbean coast were transitioning in similar ways responding to new socio-

political-economic relationships with Chichén Itzá and shifting exchange networks as a result of the decline of other lowland centers.

Between 1000-1100 CE, this port community is at its height in activity, and residents are benefiting from the regional and long-distance economic networks and engagement with Chichén Itzá. The salt beds around Emal and Las Coloradas were then main coastal salt production centers in the north. The residents of Structure 8 on the west side of the island began a series of renovations that transformed the dwelling space into a form somewhat similar to C-shaped colonnaded domestic structures from Uxmal and Chichén Itzá with 8 pillars supporting the roof and benches lining the walls. Similarly, in Structure 23 residents altered the interior of the west room, removing a bench and delineating activity areas. Structure 3, the possible ballcourt structure, is built facing south and forming a second plaza group with Structures 14 and 17. All of this is indicative of the patronage of the inland center.

Residential burial practices shifted within the small port community at this time from extended prone to seated, flexed bundle burials and also secondary burials wrapped in textiles, reflecting changes in religious beliefs and ritual custom. There is more material evidence for social group and status differentiation related to kinship, access to portable wealth and labor, and occupational status on the island. Burial 7 in Structure 8 where the exotic raw materials and luxury goods offered match the elite sumptuary goods valued at Chichén Itzá and other Maya cities dates to 1075 CE and clearly reflects occupational status symbolism related to maritime trade and commerce, as well as increased access to portable wealth that this family had. Burial 16 in the same structure that pre-dates Burial 7 by a century or less does not have the scale or variety of objects found in the same space, under a later floor, at the end of the 11th century. On the other hand Burial 24, in Structure 23, also slightly earlier in the sequence, included luxury

trade goods of personal adornment, but in very small quantities. This pattern correlates to an emerging occupational/class status associated with trade and commerce apparent in Postclassic Maya society that did not have precedent in the Classic period (Tokovinine and Beliaev 2013:194). Within this social context, non-elite port residents involved in trade related activities had increased opportunities for social mobility through access to resources of elite sumptuary value, and multiple types of specialized production with market value beyond that which would have been possible in the interior where social norms were more rigidly enforced and top-down administration more centralized. This probably encouraged population movement to and along the coast.

The 11th century seems to have been the peak of sociocultural, political, and economic relations between the island port and the inland center. At Chichén Itzá during this century, the murals featuring scenes of historical events, migrations, and warfare in coastal places are painted in the upper Temple of the Warriors. According to Ringle and Bey (2009:360), this correlates with Modified Fluorescent changes in the architecture, art, and sculptural iconography of the Great Terrace that emphasize militarism, ranked military and priestly orders over individuals, the feathered serpent, and foreign symbolism related to the archetypal Tollan(s). Coastal communities are at the forefront of the historical narratives presented in this late mural art, and Tokovinine and Beliaev (2013:184) make the interesting observation that while some show military attack and captive-taking, the sea coast village (Area 31) so reminiscent of the port community I have been documenting on the north coast is a much more "peaceful" scene. Citing Mesoamerican spatial conventions, they point out that in this landscape, canoes with warriors would be moving east on the sea, while merchants walking inland routes move north and south. There is a conceptual separation in this art between communities associated with trade that have

Tollan/Feathered Serpent-marked monumental architecture and those associated with warfare (2010:184). This could very well represent the northern Maya coast at that time, where ports like Isla Cerritos had both the port facilities and civic-ceremonial architecture to serve as settings for the rituals, iconography, and performance accompanying the social and political practice of trade. Moreover, the non-domestic architectural renovations at the port during the Late and Terminal Classic periods not only reflects political allegiance and economic investment, but also developments in religion and worldview throughout Epiclassic Mesoamerica in which the coast played a central role historically and in mythology (Ringle et al. 1998).

In the ethnohistorical record, Mesoamerican practitioners of long-distance trade are described as devout and humble, active venerators of patron gods of the road and supernatural forces protective of commercial interests, as expressed in numerous Ek' Chuwah effigy censers found at coastal sites from the Postclassic period (Andrews 1998:23). There was likely as much internal cultural motivation from port residents to construct and maintain the ceremonial architecture on the island as external pressure from the inland polity, and traders moving inland and along the coast had perhaps even more opportunity to carry and spread new religious ideas, cultural practices, and technology (see Ardren and Lowry 2011; Kepecs 2007; Ringle et al. 1998; Tokovinine and Beliaev 2013).

In the few domestic spaces that we have excavated at Isla Cerritos so far, we have not encountered clear evidence for members of the Itzá elite, government, or military orders living in the coastal community permanently. The architecture and material culture on the island is strongly influenced socially by Chichén Itzá, as is the entire central portion of the peninsula at that time, but these coastal residents do not become "Itzá" from a sociocultural perspective – the maritime orientation and the heterogeneity of the port community continued. The range of

residential architecture at the port is broadly similar to non-elite households at other Late and Terminal Classic Maya sites. If Structure 8 actually forms part of a larger residential group with Structures 9, 10a, and 10b, which is likely, the second phase of occupation of the superstructure when the room was renovated with a small central bench and pillars suggests a specialized function other than "dwelling" within the residential group (Cobos et al. 2007:55). Later, the third phase of occupation, after 900/950 CE, the pillars/columns in the interior of the room and benches along the wall segments becomes a dwelling space again. These interior features may have been designed to partially replicate the new style of architecture emerging in the Modified Fluorescent in (such as in the Initial Series Group) at Chichén Itzá or late period C-shaped buildings from the Puuc region. The offerings in Burial 7 show strong ties to the interior and elite sumptuary goods associated with Chichén Itzá, although the quantities are still lower than in inland elite contexts. The radiocarbon dating of the burial to the end of the 11th century leaves open the question of whether this family might have moved to the port from the inland city at the time of its political dissolution c. 1050 CE.

Still, the material culture pattern associated with this residence is quite similar to the other contemporaneous residential spaces at the port, which display a combination of inland technology and styles with coastal adaptations and maritime subsistence practices. The offerings in Burial 7, though more elaborate, continue to display the mixed maritime-inland symbolism of that the northern groups' burials also display (e.g., spondylus shells, grinding stones, etc.), but with a heavy occupational emphasis on trade/commerce. Also, the cranial modification documented for the four adults interred in Burial 7 and the subadult in the slightly earlier Burial 16 all display tabular oblique head-shaping characteristic of the southern Maya lowlands in Classic times (Tiesler 2013). This might represent a coastal kin group with southern Gulf coast

connections, referencing through head-shaping practices the great merchant lineages of Acalán (Andrews 1998:23). The maritime lifestyle documented at coastal ports is a heterogeneous mix of subsistence practices, social flexibility and occupational specialization, and the influx of people through ports located in coastal and borderland areas brings together a variety of collective identities. We also see evidence for this at Xcambó, where osteological and dental studies on a much larger burial population are beginning to show how demographics shifted as people saw new opportunities for social mobility on the north coast after 600 CE.

From 1100 CE to 1250 CE, after the political collapse of the Chichén Itzá polity, Isla Cerritos continued to thrive with significant architectural remodeling and maintenance of port infrastructure and functions until around 1250, well after Mayapán had become the largest and most densely populated urban center in the northern Maya lowlands. There is continuity in the ceramic assemblages of Structures 19 and 23 of the trade connections with the southern Gulf coast that the port had maintained throughout its most active period in the Terminal Classic. By the late phase of the Postclassic period (Tomburro ceramic complex), larger ports had developed to the east and were managing the salt from the north coast, as well as trade between the Maya highlands and Mexican highlands via interior routes ending in the southwestern Gulf ports near the Laguna de Términos. Residential groups on Isla Cerritos show evidence of continued, though much reduced, occupation with Mama red and Navulá domestic ceramics and Chen Mul censers dispersed throughout the site. Some house platforms, such as Structures 19, 30, and 31 are consolidated into a single large foundation by sealing the walkways between them. Structure 23 continues to be occupied into the early Colonial period as evinced by the late Postclassic curve rimmed tecomates and glazed colonial fragments found there, as was Structure 5, which was later converted into a shelter using cut stones removed from other structures to divide

interior rooms within the hall. Other port structures (domestic and non-domestic alike) were filled in and converted into altars for ritual offerings to patron gods. While the economic networks that once made the island port a small center for exchange and social mobility had long since shifted both east and west, Isla Cerritos remained a home to fishermen, occasional pilgrims, smugglers, and salt makers who lived on and traveled the northern edge of the Maya world.

In ancient Mesoamerica, political and economic relationships between resource areas were typically forged either directly through alliance or conquest, or indirectly through market exchange. Based on the results of the recent extensive excavations at the port of Isla Cerritos and incorporating what we know about Paso del Cerro and Chinalco, I do not see evidence that Chichén Itzá established the island port from scratch through military conquest or colonization of the north coast. Rather, the data we have suggest that the interior city-state and coastal communities negotiated alliances strategically and each invested in ports economically, resulting in considerable impacts in the port community and the inland city-state.

Alliance was a fundamental concept in Maya society and this could be cemented through combinations of strategic social practices, such as marriage, kinship ties (fictive or real), trade relations, and religion. At Isla Cerritos, we know that the port and its participation in long-distance and local trade relations with coastal sites and multiple inland polities were already established in the Classic period. By the Late Classic period (c.600 CE) a small resident population of 8-20 family groups was living in the island port to maintain port facilities and the civic-ceremonial group (that possibly already served a small region). The domestic contexts on the island indicate that this population had a strong maritime cultural orientation with significant ties to the western and southern Gulf coast and specialized knowledge of sea navigation, marine

resource exploitation, and trade. At the same time, coastal populations are connected to inland agricultural traditions, social practices and worldview, and the regional social changes associated with the rise of Chichén Itzá, one of the great Tollans of Mesoamerica, are blended with coastal lifestyles in the port community throughout the Terminal Classic period.

The architectural sequence, energetics estimates, and material culture patterns permit us to trace two waves of intensifying social, political, and economic interaction with the inland city. The first occurs in the century 800-900, correlating with the Modified Fluorescent period documented at Chichén Itzá, when there is also significant investment of resources in architectural renovation and expansion, including the artificial expansion of the physical islandscape and port facilities. The shift in ceramic technology from the Chacpel to the Jotuto complexes is gradual and the use of Canbalam ceramic sphere and Cehpech-Sotuta groups overlap. The Jotuto complex architecture in the civic-ceremonial plaza groups at the port replicate on a small scale the temple-altar-gallery- and/or ballcourt configuration of the Modified Fluorescent at Chichén Itzá, but these changes do not happen rapidly and all at once, but gradually and in different structures over the 300 year period. At least 3 structures on the island associated with administrative or port-related functions are renovated with architectural and iconographic features shared by Chichén Itzá. Surprisingly, architectural energetics estimates indicate that all of these renovations could have been accomplished well within the maximum time span possible with only the island population serving as the labor pool. With a little mainland assistance (less than 100 people) augmenting the resident workforce, all the island construction could have been accomplished in less than a single generation within the Terminal Classic period. This is not the pattern that would be expected from a military conquest and large investment in the rapid reorganization of a seaport by an inland center. There is no question that

Chichén Itzá invested in Isla Cerritos, and that port residents benefitted from this over time, but all indications are that the coastal sites themselves are also investing significantly in port construction and that they negotiate new alliances with economic and political centers motivated by opportunism, changing sociopolitics and exchange networks. Building these alliances through social interaction takes some time.

There tends to be an *a priori* perspective that traces the sociopolitics of alliance from top-down, or center to periphery, where merchants / seafarers / saltmakers are interpreted as "highly subordinate clients" (Loveluck 2013:181). However, the maritime Maya operating in networks of small ports and communities on the north coast had motivation and agency to strengthen social connections and reorient port activities and infrastructure based on changing circumstances in local and distant resource and market areas. In fact, the maritime Maya would have been the most likely to innovate, as news, ideologies, politics, and people were transferred along coastal trade routes.

During the Classic period, the coastal regions were increasingly specialized resource production and distribution areas for luxury items valued by the inland elite, such as white north coast salt and ritual paraphernalia crafted from sea fauna (McKillop 2010). By the Terminal Classic period, administrative control of Maya polities was becoming decentralized and elite domination over production and markets less viable, as models of "multepal" at Chichén Itzá suggest (Cobos 2007). Moreover, the wetland marshes of the north coast where salt production was conducted was difficult to access, navigate, and police by landed elites (Loveluck 2013:183), so coastal people probably controlled this large scale production, as well as marine shell and fishing to supply inland centers with alternatives to agricultural staples. Chichén Itzá

was the largest and most powerful regional market, so a strong alliance served the interests of both the coast and the inland center.

By the Late-Terminal Classic transition, the southern Maya lowlands was suffering from the effects of drought, warfare, and political collapse of royal dynasties, while the north coast salt production was booming and some ports thrived while others collapsed. Coastal ports responded to the fluctuating sociopolitical dynamics impacting markets and trade routes. Likewise, religious ideas and ideologies developing and spreading along an east-west axis in Mesoamerica during this period (Ringle et al. 1998) cannot be separated from the sociopolitical and economic dynamics. At the port of Isla Cerritos, ritual architecture providing the settings for the veneration of multiple patron gods, including the Feathered Serpent, would have been essential for the supernatural sanction and protection of the goods, the mariners transporting them, the administrators overseeing, and the peaceful transactions underway between polities. Thus, local motivation for construction of ritual and monumental architecture on a small scale, such as the Feathered Serpent marked structure pictured in the Maya Seacoast Village mural, allying the port with this extremely sacred pilgrimage center to the south was also significant.

The second wave of sociocultural changes that reflect increasing inland-coastal interaction at Isla Cerritos can be traced to the last century of Itzá sociopolitical expansion in the region at 1000-1100 CE. At this point, the residential spaces at the port show increased quantity and variety of material culture overall, including imported technology and sumptuary goods that can be considered portable wealth. The regional settlement pattern documented in the Cupul and Chikinchel province surveys show that by this time, the flow of goods along two inland routes between the market center and the coast is at its height, allowing port residents to profit. These routes probably had a lot to do with salt and its movement inland from the coastal salt flats. Port

households, while maintaining trade connections to Gulf and Caribbean coastal networks, are mostly using provincial imitations of Sotuta-Hocabá Kukulá ceramics for daily utilitarian purposes, similar to patterns documented along this inland-coastal trade corridor. The sociocultural connections with the inland polity are strongest at this time, though still blended with maritime cultural traditions that form the substrate of these coastal communities. Structure 3 was built in the center of the island at this time, its superstructure the second tallest point on the island just under 5 meters, and faces south toward Paso del Cerro. Burial offerings, such as those in Burial 7, of long-distance, exotic trade goods indicate that this is also the period in which occupational specialization at the port related to commerce was most closely tied to social status, demonstrating how building these alliances with Chichén Itzá during the Terminal Classic provided a context favorable for social mobility and innovation, opportunities that were not always available in inland urban centers where social norms were more rigid and could be easily enforced.

In discussing the implications of the sociopolitical dynamics of the relationship between Chichén Itzá and Isla Cerritos, I have touched upon the potential importance of the maritime branch of Maya culture as "catalysts of social change" (Loveluck 2013:144). This refers to the centrality (rather than the marginality) of coastal populations in the movement of cultural traditions, resources, technology, and ideas that result in larger social changes. Ardren and Lowry (2011) make a similar point when they discuss the material evidence for the introduction of new cuisines through ceramics and the routes of communication between cultures that are encouraged through the movements of traders, often along the coast. In the domestic contexts at Isla Cerritos, we see how coastal replicas of inland Kukulá pottery (Xcanchacan black on cream vessels) over time came to outnumber the originals, even along inland trade routes. Moreover, as

we begin to learn more about the chronology and geographical extent of the Canbalam ceramic sphere of domestic pottery and combine this with linguistic and bioarchaeological evidence from coastal contexts, we may learn more about the directionality and flow of ideas and technology between Central Mexico and the Maya region in the Epiclassic period.

It is interesting that by the end of the Terminal Classic period, coastal people and places take center stage in historical narratives of identity and cosmological landscapes, as best exemplified by the mural paintings commissioned by the ruler of Chichén Itzá for the Temple of the Warriors that I have referenced throughout this thesis. Ethnohistorical accounts from Yucatán at the time of contact also demonstrate the extensive historical, linguistic, and kinship connections between coastal places, even with extensive land masses between, such as the Laguna de Términos ports and San Gervasio on Cozumel that played a role in the original Itzá migration to northern Yucatán (Scholes and Roys 1948). In other historical Maya traditions, such as sacred K'iche'an texts from the Colonial period in landlocked highland Guatemala, metaphorical places of origin and even the mythological Tollan are tied to sacred seascapes (Sachse and Christenson 2005). There can be little doubt that the maritime Maya were always at the forefront of important social, political, and economic changes, and this study is an example of how turning the perspective around to one from the sea coast to the interior helps to illuminate this history.

6.4 Beyond the Port: Future Directions for Maritime Maya Research

With this dissertation project, I have generated a significant amount of new archaeological data from domestic contexts at the ancient Maya port of Isla Cerritos and carried out the first phase of organization and interpretation of these data to answer questions about

social organization, daily life, and external and hinterland relationships, especially from the period c.600-1250 CE. There was significantly more data generated than could be analyzed and reported in this study, and like any archaeological project, it has really generated more questions than answers. It is my hope that other students and scholars will be able to make use of the household data, which can be analyzed in many different ways than I have here, to amplify our understanding of the coastal Maya. As a way of concluding here, I suggest directions for future research.

At Isla Cerritos, some of the most important finds are the biological remains from the eight human burials excavated in residential contexts in 2010. As the analysis continues in the bioarchaeology laboratory, it will be very interesting to learn more about this mortuary population. There is obviously an age skew toward juveniles and infants in the patio burials, and it will be interesting to see the results of studies of any pathologies that might be apparent in the osteological analyses. Likewise, strontium and isotope analysis, similar to the studies conducted on the larger burial population at Xcambó, will provide new clues as to the origins and diet of the port residents. At Xcambó, the results of strontium analysis have demonstrated the diversity of the port population versus inland populations that indicate increased migration to and along the coast in the Late Classic Period. An interesting question to investigate is whether we see biological signatures of increasing cultural hybridity of populations of diverse origin from the Terminal Classic samples from Isla Cerritos compared with the Late Classic population at Xcambó. In addition, no radiocarbon dates have been generated from charcoal samples or the biological remains from the 2010 excavations. Once this is done, we will have a much higher quantity of absolute dates to help clarify the stratigraphic sequence for both architecture and

ceramics, providing a starker resolution from which we can refine our interpretations of change over time.

Additional archaeological research will be necessary on the island and at Paso del Cerro to clarify the chronological and cultural relationship between these two segments of the coastal community. At Isla Cerritos, there are more residential structures that need investigation in order to identify the relationship between buildings within a household group, as well as the different functions of buildings within the same great. For example, it is not clear yet how closely related Structure 23 and Structures 30 and 31 of the northern plazuela group are, and whether there are other structures between these structures and the temples in the northeast corner of the island. Currently, it is impossible to say whether Structures 9, 10a, and 10b are related to Structure 8 as part of a contemporaneous group, or whether they are oriented in different directions, possibly toward the main civic-ceremonial group. Until additional testing is done, it will not be possible to place Structure 8 in the larger historical context of a residential group.

The recent excavations at Isla Cerritos produced ceramics from an earlier period than have ever been found on the island. Likewise, the obsidian sample increased significantly with the broad, horizontal excavations of domestic contexts. A study that focuses on the earlier phases of occupation on the island (pre-Jotuto), from the Late Pre-Classic through the Classic period would help determine the size and complexity of the port prior to the larger architectural constructions of the Late Classic period and Chichén Itzá. The obsidian sample from ICAP 2006-2010 has only been sourced using visual sourcing methods. This collection needs to be studied with X-ray fluorescence to confirm or update the current interpretations of non-Pachuca obsidian sources. Sourcing other lithic material, as well, would be extremely helpful to confirm that they do come from the sources most commonly accessed by the Maya.

I hope that this research encourages the growing trend of conducting more extensive archaeological excavations at Maya coastal sites, whether this is in domestic or non-domestic contexts. In many ways household archaeology holds the most potential for interpreting sociocultural traditions and practices because of the kinds of activities associated with domiciles from ancestor and deity veneration to diet to small-scale craft production. From this research, the next logical step is to use these data sets in a comparative analysis of domestic contexts at contemporaneous inland and coastal Maya settlements to delineate the connections and divergences between these groups vis-à-vis larger Maya society. A hypothesis that should be tested is that Maya coastal communities have more in common with each other before, during, and after this period than with the contemporaneous inland polities. As documented at Isla Cerritos, household groups on the coast and hinterland may be superficially (structurally) similar, but the social practice of daily life usually differs markedly. Subsistence practices and production are the most obvious differences, but the way in which households are organized and material culture patterns also differ. Similar material expressions of collective identity and social differentiation may also be traced through these kinds of comparisons, and certain forms of social status evolve over time as coastal and inland relationships also change.

Interior sites that would be particularly useful for comparison would be Xuenkal and Chichén Itzá because of the trade connections between these three sites and their chronological overlap. Xuenkal has been described in the literature as an important secondary center and trading node on the route between Isla Cerritos on the north coast and Chichén Itzá during the Terminal Classic period (Ardren and Lowry 2011; Stockton 2013). It makes sense to compare a contemporaneous site of intermediate size between an inland center and coastal port where extensive household archaeology has been conducted (Stockton 2013).

In particular, the multi-component residential platforms described at Xuenkal would be interesting to compare with the contexts within Structure 23, the most complex of the households we studied at Isla Cerritos. If we were to take a bottom-up approach, as Stockton (2013) does, what similarities or differences would we notice between how collective identity and status is expressed from the activity area to the scale of the site / island in a port versus an agricultural settlement?

In the case of Chichén Itzá, the elite domestic contexts described above from gallery-patio structures and smaller colonnaded rooms within larger platform groups showing the temple-altar-gallery-patio configuration (Fernández Souza 1999) appear quite different than Isla Cerritos where we do not have true patios connected to colonnaded halls, and the latter lack domestic artifacts. Another interesting contrast to examine in more detail is the apsidal structure as a non-elite house form in interior agricultural communities that does not appear on this part of the north coast during the Late and Terminal Classic period. A key question is whether the domestic contexts documented at coastal sites, including Isla Cerritos, contain more similarities or differences when architectural, burial patterns, and material culture patterns are compared than Chichén Itzá and Xuenkal during the Terminal Classic period.

As for coastal contexts, Xcambó on the north coast would be a logical comparative context because of the extensive archaeological and bioarchaeological investigations that have been conducted there (Sierra Sosa 1999; Sierra Sosa et al. 2014). As discussed in Chapter 3, Xcambó was an important north coast salt trading port dating primarily to the Late Classic period. A large burial population from this port has also been studied by Tiesler and Cucina in the same lab as the Isla Cerritos burials. Although it is a much larger site in overall size, Xcambó is comparable to Isla Cerritos in its organization and proximity to salt production.

Burials there support model of social mobility discussed here, where an influx of people from outside correlates with increased salt production and trade, as well as site construction at the end of the Early Classic period. An interesting difference is the presence at Xcambó of more archaeologically visible material expression of elite social status associated with residential groups and their spatial organization, and it would be interesting to compare the variables between household groups there compared to the less visible distinctions among residential groups at Isla Cerritos.

Cozumel Island would be a potential comparative context, as it was extensively mapped and surveyed by the Harvard-Arizona Cozumel Archaeological Project in the 1970s (Sabloff and Rathje 1975; Sierra Sosa 1994). Continuous occupation of this site through the Classic and into the Postclassic period provides a useful comparative example of coastal households from the Caribbean to compare with this case study from the north coast. While the domestic contexts have not been excavated as extensively, they have been surveyed and the sites on the island have been used to develop theoretical models for how ports of trade may be defined and functioned within in the Mesoamerican economy (Chapter 2). One interesting settlement pattern feature that is worth comparing with Isla Cerritos and Xcambó is the multi-component community structure shared by these sites where there is an area of port facilities and functions, separated from domestic areas, agricultural areas, and salt production. Also, of the four types of residential structures identified in the Harvard-Arizona survey, one that does not compare to any domestic context on Isla Cerritos is the round apsidal structure (Sabloff and Freidel 1975:380). The question of how this house form might be specifically related to agricultural subsistence or lifestyle is an interesting one. Peraza Lope's (2005) study of ceramics at San Gervasio is an

interesting comparative with regard to how island sites variously ally themselves or remain outside the sociopolitical shifts taking place on the mainland coast and interior.

Considering the exchange and cultural connections that Isla Cerritos appears to have shared with the southern Gulf coast, a comparative analysis with a Late Classic/Terminal Classic port in that region would be ideal. Unfortunately, not many of the coastal sites in this region have been excavated extensively and most that have been studied have not targeted domestic contexts specifically. The Late and Terminal Classic island settlements on the Islas de los Cerros might be the closest comparative island settlements located along an estuary also linked the Gulf coast and to an inland center at Comalcalco (Ensor 2013, 2003). Domestic ceramics and burial patterns on Isla Cerritos discussed above from the Late-Terminal Classic transition show strong similarities to patterns observed to the west along the southern Gulf coast. Comparison with the burial material, ceramics, and osteology from Isla de Sacrificios, Veracruz may augment the architectural survey data from the islands in Tabasco and provide more insights into coastal demographics. Within the coastal sites sample, it would be interesting to document if there is any evidence that household organization and architecture is one way in which different social groups are distinguished within coastal communities that are themselves more heterogeneous as different populations move in and out. This is not a pattern that is very apparent in the limited sample of domestic contexts at Isla Cerritos; however more excavation within each identified residential group will help clarify this question. Clearly there is significant potential for continued household and social archaeology at coastal ports to contribute to a more nuanced understanding of the complexities of social life within the Maya "non-elite." I hope that this study serves as a useful step forward in this effort.

APPENDIX A:

COASTAL SITES SURVEY DATA

Table A.1: Coastal Sites Settlement

Appendix A, Table A.1: (Continued)

Coastal Archaeological Sites of the Northern Yucatan Peninsula (Gulf of Mexico and Northern Caribbean)

UND: Undated EPRC: Early Formative/Pre-Classic (2000-1200 BCE) MPRC: Middle Formative/Pre-Classic (1200-300 BCE)
LPRC: Late Formative/Pre-Classic (300 BCE-300 CE) EC: Early Classic (300-600 CE) LC: Late Classic (600-800 CE)
TC: Terminal Classic (800-1100 CE) EPC: Early Phase Postclassic (1100-1400/1450 CE) LPC: Late Phase Postclassic (1400-1542 CE)
COL: Colonial Period (1542-1810 CE) PO: Principal Occupation (approximate) Unk: Unknown (i): Island site

*This table combines information from a number of different published sources, archaeological surveys, site reports, and regional syntheses from Campeche, Yucatan, Quintana Roo, and Belize. The southern Caribbean coast of Guatemala and Honduras are not included here: Ruz Lluillier (1969); Andrews (1978, 1990, 2008); Ball (1977, 1978); Eaton (1978); Sabloff and Rathje (1975); Andrews and Vail (1990); Robles and Andrews (2003); Inurreta (2004); McKillop (2005); Con U. (2005); Glover and Amador (2005); Peraza L. (2005); Witschey (2005); Guderjan (2005); Rissolo and Glover (2007); Cobos, et al. (2007, 2010); Witschey and Brown (2010); Ancona A. (2012); Cobos P. (2012); Benavides C. (2012); Ek (2012); Jiménez A. (2012); Ensor (2013); Chatters et al. (2014); Johnson (2014); Sierra S., et al. (2014)

		Periods of Occupation*										
Region	Site	UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL	PO
Tabasco and Southern Campeche Coast (Mecoacán to Champotón)	Isla Chablé (Islas de los Cerros, Tabasco) (i)				■	■	■					600 - 900 CE
	Isla Santa Rosita (Islas de los Cerros, Tabasco) (i)				■	■	■					600 - 900 CE
	Isla Dos Bocas Nuevas (Islas de los Cerros, Tabasco) (i)				■	■	■					600 - 900 CE
	Isla del Campo (Islas de los Cerros, Tabasco) (i)				■	■	■					600 - 900 CE
	Isla Boca Grande (Islas de los Cerros, Tabasco) (i)				■	■	■					600 - 900 CE
	El Bellote, Tabasco				■	■	■					600 - 900 CE
	Chiltepec, Tabasco	■										Unk
	Guerrero, Tabasco	■										Unk
	Juárez, Tabasco	■										Unk
	Madero, Tabasco	■										Unk
	El Coco, Tabasco	■										Unk
	Centla, Tabasco	■										Unk
	Bellota, Tabasco	■										Unk
	Libertad, Tabasco	■										Unk
	Alvaro Obregón, Tabasco	■										Unk
	Buenos Aires, Tabasco	■										Unk
	Concepción, Tabasco	■										Unk

Appendix A, Table A.1 (Continued)

Appendix A, Table A.1: (Continued)

Region	Site	Periods of Occupation*											
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL	PO
	Santa Rita, Tabasco	■										Unk
	Zapotal, Tabasco	■										Unk
	Las Minas, Tabasco	■										Unk
	Frontera, Tabasco	■										Unk
	San Pedro, Campeche	■										Unk
	La Veleta	■										Unk
	Nuevo Progreso 3	■										Unk
	Nuevo Progreso 2	■										Unk
	Nuevo Progreso 1	■										Unk
	San Antonio Cárdenas (Car17, Car18)	■										Unk
	Pom	■										Unk
	Cuyo Pelón	■										Unk
	Atasta 2								■	■		1200 - 1542 CE
	Atasta 1	■										Unk
	Cocoyol	■										Unk
	Casimiro	■										Unk
	La Isla	■										Unk
	Tornolargo	■										Unk
	Carapacho	■										Unk
	Santa Rita					■	■	■	■	■		600 - 1250 CE
	Los Cerrillos					■	■	■	■	■		1200 - 1542 CE
	Cerillos	■										Unk
	Champotonera	■										Unk
	Las Palmas	■										Unk
	El Jobo	■										Unk
	Las Boqueñas	■										Unk
	Car58	■										Unk
	Car59	■										Unk
	Tornolargo 3	■										Unk
	Tornolargo 4	■										Unk

Appendix A, Table A.1 (Continued)

Appendix A, Table A.1: (Continued)

Region	Site	Periods of Occupation*											
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL	PO
	Tornolargo 2	■										Unk
	El Ceibo	■										Unk
	Tornolargo 5	■										Unk
	El Zapotal	■										Unk
	Aguacatal			■		■	■	■	■	■		600 - 1250 CE
	Punta Gorda 1	■										Unk
	Punta Gorda 2	■										Unk
	Punta Julieza	■										Unk
	Car23	■										Unk
	Car24	■										Unk
	Cuyeros Puerto Rico	■										Unk
	El Panteón	■										Unk
	Rancho Xicalango	■										Unk
	Cocoyoles, Isla del Carmen (i)						■	■				600 - 1100 CE
	Cuyo, Isla del Carmen (i)					■						300 - 600 CE
	Cerro Pelón, Isla del Carmen (i)					■						300 - 600 CE
	Boca Nueva, Isla del Carmen (i)					■						300 - 600 CE
	Los Guarixés, Isla del Carmen (i)					■	■	■	■	■	■	600 - 1542 CE
	Rosario, Isla del Carmen (i)						■	■				600 - 1100 CE
	Punta Estuardo, Isla del Carmen (i)								■	■	■	1100 -1542 CE
	Paso Real, Isla del Carmen (i)	■										Unk
	Pozas de Ventura, Isla del Carmen (i)	■										Unk
	Tiestal, Isla del Carmen (i)	■										Unk
	Cuyos de Ávila					■	■	■				600 - 1100 CE
	Suma					■	■	■				600 - 1100 CE
	Punta Piedra					■	■	■				800 - 1100 CE
	Horno					■	■					100 BCE - 600 CE
	Canachos					■						100 BCE - 300 CE
	Tiradores								■	■	■	1200 - 1542 CE
	Boca de Balchakan	■										Unk
	Chumpa	■										Unk
	Punta Gorda	■										Unk

Appendix A, Table A.1 (Continued)

Appendix A, Table A.1: (Continued)

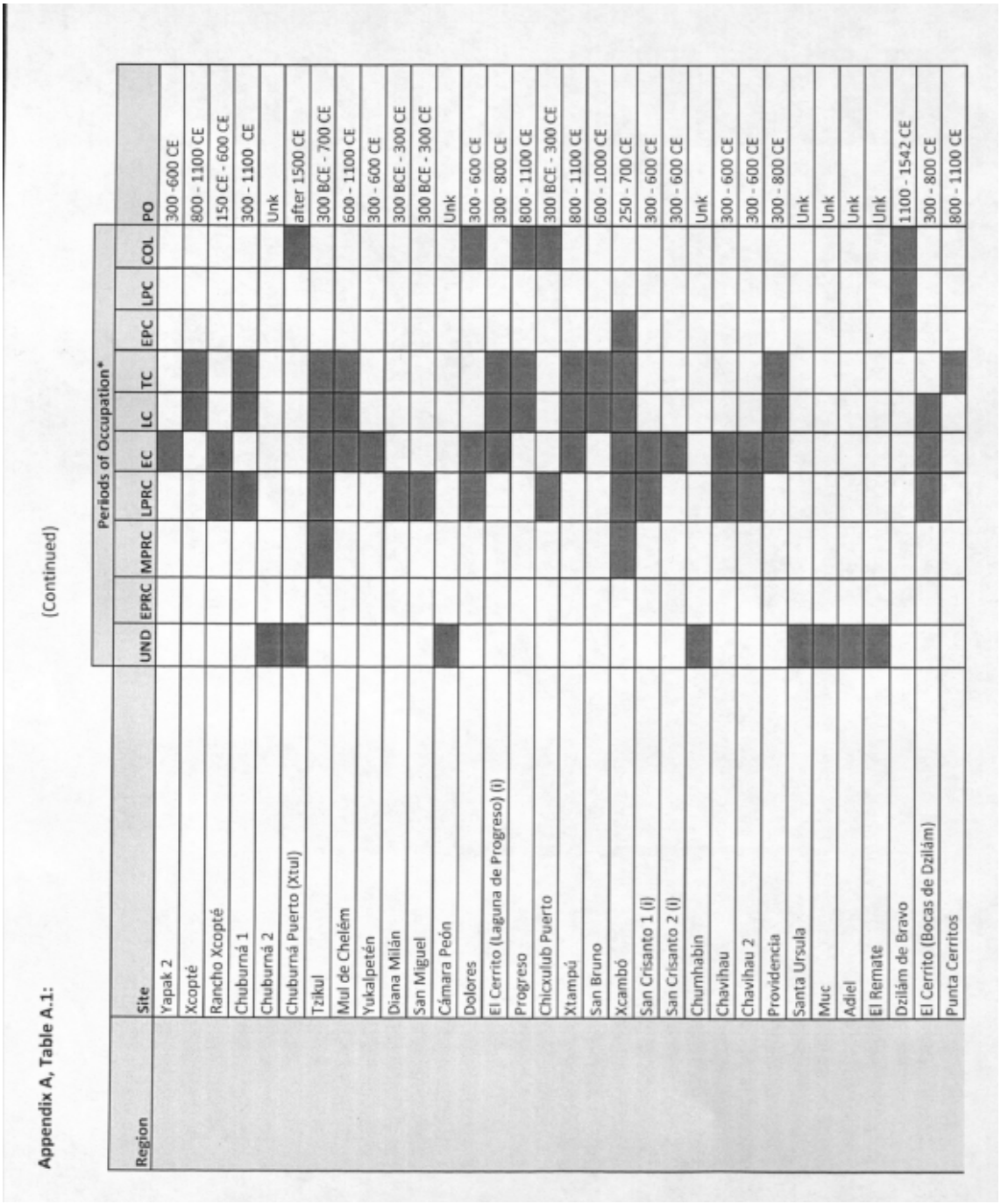
Region	Site	Periods of Occupation*											PO
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL		
	Anonal	■											Unk
	A Chivajal Grande	■											Unk
	A Largartero	■											Unk
	A Chijuajal Chico	■											Unk
	Tixchel			■	■				■	■	■		300 BCE - 300 CE, after 1200 CE
	Sabancuy						■	■					600 - 900 CE
	Polkay						■	■					600 - 900 CE
	Arenal (Km 713)				■								50 BCE - 150 CE
	San Pablito	■											Unk
	Chakanputun			■	■		■	■	■	■	■		800 - 1542 CE
	Champotón			■	■		■	■	■	■	■		800 CE to Present
	Paraíso				■		■	■	■	■	■		800 - 1542 CE
	Moquel			■	■								400 BCE - 150 CE
	Villamar 1			■	■								300 BCE - 300 CE
	Uluma	■											Unk
	Chatel	■											Unk
	Cansayab	■											Unk
	Paibox	■											Unk
	Villamar 2			■	■								300 BCE - 300 CE
Campeche Coast (Champotón to Celestún	Chuncan	■											Unk
	La Joya				■								300 BCE - 300 CE
	Haltunchén Playa	■											Unk
	Boxol	■											Unk
	Xahu	■											Unk
	Chumpich	■											Unk
	Xtun	■											Unk
	Haltunchén			■	■								400 BCE - 150 CE
	Acapulquito (Km 165)				■								300 BCE - 150 CE
	Sihoplaya					■	■	■	■	■			300 BCE - 1542 CE
	El Pedegral (Km 169)				■				■	■	■		800 - 1542 CE

Appendix A, Table A.1 (Continued)

Appendix A, Table A.1: (Continued)

Region	Site	Periods of Occupation*											PO
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL		
	Seybaplaya				■								300 BCE - 300 CE
	Queja							■					600 - 1100 CE
	Campeche							■	■	■	■		600 CE - Present
	El Cuyo (Punta Chanpetén)				■			■					600 - 1100 CE
	Dos Bocas	■											Unk
	Tenabo	■											Unk
	Yukumbalám							■					800 - 1100 CE
	Isla Jaina (i)				■		■	■					300 - 1000 CE
	Islote Nisyuc (i)	■											Unk
	Isla Piedras (i)				■		■	■					300 - 1000 CE
	Isla Uaymil (i)				■		■	■					800 - 1100 CE
	Boca de Chisahscab	■											Unk
	Yaltón	■											Unk
	Nunchukún	■											Unk
	Cojol	■											Unk
	Isla (Punta) Arenas (i)							■					800 - 1100 CE
	Canbalám (Punta Canbalam)				■		■	■					600 - 1000 CE
	Punta Lastre	■											Unk
	Holbach-Cimitún							■					800 - 1100 CE
North Coast of Yucatan	Tambor (Tambo)						■	■					600 - 1100 CE
	Xuxac							■					600 - 1100 CE
	Okmil					■							300 - 600 CE
	Cerros de Caracoles					■	■	■		■			300 BCE - 600 CE
	Petenes de Xlabarco (i)							■					800 - 1100 CE
	Cauich					■							300 - 600 CE
	Punta Piedra	■											Unk
	Sisal						■	■		■	■		800 - 1542 CE
	El Petén					■							300 - 600 CE
	El Petén 2					■							300 - 600 CE
	Yapak 1				■		■	■					300 -600 CE

Appendix A, Table A.1 (Continued)



Appendix A, Table A.1: (Continued)

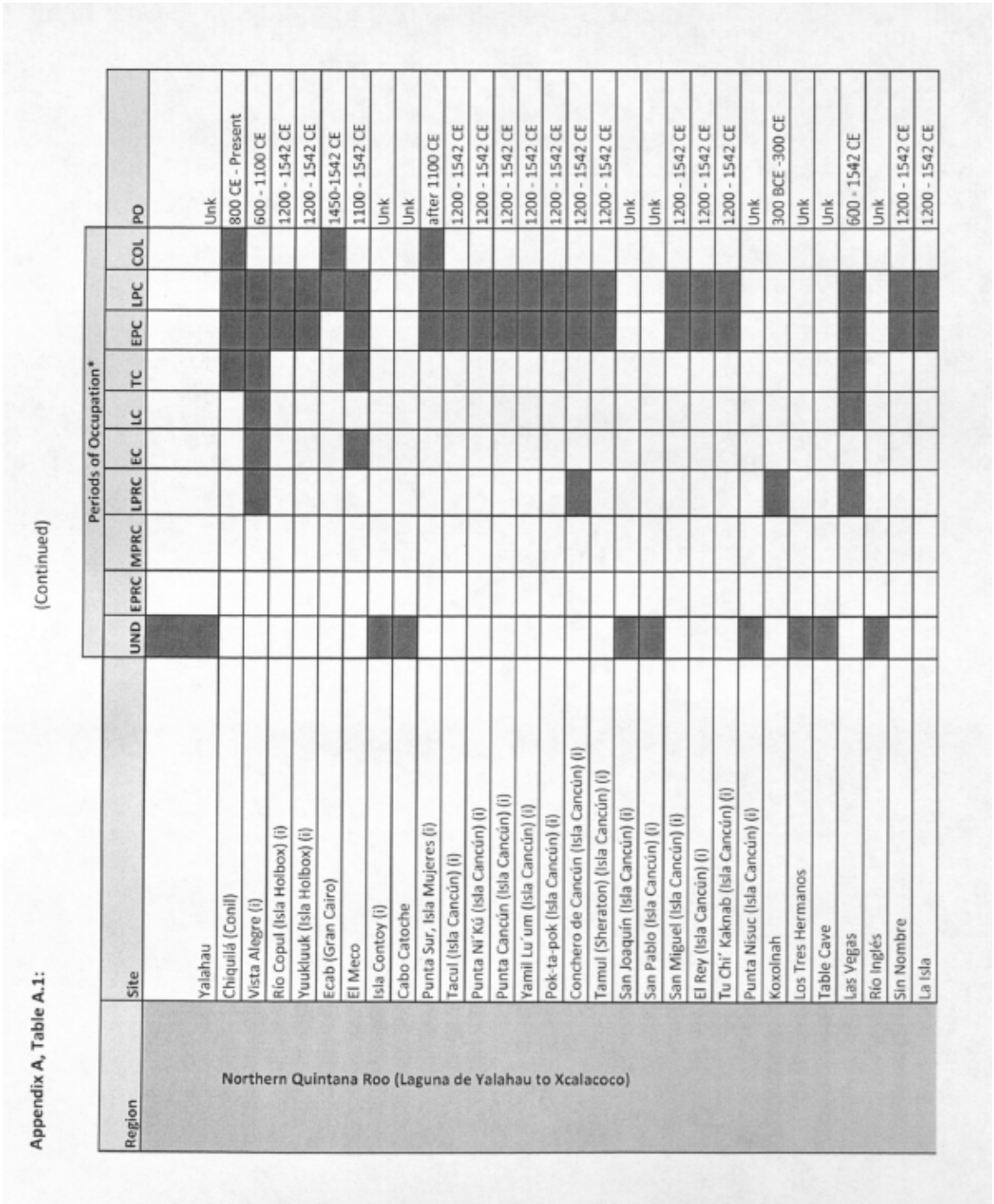
Region	Site	Periods of Occupation*											
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL	PO
	Yapak 2											300 -600 CE
	Xcopté											800 - 1100 CE
	Rancho Xcopté											150 CE - 600 CE
	Chuburná 1											300 - 1100 CE
	Chuburná 2											Unk
	Chuburná Puerto (Xtul)											after 1500 CE
	Tzikul											300 BCE - 700 CE
	Mul de Chelém											600 - 1100 CE
	Yukalpetén											300 - 600 CE
	Diana Milán											300 BCE - 300 CE
	San Miguel											300 BCE - 300 CE
	Cámara Peón											Unk
	Dolores											300 - 600 CE
	El Cerrito (Laguna de Progreso) (i)											300 - 800 CE
	Progreso											800 - 1100 CE
	Chicxulub Puerto											300 BCE - 300 CE
	Xtampú											800 - 1100 CE
	San Bruno											600 - 1000 CE
	Xcambó											250 - 700 CE
	San Crisanto 1 (i)											300 - 600 CE
	San Crisanto 2 (i)											300 - 600 CE
	Chumhabin											Unk
	Chavihau											300 - 600 CE
	Chavihau 2											300 - 600 CE
	Providencia											300 - 800 CE
	Santa Ursula											Unk
	Muc											Unk
	Adiel											Unk
	El Remate											Unk
	Dziläm de Bravo											1100 - 1542 CE
	El Cerrito (Bocas de Dziläm)											300 - 800 CE
	Punta Cerritos											800 - 1100 CE

Appendix A, Table A.1 (Continued)

Appendix A, Table A.1: (Continued)

Region	Site	Periods of Occupation*											PD
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL		
	Paso Holuntun												600 - 1100 CE
	Isla Cerritos (i)												600 - 1250 CE
	Paso del Cerro												600 - 1250 CE
	Chinalco												600 - 1250 CE
	Río Lagartos												600 - 1100 CE
	San Celso												Unk
	Holkoben 1												Unk
	Holkoben 2												Unk
	Las Coloradas												Unk
	Emal												600 - 1100 CE
	Komkobalam												Unk
	Chunchakan												Unk
	Rancho Pata												Unk
	Tixchel												Unk
	Calotmul												Unk
	San Fernando Orilla												Unk
	Isla Muertos (i)												Unk
	Alegría 1												300 BCE - 150 CE
	Alegría 2												300 BCE - 150 CE
	Alegría 3												300 BCE - 150 CE
	Alegría 4												300 BCE - 150 CE
	Angostura												Unk
	Alegría 5												Unk
	El Cuyo												300 - 1100 CE
	El Cuyo South												300 - 1100 CE
	El Cuyo East												300 - 1100 CE
	Isla Chivos (i)												Unk
	Holkoben 3												Unk
	Helicóptero												300 BCE - 300 CE
	Sacboh												300 BCE - 300 CE, after 1250 CE

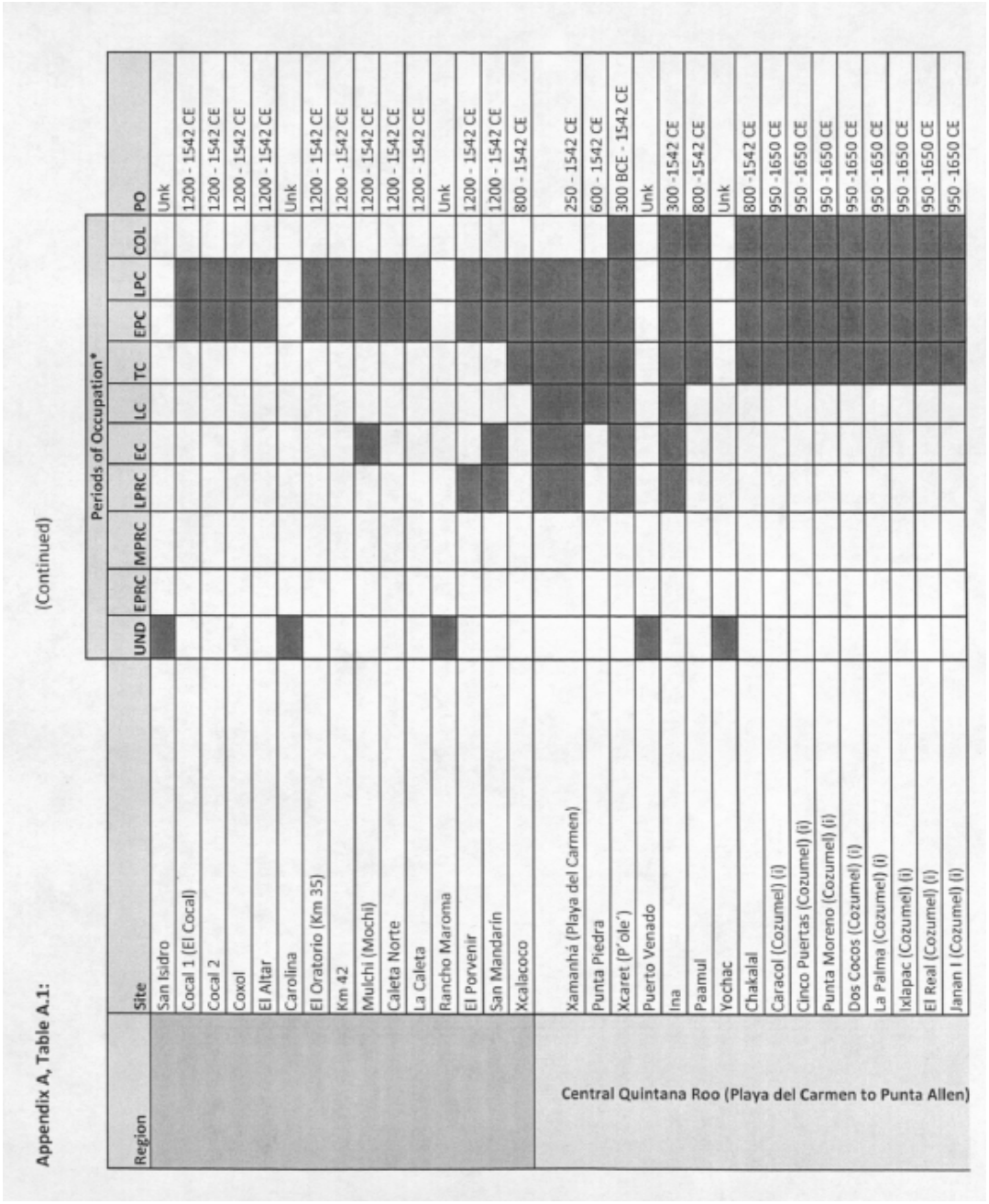
Appendix A, Table A.1 (Continued)



Appendix A, Table A.1: (Continued)

Region	Site	Periods of Occupation*												
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL	PO	
Northern Quintana Roo (Laguna de Yalahau to Xcalacoco)	Yalahau	■	■										Unk
	Chiquilá (Conil)							■	■	■	■		800 CE - Present
	Vista Alegre (i)					■	■	■	■	■			600 - 1100 CE
	Río Copul (Isla Holbox) (i)								■	■			1200 - 1542 CE
	Yuukluuk (Isla Holbox) (i)								■	■			1200 - 1542 CE
	Ecab (Gran Cairo)									■	■		1450-1542 CE
	El Meco					■		■	■	■			1100 - 1542 CE
	Isla Contoy (i)	■											Unk
	Cabo Catoche	■											Unk
	Punta Sur, Isla Mujeres (i)								■	■	■		after 1100 CE
	Tacul (Isla Cancún) (i)								■	■			1200 - 1542 CE
	Punta Ni'Kú (Isla Cancún) (i)								■	■			1200 - 1542 CE
	Punta Cancún (Isla Cancún) (i)								■	■			1200 - 1542 CE
	Yamil Lu'um (Isla Cancún) (i)								■	■			1200 - 1542 CE
	Pok-ta-pok (Isla Cancún) (i)								■	■			1200 - 1542 CE
	Conchero de Cancún (Isla Cancún) (i)				■				■	■			1200 - 1542 CE
	Tamul (Sheraton) (Isla Cancún) (i)								■	■			1200 - 1542 CE
	San Joaquín (Isla Cancún) (i)	■											Unk
	San Pablo (Isla Cancún) (i)	■											Unk
	San Miguel (Isla Cancún) (i)								■	■			1200 - 1542 CE
	El Rey (Isla Cancún) (i)								■	■			1200 - 1542 CE
	Tu Chi' Kaknab (Isla Cancún) (i)								■	■			1200 - 1542 CE
	Punta Nisuc (Isla Cancún) (i)	■											Unk
	Koxolnah				■								300 BCE -300 CE
	Los Tres Hermanos	■											Unk
	Table Cave	■											Unk
	Las Vegas				■			■	■	■			600 - 1542 CE
	Río Inglés	■											Unk
	Sin Nombre								■	■			1200 - 1542 CE
	La Isla								■	■			1200 - 1542 CE

Appendix A, Table A.1 (Continued)



Appendix A, Table A.1: (Continued)

Region	Site	Periods of Occupation*											PO
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL		
Central Quintana Roo (Playa del Carmen to Punta Allen)	San Isidro	■											Unk
	Cocal 1 (El Cocal)								■	■			1200 - 1542 CE
	Cocal 2								■	■			1200 - 1542 CE
	Coxol								■	■			1200 - 1542 CE
	El Altar								■	■			1200 - 1542 CE
	Carolina	■											Unk
	El Oratorio (Km 35)								■	■			1200 - 1542 CE
	Km 42								■	■			1200 - 1542 CE
	Mulchi (Mochi)					■			■	■			1200 - 1542 CE
	Caleta Norte								■	■			1200 - 1542 CE
	La Caleta								■	■			1200 - 1542 CE
	Rancho Maroma	■											Unk
	El Porvenir				■				■	■			1200 - 1542 CE
	San Mandarin				■	■			■	■			1200 - 1542 CE
	Xcalacoco							■	■	■			800 - 1542 CE
	Xamanhá (Playa del Carmen)				■	■	■	■	■	■			250 - 1542 CE
	Punta Piedra						■	■	■	■			600 - 1542 CE
	Xcaret (P'ole')				■	■	■	■	■	■	■		300 BCE - 1542 CE
	Puerto Venado	■											Unk
	Ina				■		■	■	■	■	■		300 -1542 CE
	Paamul							■	■	■	■		800 -1542 CE
	Yochac	■											Unk
	Chakalal								■	■	■		800 -1542 CE
	Caracol (Cozumel) (i)								■	■	■		950 -1650 CE
	Cinco Puertas (Cozumel) (i)								■	■	■		950 -1650 CE
	Punta Moreno (Cozumel) (i)								■	■	■		950 -1650 CE
	Dos Cocos (Cozumel) (i)								■	■	■		950 -1650 CE
	La Palma (Cozumel) (i)								■	■	■		950 -1650 CE
	Ixlapac (Cozumel) (i)								■	■	■		950 -1650 CE
	El Real (Cozumel) (i)								■	■	■		950 -1650 CE
	Janan I (Cozumel) (i)								■	■	■		950 -1650 CE

Appendix A, Table A.1 (Continued)

Appendix A, Table A.1: (Continued)

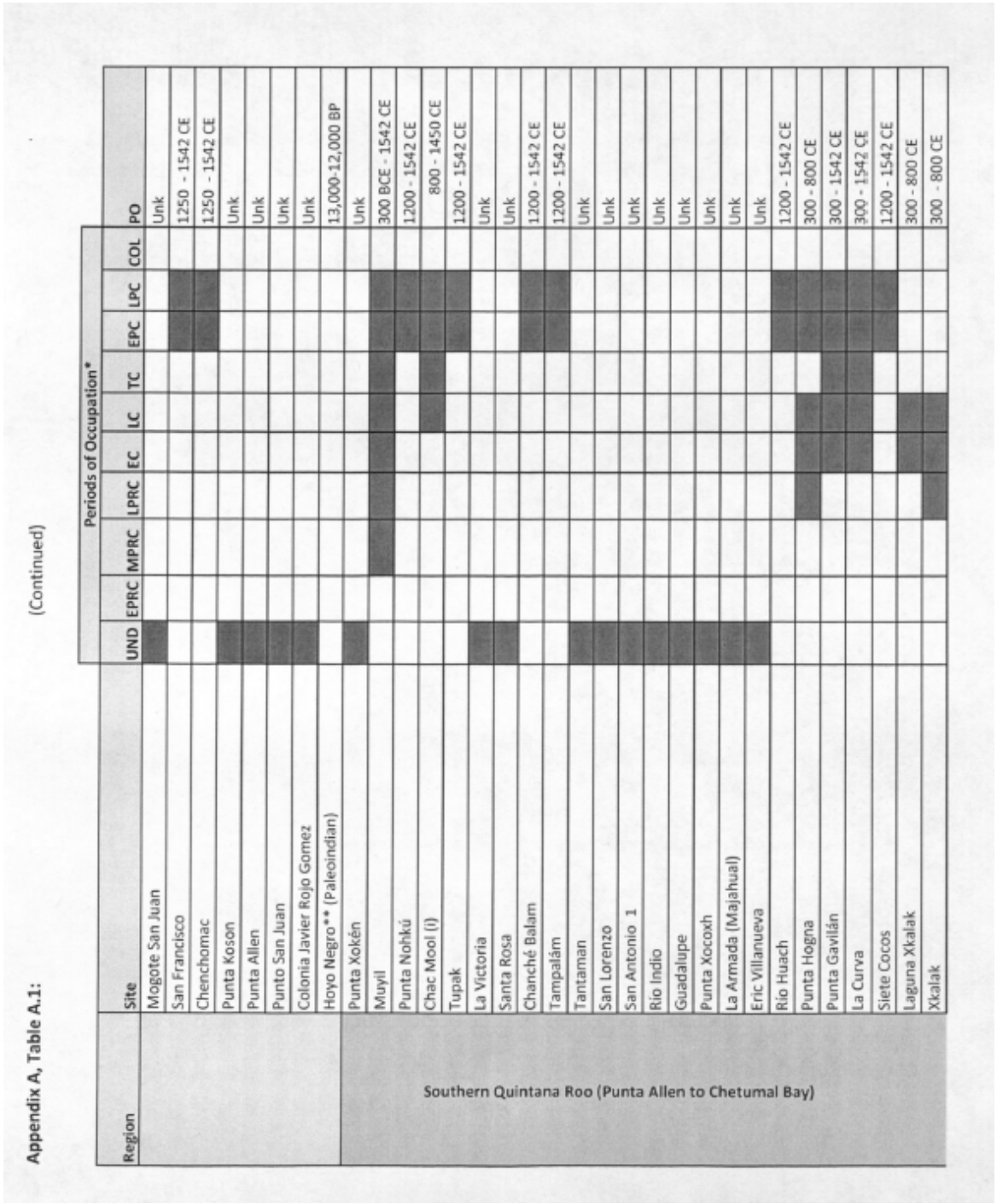
Region	Site	Periods of Occupation*										
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL	PO
	Punta Molas (Cozumel) (i)											950 -1650 CE
	Arrecife (Cozumel) (i)											950 -1650 CE
	Miramar (Cozumel) (i)											950 -1650 CE
	Punta Chiclero (Cozumel) (i)											950 -1650 CE
	San Miguel (Cozumel) (i)											300 - 1650 CE
	Eleven Mound Site (Cozumel) (i)											1100 - 1650 CE
	El Cedral (Cozumel) (i)											300 - 1650 CE
	Celerain 1 (Cozumel) (i)											1100 - 1650 CE
	Celerain 2 (Cozumel) (i)											1100 - 1650 CE
	Buena Vista (Cozumel) (i)											600 - 1650 CE
	Throne Site (Cozumel) (i)											1100 - 1650 CE
	Columbia (Cozumel) (i)											1450 - 1650 CE
	El Faro (Cozumel) (i)											1100 - 1650 CE
	San Gervasio (Cozumel) (i)											300 - 1650 CE
	Nohna (Cozumel) (i)											1100 - 1650 CE
	Santo Tomás (Cozumel) (i)											1100 - 1650 CE
	La Expedición (Cozumel) (i)											950 - 1650 CE
	Cinco Manos (Las Grecas) (Cozumel) (i)											1100 - 1650 CE
	Aguada Grande (Cozumel) (i)											300 - 1650 CE
	Niko (Cozumel) (i)											1100 - 1650 CE
	Vista del Mar (Cozumel) (i)											1100 - 1650 CE
	Al Kanab (Cozumel) (i)											1100 - 1650 CE
	Zuuk (Janan 2) (Cozumel) (i)											1100 - 1650 CE
	Expedición											Unk
	Uculha											Unk
	San Benito											Unk
	Nohmac											Unk
	San Severo											Unk
	Observatorio											Unk
	Grecas											Unk
	Chancedral (Cozumel) (i)											1100 - 1650 CE
	Och Culné (Cozumel) (i)											1100 - 1650 CE

Appendix A, Table A.1 (Continued)

Appendix A, Table A.1: (Continued)

Region	Site	Periods of Occupation*										
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL	PO
	Puhá											1250 - 1542 CE
	Punta Chile											1250 - 1542 CE
	Xaac (Ac, Ak, Ak 2)											1250 - 1542 CE
	Yalkú (Ak 1)											1250 - 1542 CE
	Akumal											800 - 1542 CE
	Pamal											Unk
	Chacalal											Unk
	Soliman Point											Unk
	Xcassel											Unk
	El Palmar											1250 - 1542 CE
	Palmar Playa											1250 - 1542 CE
	Punta Matanceros											1250 - 1542 CE
	Xelhá											250 -1542 CE
	Tancah											300 BCE - 1542 CE
	Tulum											800 - 1542 CE
	Tulum Playa											800 - 1542 CE
	Tischbactum											Unk
	Villas Boca Paila											Unk
	Islote Capecheen (i)											1250 - 1542 CE
	Paso Juana											Unk
	Xlahpak											Unk
	Boca de Paila											Unk
	Capechen											Unk
	Cayo Venado											Unk
	San Miguel de Ruz											1250 - 1542 CE
	El Caño											1250 - 1542 CE
	Chamax											1250 - 1542 CE
	Paso de la Viuda											1250 - 1542 CE
	Pistolas											1250 - 1542 CE
	Punta Chamax (Punta San Juan)											1250 - 1542 CE
	Recodo San Juan											1250 - 1542 CE
	Rancho San Juan											1250 - 1542 CE

Appendix A, Table A.1 (Continued)



Appendix A, Table A.1: (Continued)

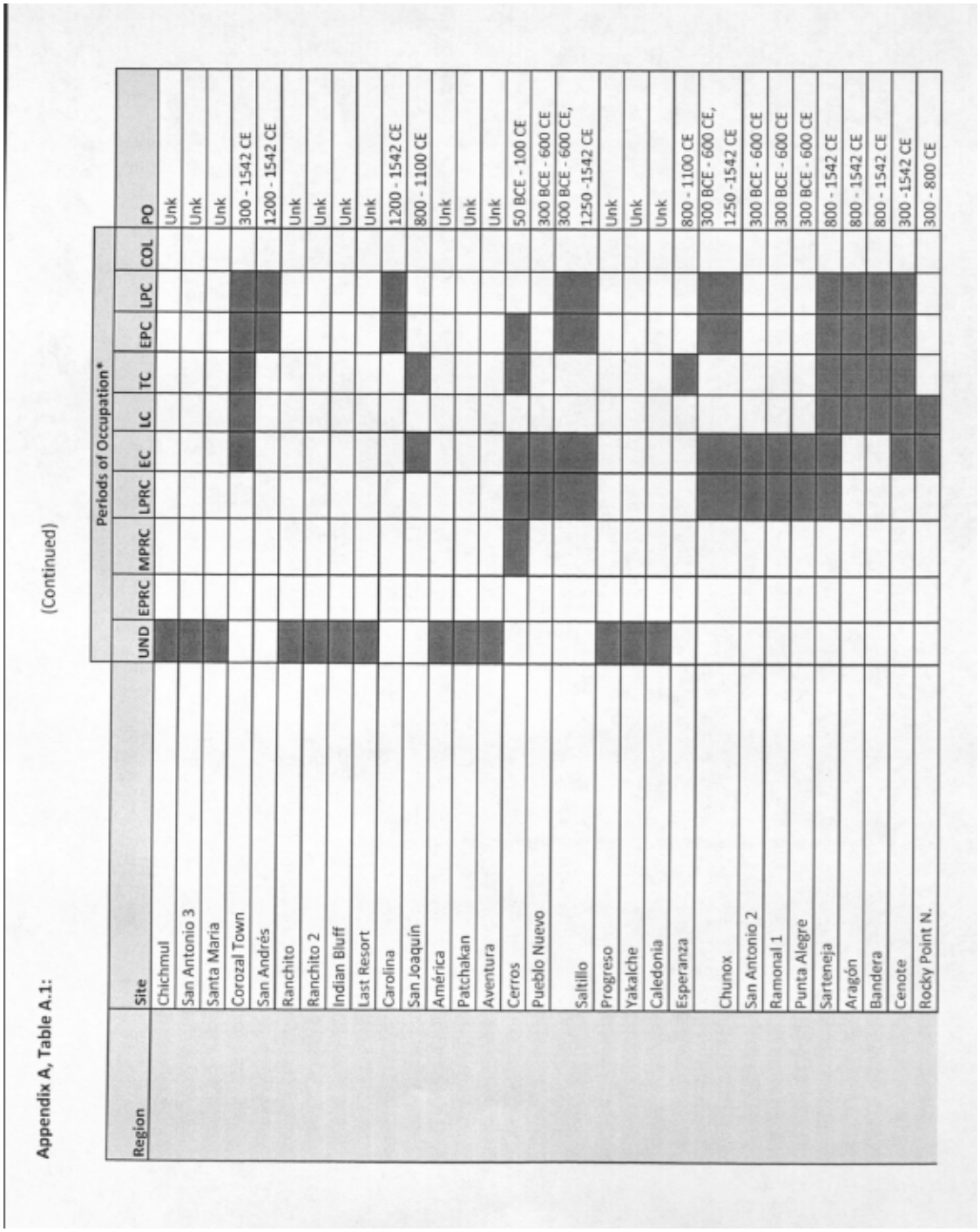
Region	Site	Periods of Occupation*											PO
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL		
Southern Quintana Roo (Punta Allen to Chetumal Bay)	Mogote San Juan	■											Unk
	San Francisco								■	■			1250 - 1542 CE
	Chenchomac								■	■			1250 - 1542 CE
	Punta Koson	■											Unk
	Punta Allen	■											Unk
	Punto San Juan	■											Unk
	Colonia Javier Rojo Gomez	■											Unk
	Hoyo Negro** (Paleoindian)												13,000-12,000 BP
	Punta Xokén	■											Unk
	Muyil			■	■	■	■	■	■	■			300 BCE - 1542 CE
	Punta Nohkú								■	■			1200 - 1542 CE
	Chac Mool (i)						■	■	■	■			800 - 1450 CE
	Tupak								■	■			1200 - 1542 CE
	La Victoria	■											Unk
	Santa Rosa	■											Unk
	Chanché Balam								■	■			1200 - 1542 CE
	Tampalám								■	■			1200 - 1542 CE
	Tantaman	■											Unk
	San Lorenzo	■											Unk
	San Antonio 1	■											Unk
	Río Indio	■											Unk
	Guadalupe	■											Unk
	Punta Xocoxh	■											Unk
	La Armada (Majahual)	■											Unk
	Eric Villanueva	■											Unk
	Río Huach								■	■			1200 - 1542 CE
	Punta Hogna				■	■	■		■	■			300 - 800 CE
	Punta Gavilán					■	■	■	■	■			300 - 1542 CE
	La Curva					■	■	■	■	■			300 - 1542 CE
	Siete Cocos						■		■	■			1200 - 1542 CE
	Laguna Xkalak					■	■						300 - 800 CE
	Xkalak				■	■	■						300 - 800 CE

Appendix A, Table A.1 (Continued)

Appendix A, Table A.1: (Continued)

Region	Site	Periods of Occupation*											PD
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL		
Northern Belize (to Belize City)	Cementerio Xkalak												1200 - 1542 CE
	Necax												300 - 600 CE
	Notechon												Unk
	Rancho Guadalupe												Unk
	Sin Nombre												Unk
	El Cocal												Unk
	Chequitaquil												Unk
	Laguna Guerrero												Unk
	La Sabana												Unk
	Nohuchmul												Unk
	San Miguel												Unk
	San Manuel												Unk
	Los Pesos (i)												Unk
	La Iglesia												Unk
	Oxtankah												300 - 1600 CE
	Isla Tamalcab (i)												Unk
	Ichpaatún												600 - 1542 CE
	Calderitas												800 - 1542 CE
	Chetumal												Unk
	El Bosque												Unk
	El Rancho												Unk
	Dimas Lopez												Unk
	Santa Rita Corozal												300 - 1542 CE
	Consejo												300 - 1542 CE
	Consejo 2												300 - 600 CE
	Consejo 3												300 - 600 CE
	Consejo 4												300 - 600 CE
	Paraíso												Unk

Appendix A, Table A.1 (Continued)



Appendix A, Table A.1: (Continued)

Region	Site	Periods of Occupation*											PO
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL		
	Chichmul												Unk
	San Antonio 3												Unk
	Santa Maria												Unk
	Corozal Town												300 - 1542 CE
	San Andrés												1200 - 1542 CE
	Ranchito												Unk
	Ranchito 2												Unk
	Indian Bluff												Unk
	Last Resort												Unk
	Carolina												1200 - 1542 CE
	San Joaquín												800 - 1100 CE
	América												Unk
	Patchakan												Unk
	Aventura												Unk
	Cerros												50 BCE - 100 CE
	Pueblo Nuevo												300 BCE - 600 CE
	Saltillo												300 BCE - 600 CE, 1250 -1542 CE
	Progreso												Unk
	Yakalche												Unk
	Caledonia												Unk
	Esperanza												800 - 1100 CE
	Chunox												300 BCE - 600 CE, 1250 -1542 CE
	San Antonio 2												300 BCE - 600 CE
	Ramonal 1												300 BCE - 600 CE
	Punta Alegre												300 BCE - 600 CE
	Sarteneja												800 - 1542 CE
	Aragón												800 - 1542 CE
	Bandera												800 - 1542 CE
	Cenote												300 -1542 CE
	Rocky Point N.												300 - 800 CE

Appendix A, Table A.1 (Continued)

Appendix A, Table A.1: (Continued)

Region	Site	Periods of Occupation*										
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL	PO
	Shipstern											300 - 1542 CE
	Dula Cay											Unk
	Condemned Point											Unk
	Condemned Point 2											Unk
	Ramonal 2											1200 - 1542 CE
	Ramonal Lookout											1250 -1542 CE
	High Bluff											Unk
	Spanish Point											Unk
	Will Edwards Lagoon											300 - 600 CE
	Pibil Luum (Northern River Lagoon)											600 - 1100 CE
	Shark Point (N.R.L)(i)											300 - 600 CE
	Northern River Lagoon South 1											300 - 600 CE
	Northern River Lagoon South 2											300 - 600 CE
	Gabriel Island (i) (N.R.L)											Unk
	Corozalito Northeast (N.R.L)											300 - 600 CE
	Santa Ana											Unk
	Maskall											Unk
	Cabbage Ridge (Salt Creek Lagoon)											Unk
	Powell's Ridge (S.C.L.)											Unk
	Marlowe Cay (S.C.L.) (i)											600 - 1100 CE
	SC7 (S.C.L.)											Unk
	Santa Elena (S.C.L.)											Unk
	Evan´s Gap (S.C.L.)											Unk
	Iguana Cay (S.C.L.) (i)											Unk
	Last Chance (S.C.L.)											Unk
	Last Change Plantation (S.C.L.)											Unk
	SC4 (S.C.L.)											Unk
	SC2 (S.C.L.)											Unk
	SC3 (S.C.L.)											Unk
	SC1 (S.C.L.)											Unk
	Carta Blanca (S.C.L.)											Unk
	Rocky Point S. (S.C.L.)											300 BCE - 600 CE

Appendix A, Table A.1 (Continued)

Appendix A, Table A.1: (Continued)

Region	Site	Periods of Occupation*										
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL	PO
Central Belize	Little Rocky Point (S.C.L.)	■										Unk
	New Boston	■										Unk
	Potts Landing (Potts Creek)					■	■					300 - 800 CE
	Potts Creek Lagoon					■	■					300 - 800 CE
	Salt Creek Estate Mounds (Potts Creek)					■	■					300 - 800 CE
	Ladyville Site 1	■										Unk
	Ladyville Site 2	■										Unk
	Chac Balám (Ambergris Cay) (i)					■	■	■				600 - 1100 CE
	San Juan (Ambergris Cay) (i)					■	■	■				600 - 1100 CE
	Ek Luum (Ambergris Cay) (i)					■	■	■				600 - 1100 CE
	Valencia (Ambergris Cay) (i)							■				800 - 1100 CE
	Franco Site (Ambergris Cay) (i)	■										Unk
	Burning Water Site (Ambergris Cay) (i)						■	■				600 - 1100 CE
	Robles Point (Ambergris Cay) (i)							■				800 - 1100 CE
	Punta Limón (Ambergris Cay) (i)						■	■				600 - 1100 CE
	Basil Jones (Ambergris Cay) (i)							■	■	■		900 - 1542 CE
	Santa Cruz (Ambergris Cay) (i)						■	■				600 - 1100 CE
	Cayo Francesca (Ambergris Cay) (i)						■	■				600 - 1100 CE
	Tres Cocos (Ambergris Cay) (i)							■				800 - 1100 CE
	Guerrero Site (Ambergris Cay) (i)	■										Unk
	San Pedro I (Ambergris Cay) (i)	■										Unk
	San Pedro Lagoon (Ambergris Cay) (i)	■										Unk
	Marco González (Ambergris Cay) (i)				■	■	■	■	■	■		600 - 1542 CE
	Cay Chapel (i)	■										Unk
	Hick's Cay (i)							■				800 - 1100 CE
	St. George's Cay (i)	■										Unk
	Calabash Cay (Turneffe Islands) (i)	■										Unk
	Northern Bogue Cay (Turneffe Islands) (i)							■				600 - 1100 CE
	Moho Cay (i)				■	■	■	■	■	■		300 - 1542 CE
	Frenchman Cay (i)	■										Unk
	Northern Lagoon	■										Unk

Appendix A, Table A.1 (Continued)

Appendix A, Table A.1: (Continued)

Region	Site	Periods of Occupation*											
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL	PO
	Southern Lagoon	■										Unk
	Cave Site					■	■					600 - 800 CE
	Gales Point	■										Unk
	Oshon Site	■										Unk
	Kakalché (Colson Point)				■	■	■	■	■	■		600 - 1542 CE
	Watson's Island (Colson Point) (i)				■	■	■	■	■	■		600 - 1542 CE
	Pamona	■										Unk
	Mayflower	■										Unk
	Kendall	■										Unk
	Regalia	■										Unk
	Maintzunun	■										Unk
	Tau Witz	■										Unk
	South Water Cay (i)	■										Unk
	Placencia Lagoon Site (Rum Point Airstrip)					■						300 - 600 CE
	Dalton Elley (Placencia Lagoon)						■	■				600 - 800 CE
	Indian Hill 2 (Placencia Lagoon)					■	■	■				300 - 800 CE
	Traffic Island (Placencia Lagoon) (i)					■	■	■				300 - 800 CE
	Placencia Lagoon (PL-8)					■	■	■				300 - 800 CE
	Point Placencia (Placencia Lagoon)								■	■		1200 - 1542 CE
	Santa Maria Creek (Placencia Lagoon)	■										Unk
	Maya Beach Airstrip (Placencia Lagoon)	■										Unk
	Pedro Rubio (Roller Home) (Placencia Lagoon)					■	■	■				300 - 800 CE
	Indian Hill 1 (George Elley Site) (Placencia Lagoon)						■	■				600 - 800 CE
	Snorkel Site (Placencia Lagoon)							■				600 - 800 CE
	Big Creek (Placencia Lagoon)	■										Unk
	Bevier Site (Placencia Lagoon)						■	■				600 - 800 CE
	Hideaway Site (Placencia Lagoon)						■	■				600 - 800 CE
	Placencia Cay							■	■	■		600 - 1542 CE
	False Cay							■				800 - 1100 CE
	Tobacco Range (i)	■										Unk

Appendix A, Table A.1 (Continued)

Appendix A, Table A.1: (Continued)

Region	Site	Periods of Occupation*											
		UND	EPRC	MPRC	LPRC	EC	LC	TC	EPC	LPC	COL	PO
Southern Belize	Gladden Cay (i)											1200 - 1542 CE
	Laughing Bird Cay (i)											Unk
	Funk Cay (i)											1200 - 1542 CE
	Quamina Cay (i)											1200 - 1542 CE
	Cary Cay (i)											Unk
	Wippari Cay (i)											Unk
	Plantation Creek Lagoon											600 - 800 CE
	Indian Hill Lagoon											600 - 800 CE
	John Sprang Property											600 - 800 CE
	Seven Hills											600 - 800 CE
	Pork and Doughboy Point											600 - 800 CE
	Lower Rio Grande											Unk
	Sarstún											Unk
	Ranguana Cay (i)											1200 - 1542 CE
	Wild Cane Cay (i)											600 - 1250 CE
	Frenchman's Cay (i)											600 - 1100 CE
	Tiger Mound (i)											Unk
	Stuart Cay (i)											Unk
	Green Vine Snake (i)											Unk
	Nicholas Cay (i)											600 - 800 CE
	Hunting Cay (NE Sapodilla) (i)											1200 - 1542 CE
	Tom Owen's Cay (i)											1200 - 1542 CE
Total Sites		531	238	0	17	90	107	126	127	161	158	58	**1 Late Pleistocene
Percent % of Total Sites of Known Date		X	X	0	6	31	36	43	43	55	54	20	

APPENDIX B:

CERAMIC CHRONOLOGY AND TABULATION, ICAP 2010

Table B.1: Ceramic Chronology Structure 19

PROYECTO ARQUEOLÓGICO ISLA CERRITOS, YUCATÁN

TEMPORADA 2010

CRONOLOGÍA CERÁMICA

ESTRUCTURA 19

CRONOLOGÍA COMPLEJO - HORIZONTE	GRUPO	TIPO	VARIEDAD	CAPA					TOTAL POR TIPO	TOTAL POR GRUPO	TOTAL POR COMPLEJO	
				SUP	I	II	III	IV				
COLONIAL 1542 d.C. - 1810 d.C.	Yuncu	Yuncu sin engobe	Yuncu		1	1			2	2	6	0.045%
	Sin decoración	Caña miel-cafetoso	No especificada			1			1	1		
	No designado rojo colonial	No designado rojo	No especificada		1				1	1		
		No identificado (vidriado, Colonial)				1	1		2	2		
POSTCLÁSICO 1100 d.C. - 1542 d.C. TOMBURRO (TASES)	Mama	Mama rojo	Cancun		4	26	8	1	39	80	688	5.214%
		Mama rojo	Mama		3	27	7	1	38			
		Mama rojo	Pasta roja		1				1			
		Kanlum plano-relieve	Kanlum			1			1			
		Papacal inciso	Papacal					1	1			
	Navulá	Navula sin engobe	Pasta rojiza			2	2	2	6	458		
		Navula sin engobe	Navula		75	184	114	34	407			
		Yacman estriado	Yacman		15	11	19		45			
	Matillas	Chilapa gubiado inciso	Chilapa		1	5			6	99		
		Matillas naranja	Matillas		27	31	26		84			
		Nacajuca negro sobre naranja	Nacajuca			3			3			
		Villahermosa inciso	Villahermosa			4	2		6			
	Panabá	Thul aplicado	Thul			2			2	3		
		Thul aplicado	No especificada				1		1			
	Cunduacán	Cunduacan naranja	Cunduacan			2			2	2		
	Miscelánea	No identificado	Postclásico Tardío/Colonial tecomates, ollas		4	21	18		43	43		
		No identificado (Postclásico)				3			3	3		

Appendix B, Chart B.1

CLÁSICO TERMINAL 800 d.C. - 1100 d.C. JOTUTO (CHEPECH-SOTUTA)	Tinum	Cerro Montoso	No especificada				2		2	3	8549	64,78%
		Tinum rojo sobre canela	No especificada			1			1			
	San Juan (Plomizo)	No identificado	Gubiada		1				1	1		
	Tohil (Plomizo)	Malacatan modelado	Malacatan		2	3	2		7	10		
		Tohil plomizo	Tohil				1		1			
		Tumbador inciso	Tumbador			1	1		2			
	Jilón	Jilon liso	Jilon		5	32	11	5	53	63		
		Jilon liso	No especificada		1	9			10			
	No designado	Especial Laguna de Términos	No especificada		2	6		1	9	9		
	Kukulá	Kukulá crema	Kukulá (pasta crema)	1	611	1060	403	40	2115	4406		
		Kukulá crema	Pasta compacta		1	1	1		3			
		Kukulá crema	Pasta roja	1	226	490	156	31	904			
		Pencuyut inciso	Acanalada			3	2		5			
		Pencuyut inciso	Pencuyut				2		2			
		Pencuyut inciso	Impresion de uña				1		1			
		Pencuyut inciso	Pasta roja		1	2			3			
		Xcanchacán negro sobre crema	Incisa		2	2	4	2	10			
		Xcanchacán negro sobre crema	Xcanchacán		192	299	277	41	809			
		Xcanchacán negro sobre crema	Pasta roja		129	221	161	42	553			
		No identificado	No identificada			1			1			
	Silhó	Cumpich inciso	Cumpich		3	1	2		6			
		Kilikan compuesto	Kilikan		3	9	14		26			
		Kilikan compuesto	Policromo			2	1		3			
		Koliha bicromo	Koliha		1	1	3		5			
		Pocboc gubiado inciso	Pocboc		9	32	30	2	73			
		Silho naranja	Silho		97	336	283	23	739			
		Silho naranja	Pasta cafetosa		3	9	6		18			
		Yalton negro sobre naranja	Yalton		17	53	103	12	185			
		No identificado	No identificada		1	1	2		4			

Appendix B, Chart B.1 (Continued)

Altar	Altar naranja	Altar		1	30	18	2	51	63				
	Trapiché inciso	Trapiché			3	1	1	5					
	Tumba negro sobre naranja	Tumba		1	4	2		7					
Balancán	Balancan naranja	Balancan		9	12	3	5	29	32				
	Provincia plano-relieve	Provincia		1		1		2					
	Palizada negro sobre naranja	Palizada			1			1					
Yalcox	Yalcox negro	Yalcox			5	2		7	7				
Pisté	Espita aplicado	Espita		3	5	2		10	1856				
	Pisté estriado	Pisté		342	730	412	52	1536					
	Pisté estriado	Pasta compacta		7				7					
	Pisté estriado	Pasta roja		1	2			3					
	Sisal sin engobe	Sisal		50	162	65	14	291					
	Sisal sin engobe	Pasta roja		8	1			9					
Dzitas	Balam Canché rojo sobre pizarra	Balam Canché			2			2	1033				
	Balantun negro sobre pizarra	Balantun	1	29	162	233	3	428					
	Chacmay inciso	Chacmay		8	14	5		27					
	Dzitas pizarra	Dzitas		65	309	167	6	547					
	Dzitas pizarra	No identificada			2			2					
	Timak compuesto	Incisa				1		1					
	Timak compuesto	Timak				1		1					
	No identificado	No identificada		8	15	2		25					
Maquina	Maquina café	Maquina		1	1	1		3	3				
Cambio	Cambio sin engobe	Cambio		1	3			4	4				
Maxcanu	Maxcanu bayo	Gris blanco			1			1	1				
Dzibiac	Chan Kom negro sobre rojo	Chan Kom		1		1		2	125				
	Dzibiac rojo	Dzibiac		14	68	36	2	120					
	Holtun gubiado inciso	Holtun		1				1					
	Xuku inciso	Xuku			1	1		2					
Dzitya	Dzitya negro	Dzitya			2			2	3				
	Expedz inciso	Expedz				1		1					

Appendix B, Chart B.1 (Continued)

	Ticul	Tabi gubiado inciso	Tabi		1	1			2	16					
		Ticul pizarra delgada	Ticul			2	11		13						
		No identificado	No identificada			1			1						
	Muna	Akil impreso	Akil				2		2						
		Chumayel rojo sobre pizarra	Engobe café claro			1			1						
		Muna pizarra	Chemax		4	11	2		17						
		Muna pizarra	Engobe café claro		2				2						
		Muna pizarra	Muna		29	121	27	1	178	238					
		Muna pizarra	Engobe negro		1				1						
		Sacalum negro sobre pizarra	Engobe café claro			1			1						
		Sacalum negro sobre pizarra	Sacalum		5	25	2	1	33						
		Tekit inciso	Tekit		2		1		3						
	Vista Alegre	Vista Alegre estriado	Apalillada				1		1	750					
		Vista Alegre estriado	Acanalada			1			1						
		Vista Alegre estriado	Chen Rio		1	8	3		12						
		Vista Alegre estriado	Vista Alegre		168	393	158	10	729						
		Vista Alegre estriado	No especificada		2	2	3		7						
	Punta Piedra	Punta Piedra crema	Punta Piedra			1		1	2	2					
	Poza Rica	Poza Rica café	Poza Rica			3			3	3					
	Teabo	Teabo rojo	Teabo		41	111	18	1	171	173					
		Teabo rojo	Incisa		1	1			2						
	Nimun	El Arenal estriado	El Arenal			10			10	69					
		Nimun café	Nimun		8	32	13	1	54						
		Tacunché aplicado	Tacunché						0						
		Tlokolob inciso	Ranurada			2	3		5						
	Baca	Baca rojo	Baca		27	97	25	1	150	150					
	Dzitbalché	Dzitbalché bayo fino	Dzitbalché		2	3	1		6	6					
	Saxché	Saxché policromo	Saxché			1			1	2					
		Saxché naranja	No especificada			1			1						
	Infierno	Infierno negro	Infierno			1			1	2					
		Infierno negro	No especificada			1			1						
CLÁSICO TARDÍO 700 d.C. - 900 d.C. CHACPEL (TEPEU, CEHPECH) (CANBALAM)											1969	14.92%			

Appendix B, Chart B.1 (Continued)

Tinaja	Tinaja rojo	Tinaja				1		1	1		
Tenabo	Tenabo rojo	Tenabo		1	21	3		25			
Koxolac	Koxolac estriado	Koxolac		7	10	2		19	80		
	Providencia alisado	Providencia		12	39	9	1	61			
Encanto	Encanto estriado	Yokat		1	10			11	141		
	Encanto estriado	Encanto		29	67	30	3	129			
	Encanto estriado	Pasta rojiza (Coba y sur de Quintana Roo)			1			1			
No designado	Dos caras estriado	Dos Caras		1	11	4		16	16		
Cetelac	Cetelac desgrasante vegetal	Cetelac		17	17	2		36	36		
Acapulquito	Acapulquito sin engobe	Acapulquito		1	4	2		7	7		
Chencan	Chencan café sobre naranja	Chencan			3			3	3		
Nilum	Nilum sin engobe	Nilum		1	9			10	10		
Chablekal	Chablekal gris	Chablekal		8	23	13	1	45	52		
	Chicxulub inciso	Chicxulub		1	6			7			
Zayozal	Zayozal negro	Zayozal		2	3	1		6	6		
Arena	Arena rojo	Arena		11	16	3		30	32		
	Arena rojo	Xcanha			2			2			
Becanchen	Becanchen café	Becanchen		1	1			2	2		
No designado (Usumacinta Media)	Chinikiha negro fino	No especificada			1			1	4		
	Cafe fino con engobe bayo	No especificada				1		1			
	No identificado	No especificada			1	1		2			
Miscelánea	Especial Tardío	No especificada			2			2	5		
	Foraneo	Region Grijalva-Chontalpa			3			3			
	No identificado (Policromo)				1			1			
	No identificado (Gris fino)				6			6	9		
	No identificado (Usumacinta Bajo)				1			1			
	No identificado (Tepeu)				1			1			

CLÁSICO TEMPRANO 300 d.C. - 700 d.C. TROMPILLO (COCHUAH, TZAKOL)	Chubumá	Catoche pintura chorreada	Catoche			1			1	1	351	2.660%
	Holactun	Tikinmul compuesto	Tikinmul		1	1			2	2		
	Maxcanu	Maxcanu bayo	Maxcanu			1	2		3	5		
		Maxcanu bayo	Gris blanco			2			2			
		Oxil sin engobe	Oxil		12	6	6	2	26	68		
		Yalchak estriado	Yalchak		12	27	3		42			
	Tituc	Tituc naranja policromo	Bandas - Camichín		13	46	11		70	99		
		Tituc naranja policromo	Bandas		1	3			4			
		Tituc naranja policromo	Camichín		1	1			2			
		Tituc naranja policromo	Tituc		3	17	3		23			
	Timucuy	Timucuy naranja policromo	Chac				2		2	4		
		Timucuy naranja policromo	Timucuy			2			2			
	Águila	Aguila naranja	Aguila		1	9	4		14	32		
		Aguila naranja	No especificada			6	8	1	15			
		Aguila naranja	No especificada (gubiada)			1	1		2			
		Dos arroyos naranja policromo	Dos arroyos			1			1			
	Batres	Batres rojo	Batres		1	10	3		14	14		
	Balanza	Balanza negro	Balanza			1	1		2	2		
	Huachinango	Fango bicromo inciso (Ek Balam)	Fango		1	10	5		16	33		
		Huachinango bicromo inciso	Huachinango		2	11	1	3	17			
	Shangurro	Shangurro rojo sobre naranja	Shangurro		2		4		6	8		
		Valladolid bicromo inciso	Valladolid			2			2			
	Saban	Saban burdo	Becoob		8	26	5	2	41	46		
		Saban burdo	Saban		3	2			5			
	Tancah	Tancah burdo	Tancah		7	13	10		30	30		
	Xanabá	Xanabá rojo (Chicanel)	Xanabá			4	3		7	7		

PRECLÁSICO TARDÍO 100 a.C. - 300 d.C. XAUMITO (CHICANEL, NABANCHÉ TARDÍO)	Cetelac	Cetelac desgrasante vegetal	Cetelac		28	56	7	2	93	100	244	1.849%
		Cetelac desgrasante vegetal	Xcan			3	2	2	7			
	Dzilam	Dzilam verde inciso	Dzilam		4	5	10		19	19		
	Sombra	Expedición estriado (Preclásico Superior)	Expedición			5	1		6	40		
		Sombra burdo	Sombra		7	10	14	3	34			
	Flor	Flor crema	Flor			1			1	1		
	Zotz	Zotz negro a crema inciso	Zotz		2	2	1	1	6	7		
		No identificado	No identificada					1	1			
	Unto	Unto negro sobre estriado	Unto			10			10	10		
	Habana	Habana Club inciso-punzado	Habana			2	4		6	13		
		Habana Club inciso-punzado	No especificada			2	5		7			
	Polvero	Polvero negro	Polvero				1		1	2		
		Polvero negro	No especificada			1			1			
	Carolina	Carolina bicromo inciso	Carolina		2				2	2		
	Sierra	Laguna Verde inciso	Sierra			1			1	25		
		Laguna Verde inciso	No especificada			1			1			
		Sierra rojo	No especificada		8	5	5		18			
		Sierra rojo	Engobe claro			1	2		3			
		Sierra rojo	Flakey				1		1			
		Sierra rojo	Society Hall				1		1			
	Saban	Chancenote estriado	Chancenote			5	3	2	10	15		
		Chancenote estriado	Chiquilá		2	3			5			
	Achiotes	Sapote estriado	Sapote			2	1		3	3		
	Chunhinta	Chunhinta negro	Chunhinta			1			1	1		
		No identificado (Chicanel Preclasico Tardio)			2	1	3		6	6		
		Dzudzuquil crema a bayo	Dzudzuquil		2	1	1		4			

Appendix B, Chart B.1 (Continued)

Appendix B, Chart B.1 (Continued)

PRECLÁSICO MEDIO	Dzudzuquil	Dzudzuquil crema a bayo	No identificada (Estriada)		1					1									
400 a.C. - 100 a.C.		Dzudzuquil crema a bayo	Engobe café claro		1					1		7			10	0.076%			
(NABANCHÉ TEMPRANO)		Bakxoc negro sobre crema a bayo	Bakxoc		1					1									
	Joventud	Joventud rojo	Joventud			2	1			3		3							
		No identificado (Preclasico Medio)			1	1				2		2			2	0.015%			
				3	2506	5849	3098	363		11819		10735			11819	89.57%			
		Miscelánea foráneos			1	5	2			8									
		Miscelánea foráneos (Pasta fina)			1	3				4									
		No identificados (Pasta fina erosionada)				12				12									
		No identificados (Pizarra erosionada)			39	54	7	5		105		1377			1377	10.435%			
		No identificados (Estriados erosionados)			6	2				8									
		No identificados (Erosionados)			295	530	83	17		925									
		No identificados			60	178	72	5		315									
				0	402	784	164	27		1377					1377	10.435%			

TOTAL	3	2908	6633	3262	390		13196		12112	13196	100.0%

Artefactos ceramicos (tejos, pesas de red, "canicas", cuentas, etc.)	0	5	19	9	1	34	

Table B.2: Ceramic Chronology Patio (West Patio Group)

PROYECTO ARQUEOLÓGICO ISLA CERRITOS, YUCATÁN

TEMPORADA 2010

CRONOLOGÍA CERÁMICA

PATIO Y POZO 28

PERIODO COMPLEJO - HORIZONTE	GRUPO	TIPO	VARIEDAD	PATIO CAPAS				SUB TOTAL	POZO 28 CAPAS				SUB TOTAL	TOTAL POR TIPO	TOTAL POR GRUPO	TOTAL POR COMPLEJO	
				I	II	III	IV		I	II	III	IV					
POSTCLÁSICO	Mama	Mama rojo	Cancun	1	2	3		6					0	6	6		
1100 d.C. - 1542 d.C.	Navula	Navula sin engobe	Navula	1		6		7		1			1	8	8	16	0.486%
TOMBURRO (TASES)	Paxcaman	Paxcaman rojo	Paxcaman			2		2					0	2	2		
	Jilon	Jilon liso	Jilon	5	11	7	1	24				1	1	25	25		
	No designado	Especial Laguna de Terminos			7			7					0	7	7		
	Kukula	Kukula crema	Pasta crema			3	1	4	1	4			5	9	343		
CLÁSICO TERMINAL		Kukula crema	Pasta roja	4		2	1	7	6	8			14	21			
800 d.C. - 1100 d.C.		Pencuyut inciso	Impresion de uña		1			1					0	1			
JOTUTO		Pencuyut inciso	No especificada	1		1		2					0	2			
(CEHPECH-SOTUTA)		Xcanchacan negro sobre crema	Incisa			1		1					0	1			
		Xcanchacan negro sobre crema	Xcanchacan	35	12	38		85		1	1		2	87			
		Xcanchacan negro sobre crema	Pasta roja	54	68	81	5	208		11	3		14	222			
	Silho	Champan rojo sobre naranja	Champan	2	1	10	1	14					0	14	200		
		Cumpich inciso	Cumpich	1				1					0	1			
		Cumpich inciso	Pintura negra			1		1					0	1			
		Kilikan compuesto	Kilikan		1	1		2					0	2			
		Kilikan compuesto	Policroma			1		1					0	1			
		Pocboc gubiado inciso	Pintura negra		1			1					0	1			
		Pocboc gubiado inciso	Pocboc	1		1		2					0	2			
		Silho naranja	Silho	19	42	61		122	1	30	9	1	41	163			
		Yalton negro sobre naranja	Yalton	1	2	9		12		3			3	15			
	Balancan	Balancan naranja	Balancan			1		1			1		1	2	5		
		Provincia plano relieve	Provincia			3		3					0	3			
	Altar	Altar naranja	Altar			8	1	9			2	1	3	12	20		
		Trapiche inciso	Trapiche			3		3					0	3			
		Tumba negro sobre naranja	Tumba			4		4				1	1	5			
	Achiotes	Achiotes sin engobe	No especificada			20		20					0	20	33		
		Sapote estriado	Sapote		3	4	4	11					0	11			
		Especial modelado	No especificada			1		1					0	1			
		Torro gubiado inciso	Torro			1		1					0	1			
	Sisal	Espita aplicado	Espita	1				1					0	1	184		
		Piste estriado	Piste	19	23	85	3	130		48	1	1	50	180		1079	32.80%

Appendix B, Chart B.2

PROYECTO ARQUEOLÓGICO ISLA CERRITOS, YUCATÁN

TEMPORADA 2010

CRONOLOGÍA CERÁMICA

PATIO Y POZO 28

PERIODO COMPLEJO - HORIZONTE	GRUPO	TIPO	VARIEDAD	PATIO CAPAS				SUB	POZO 28 CAPAS				SUB	TOTAL	TOTAL	TOTAL
				I	II	III	IV	TOTAL	I	II	III	IV	TOTAL	POR TIPO	POR GRUPO	POR COMPLEJO
CLÁSICO TARDÍO 700 d.C. - 900 d.C. CHACPEL (CEHPECH, TEPEU, CANBALAM)		Sisal sin engobe	Sisal	2		1		3					0	3		
	Dzitas	Balam Canche rojo sobre pizarra	Balam Canche		1			1			1		1	2	252	
		Balantun negro sobre pizarra	Balantun	18	41	109	15	183		22	6	3	31	214		
		Chacmay inciso	Ranurada-incisa					0		1			1	1		
		Dzitas pizarra	Dzitas	3		18	1	22	1	4	2		7	29		
		Timak compuesto	Timak	1	2	1	1	5		1			1	6		
	Maquina	Maquina cafe	Maquina			1	1	2					0	2	2	
	Cambio	Cambio sin engobe	No especificada					0				2	2	2	2	
		No identificado (Clasico Terminal)					6	6					0	6	6	
	Dzibiac	Chan Kom negro sobre rojo	Chan Kom			2		2			1		1	3	51	
		Dzibiac rojo	Dzibiac	5	5	24	6	40		1	4	1	6	46		
		Dzibiac rojo	Engobe crema			1		1					0	1		
		Especial engobe interior rojo y engobe exterior crema				1		1					0	1		
	Tinaja	Tinaja rojo	Tinaja					0			1		1	1	1	
	Dzitya	Dzitya negro	Dzitya			2	4	6					0	6	12	
		Ekpedz inciso	Ekpedz			1	4	5					0	5		
		Ekpedz inciso	No especificada				1	1					0	1		
	Acapulquito	Acapulquito sin engobe	Acapulquito				1	1					0	1	10	
		Paxyan negro sobre gris	Paxyan				5	5					0	5		
		Yakatzib estriado	Yakatzib			3	1	4					0	4		
	Chencan	Chencan cafe sobre naranja	Chencan			15	2	17			9		9	26	26	
	Ticul	Ticul pizarra delgada	Engobe cafe			1		1					0	1	19	
		Ticul pizarra delgada	Ticul		2	10	3	15				2	2	17		
		Xul inciso	Xul			1		1					0	1		
	Muna	Muna pizarra	Chemax			12		12					0	12	111	
		Muna pizarra	Engobe cafe claro			13	10	23					0	23		
		Muna pizarra	Muna			2		2			5		5	7		
		Muna pizarra	No especificada			2	2	4					0	4		
		Sacalum negro sobre pizarra	Chemax			3	13	16					0	16		
		Sacalum negro sobre pizarra	Engobe cafe claro		2	10	6	18					0	18		

Appendix B, Chart B.2 (Continued)

PROYECTO ARQUEOLÓGICO ISLA CERRITOS, YUCATÁN

TEMPORADA 2010

CRONOLOGÍA CERÁMICA

PATIO Y POZO 28

PERIODO COMPLEJO - HORIZONTE	GRUPO	TIPO	VARIEDAD	PATIO CAPAS				SUB	POZO 28 CAPAS				SUB	TOTAL	TOTAL	TOTAL
				I	II	III	IV	TOTAL	I	II	III	IV	TOTAL	POR TIPO	POR GRUPO	POR COMPLEJO
		Sacalum negro sobre pizarra	Sacalum			21	6	27			3		3	30		
		Tekit inciso	Tekit				1	1					0	1		
	Yalcox	Yalcox negro	Yalcox			1		1					0	1	1	
	Jalpa	Jalpa negro	Jalpa				1	1					0	1	1	
	Vista Alegre	Vista Alegre estriado	Apaliilada			8		8					0	8	329	
		Vista Alegre estriado	Chen Rio	7	23	100	20	150			14	4	18	168		
		Vista Alegre estriado	Delgada				17	17					0	17		
		Vista Alegre estriado	Vista Alegre	9	5	80	31	125	1	3	7		11	136		
	Chum	Oxkutzcab aplicado	Oxkutzcab					0		1			1	1	8	
		Yokat estriado	Cuello interior			1		1					0	1		
		Yokat estriado	Yokat			4	2	6					0	6		

PROYECTO ARQUEOLÓGICO ISLA CERRITOS, YUCATÁN

TEMPORADA 2010

CRONOLOGÍA CERÁMICA

PATIO Y POZO 28

PERIODO COMPLEJO - HORIZONTE	GRUPO	TIPO	VARIEDAD	PATIO CAPAS				SUB	POZO 28 CAPAS				SUB	TOTAL	TOTAL	TOTAL	
				I	II	III	IV	TOTAL	I	III	III	IV	TOTAL	POR TIPO	POR GRUPO	POR COMPLEJO	
CLÁSICO TARDÍO 700 d.C. - 900 d.C. CHACPEL (CEHPECH, TEPEU, CANBALAM)	Teabo	Becal inciso	Becal		1		1	2					0	2	33	948	28.81%
		Casassus rojo	Casassus					0		1			1	1			
		Teabo rojo	Teabo	5		9	6	20		4	1	1	6	26			
		Tekax negro sobre rojo	Tekax		1	3		4					0	4			
	Tsicul	Tsicul negro	Tzicul				1	1					0	1	3		
		Xuxac inciso	Xuxac			1	1	2					0	2			
	Nimun	Nimun cafe	Nimun			3	11	14			5		5	19	24		
		Tancuche aplicado	Tancuche			1		1					0	1			
		Tixkokob inciso	Ranurada		1	2	1	4					0	4			
	Baca	Baca rojo	Baca	1	2	27	16	46			1		1	47	59		
		Chavihau rojo especular	Chavihau	1				1			2		2	3			
		San Pablito negativo	San Pablito			1	3	4					0	4			
		Sinanche impreso	Sinanche			4		4			1		1	5			
	Infierno	Infierno negro	No especificada	1		3		4			1		1	5	5		
	Tenabo	Especial con decoración impresa				1		1					0	1	51		
		Especial con decoración muescada						0		1			1	1			
		Tenabo rojo	Tenabo		3	32	5	40			6	3	9	49			
	Koxolac	Koxolac estriado	Koxolac	2	7	14	5	28			4	3	7	35	59		
		Providencia alisado	Providencia		1	13	7	21		2	1		3	24			
	Encanto	Encanto estriado	Yokat			8	9	17					0	17	59		
		Encanto estriado	Encanto	4	1	14	12	31		6	4		10	41			
		Encanto estriado	Sacna			1		1					0	1			
	No designado	Dos caras estriado	Dos Caras			4	2	6					0	6	6		
	Charote	Charote rojo	Charote			1		1				1	1	2	2		
	Cetelac	Cetelac desgrasante vegetal	Cetelac	4	2	2	1	9		2			2	11	11		
	Nilum	Nilum sin engobe	Nilum			13	10	23					0	23	23		
	Maxcanu	Maxcanu bayo	Engobe gris-blanco					0			3		3	3	12		
		Maxcanu bayo	Maxcanu		3	1		4		2	3		5	9			
	Chablekal	Chablekal gris	Chablekal	1		5	1	7			1		1	8	22		
		Chicxulub inciso	Chicxulub			2	12	14					0	14			
	Cimatan	El golpe impreso	Impresion de uña			1		1					0	1	1		

Appendix B, Chart B.2 (Continued)

PROYECTO ARQUEOLÓGICO ISLA CERRITOS, YUCATÁN

TEMPORADA 2010

CRONOLOGÍA CERÁMICA

PATIO Y POZO 28

PERIODO COMPLEJO - HORIZONTE	GRUPO	TIPO	VARIEDAD	PATIO CAPAS				SUB TOTAL	POZO 28 CAPAS				SUB TOTAL	TOTAL POR TIPO	TOTAL POR GRUPO	TOTAL POR COMPLEJO	
				I	II	III	IV		I	II	III	IV					
	Punta piedra	Punta piedra crema	Punta piedra	1				1					0	1	1		
	Zayozal	Zayozal negro	Zayozal			3		3					0	3	3		
	Chimbote	Chimbote crema policromo	Chimbote			1		1					0	1	1		
	Arena	Arena rojo	Arena			3		3					0	3	3		
		No identificado (Pizarra)				1		1					0	1	1		
CLÁSICO TEMPRANO 300 d.C. - 700 d.C. TROMPILLO (COCHUAH)	Oxil	Elote estriado impreso	Mulix			2		2					0	2	13	250	7.599%
		Oxil sin engobe	Oxil				1	1					0	1			
		Yalchak estriado	Yalchak	4		5	1	10					0	10			
	Tituc	Tituc naranja policromo	Bandas - Camichin	5	2	1	0	8					0	8	21		
		Tituc naranja policromo	Tituc		2	5	3	10		1	2		3	13			
	Triunfo	Triunfo estriado	Triunfo			6		6					0	6	6		
	Batres	Batres rojo	Batres	6	1	1	14	22					0	22	23		
		Chichimila pintura chorreada	Chichimila					0			1		1	1			
	Aguila	Aguila naranja	No especificada			17	4	21		1	1		2	23	24		
		Boleto negro sobre naranja	No especificada		1			1					0	1			
	Dos Arroyos	Dos Arroyos naranja policromo	Dos Arroyos		1	1		2			1		1	3	3		
	Balanza	Apio compuesto	Apio		1			1					0	1	1		
	Huachinango	Fango bicromo inciso	Fango	4	2	2		8			1		1	9	72		
		Huachinango bicromo inciso	Huachinango		6	42	8	56	1			6	7	63			
	Shangurro	Kana naranja	Kana			1		1					0	1	3		
		Valladolid bicromo inciso	Delgada			2		2					0	2			
	Percebes	Calamar negro sobre bayo	Calamar			2		2					0	2	2		
	Timucuy	Timucuy naranja policromo	Timucuy	1				1					0	1	1		
	Saban	Saban burdo	Becoob		6	3	2	11					0	11	11		
	Tancah	Tancah burdo	Tancah	2		35	17	54				12	12	66	66		
	Xanaba	Xanaba rojo	Xanaba		1	1		2					0	2	2		
		No identificado (Clasico Temprano)				1		1					0	1	1		
		No identificado (Tzakol 3)				1		1					0	1	1		
	Cetelac	Cetelac desgrasante vegetal	Xcan	5	8	3	2	18					0	18	18		
	Zotz	Zotz negro a crema inciso	Zotz			8	1	9					0	9	9		
	Unto	Unto negro sobre estriado	Unto			10	2	12					0	12	12		
	Tipikal	Tipikal rojo sobre estriado	Tipikal			2		2					0	2	2		
	Habana	Habana club inciso-punzado	No especificada			20	3	23				1	1	24	24		
	Sombra	Expedicion estriado	Expedicion	1		1		2					0	2	18		

Appendix B, Chart B.2 (Continued)

PROYECTO ARQUEOLÓGICO ISLA CERRITOS, YUCATÁN

TEMPORADA 2010

CRONOLOGÍA CERÁMICA

PATIO Y POZO 28

PERIODO COMPLEJO - HORIZONTE	GRUPO	TIPO	VARIEDAD	PATIO CAPAS				SUB	POZO 28 CAPAS				SUB	TOTAL	TOTAL	TOTAL	
				I	II	III	IV	TOTAL	I	II	III	IV	TOTAL	POR TIPO	POR GRUPO	POR COMPLEJO	
PRECLÁSICO TARDÍO 100 a.C. - 300 d.C. XAUMITO (CHICANEL, NABANCHÉ TARDÍO)	Sombra	Sombra burdo	Sombra	1	3	6		10			6		6	16			
	Polvero	Povero negro	No especificada			2		2					0	2	5		
		Povero negro	Polvero			1	2	3					0	3			
	Carolina	Carolina bicromo inciso	Carolina			5		5			1		1	6	6		
	Dzilam	Dzilam verde inciso	Dzilam	1		8	5	14		2	1	3	6	20	20		
	No designado	Xuch negro y rojo	Xuch			1		1					0	1	1		
	Flor	Flor crema	No especificada					0			1		1	1	1	188	5.714%
		No identificado (Chicanel Tardío)				1		1					0	1	1		
	Sierra	Laguna verde inciso	No especificada	1				1					0	1			
		Sierra rojo	Engobe claro		3		1	4		1			1	5	18		
		Sierra rojo	No especificada			11		11					0	11			
		Sierra rojo	Society Hall			1		1					0	1			
	Saban	Chancenote estriado	Chancenote	1	2	7	4	14			1		1	15	53		
		Chancenote estriado	Chiquila			12	2	14			3		3	17			
		No identificado	No especificada		1			1					0	1			
		Saban burdo	Saban			20		20					0	20			
PRECLÁSICO MEDIO 400 a.C. - 100 a.C. (NABANCHÉ TEMPRANO MAMON)	Dzudzuquil	Bakxoc negro sobre crema a bayo	Bakxoc				1	1					0	1	3		
		Dzudzuquil crema a bayo	Dzudzuquil				0	0					0	0			
		Majan rojo sobre crema a bayo	Majan				2	2					0	2			
	Muxanal	Muxanal rojo sobre crema	No especificada				1	1					0	1	1	6	0.182%
		Preclásico especial con engobe naranja a bayo y decoración incisa-ranurada					1	1					0	1	1		
		No identificado (Preclasico)				1		1					0	1	1		
				242	317	1228	358	2145	11	162	122	47	342	2487	2487	2487	75.59%
	Especial con decoración impresa (dos filas de triángulos invertidos)					1		1					0	1	5	5	0.152%
	Especial con decoración muescada					1		1					0	1			
	Especial con engobe cafe y decoración incisa			1				1					0	1			
	Especial con engobe rojo y decoración esgrafiada					1		1					0	1			
	Especial sin engobe con decoración incisa-punzada			1				1					0	1			
	No identificados (Erosionados)			47	117	254	29	447		52	15	17	84	531			
	No identificados			9	18	156	48	231		2	12	4	18	249			

Appendix B, Chart B.2 (Continued)

PROYECTO ARQUEOLÓGICO ISLA CERRITOS, YUCATÁN

TEMPORADA 2010

CRONOLOGÍA CERÁMICA

PATIO Y POZO 28

PERIODO COMPLEJO - HORIZONTE	GRUPO	TIPO	VARIEDAD	PATIO CAPAS				SUB TOTAL	POZO 28 CAPAS				SUB TOTAL	TOTAL POR TIPO	TOTAL POR GRUPO	TOTAL POR COMPLEJO
				I	II	III	IV		I	II	III	IV				
	No identificados (Engobe naranja abigarrado)					1		1					0	1	798	24.26%
	No identificados (Engobe rojo)			1		14		15					0	15		
	No identificados (Pasta gris)							0			1		1	1		
	No identificados (Pasta gris-cafe)					1		1					0	1		
				59	135	429	77	700	0	54	28	21	103	803	803	24.41%
		TOTAL		301	452	1657	435	2845	11	216	150	68	445	3290	3290	100.0%
	Artefactos (tejos, pesas de red, "canicas", miscelánea)			3	11	14	3	31		1	1	1	3	34		

Table B.3: Ceramic Chronology Structure 23

PROYECTO ARQUEOLÓGICO ISLA CERRITOS, YUCATÁN
TEMPORADA 2010
CRONOLOGÍA CERÁMICA
ESTRUCTURA 23

CRONOLOGÍA COMPLEJO - HORIZONTE	GRUPO	TIPO	VARIEDAD	CAPA					TOTAL POR TIPO	TOTAL POR GRUPO	TOTAL POR COMPLEJO	
				SUP	I	II	III	IV				
POSTCLÁSICO 1100 d.C. - 1542 d.C. TOMBURRO (TASES)	Polbox	Tecoh rojo sobre bayo	Tecoh		1		1		2	2	1574	9.987%
	Panaba	Chen Mul modelado	Chen Mul			1			1	1		
	Payil	Palmul inciso	Palmul			1			1	2		
		Payil rojo	Payil			1			1			
	Mama	Mama rojo	Cancun			11	1		12	68		
		Mama rojo	Mama		2	44	2		48			
		Papacal inciso	Papacal			8			8			
	Navula	Navula sin engobe	Incisa		1				1	1486		
		Navula sin engobe	Navula		104	556	22		682			
		Navula sin engobe	Pasta rojiza			1			1			
		Thul aplicado	Thul			1			1			
		Yacman estriado	Yacman		180	600	21		801			
	Matillas	Chilapa gubiado inciso	Chilapa		1	1			2	14		
		Especial inciso negro sobre naranja				1			1			
		Matillas naranja	Matillas		4				4			
		Nacajuca negro sobre naranja	Nacajuca		1				1			
		Salto compuesto	Salto			1			1			
		Villahermosa inciso	Villahermosa		5				5			
		No identificado (Postclasico)					1		1	1		
CLÁSICO TERMINAL 800 d.C. - 1100 d.C. JOTUTO (CEHPECH-SOTUTA)	Tinum	Cerro Montoso policromo				1			1	1		
		Tinum rojo sobre canela			1			1	2	2		
	Tohil	Malacatan modelado	Malacatan		1	1			2	2		
	Jilon	Jilon liso	Jilon		28	137	4		169	169		
	No designado	Especial Laguna de Terminos				5			5	5		
	Kukula	Kukula crema	Kukula (pasta crema)		64	200	6		270	3279		
		Kukula crema	Pasta compacta			1			1			
		Kukula crema	Pasta roja		14	4	1	2	21			
		Pencuyut inciso	Acanalada		1				1			
		Pencuyut inciso	Incisa			7			7			
		Pencuyut inciso	Pencuyut		1	9	1		11			
		Xcanchacan negro sobre crema	Incisa			6			6			
		Xcanchacan negro sobre crema	Pared delgada			7	3		10			
		Xcanchacan negro sobre crema	Pasta compacta			16	3	3	22			
		Xcanchacan negro sobre crema	Xcanchacan	2	249	798	98	1	1148			
		Xcanchacan negro sobre crema	Pasta roja	1	415	1224	141	1	1782			
		Champan rojo sobre naranja	Champan		4	8	1		13			

Appendix B, Chart B.3

Silho	Cumpich inciso	Cumpich		4	9	5		18	870	8394	53.261%	
	Cumpich inciso	Pintura negra			1			1				
	Especial con decoración impresa				1			1				
	Especial negro y blanco sobre naranja				1			1				
	Kilikan compuesto	Engobe crema			7			7				
	Kilikan compuesto	Engobe negro			2			2				
	Kilikan compuesto	Kilikan		5	21	5		31				
	Kilikan compuesto	Policroma		1				1				
	Koltha bicromo	Koltha			13	7		20				
	Pocboc gubiado inciso	Engobe cafe			1			1				
	Pocboc gubiado inciso	Engobe negro			2			2				
	Pocboc gubiado inciso	Pocboc		1	5			6				
	Pomuch policromo	Pomuch		2				2				
	Silho naranja	Engobe crema			1			1				
	Silho naranja	Silho	4	188	360	76	1	629				
	Yalton negro sobre naranja	Yalton		27	91	16		134				
Achiotes	Achiotes negro	Achiotes			1			1	1			
Altar	Altar naranja	Altar		8	19	4		31	39			
	Cedro acanalado mediacaña	Cedro			2			2				
	Pabellon modelado excavado	No especificada				1		1				
	Trapiche inciso	Trapiche			3			3				
	Tumba negro sobre naranja	Tumba			1	1		2				
Balancan	Balancan naranja	Balancan		1	6			7	9			
	Caribe inciso	Caribe		1				1				
	Palizada negro sobre naranja	Palizada		1				1				
Jalpa	Jalpa negro	Jalpa			2			2	2			
Yalcox	Yalcox negro	Yalcox		1				1	1			
Cipres	Cipres bicromo	Cipres		1				1	1			
Sisal	Cumtun compuesto	Cumtun		2	1			3	3194			
	Espita aplicado	Espita			2	1		3				
	Piste estriado	Piste		417	2146	507	4	3074				
	Sisal sin engobe	Sisal		3	98	13		114				
Dzitas	Balam Canche rojo sobre pizarra	Balam Canche		5				5	809			
	Balantun negro sobre pizarra	Balantun	3	217	291	140	3	654				
	Chacmay inciso	Chacmay			2	1		3				
	Dzitas pizarra	Dzitas	2	21	103	4	1	131				
	Nenela modelado	Nenela			1			1				
	Timak compuesto	Incisa			2			2				
	Timak compuesto	Timak		3	9	1		13				
Maquina	Maquina cafe	Maquina			3	2		5	5			
Cambio	Cambio sin engobe	Cambio			5			5	5			
Maxcanu	Maxcanu bayo	No especificada		1		3		4	4			
	Chan Kom negro sobre rojo	Chan Kom		2				2				

CLÁSICO TARDÍO 700 d.C. - 900 d.C. CHACPEL (TEPEU, CEHPECH, CANBALAM)	Dzibiac	Chan Kom negro sobre rojo	Engobe crema					1		1				
		Dzibiac rojo	Dzibiac	3	31	75	21	3	133		141			
		Especial con decoración aplicada			1				1					
		Especial con decoración modelada				1			1					
		Holtun gubiado inciso	Holtun			1	0		1					
		Xuku inciso	Xuku		1	1			2					
	Dzitya	Dzitya negro	Dzitya		2	1			3		3			
	Ticul	Tabi gubiado inciso	Tabi		1				1					
		Ticul pizarra delgada	No especificada			1	4		5		21			
		Ticul pizarra delgada	Ticul		1	6	7		14					
		Xul inciso	Xul			1			1					
	Muna	Akil impreso	Akil		3	1			4		91			
		Muna pizarra	Chemax		1		4		5					
		Muna pizarra	Engobe cafe claro		2				2					
		Muna pizarra	Muna		12	33	10	4	59					
		Sacalum negro sobre pizarra	Engobe cafe claro		1				1					
		Sacalum negro sobre pizarra	Sacalum		8	4	2		14					
		Tekit inciso	Tekit		1	4	1		6					
	Vista Alegre	Vista Alegre estriado	Apasillada		1	15	7		23		642			
		Vista Alegre estriado	Chen Rio		52	53	29	6	140					
		Vista Alegre estriado	Vista Alegre	1	154	291	31	2	479					
	Chum	Chum sin engobe	Chum			2			2		2			
		Yokat estriado	Yokat		0		0		0					
	Teabo	Teabo rojo	Teabo		8	14	11	1	34		38			
		Tekax negro sobre rojo	Tekax			3			3					
		Yaxuna compuesto	Yaxuna		1				1					
	Nimun	El Arenal estriado	El Arenal		1	17			18		34			
		Nimun cafe	Nimun		3		4		7					
		Tacunche aplicado	Tacunche			2			2					
		Tixkokob inciso	Ranurada		1	2	4		7					
	Baca	Baca rojo	Baca		13	29	9	2	53		55			
		Chavihau rojo especular	Chavihau	1					1					
		Sinanche impreso	Sinanche			1			1					
	Dzitbalche	Dzitbalche bayo fino	Dzitbalche		1				1		2	1515	9.613%	
		El Remate rojo sobre bayo	El Remate			1			1					
	Saxche	Saxche policromo	Saxche			1			1		1			
	Infierno	Carmelita inciso	Carmelita			1			1		7			
		Infierno negro	Infierno		1	4		1	6					
	Tinaja	Tinaja rojo	Tinaja		1	3	2		6		6			
	Tenabo	Isla Arena inciso	Isla Arena		2	1			3		42			
		Tenabo rojo	Tenabo		9	16	13	1	39					
	Xoxolac	Xoxolac estriado	Xoxolac		6	8	1	8	23		37			
		Providencia aliseado	Providencia		3	5	5	1	14					

Appendix B, Chart B.3 (Continued)

	Encanto	Encanto estriado	Yokat		7	27	12		46	62				
		Encanto estriado	Encanto		7	6	3		16					
	No designado	Dos caras estriado	Dos Caras			3	3		6	6				
	Charote	Charote rojo	Charote			1			1	2				
		Sihochac rojo obscuro sobre rojo	Sihochac			1			1					
	Cetelac	Cetelac desgrasante vegetal	Cetelac	2	36	48			86	86				
	Acapulquito	Acapulquito sin engobe	Acapulquito		1				1	10				
		Paxyan negro sobre gris	Paxyan		5	1	1		7					
		Yakatzib estriado	Yakatzib		1	1			2					
	Chencan	Chencan cafe sobre naranja	Chencan		5	23	2		30	30				
	Nilum	Nilum sin engobe	Nilum		13	38	3		54	54				
	Chablekal	Chablekal gris	Chablekal	4	25	32	6	2	69	79				
		Chablekal gris	Variedad Tardia	1					1					
		Chicxulub inciso	Chicxulub		4	4			8					
		Petenes gubiado	Petenes			1			1					
	Zayozal	Zayozal negro	Zayozal		4	4	2		10	10				
	Chimbote	Samula	Samula			1			1	1				
	Arena	Arena rojo	Arena		9	12	1		22	22				
	Hunabchen	Hunabchen rojo	Hunabchen			5		1	6	7				
		Ola negro sobre rojo	Ola			1			1					
	Chumul	Janan naranja policromo (Clasico Tardio)	Janan		1	13			14	14				
	Becanchen	Becanchen café	Becanchen				1		1	1				
	Comalcalco	Comalcalco gris	Comalcalco			1			1	1				
		No identificado (Clasico Tardio)					2		2	4				
		No identificado (Sin engobe)					1		1					
		No identificado (Tepeu)					1		1					
	Maxcanu	Maxcanu bayo	Maxcanu			11	22	1	34	38				
		Tacopate chorreado sobre cafe	Tacopate		2		2		4					
	Oxil	Elote estriado impreso	Elote				1		1	25				
		Oxil sin engobe	Oxil		1		1		2					
		Yalchak estriado	Yalchak		11	11			22					
	Tituc	Tituc naranja policromo	Bandas - Camichin		41	44	13		98	197				
		Tituc naranja policromo	Camichin		1	17	1		19					
		Tituc naranja policromo	Tituc		27	44	9		80					
	Timucuy	Timucuy naranja policromo	Timucuy			1	1		2	2				
	Aguila	Aguila naranja	No especificada		5	19	3		27	28				
		San Blas rojo sobre naranja	No especificada		1				1					
	Dos arroyos	Dos arroyos naranja policromo	Dos arroyos		1	4			5	5				
	Triunfo	Triunfo estriado	Triunfo			1		4	5	5				
	Batres	Batres rojo	Batres		3	4	3	1	11	11				
	Balanza	Balanza negro	Balanza			3	2		5	5				
	Huachinango	Fango bicromo inciso	Fango	2	6	32	5		45	119				
		Huachinango bicromo inciso	Huachinango		28	40	5	1	74					

CLÁSICO TEMPRANO
300 d.C. - 700 d.C.
TROMPILLO
(COCHUAH, TZAKOL)

554

3.515%

	Shangurro	Chango negro y rojo sobre crema	Chango		1				1	3		
		Shangurro rojo sobre naranja	Shangurro			1			1			
		Valladolid bicromo inciso	Valladolid				1		1			
	Chencoh	Chencoh naranja delgado	Chencoh			1			1	1		
	Percebes	Calamar negro sobre bayo	Calamar			1			1	1		
	Saban	Saban burdo	Becoob		26	49	4		79	79		
	Tancah	Tancah burdo	Tancah		2	16	9		27	27		
	Xanaba	Xanaba rojo (Chicanel)	Xanaba		1	5	1		7	7		
		No identificado (Clasico Temprano)				1			1	1		
PRECLÁSICO TARDÍO 100 a.C. - 300 d.C. XAUMITO (CHICANEL, NABANCHÉ TARDÍO)	Cetelac	Cetelac desgrasante vegetal	Xcan	1	6	16	2		25	25	142	0.901%
	Dzilam	Dzilam verde inciso	Dzilam		9	17	1		27	27		
	Sombra	Expedicion estriado preclasico superior	Expedicion			3	1	2	6	8		
		Sombra burdo	Sombra			2			2			
	Flor	Flor crema	Flor			1			1	1		
	Zotz	Zotz negro a crema inciso	Zotz		5	4	3		12	12		
	Unto	Unto negro sobre estriado	Unto			8			8	8		
	Tipikal	Tipikal rojo sobre estriado	Tipikal			1			1	1		
	Habana	Habana club inciso-punzado	Habana		5	16	1		22	22		
	Polvero	Polvero negro	Chikin		1	3	1		5	7		
		Polvero negro	No especificada				2		2			
	Carolina	Carolina bicromo inciso	Carolina		3	0	1		4	4		
	Sierra	Sierra rojo	No especificada			3	1	1	5	5		
	Saban	Chancenote estriado	Chiquila			6			6	6		
	Achiotes	Sapote estriado	Sapote				2	0	2	2		
	Chunhinta	Chunhinta negro	Chunhinta			2	0		2	2		
	Dzudzuquil	Dzudzuquil crema a bayo	Dzudzuquil			2	2		4	5		
		Majan rojo sobre crema a bayo	Majan			1			1			
PRECLÁSICO MEDIO 400 a.C. - 100 a.C. (NABANCHÉ TEMPRANO)	Joventud	Joventud rojo	Joventud		2		2		4	4		
		Joventud rojo	Nolo			1			1	1		
		No identificado (Preclasico Medio)				1	1		2	2		
				27	2617	8076	1400	59	12179	12179	12179	77.278%
	Miscelánea foraneos				6	24	8		38	3581	3581	22.722%
	No identificados (Erosionados)			18	1038	1628	120	6	2810			
	No identificados (Pasta fina erosionada)				31	32	2		65			
	No identificables (Pizarra erosionada)			1	3	32	21		57			
	No identificados				190	278	91	5	564			
	No identificados (Pasta fina)				28	6	11	2	47			
				19	1296	2000	253	13	3581		3581	22.722%
			TOTAL	46	3913	10076	1653	72	15760	15760	15760	100%
	Artefactos (tejos, pesas de red, "canicas", miscelánea)			0	18	54	7	0	79			

Appendix B, Chart B.3 (Continued)

Table B.4: Ceramic Chronology Structure 30

PROYECTO ARQUEOLÓGICO ISLA CERRITOS, YUCATÁN

TEMPORADA 2010

CRONOLOGÍA CERÁMICA

ESTRUCTURA 30

CRONOLOGÍA COMPLEJO - HORIZONTE	GRUPO	TIPO	VARIEDAD	CAPA			TOTAL POR TIPO	TOTAL POR GRUPO	TOTAL POR COMPLEJO	
				I	II	III				
POSTCLÁSICO 1100 d.C. - 1542 d.C. TOMBURRO (TASES)	Mama	Mama rojo	Cancun	2	9	2	13	17	108	15.98%
		Mama rojo	Mama	3			3			
		Mama rojo	Sin engobe exterior	1			1			
	Navula	Navula sin engobe	Navula	14	28	2	44	90		
		Yacman estriado	Yacman	21	15	10	46			
	Matillas	Villahermosa inciso	Villahermosa	1			1	1		
CLÁSICO TERMINAL 800 d.C. - 1100 d.C. JOTUTO (CEHPECH-SOTUTA)	Tohil	Malacatan modelado	Malacatan			1	1	1	438	64.79%
	Jilon	Jilon liso	Jilon		2	1	3	3		
	No designado	Especial Laguna de Terminos			6	1	7	7		
	Kukula	Kukula crema	Pasta roja		1		1	148		
		Xcanchacan negro sobre crema	Incisa	1	1		2			
		Xcanchacan negro sobre crema	Incisa (pasta roja)		1		1			
		Xcanchacan negro sobre crema	Xcanchacan	5	16	2	23			
		Xcanchacan negro sobre crema	Pasta roja	33	78	10	121			
	Silho	Champan rojo sobre naranja	Champan	5			5	36		
		Silho naranja	Silho	10	17	3	30			
		Yalton negro sobre naranja	Yalton	1			1			
	Sisal	Espita aplicado	Espita	1			1	223		
		Piste estriado	Piste	19	134	69	222			
	Dzitas	Balantun negro sobre pizarra	Balantun	7	5	8	20	20		
CLÁSICO TARDÍO 700 d.C. - 900 d.C. CHACPEL (TEPEU, CEHPECH, CANBALAM)	Dzibiac	Dzibiac rojo	Dzibiac	1	3	1	5	7	24	3.550%
		Holtun gubiado inciso	Holtun			2	2			
	Poza Rica	Poza Rica cafe	Poza Rica			1	1	1		
	Muna	Muna pizarra	Engobe cafe claro		1		1	3		
		Muna pizarra	Muna			1	1			
		Tekit inciso	Tekit			1	1			
	Vista Alegre	Vista Alegre estriado	Vista Alegre	4			4	4		
	Baca	Baca rojo	Baca	3			3	3		
	Tenabo	Tenabo rojo	Tenabo	2			2	2		
	Maxcanu	Maxcanu bayo	Maxcanu		1		1	1		
	Chablekal	Chablekal gris	Chablekal			1	1	1		
	Chimbote	Chimbote crema policromo	Chimbote	1		1	2	2		

Appendix B, Chart B.4

Appendix B, Chart B.4 (Continued)

CLÁSICO TEMPRANO 300 d.C. - 700 d.C. TROMPILLO (COCHUAH, TZAKOL)	Aguila	Aguila naranja	Aguila		2		2	2			
	Saban	Saban burdo	Becoob	1		4	5	5			
	Tancah	Tancah burdo	Tancah			1	1	1	11	1.627%	
	Cetelac	Cetelac desgrasante vegetal	Xcan		1		1	1			
	Cetelac	Cetelac desgrasante vegetal	Cetelac			1	1	1			
	Zotz	Zotz negro a crema inciso	Zotz		1		1	1			
				136	322	123	581	581	581	85.95%	
		No identificados (Erosionados)		27	47	9	83				
		No identificados				11	11	95	95	14.05%	
		No identificados (Engobe rojo)				1	1				
				27	47	21	95	95	95	14.05%	
			TOTAL	163	369	144	676	676	676	100.0%	
			Artefactos (tejos, pesas de red, "canicas", miscelánea)	2	7	1	10				

APPENDIX C:

ARTIFACT TABLES AND LOT SHEET TEMPLATE, ICAP 2010

Table C.1: General Lithic Artifacts

PROYECTO ARQUEOLÓGICO ISLA CERRITOS, YUCATÁN

TEMPORADA DE CAMPO 2010

MATERIAL LÍTICO

PATIO (INCLUYENDO POZO 28); ESTRUCTURAS 19, 23 Y 30

NO. ICAP	EST.	LOTE	CALA	CUADRO	CAPA		TIPO DE HERRAMIENTA	TECNICA DE MANUFACTURA	MATERIA PRIMA	HUELLAS DE USO VISIBLES (S/N)	RETOQUE (S/N)	CORTEZA (S/N)	COMPLETO / FRAG	OBSERVACIONES	FREC.
3307	23	E163	L	14E	III	ENTIERRO # 24	ADORNO	MOLIDA, PULIDA Y PERFORADA	JADEITA	SI	NO	NO	COMPLETO	MUY PULIDO, DECORACIÓN INCISO, PUESTO EN LA BOCA DEL DIFUNTO	1
3310	23	E163	L	14E	III	ENTIERRO # 24	ADORNO	MOLIDA, PULIDA Y PERFORADA	NO IDENTIFICADO	SI	NO	NO	COMPLETO	PULIDO	1
3309	23	E163	L	14E	III	ENTIERRO # 24	ADORNO	MOLIDA, PULIDA Y PERFORADA	NO IDENTIFICADO	SI	NO	NO	COMPLETO	PULIDO	1
3188	19	F58	S	21L	II	INT	ALISADOR	MOLIDO	BASALTO	SI	NO	NO	FRAGMENTO	PULIDO AMBOS LADOS, DESGASTE, RESIDUO DE COLOR	1
3193	19	F72	T	21J	II		ALISADOR	TALLADA	CALIZA	NO	NO	NO	COMPLETO		1
3204	19	F118	U	20K	III	EXT	ALISADOR	MOLIDO Y PULIDO	PIEDRA DE RIO	NO	NO	NO	COMPLETO	PULIDO	1
3453	19	F146	U	20K	II		ALISADOR	MOLIDO Y PULIDO	PIEDRA DE RIO	SI	NO	NO	FRAGMENTO	PULIDO EN UN LADO	1
3214	19	F155	X	17L	IV		ALISADOR	MOLIDO Y PULIDO	PIEDRA DE RIO	SI	NO	NO	FRAGMENTO	PULIDO	1
3179	19	F45	S	21R	II	EXT	ALISADOR	MOLIDO, PULIDO	PIEDRA DE RIO	NO	NO	NO	FRAGMENTO		1
3227	23	E99	J	12C	I		ALISADOR	MOLIDO Y PULIDO	BASALTO	SI	NO	NO	FRAGMENTO	PULIDO EN UN LADO	1
3236	23	E109	N	16A	II		ALISADOR	MOLIDO	CALIZA	SI	SI	NO	FRAGMENTO	PULIDO, INCISO	1
3239	23	E111	K	13B	II	INTERIOR BASAMENTO	ALISADOR	MOLIDO	CALIZA	NO	NO	NO	FRAGMENTO	MUY EROSIONADO	1
3243	23	E114	J	12B	II		ALISADOR	TALLADA Y MOLIDA	CALIZA	SI	NO	NO	COMPLETO	PULIDO EN UN LADO	1
3245, 3827	23	E114	J	12B	II		ALISADOR	TALLADA	CALIZA	NO	NO	NO	COMPLETO		3
3255	23	E117	J	12F	III		ALISADOR	TALLADA Y MOLIDO	CALIZA	SI	NO	NO	FRAGMENTO	PULIDO EN UN LADO	1
3263	23	E119	J	12D	II		ALISADOR	MOLIDA Y PULIDA	CALIZA	SI	NO	NO	COMPLETO	MUY PULIDO EN UN LADO	1
3273	23	E131	K	13E	II		ALISADOR	TALLADA Y MOLIDA	CALIZA	NO	NO	NO	COMPLETO	EROSIONADO	1
3280	23	E136	L	14E	II		ALISADOR	MOLIDA	CALIZA	SI	NO	NO	FRAGMENTO	PULIDO	1

Appendix C, Table C.1

Appendix C, Table C.1 (Continued)

3219	23	E63	N	15G	I		ALISADOR	MOLIDO	CALIZA	NO	NO	NO	FRAGMENTO		1
3225	23	E95	J	12G	I		ALISADOR	TALLADA Y MOLIDO	CALIZA	NO	NO	NO	FRAGMENTO		1
3222	23	E84	N	16F	SUP		ALISADOR	TALLADA	PIEDRA DE CUEVA	SI	NO	NO	COMPLETO	TIENE LADO MOLIDO/PULIDO	1
3312	23	E163	L	14E	III	ENTIER RO # 24	ALISADOR	MOLIDA Y PULIDA	PIEDRA DE RIO	NO	NO	NO	COMPLETO	PULIDO	1
3147	30	G2	J	12L	II	EXT	ALISADOR	TALLADA POR PERCUSIÓN	CALIZA	SI	SI	NO	COMPLETO	7 X 8CM, UN LADO CON DESGASTE Y PULIDO	1
3333	30	G2	J	12L	II	EXT	ALISADOR	MOLIDA Y PULIDA	PIEDRA DE RIO	SI	NO	NO	FRAGMENTO	PULIDO EN UN LADO	1
3162..3163	PATIO	H12	AA	24L	III		ALISADOR	TALLADA POR PERCUSIÓN	CALIZA	SI	NO	NO	COMPLETO	2 COMPLETOS, 4 FRAGMENTOS	2
3399	19	F47	W	18N	II		BURIL	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3521	23	E106	K	13G	II		BURIL	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO		1
3549	23	E112	M	15B	II		BURIL	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO		1
3327	PATIO	H21	AA	24N	III		BURIL	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO		1
3467..3468	19	F155	X	17L	IV		CANTO RODADO	NO IDENTIFICADO	PIEDRA DE RIO	NO	NO	NO	COMPLETO		2
3177	19	F44	W	18M	II		CANTO RODADO	MOLIDO	PIEDRA DE RIO	NO	NO	NO	COMPLETO		1
3197	19	F98	W	18R	III	EXT	CANTO RODADO	NO IDENTIFICADO	PIEDRA DE RIO	NO	NO	NO	COMPLETO	NATURAL?	1
3244, 3829	23	E114	J	12B	II		CANTO RODADO	TALLADA	CALIZA	NO	NO	NO	FRAGMENTO		2
3260	23	E119	J	12D	II		CANTO RODADO	TALLADA Y MOLIDA	CALIZA	NO	NO	NO	COMPLETO	MUY EROSIONADO, 7CM DIAMETRO	1
3281	23	E141	L	14F	II		CANTO RODADO	NO IDENTIFICADO	CALIZA	NO	NO	NO	COMPLETO	POSIBLEMENTE NATURAL?	1
3275	23	E131	K	13E	II		CANTO RODADO	MOLIDA Y PULIDA	PIEDRA DE RIO	SI	NO	NO	COMPLETO	PULIDO	1
3149..3150	30	G2	J	12L	II	EXT	CANTO RODADO	TALLADA POR PERCUSIÓN	CALIZA	NO	NO	NO	COMPLETO	7CM DIAMETRO	2
3252	23	E116	J	12F	II		ESCULTURA	TALLADA PARA ESCULTURA	CALIZA	NO	NO	NO	FRAGMENTO	FORMA DE RING, ARQUITECTONICO?	1
3267	23	E126	N	16B	II		ESCULTURA	TALLADA	CALIZA	NO	NO	NO	FRAGMENTO	FRAGMENTO DE RING	1
3268	23	E128	K	13F	II		ESCULTURA	TALLADA	CALIZA	NO	NO	NO	COMPLETO	UNA TAPADERA O ESCULTURA ARQUITECTÓNICA	1
3217	19	F154	U	20O	II		HACHA	MOLIDO Y PULIDO	PIEDRA VERDE	NO	NO	NO	FRAGMENTO	PULIDO	1
3249	23	E115	J	12E	II		HACHA	MOLIDA Y PULIDA	PIEDRA VERDE	NO	NO	NO	FRAGMENTO	PULIDO	1
3484	19	F106	S	21M	III	EXT	LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3359	19	F114	T	17I	II		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3450	19	F154	U	20O	II		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1

Appendix C, Table C.1 (Continued)

3392...3393	19	F18	S	21M	I		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO			2
3409...3410	19	F31	S	21R	I		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO			2
3368	19	F43	S	21Q	I		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO			1
3428	19	F30	W	18O	II		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO			1
3377	19	F67	T	17J	III		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO			1
3385	19	F94	S	21Q	III	EXT	LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO			1
3423	19	F109	T	17I	I		LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	NO	NO	FRAGMENTO			1
3163...3364	19	F114	T	17I	III		LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	NO	NO	FRAGMENTO			2
3456	19	F127	V	19Q	I		LASCA	TALLADA POR PERCUSIÓN	SILEX	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN		1
3448	19	F139	X	17P	I		LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	NO	NO	FRAGMENTO			1
3451	19	F154	U	20O	III		LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	NO	SI	FRAGMENTO	QUEMADO O CALIENTADO		1
3447	19	F37	W	18R	I		LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	NO	NO	FRAGMENTO			1
3381...3382	19	F44	W	18M	II		LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	NO	NO	FRAGMENTO			2
3435	19	F6	T	19J	I		LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	NO	NO	FRAGMENTO			1
3371	19	F71	S	21O	III	INT	LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	NO	NO	FRAGMENTO			1
10602	19	F75	T	17J	III		LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	NO	SI	FRAGMENTO			1
2519	23	E106	K	13G	II		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO	LASCA DE REDUCCIÓN DE UN NÚCLEO		1
3520	23	E109	K	13G	II		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO			1
4167	23	E106	K	13G	II		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO			1
3494	23	E111	K	13B	II	INTERIOR BASAMENTO	LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO			1
3547	23	E112	M	15B	II		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO			1
3489	23	E119	J	12D	II		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO			1
3558	23	E129	J	12G	III		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO			1
3541	23	E132	K	13D	II		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO			1
3544	23	E132	K	13D	II		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO			1
3497	23	E96	J	12F	I		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO			1
3532	23	E101	I	12A	I		LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	NO	NO	FRAGMENTO			1

Appendix C, Table C.1 (Continued)

3523	23	E106	K	13G	II		LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	NO	NO	FRAGMENTO		1
3535	23	E115	J	12E	II		LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	NO	NO	FRAGMENTO		1
3505	23	E140	L	14D	I		LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	SI	NO	FRAGMENTO		1
3506	23	E140	L	14D	I		LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	NO	NO	FRAGMENTO		1
3553	23	E141	L	14F	II		LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	SI	NO	FRAGMENTO		1
3510	23	E98	I	12D	I		LASCA	TALLADA POR PERCUSIÓN	SILEX	NO	NO	NO	FRAGMENTO		1
3331	PATIO	H11	AA	24N	III		LASCA	TALLADA POR PERCUSIÓN	CALIZA	NO	NO	NO	FRAGMENTO	QUEMADO O CALIENTADO	1
3326	PATIO	H24	AA	25L	III		LASCA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3336	30	G2	J	12L	II	EXT	MACERADOR	TALLADA, MOLIDA E INCISA	CALIZA	SI	NO	NO	FRAGMENTO	DESGASTO DE HILO	1
3208	19	F135	V	19R	II	EXT	MANO DE METATE	MOLIDO	CALIZA	SI	NO	NO	COMPLETO	PULIDO	1
3210	19	F144	V	19R	III	EXT	MANO DE METATE	MOLIDO	CALIZA	NO	NO	NO	FRAGMENTO		1
3215	19	F157	U	20Q	II		MANO DE METATE	MOLIDO	CALIZA	NO	NO	NO	FRAGMENTO		1
3183...3186	19	F94	X	17L	I		MANO DE METATE	MOLIDO	CALIZA	NO	NO	NO	FRAGMENTO	TODOS DESGASTE, PULIDO	4
4112...4113	19	F56	S	21Q	II	INT	MANO DE METATE	MOLIDO	CALIZA	NO	NO	NO	FRAGMENTO		2
3172	19	F6	T	19J	I		MANO DE METATE	MOLIDO, PULIDO	CALIZA	NO	NO	NO	FRAGMENTO	PEQUEÑO FRAGMENTO DEL MANO	1
3181	19	F48	W	18K	II		MANO DE METATE	MOLIDO	NO IDENTIFICADO	NO	NO	NO	FRAGMENTO	PULIDO, QUEMADO	1
3190	19	F63	S	21P	II	INT	MANO DE METATE	MOLIDO Y PULIDO	PIEDRA DE RIO	NO	NO	NO	FRAGMENTO	PULIDO	1
3205	19	F118	U	20K	III	EXT	MANO DE METATE	MOLIDO Y PULIDO	SILEX	SI	NO	NO	FRAGMENTO	PULIDO	1
3206	19	F126	U	20Q	I		MANO DE METATE	MOLIDO Y PULIDO	SILEX	SI	NO	NO	FRAGMENTO	PULIDO	1
3419	19	F55	W	18R	II		MANO DE METATE	MOLIDA Y PULIDA	SILEX	SI	NO	NO	FRAGMENTO	PULIDO	1
3220...3221	23	E 66	M	15F	I		MANO DE METATE	TALLADA Y MOLIDO	CALIZA	NO	NO	NO	FRAGMENTO	2 FRAGMENTOS DE MANOS DIFERENTES	2
3224	23	E 95	J	12G	I		MANO DE METATE	TALLADA Y MOLIDO	CALIZA	NO	NO	NO	COMPLETO		1
3228	23	E 99	J	12C	I		MANO DE METATE	MOLIDO	CALIZA	NO	NO	NO	FRAGMENTO		1
3232	23	E108	M	15A	II		MANO DE METATE	TALLADA, MOLIDO	CALIZA	NO	NO	NO	FRAGMENTO	DESGASTADO	1
3233	23	E108	M	15A	II		MANO DE METATE	TALLADA, MOLIDO	CALIZA	SI	NO	NO	FRAGMENTO	PULIDO EN UN LADO	1

Appendix C, Table C.1 (Continued)

3237	23	E111	K	13B	II		MANO DE METATE	MOLIDO	CALIZA	NO	NO	NO	FRAGMENTO	EROSIONADO	1			
3247	23	E115	J	12E	II		MANO DE METATE	MOLIDA Y PULIDA	CALIZA	NO	NO	NO	FRAGMENTO	PULIDO	1			
3250...3251	23	E116	J	12F	II		MANO DE METATE	MOLIDA	CALIZA	NO	NO	NO	FRAGMENTO	MUY EROSIONADO	2			
3279	23	E135	L	14C	II		MANO DE METATE	TALLADA Y MOLIDA	CALIZA	NO	NO	NO	FRAGMENTO	MUY EROSIONADO	1			
3283	23	E151	K	13D	II	PLATAF ORMA/ ALTAR	MANO DE METATE	TALLADA Y MOLIDA	CALIZA	NO	NO	NO	FRAGMENTO	BOM DIAMETRO	1			
10652	23	E78	H	16F	I		MANO DE METATE	MOLIDO	CALIZA	NO	NO	NO	FRAGMENTO		1			
3223	23	E90	H	16F	II	INTERI OR	MANO DE METATE	TALLADA Y MOLIDO	CORAL	NO	NO	NO	FRAGMENTO	MUY DETERIORADO	1			
3257	23	E119	J	12D	II		MANO DE METATE	MOLIDA Y PULIDA	SILEX	SI	NO	NO	FRAGMENTO	MUY PULIDO EN UN LADO	1			
3266	23	E126	H	16B	II		MANO DE METATE	MOLIDA Y PULIDA	SILEX	NO	NO	NO	FRAGMENTO	FRGMENTO MUY DELGADO DE UN MANO MUY PULIDO	1			
3282	23	E151	K	13D	II	PLATAF ORMA/ ALTAR	MANO DE METATE	MOLIDA Y PULIDA	SILEX	NO	NO	NO	FRAGMENTO	PULIDO, PEGANDO 2 FRAGMENTOS	1			
3285	23	E156	L	14B	II		MANO DE METATE	MOLIDA Y PULIDA	SILEX	SI	NO	NO	FRAGMENTO	MUY PULIDO	1			
3296...3297	PATIO	277	AA	24N	IV	ENTIER RO # 19	MANO DE METATE	MOLIDA Y PULIDA	CALIZA	SI	NO	NO	FRAGMENTO	PULIDOS	2			
3295	PATIO	277	AA	24N	IV	ENTIER RO # 19	MANO DE METATE	MOLIDA	CALIZA	SI	NO	NO	FRAGMENTO	CALIZA, 2 FRAGMENTOS DEL MISMO MANO	1			
3158...3161	PATIO	H12	AA	24L	III		MANO DE METATE	MOLIDO	CALIZA	SI	NO	NO	FRAGMENTO	DESGASTE PRESENTE EN TODOS	4			
3155...3156	PATIO	H15	AA	25N	II	EXT	MANO DE METATE	PULIDA	CALIZA	NO	NO	NO	FRAGMENTO	AMBOS MUY DETERIORADOS	2			
3332	PATIO	H20	AA	25L	I		MANO DE METATE	TALLADA Y MOLIDA	CALIZA	SI	NO	NO	COMPLETO	DESGASTE EN UN LADO	1			
3286	23	E112	M	15B	II		METATE	TALLADA Y MOLIDA	BASALTO	SI	NO	NO	FRAGMENTO	PULIDO EN UN LADO	1			
3269	23	E128	K	13F	II		METATE	MOLIDA	BASALTO	SI	NO	NO	FRAGMENTO	MUY PULIDO EN UN LADO	1			
3287	23	E159	L	14E	III		METATE	TALLADA Y MOLIDA	BASALTO	SI	NO	NO	FRAGMENTO	DESGASTE EN UN LADO	1			

Appendix C, Table C.1 (Continued)

3289	23	E159	L	14E	III		METATE	MOLIDA	BASALTO	SI	NO	NO	FRAGMENTO	PUDIDO, SOPORTE DE METATE	1
3293...3394	23	E160	L	14C	III		METATE	MOLIDA	BASALTO	SI	NO	NO	FRAGMENTO	AMBOS PULIDOS	2
3171	PATIO	275	AA	24M	II		METATE	MOLIDO	BASALTO	NO	NO	NO	FRAGMENTO		1
3157	PATIO	H12	AA	24L	III		METATE	MOLIDO	BASALTO	NO	NO	NO	FRAGMENTO		1
3167	PATIO	H7	AA	24N	II		METATE	MOLIDO	BASALTO	NO	NO	NO	FRAGMENTO		1
3372	19	F71	S	21O	II	INT	NAVAJA	TALLADA POR PERCUSIÓN	SILEX	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
10636	19	F75	T	17J	III		NAVAJA	TALLADA POR PERCUSION	SILEX	SI	SI	NO	FRAGMENTO		1
3338	30	G1	J	12L	I		NAVAJA	TALLADA POR PERCUSIÓN	SILEX	NO	SI	NO	FRAGMENTO	UNA HERRAMIENTA DE LASCA	1
3554	23	E95	J	12G	I		NAVAJA	TALLADA POR PERCUSIÓN	SILEX	NO	SI	NO	COMPLETO	HERRAMIENTA DE LASCA PARA CORTAR	1
3476	19	F135	V	19R	II	EXT	NAVAJA DE PERCUSIÓN	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3394	19	F18	S	21M	I		NAVAJA DE PERCUSIÓN	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3380	19	F44	W	18M	II		NAVAJA DE PERCUSIÓN	TALLADAY POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3427	19	F50	W	18O	II		NAVAJA DE PERCUSIÓN	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3508	23	E135	L	14C	III		NAVAJA DE PERCUSIÓN	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3525	23	E159	L	14E	III		NAVAJA DE PERCUSIÓN	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3316	23	E162	L	14B	II	ENTIER RIO # 22	NAVAJA DE PERCUSIÓN	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3344	30	G2	J	12L	II	EXT	NAVAJA DE PERCUSIÓN	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3358	PATIO	H12	AA	24L	III		NAVAJA DE PERCUSIÓN	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3352...3353	PATIO	H12	AA	24L	III		NAVAJA DE PERCUSIÓN	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	2
3483	19	F106	S	21M	III	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3485	19	F106	S	21M	III	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3474	19	F112	S	21L	III	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3475	19	F112	S	21L	III	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3472...3473	19	F113	S	21K	III	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		2
3360...3361	19	F114	T	17I	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	2
3466	19	F12	S	21N	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1

Appendix C, Table C.1 (Continued)

3465	19	F12	S	21N	I		NAVAJA PRISMÁTICA	TALLADA POR PRECUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3463...3464	19	F122	V	19O	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	2
3470	19	F123	U	20R	II	INT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3477	19	F135	V	19R	II	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3471	19	F144	V	19R	III	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3459...3461	19	F145	V	19R	II	INT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	3
3478	19	F147	V	19Q	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3479	19	F147	V	19Q	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	SI	FRAGMENTO		1
3480	19	F147	V	19Q	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3760	19	F147	V	19Q	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3481...3482	19	F149	U	20M	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		2
3462	19	F153	V	19O	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3469	19	F155	X	17L	IV		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3452	19	F157	U	20Q	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3390...3391	19	F18	S	21M	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	2
3441...3442	19	F23	S	21L	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	2
3439	19	F27	S	21K	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3406...3408	19	F31	S	21R	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	3
3445...3446	19	F37	W	18R	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		2
3440	19	F39	W	18Q	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3431	19	F4	S	21O	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	COMPLETO		1
3432	19	F4	S	21O	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3366	19	F43	S	21Q	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
1367	19	F43	S	21Q	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3378...3379	19	F44	W	18N	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	2
3386...3388	19	F45	S	21R	II	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	3
3389	19	F45	S	21R	II	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	COMPLETO		1

Appendix C, Table C.1 (Continued)

3395...3398	19	F47	W	18N	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	4
3443...3444	19	F48	W	18K	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		2
3426	19	F50	W	18O	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3436...3438	19	F51	T	18J	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		3
3420	19	F52	S	21Q	II	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3429	19	F55	W	18R	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3416...3418	19	F56	S	21Q	II	INT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		3
3404...3405	19	F63	S	21P	II	INT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	2
3411...3412	19	F64	S	21K	II	INT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	2
3376	19	F67	T	17J	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3369	19	F71	S	21O	II	INT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3370	19	F71	S	21O	II	INT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3430	19	F76	T	20J	II	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3421	19	F79	S	21N	II	INT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3434	19	F88	X	17R	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3373	19	F90	T	19J	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3374	19	F90	T	19J	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3401...3403	19	F93	X	17R	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	3
3383...3384	19	F94	S	21Q	III	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	2
3433	19	F95	T	20J	II	INT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3424	19	F98	W	18R	III	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3425	19	F98	W	18R	III	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3490	23	E102	J	12H	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3491	23	E102	J	12H	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3492	23	E102	J	12H	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3559	23	E104	J	12A	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3514	23	E105	K	13H	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3517	23	E106	K	13G	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1

Appendix C, Table C.1 (Continued)

3518	23	E106	K	13G	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO	1
3761	23	E106	K	13G	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO	1
3762	23	E106	K	13G	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO	1
3495	23	E111	K	13B	II	INTERIOR BASAMENTO	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO RETOQUE DE PRESIÓN	1
3533	23	E112	M	15B	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO	1
3534	23	E115	J	12E	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO	1
3537	23	E116	J	12F	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO	1
3501	23	E118	J	12C	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO RETOQUE DE PRESIÓN	1
3486...3487	23	E119	J	12D	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO RETOQUE DE PRESIÓN	2
3498	23	E128	K	13F	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO	1
3499	23	E128	K	13F	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO RETOQUE DE PRESIÓN	1
3500	23	E128	K	13F	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO	1
3545	23	E132	K	13D	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO RETOQUE DE PRESIÓN	1
3546	23	E132	K	13D	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO	1
3509	23	E135	L	14C	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO RETOQUE DE PRESIÓN	1
3511...3513	23	E145	L	14D	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO	3
3557	23	E147	M	15D	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO	1
3516	23	E152	M	15G	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO RETOQUE DE PRESIÓN	1
3555	23	E156	L	14B	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO	1
3531	23	E159	L	14E	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	COMPLETO RETOQUE DE PRESIÓN	1
3540	23	E159	L	14E	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO RETOQUE DE PRESIÓN	1
3526...3528	23	E159	L	14E	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO	3
3538...3539	23	E159	L	14E	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO	2
3502	23	E160	L	14C	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO	1
3550	23	E160	L	14C	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO RETOQUE DE PRESIÓN	1
3551	23	E160	L	14C	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO	1

Appendix C, Table C.1 (Continued)

3552	23	E160	L	14C	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3503...3504	23	E160	L	14C	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		2
3315	23	E162	L	14B	II	ENTIERRO # 22	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3318	23	E163	L	14E	III	ENTIERRO # 24	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3556	23	E76	M	15H	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3493	23	E86	N	16B	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3496	23	E96	J	12F	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3524	23	E98	J	12D	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3507	23	E99	J	12C	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	NO	NO	FRAGMENTO		1
3542...3543	23	E132	K	13D	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	NO	NO	FRAGMENTO		2
3345	30	G2	J	12L	II	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3340	PATIO	H10	AA	24L	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO		1
3341	PATIO	H10	AA	24L	II		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO		1
3346...3351	PATIO	H12	AA	24L	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	6
3354...3355	PATIO	H12	AA	24L	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	2
3356...3357	PATIO	H12	AA	24L	III		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	2
3328	PATIO	H14	AA	25N	I		NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO		1
3339	PATIO	H15	AA	25N	II	EXT	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	SI	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3320...3321	PATIO	H16	AA	24N / 25N	III	ENTIERRO # 20	NAVAJA PRISMÁTICA	TALLADA POR PERCUSIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO	VARIOS FUENTES, TODOS FRAGMENTOS DE NAVAJAS PRISMATICAS	6
3319	PATIO	H17	AA	24L / 24M	IV	ENTIERRO # 21	NAVAJA PRISMÁTICA	TALLADA POR PERCUSION	OBSIDIANA	NO	NO	NO	FRAGMENTO		1
3343	PATIO	H20	AA	25L	I		NAVAJA PRISMÁTICA	TALLADA POR PRESIÓN	OBSIDIANA	NO	SI	NO	FRAGMENTO		1
3216	19	F154	U	20O	II		NO IDENTIFICADO	MOLIDO	ARENISCA	NO	NO	NO	FRAGMENTO		1
3449	19	F144	V	19R	III	EXT	NO IDENTIFICADO	NO IDENTIFICADO	CALIZA	NO	NO	NO	FRAGMENTO	NATURAL?	1
3195	19	F96	T	21J	III	EXT	NO IDENTIFICADO	TALLADA	CALIZA	NO	NO	NO	FRAGMENTO		1

Appendix C, Table C.1 (Continued)

3633_3630	19	F103	S	21O	III	EXT	NO IDENTIFICADO	NO IDENTIFICADO	CORAL	NO	NO	NO	FRAGMENTO		4
3638	19	F63	S	21P	II	INT	NO IDENTIFICADO	TALLADA	CORAL	NO	NO	NO	FRAGMENTO	FRAGMENTO LABRADO	1
3640_3641	19	F97	S	21P	III	EXT	NO IDENTIFICADO	NO IDENTIFICADO	CORAL	NO	NO	NO	FRAGMENTO		2
3187	19	F57	S	21L	II	EXT	NO IDENTIFICADO	MOLIDA	PÓMEZ	SI	SI	NO	COMPLETO	PERFORADO	1
3246	23	E115	J	12E	III		NO IDENTIFICADO	MOLIDA Y PULIDA	BASALTO	SI	NO	NO	FRAGMENTO	PULIDO EN AMBOS LADOS	1
3229	23	E100	J	12B	I		NO IDENTIFICADO	MOLIDO Y PULIDO	CALIZA	NO	NO	NO	FRAGMENTO		1
3231	23	E107	J	12B	II		NO IDENTIFICADO	NO IDENTIFICADO	CALIZA	NO	NO	NO	FRAGMENTO	MUY EROSIONADO	1
3235	23	E108	M	15A	II		NO IDENTIFICADO	TALLADA Y MOLIDO	CALIZA	NO	NO	NO	FRAGMENTO		1
3238	23	E111	K	13B	II	INTERIOR BASAMENTO	NO IDENTIFICADO	MOLIDO	CALIZA	NO	NO	NO	COMPLETO	MUY EROSIONADO	1
3699	23	E112	M	15B	II		NO IDENTIFICADO	MOLIDA	CALIZA	NO	NO	NO	FRAGMENTO		1
3530	23	E114	J	12B	II		NO IDENTIFICADO	MOLIDA	CALIZA	NO	NO	NO	COMPLETO		1
3536	23	E116	J	12F	II		NO IDENTIFICADO	TALLADA Y MOLIDA	CALIZA	NO	NO	NO	COMPLETO		1
3254	23	E117	J	12F	III		NO IDENTIFICADO	TALLADA	CALIZA	NO	NO	NO	FRAGMENTO	MANO O ESCULTURA?	1
3265	23	E121	M	15F	II		NO IDENTIFICADO	TALLADA	CALIZA	NO	NO	NO	FRAGMENTO	ARCHITECTÓNICO?	1
3277	23	E133	L	14F	I		NO IDENTIFICADO	TALLADA	CALIZA	NO	NO	NO	FRAGMENTO	EROSIONADO	1
3284	23	E152	M	15G	II		NO IDENTIFICADO	TALLADA	CALIZA	NO	NO	NO	FRAGMENTO	MUY EROSIONADO; ESCULTURA?	1
3515	23	E152	M	15G	II		NO IDENTIFICADO	TALLADA	CALIZA	NO	NO	NO	FRAGMENTO		1
3288	23	E159	L	14E	III		NO IDENTIFICADO	MOLIDA Y PULIDA	CALIZA	NO	NO	NO	FRAGMENTO	PULIDO	1
3292	23	E160	L	14C	III		NO IDENTIFICADO	MOLIDA	CALIZA	NO	NO	NO	FRAGMENTO	EROSIONADO	1
3704	23	E61	M	15A	I		NO IDENTIFICADO	TALLADA Y MOLIDA	CALIZA	NO	NO	NO	FRAGMENTO		1
3637	23	E107	J	12B	II		NO IDENTIFICADO	NO IDENTIFICADO	CORAL	NO	NO	NO	FRAGMENTO		1
3639	23	E119	J	12D	II		NO IDENTIFICADO	TALLADA	CORAL	NO	NO	NO	FRAGMENTO	FRAGMENTO LABRADO	1
3686	23	E110	K	13B	II	EXT	NO IDENTIFICADO	TALLADA POR PERCUSIÓN	NO IDENTIFICADO	NO	NO	NO	FRAGMENTO	MINERAL ROJO	1
3262	23	E119	J	12D	II		NO IDENTIFICADO	TALLADA	NO IDENTIFICADO	SI	NO	NO	FRAGMENTO	QUEMADO O CALIENTADO	1
3690	23	E 61	M	15A	I		NO IDENTIFICADO	TALLADA	PIEDRA DE CUEV	NO	NO	SI	FRAGMENTO		1
3242	23	E112	M	15B	II		NO IDENTIFICADO	TALLADA	SILEX	NO	NO	SI	FRAGMENTO		1

Appendix C, Table C.1 (Continued)

3329	23	E114	J	12B	II		NO IDENTIFICADO	TALLADA POR PERCUSIÓN	SILEX	NO	SI	NO	COMPLETO		1
3400	23	E163	L	14E	III	ENTIER RO # 24	NO IDENTIFICADO	TALLADA POR PERCUSIÓN	SILEX	NO	SI	NO	COMPLETO	CUIDADO, NÚCLEO?	1
3148	30	G2	J	12L	II	EXT	NO IDENTIFICADO	TALLADA POR PERCUSIÓN	CALIZA	SÍ	NO	NO	COMPLETO	11 X 15CM	1
3198	PATIO	277	AA	24N	IV	ENTIER RO # 19	NO IDENTIFICADO	TALLADA	CALIZA	NO	NO	NO	FRAGMENTO		1
3342	PATIO	H10	AA	24L	II		NO IDENTIFICADO	TALLADA	CALIZA	NO	NO	NO	FRAGMENTO	APLIQUÉ DE ESTUCO?	1
3154	PATIO	H15	AA	25N	II		NO IDENTIFICADO	TALLADA	CALIZA	SÍ	NO	NO	FRAGMENTO	DESGASTE LADO VENTRAL	1
3575	PATIO	H23	AA	24N	IV	ENTIER RO # 25	NO IDENTIFICADO	TALLADA POR PERCUSIÓN	CALIZA	SI	NO	NO	COMPLETO	PULIDO	1
3576	PATIO	H23	AA	24N	IV	ENTIER RO # 25	NO IDENTIFICADO	TALLADA POR PERCUSIÓN	CALIZA	NO	NO	NO	COMPLETO		1
3151	PATIO	H24	AA	25L	III		NO IDENTIFICADO	PULIDA	CALIZA	NO	NO	NO	FRAGMENTO		1
3329	PATIO	H11	AA	24N	III		NO IDENTIFICADO	TALLADA POR PERCUSIÓN	NO IDENTIFICADO	NO	SI	SI	FRAGMENTO	SOAPSTONE?	1
3152	PATIO	H24	AA	25L	III		NO IDENTIFICADO	TALLADA POR PERCUSIÓN	PIEDRA DE CUEVA	NO	SI	SI	COMPLETO		1
3153	PATIO	H24	AA	25L	III		NO IDENTIFICADO	TALLADA POR PERCUSIÓN	PIEDRA DE CUEVA	NO	NO	NO	COMPLETO		1
12412	PATIO	H7	AA	24N	II		NO IDENTIFICADO	TALLADA	PIEDRA DE CUEVA	SI	NO	SI	FRAGMENTO	NÚCLEO?	1
3169	PATIO	H7	AA	24N	II		NO IDENTIFICADO	MOLIDO Y PULIDO	PIEDRA DE RIO	SI	NO	NO	FRAGMENTO	PULIDO	1
3579	PATIO	H21	AA	24N	IV		NO IDENTIFICADO	TALLADA POR PERCUSIÓN	SILEX	NO	NO	NO	FRAGMENTO		1
3413	19	F90	T	19J	II		NÚCLEO	TALLADA POR PERCUSIÓN	SILEX	SI	SI	NO	FRAGMENTO	QUEMADO O CALIENTADO	1
3264	23	E119	J	12D	II		NÚCLEO	TALLADA Y PULIDA	SILEX	SI	SI	SI	COMPLETO	NUCLEO QUITADAS, PULIDO	1
3330	PATIO	H11	AA	24N	III		NÚCLEO	TALLADA POR PERCUSIÓN	SILEX	SI	SI	NO	COMPLETO		1
3226	23	E99	J	12C	I		PERCUTOR	TALLADA Y MOLIDO	CALIZA	SI	NO	NO	COMPLETO	MOLIDO Y APLANADO EN UN LADO	1
3200	19	F107	S	21N	III	EXT	PESA DE RED	MOLIDO Y PULIDO	CALIZA	SI	NO	NO	COMPLETO		1
3311	23	E163	L	14E	III	ENTIER RO # 24	PESA DE RED	MOLIDA Y PULIDA	PIEDRA DE RIO	SI	NO	NO	COMPLETO	DESGASTE POR HILO, PULIDO	1
3207	19	F128	V	19K	II		PIEDRA APLANADA	TALLADA	CALIZA	NO	NO	NO	COMPLETO	TAPADERA?	1
3194	19	F92	X	17N	I		PIEDRA APLANADA	TALLADA POR PERCUSIÓN	CALIZA	NO	NO	NO	COMPLETO		1

Appendix C, Table C.1 (Continued)

3199	19	F98	W	18R	III	EXT	PIEDRA APLANADA	TALLADA	CALIZA	NO	NO	NO	COMPLETO	"PANUCHO"	1
3253	23	E116	J	13F	II		PIEDRA APLANADA	TALLADA Y MOLIDA	CALIZA	SI	NO	NO	COMPLETO	PULIDO EN UN LADO, 6CM DIAMETRO, DETERIORADO	1
3258	23	E119	J	12D	II		PIEDRA APLANADA	MOLIDA	CALIZA	NO	NO	NO	FRAGMENTO	DESGASTADO Y EROSIONADO	1
3274	23	E131	K	13E	II		PIEDRA APLANADA	TALLADA Y MOLIDA	CALIZA	NO	NO	NO	COMPLETO	EROSIONADO	1
3334	30	G2	J	12L	II	EXT	PIEDRA APLANADA	TALLADA Y MOLIDA	CALIZA	NO	NO	NO	FRAGMENTO	2 FRAGMENTOS PEGADOS	1
3164	PATIO	H12	AA	24L	III		PIEDRA APLANADA	TALLADA POR PERCUSIÓN	CALIZA	NO	NO	SI	FRAGMENTO		1
3580	PATIO	H14	AA	25N	I		PIEDRA APLANADA	MOLIDA	CALIZA	NO	NO	NO	COMPLETO		1
3168	PATIO	H7	AA	24N	II		PIEDRA APLANADA	TALLADA DE PERCUSION Y MOLIDO	CALIZA	SI	NO	NO	FRAGMENTO	DESGASTE LADO VENTRAL	1
3201	19	F113	S	21K	III	EXT	PIEDRA DE MOLER	TALLADA Y MOLIDA	CALIZA	NO	NO	NO	FRAGMENTO	MUY DETERIORADO	1
3212	19	F147	V	19Q	II		PIEDRA DE MOLER	TALLADA	CALIZA	SI	NO	NO	COMPLETO	4.5CM DIAMETRO	1
3240	23	E112	M	15B	II		PIEDRA DE MOLER	TALLADA Y MOLIDA	CALIZA	NO	NO	NO	COMPLETO	MUY EROSIONADO	1
3335	30	G2	J	12L	II	EXT	PIEDRA DE MOLER	MOLIDA	CALIZA	SI	NO	NO	COMPLETO	PULIDO	1
12411	PATIO	H7	AA	24M	II		PIEDRA DE MOLER	MOLIDO	CALIZA	SI	NO	NO	COMPLETO	DESGASTE DE MOLER	1
3202...3203	19	F118	U	20K	III	EXT	PIEDRA REDONDEADA	TALLADA	CALIZA	NO	NO	NO	COMPLETO	2 PERCUTORES, 5CM, 7CM DIAMETRO	2
3209	19	F143	U	20K	I		PIEDRA REDONDEADA	TALLADA	CALIZA	NO	NO	NO	COMPLETO	3.5CM DIAMETRO	1
3211	19	F147	V	19A	II		PIEDRA REDONDEADA	MOLIDO	CALIZA	NO	NO	NO	COMPLETO	4CM DIAMETRO	1
3213	19	F152	X	17L	III	PASILLO	PIEDRA REDONDEADA	MOLIDO	CALIZA	NO	NO	NO	COMPLETO	5.5CM DIAMETRO	1
3218	19	F154	U	20O	II		PIEDRA REDONDEADA	TALLADA Y MOLIDA	CALIZA	SI	NO	NO	COMPLETO	APLANADA POR MOLER, 5CM DIAMETRO	1
3174	19	F20	W	18L	I		PIEDRA REDONDEADA	MOLIDO	CALIZA	SI	NO	NO	COMPLETO	DESGASTADO	1
3176	19	F25	W	18M	I		PIEDRA REDONDEADA	MOLIDO	CALIZA	NO	NO	NO	COMPLETO	5CM DIAMETRO, DETERIORADO	1
3189	19	F58	S	21L	II		PIEDRA REDONDEADA	TALLADA POR PERCUSIÓN	CALIZA	NO	NO	NO	COMPLETO	7 X 6CM	1
3191	19	F64	S	21K	II	INT	PIEDRA REDONDEADA	MOLIDO	CALIZA	NO	NO	NO	COMPLETO	5CM DIAMETRO	1
3192	19	F67	T	17J	II		PIEDRA REDONDEADA	MOLIDO	CALIZA	NO	NO	NO	COMPLETO	5CM X 5CM, MUY DETERIORADO	1
3196	19	F98	W	18R	III	EXT	PIEDRA REDONDEADA	TALLADA Y MOLIDA	CALIZA	NO	NO	NO	COMPLETO	TRROWING STONE? 2.5CM DIAMETRO	1
3198	19	F98	W	18R	III	EXT	PIEDRA REDONDEADA	TALLADA	CALIZA	NO	NO	NO	COMPLETO	7CM DIAMETRO	1
3175	19	F23	S	21L	I		PIEDRA REDONDEADA	MOLIDO	PIEDRA DE CUEV	NO	SI	NO	FRAGMENTO		1

Appendix C, Table C.1 (Continued)

3234	23	E108	M	15A	II		PIEDRA REDONDEADA	MOLIDO	CALIZA	SI	NO	NO	COMPLETO	PULIDO EN UN LADO, APLANADO UN LADO, 6CM DIAMETRO	1
3241	23	E112	M	15B	II		PIEDRA REDONDEADA	MOLIDA	CALIZA	NO	NO	NO	COMPLETO		1
3248	23	E115	J	12E	II		PIEDRA REDONDEADA	TALLADA Y MOLIDA	CALIZA	NO	NO	NO	FRAGMENTO		1
3256	23	E117	J	12F	III		PIEDRA REDONDEADA	TALLADA Y MOLIDO	CALIZA	NO	NO	NO	COMPLETO	7 CM DIAMETRO	1
3259	23	E119	J	12D	II		PIEDRA REDONDEADA	TALLADA Y MOLIDA	CALIZA	SI	NO	NO	FRAGMENTO	DESGASTADO EN UN LADO, APLANADO	1
3261	23	E119	J	12D	II		PIEDRA REDONDEADA	TALLADAY Y MOLIDA	CALIZA	SI	NO	NO	FRAGMENTO	PULIDO EN UN LADO	1
3272	23	E131	K	13E	II		PIEDRA REDONDEADA	TALLADA Y MOLIDA	CALIZA	NO	NO	NO	COMPLETO	MUY EROSIONADO	1
3270...3271	23	E131	K	13E	II		PIEDRA REDONDEADA	TALLADA Y MOLIDA	CALIZA	NO	NO	NO	COMPLETO	BORDES MUY DETERIORADOS	2
3290	23	E159	L	14E	III		PIEDRA REDONDEADA	MOLIDA	CALIZA	NO	NO	NO	FRAGMENTO	EROSIONADO, FRAGMENTO DE MANO? 8 CM DIAMETRO	1
3291	23	E159	L	14E	III		PIEDRA REDONDEADA	MOLIDA	CALIZA	NO	NO	NO	FRAGMENTO	EROSIONADO, 5.5CM DIAMETRO, PERCUTOR?	1
10580	23	E78	N	16F	I		PIEDRA REDONDEADA	MOLIDO	CALIZA	NO	NO	NO	COMPLETO	4.5CM DIAMETRO	1
3276	23	E132	K	13D	II		PIEDRA REDONDEADA	MOLIDA	NO IDENTIFICADO	NO	NO	SI	FRAGMENTO		1
3146	30	G3	J	12L	III	EXT	PIEDRA REDONDEADA	TALLADA POR PERCUSIÓN	CALIZA	SÍ	NO	NO	COMPLETO	9.5CM DIÁMETRO	1
3170	PATIO	275	AA	24M	II		PIEDRA REDONDEADA	TALLADA DE PERCUSION	CALIZA	NO	NO	NO	COMPLETO	8CM DIAMETRO	1
3165	PATIO	H12	AA	24L	III		PIEDRA REDONDEADA	TALLADA POR PERCUSIÓN	CALIZA	NO	NO	NO	COMPLETO	5.5CM DIAMETRO	1
3166	PATIO	H12	AA	24L	III		PIEDRA REDONDEADA	TALLADA POR PERCUSIÓN	CALIZA	NO	SÍ	NO	FRAGMENTO	5.5X6CM, CORTADO POR LA MITAD Y REUTILIZADO	1
3422	19	F109	T	17I	I		PUNTA	TALLADA POR PERCUSIÓN	SILEX	NO	NO	SI	FRAGMENTO		1
3362	19	F114	T	17I	II		PUNTA	TALLADA POR PERCUSIÓN	SILEX	NO	SI	NO	COMPLETO	RETOQUE DE PRESIÓN	1
3365	19	F114	T	17I	II		PUNTA	TALLADA POR PERCUSIÓN	SILEX	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3454	19	F143	U	20K	I		PUNTA	TALLADA POR PERCUSIÓN	SILEX	NO	SI	SI	FRAGMENTO	BASE DE FLECHA ROTA	1
3455	19	F147	V	19Q	II		PUNTA	TALLADA POR PERCUSIÓN	SILEX	NO	SI	SI	COMPLETO	DE LANZA?	1
3375	19	F67	T	17J	II		PUNTA	TALLADA POR PERCUSIÓN	SILEX	NO	SI	NO	FRAGMENTO	RETOQUE DE PRESIÓN	1
3522	23	E106	K	13G	II		PUNTA	TALLADA POR PERCUSIÓN	SILEX	NO	SI	NO	FRAGMENTO		1
3548	23	E112	M	15B	II		PUNTA	TALLADA POR PERCUSIÓN	SILEX	NO	SI	NO	FRAGMENTO		1
3488	23	E119	J	12D	II		PUNTA	TALLADA POR PERCUSIÓN	SILEX	NO	SI	NO	COMPLETO	HERRAMIENTA DE LASCA	1

1565	23	E128	K	13F	II		PUNTA	TALLADA POR PERCUSION	SILEX	NO	SI	NO	COMPLETO	PUNTA DE LANZA, RETOQUE POR PRESION	1
3313	23	E162	L	14B	II	ENTIER RO # 22	RAEDERA	LASCA, TALLADA POR PERCUSIÓN	SILEX	SI	SI	NO	COMPLETO	AMBOS LADOS RETOCADOS	1
3178	19	F45	S	21R	II	EXT	RASPADOR	TALLADA POR PERCUSIÓN	CALIZA	NO	SI	NO	COMPLETO		1
3182	19	F51	T	18J	III		RASPADOR	TALLADA	SILEX	SI	SI	SI	COMPLETO		1
3278	23	E133	L	14F	I		RASPADOR	TALLADA POR PERCUSIÓN	SILEX	SI	SI	SI	COMPLETO	FILO DE UNA LASCA, RETOCADO	1
3314	23	E162	L	14B	III	ENTIER RO # 22	RASPADOR	LASCA, TALLADA POR PERCUSIÓN	SILEX	SI	SI	NO	COMPLETO	UN LADO RETOCADO	1
3180	19	F47	W	18H	III		SOPORTE DE METATE	MOLIDO	BASALTO	SI	NO	NO	COMPLETO	PULIDO	1
3173	19	F10	T	18J	I		SOPORTE DE METATE	MOLIDO	CALIZA	NO	NO	NO	FRAGMENTO	MUY DETERIORADO	1
3230	23	E104	J	12A	II		TAJADOR	TALLADA POR PERCUSIÓN	CALIZA	NO	SI	NO	COMPLETO	PULIDO EN UN LADO	1
														TOTAL	432

Table C.2: Obsidian Artifacts

PROYECTO ARQUEOLÓGICO ISLA CERRITOS, YUCATÁN
TEMPORADA DE CAMPO 2010
ARTEFACTOS DE OBSIDIANA CON ANALISIS VISUAL DE FUENTES

NO. DE ARTEFACTO	EST.	POZO	LOTE	CALA	CUADRO	CAPA		TIPO DE HERRAMIENTA	FRAG / COMPLETO	CORTEZA	RETOQUE	HUELLAS DE USO VISIBLE (S/N)	FUENTE	FREC.
3370	19		F71	S	21O	II	INT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	CHY	1
3430	19		F76	T	20J	II	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	CHY	1
3433	19		F95	T	20J	II	INT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	CHY	1
3463	19		F122	V	19O	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	CHY	1
3470	19		F123	U	20R	II	INT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	CHY	1
3459...3460	19		F145	V	19R	II	INT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	CHY	2
3478	19		F147	V	19Q	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	CHY	1
3462	19		F153	V	19O	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	CHY	1
3442	19		F23	S	21L	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	CHY	1
3416...3418	19		F56	S	21Q	II	INT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	CHY	3
3373	19		F90	T	19J	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	CHY	1
3450	19		F154	U	20O	II		LASCA	FRAGMENTO	NO	NO	NO	IXT	1
3427	19		F50	W	18O	II		NAVAJA DE PERCUSIÓN	FRAGMENTO	NO	NO	NO	IXT	1
3412	19		F64	S	21K	II	INT	NAVAJA DE PERCUSIÓN	FRAGMENTO	NO	SI	SI	IXT	1
3474	19		F112	S	21L	III	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	IXT	1
3476	19		F135	V	19R	II	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	IXT	1
3471	19		F144	V	19R	III	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	IXT	1
3482	19		F149	U	20M	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	IXT	1
3388	19		F45	S	21R	II	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	IXT	1
3399	19		F47	W	18N	II		BURIL	FRAGMENTO	NO	NO	NO	NO ID	1
3359	19		F114	T	21K	II		LASCA	FRAGMENTO	NO	NO	NO	NO ID	1
3439	19		F27	S	21K	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	NO ID	1
3434	19		F88	X	17R	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	NO ID	1
3378	19		F44	W	18M	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	NO ID	1
3369	19		F71	S	21O	II	INT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	NO ID	1
3424	19		F98	W	18R	III	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	NO ID	1

Appendix C, Table C.2

Appendix C, Table C.2 (Continued)

3479	19		F147	V	19Q	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	OTU	1
3393	19		F18	S	21M	I		LASCA	FRAGMENTO	NO	NO	NO	PAC	1
3410	19		F31	S	21R	I		LASCA	FRAGMENTO	NO	NO	NO	PAC	1
3431	19		F4	S	21O	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	PAC	1
3432	19		F4	S	21O	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	PAC	1
3441	19		F23	S	21L	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	PAC	1
3446	19		F37	W	18R	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	PAC	1
3397...3398	19		F47	W	18N	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	PAC	2
3444	19		F48	W	18K	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	PAC	1
3426	19		F50	W	18O	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	PAC	1
3436...3438	19		F51	T	18J	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	PAC	3
3420	19		F52	S	21Q	II	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	PAC	1
3376	19		F67	T	17J	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	PAC	1
3425	19		F98	W	18R	III	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	PAC	1
3483	19		F106	S	21M	III	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	PAC	1
3473	19		F113	S	21K	III	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	PAC	1
3465	19		F12	S	21N	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	PAC	1
3464	19		F122	V	19O	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	PAC	1
3407...3408	19		F31	S	21R	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	PAC	2
3379	19		F44	W	18M	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	PAC	1
3404	19		F63	S	21P	II	INT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	PAC	1
3368	19		F43	S	21Q	I		LASCA	FRAGMENTO	NO	NO	NO	PAR	1
3380	19		F44	W	18M	II		NAVAJA DE PERCUSIÓN	FRAGMENTO	NO	NO	NO	PAR	1
3411	19		F64	S	21K	II	INT	NAVAJA DE PERCUSIÓN	FRAGMENTO	NO	SI	SI	PAR	1
3440	19		F39	W	18Q	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	PAR	1
3383	19		F94	S	21Q	III	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	PAR	1
3480	19		F147	V	19Q	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	PAR	1
3403	19		F93	X	17R	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	PAR	1
3385	19		F94	S	21Q	III	EXT	LASCA	FRAGMENTO	NO	NO	NO	PDO	1
3466	19		F12	S	21N	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	PDO	1
3401	19		F93	X	17R	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	PDO	1
3445	19		F37	W	18R	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	PDO	1

Appendix C, Table C.2 (Continued)

3366	19		F43	S	21Q	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	PDO	1
3394	19		F18	S	21M	I		NAVAJA DE PERCUSIÓN	FRAGMENTO	NO	SI	SI	SMJ	1
3390	19		F18	S	21M	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	SMJ	1
3485	19		F106	S	21M	III	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	SMJ	1
3472	19		F113	S	21K	III	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	SMJ	1
3461	19		F145	V	19R	II	INT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	SMJ	1
3760	19		F147	V	19Q	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	SMJ	1
3481	19		F149	U	20M	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	SMJ	1
3384	19		F94	S	21Q	III	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	SMJ	1
3392	19		F18	S	21M	I		LASCA	FRAGMENTO	NO	NO	NO	UCA	1
3428	19		F50	W	18O	II		LASCA	FRAGMENTO	NO	NO	NO	UCA	1
3429	19		F55	W	18R	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	UCA	1
3405	19		F63	S	21P	II	INT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	UCA	1
3421	19		F79	S	21N	II	INT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	UCA	1
3374	19		F90	T	19J	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	UCA	1
3475	19		F112	S	21L	III	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	UCA	1
3360...3361	19		F114	T	17I	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	UCA	2
3452	19		F157	U	20Q	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	UCA	1
3391	19		F18	S	21M	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	UCA	1
3396	19		F47	W	18N	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	UCA	1
3443	19		F48	W	18K	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	UCA	1
3402	19		F93	X	17R	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	UCA	1
3377	19		F67	T	17J	II		LASCA	FRAGMENTO	NO	NO	NO	ZAR	1
3484	19		F106	S	21M	III	EXT	LASCA	FRAGMENTO	NO	NO	NO	ZAR	1
3409	19		F31	S	21R	I		LASCA	FRAGMENTO	NO	NO	NO	ZAR	1
3406	19		F31	S	21R	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	ZAR	1
3367	19		F43	S	21Q	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	ZAR	1
3386...3387	19		F45	S	21R	II		NAVAJA PRISMÁTICA	COMPLETO	NO	SI	NO	ZAR	2
3477	19		F135	V	19R	II	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	ZAR	1
3469	19		F155	X	17L	IV		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	ZAR	1
3389	19		F45	S	21R	II		NAVAJA PRISMÁTICA	COMPLETO	NO	NO	SI	ZAR	1
3395	19		F47	W	18N	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	ZAR	1

Appendix C, Table C.2 (Continued)

3549	23	E112	M	15B	II		BURIL	FRAGMENTO	NO	SI	SI	CHY	1
3541	23	E132	K	13D	II		LASCA	FRAGMENTO	NO	NO	NO	CHY	1
3508	23	E135	L	14C	II		NAVAJA DE PERCUSIÓN	FRAGMENTO	NO	SI	SI	CHY	1
3517	23	E106	K	13G	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	CHY	1
3495	23	E111	K	13B	II	INT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	CHY	1
3500	23	E128	K	13F	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	CHY	1
3540	23	E159	L	14E	III		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	CHY	1
3527...3528	23	E159	L	14E	III		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	CHY	2
3547	23	E112	M	15B	II		LASCA	FRAGMENTO	NO	NO	NO	IXT	1
3489	23	E119	J	12D	II		LASCA	FRAGMENTO	NO	NO	NO	IXT	1
3544	23	E132	K	13D	II		LASCA	FRAGMENTO	NO	NO	NO	IXT	1
3316	23	E162	L	14B	II	TIERRO	NAVAJA DE PERCUSIÓN	FRAGMENTO	NO	NO	NO	IXT	1
3514	23	E105	K	13H	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	IXT	1
3762	23	E106	K	13G	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	IXT	1
3533	23	E112	M	15B	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	IXT	1
3486...3487	23	E119	J	12D	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	IXT	2
3499	23	E128	K	13F	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	IXT	1
3542...3543	23	E132	K	13D	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	IXT	2
3550	23	E160	L	14C	III		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	IXT	1
3524	23	E98	J	12D	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	IXT	1
3519	23	E106	K	13G	II		LASCA	FRAGMENTO	NO	NO	NO	NO ID	1
3490	23	E102	J	12H	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	NO ID	1
3518	23	E106	K	13G	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	NO ID	1
3545	23	E132	K	13D	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	NO ID	1
3513	23	E145	L	14D	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	NO ID	1
3315	23	E162	L	14B	II	TIERRO	NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	NO ID	1
3521	23	E106	K	13G	II		BURIL	FRAGMENTO	NO	SI	SI	PAC	1
3520	23	E106	K	13G	II		LASCA	FRAGMENTO	NO	NO	NO	PAC	1
4167	23	E106	K	13G	II		LASCA	FRAGMENTO	NO	NO	NO	PAC	1
3494	23	E111	K	13B	II	INT	LASCA	FRAGMENTO	NO	NO	NO	PAC	1
3493	23	E 86	N	16B	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	PAC	1
3496	23	E 96	J	12F	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	PAC	1

Appendix C, Table C.2 (Continued)

3555	23		E156	M	14B	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	PAC	1
3538...3539	23		E159	L	14E	III		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	PAC	2
3552	23		E160	L	14C	III		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	PAC	1
3503...3504	23		E160	L	14C	III		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	PAC	2
3492	23		E102	J	12H	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	PAR	1
3559	23		E104	J	12A	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	PAR	1
3511	23		E145	L	14D	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	PAR	1
3558	23		E129	J	12G	III		LASCA	FRAGMENTO	NO	NO	SI	PDO	1
3556	23		E 76	M	15H	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	PDO	1
3509	23		E135	L	14C	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	PDO	1
3525	23		E159	L	14E	III		NAVAJA DE PERCUSIÓN	FRAGMENTO	NO	NO	SI	SWJ	1
3531	23		E159	L	14E	III		NAVAJA DE PERCUSIÓN	COMPLETO	NO	SI	SI	SWJ	1
3512	23		E145	L	14D	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	SWJ	1
3491	23		E102	J	12H	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	UCA	1
3557	23		E147	M	15D	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	UCA	1
3516	23		E152	M	15G	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	UCA	1
3526	23		E159	L	14E	III		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	UCA	1
3318	23		E163	L	14E	III	HERRO	NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	UCA	1
3497	23		E 96	J	12F	I		LASCA	FRAGMENTO	NO	NO	NO	ZAR	1
3507	23		E 99	J	12C	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	ZAR	1
3761	23		E106	K	13G	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	ZAR	1
3534	23		E115	J	12E	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	ZAR	1
3537	23		E116	J	12F	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	ZAR	1
3501	23		E118	J	12C	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	ZAR	1
3498	23		E128	K	13F	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	ZAR	1
3546	23		E132	K	13D	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	ZAR	1
3502	23		E160	L	14C	III		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	ZAR	1
3551	23		E160	L	14C	III		NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	SI	ZAR	1
3344	30		G2	J	12L	II	EXT	NAVAJA DE PERCUSIÓN	FRAGMENTO	NO	SI	NO	IXT	1
3345	30		G2	J	12L	II	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	ZAR	1
3354...3355	PATIO		H12	AA	24L	III		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	CHY	2
3326	PATIO		H24	AA	25L	III		LASCA	FRAGMENTO	NO	NO	NO	IXT	1

Appendix C, Table C.2 (Continued)

3324	PATIO	H16	AA	24N / 25N	III	TIERRO	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	NO ID	1
3352...3353	PATIO	H12	AA	24L	III		NAVAJA DE PERCUSIÓN	FRAGMENTO	NO	SI	NO	PAC	2
3340	PATIO	H10	AA	24L	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	PAC	1
3346...3351	PATIO	H12	AA	24L	III		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	PAC	6
3327	PATIO	H21	AA	24N	III		BURIL	FRAGMENTO	NO	SI	SI	PDO	1
3319	PATIO	H17	AA	24L / 24M	IV	TIERRO	NAVAJA PRISMÁTICA	FRAGMENTO	NO	NO	NO	PDO	1
3358	PATIO	H12	AA	24L	III		NAVAJA DE PERCUSIÓN	FRAGMENTO	NO	SI	NO	SMJ	1
3356...3357	PATIO	H12	AA	24L	III		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	SMJ	2
3323	PATIO	H16	AA	24N / 25N	III	TIERRO	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	SMJ	1
3341	PATIO	H10	AA	24L	II		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	UCA	1
3320...3322	PATIO	H16	AA	24N / 25N	III	TIERRO	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	UCA	3
3343	PATIO	H20	AA	25L	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	UCA	1
3328	PATIO	H14	AA	25N	I		NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	ZAR	1
3339	PATIO	H15	AA	25N	II	EXT	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	SI	ZAR	1
3325	PATIO	H16	AA	24N / 25N	III	TIERRO	NAVAJA PRISMÁTICA	FRAGMENTO	NO	SI	NO	ZAR	1
												TOTAL	193

SMJ SAN MARTÍN JILOTEPEC, GUATEMALA
CHY EL CHAYAL, GUATEMALA
IXT IXTEPEQUE, GUATEMALA
PDO PICO DE ORIZABA, VERACRUZ
ZAC ZACUALTIPÁN, HIDALGO
UCA UCAREO, MICHOACÁN
OTU OTUMBA, MÉXICO
ZAR ZARAGOZA, PUEBLA
PAC PACHUCA, HIDALGO
PAR PAREDÓN, PUEBLA
NO ID NO IDENTIFICADO

Table C.3: Ceramic Small Finds

PROYECTO ARQUEOLÓGICO ISLA CERRITOS, YUCATÁN

TEMPORADA DE CAMPO 2010

MATERIAL CERÁMICO

PATIO (INCLUYENDO POZO 28); ESTRUCTURAS 19, 23 Y 30

NO. IC	EST.	LOTE	CALA	CUADRO	CAPA		TIPO FUNCIONAL	FORMA	FREC.	OBSERVACIONES
4169	19	F14	T	20J	I		TAMBOR	BORDE DE CERAMICA	1	FRAGMENTO DE BORDE O PEDESTAL DE TAMBOR DE MUNA PIZARRA
10733	19	F92	X	17N	I		BOLITA DE BARRO	CIRCULAR	1	SEMIPERFORADA
10788	19	F92	X	17N	I		PESA DE RED	IRREGULAR	1	
12424	19	F29	W	18N	I		PESA DE RED	IRREGULAR	1	
12427	19	F127	V	19Q	I		PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	1	
3642	19	F154	U	20O	II		ADORNO	ESFÉRICA	1	CUENTA, ESFEROIDE
3662	19	F157	U	20Q	II		PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	1	
3659	19	F45	S	21R	II	EXT	PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	1	
3658	19	F48	W	18K	II		PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	1	KUKULA CREMA
3657	19	F65	S	21M	II	EXT	TEJO	CIRCULAR	1	DZITAS
10557	19	F63	S	21P	II	INT	BASE DE ESPEJO	CIRCULAR	1	PASTA FINA, FRAGMENTO
10692	19	F45	S	21P	II	EXT	TEJO	IRREGULAR	1	
10714	19	F63	S	21P	II	INT	TEJO	IRREGULAR	1	
10779	19	F149	U	20M	II		TEJO	CIRCULAR	1	
10765	19	F72	T	21J	II		TEJO	IRREGULAR	1	
12415	19	F47	W	18N	II		NO IDENTIFICADO	CIRCULAR	1	CERAMICA PERFORADA
12416	19	F45	S	21R	II	EXT	BOLITA DE BARRO	CIRCULAR	1	
12417	19	F145	V	19R	II	INT	BOLITA DE BARRO	CIRCULAR	1	SEMIPERFORADA

Appendix C, Table C.3

Appendix C, Table C.3 (Continued)

12419	19	F47	W	18N	II		PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	1	
12420	19	F104	T	18I	II		TEJO	CIRCULAR	1	
12421...12419	19	F56	S	21Q	II	INT	PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	2	
12423	19	F123	U	20R	II	INT	BOLITA DE BARRO	CIRCULAR	1	SEMIPERFORADA
12426	19	F154	U	20O	II		TEJO	CIRCULAR	1	
3660...3661	19	F135	V	19R	III	EXT	PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	2	
3943	19	F152	X	17L	III	PASILLO	TEJO	CUADRANGULAR	1	PERFORADO
6943	19	F152	X	17L	III		TEJO	IRREGULAR	1	
10778	19	F144	V	19R	III	EXT	TEJO	IRREGULAR	1	
12413...12419		F98	W	18R	III	EXT	TEJO	IRREGULAR	2	
12418	19	F89	S	21R	III	EXT	PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	1	
12425	19	F118	U	20R	III	EXT	PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	1	
10644	19	F155	X	17L	IV		TEJO	IRREGULAR	1	
3726	23	E 70	N	16E	I		NO IDENTIFICADO	CILÍNDRICO	1	
3712	23	E 77	M	15G	II	EXT	TEJO	RECTANGULAR	1	NARANJA FINA
3671	23	E 85	N	16G	I		TEJO	RECTANGULAR CON LADOS DESIGUALES	1	DZITAS
3695	23	E 90	N	16F	II	INT	TEJO	RECTANGULAR CON VERTICES CONCAVAS	1	
3678	23	E100	J	12B	I		TEJO	CIRCULAR	1	KUKULA CREMA
3707	23	E102	J	12H	II		TEJO	TRIANGULAR	1	
3696	23	E103	J	12G	II		TEJO	TRIANGULAR	1	

Appendix C, Table C.3 (Continued)

3730	23	E104	J	12A	II		PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	1	
3701	23	E107	J	12B	II		TEJO	RECTANGULAR	1	
3673	23	E107	J	12B	II		TEJO	CIRCULAR	1	
3692...3693	23	E109	N	16A	II		TEJO	SEMICIRCULAR	2	
3691	23	E109	N	16A	II		TEJO	CIRCULAR	1	
4165....4166	23	E110	K	13B	II	EXT	TEJO	REDONDEADA	2	PISTE ESTRIADOS, DE UNA OFRENDA O CONCENTRACION DE CERAMICA
3694	23	E110	K	13B	II	EXT	TEJO	CIRCULAR	1	
3705...3706	23	E112	M	15B	II	EXT	TEJO	CIRCULAR	2	
3687...3688	23	E112	M	15B	II	EXT	TEJO	TRIANGULAR	2	
3669...3670	23	E112	M	15B	II	EXT	TEJO	CIRCULAR	2	
3714	23	E112	M	15B	II	EXT	TEJO	RECTANGULAR CON VERTICES REDONDEADOS	1	
3663...3665	23	E115	J	12E	II		TEJO	SEMICIRCULAR	3	
3689	23	E115	J	12E	II		TEJO	CIRCULAR	1	MARCA CENTRAL DE FRICCIÓN
3735....3736	23	E116	J	12F	II		PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	2	
3683...3684	23	E116	J	12F	II		TEJO	CIRCULAR	2	
3718	23	E117	J	12F	III		TEJO	TRIANGULAR	1	
3680	23	E119	J	12D	II		TEJO	TRIANGULAR	1	
3679	23	E119	J	12D	II		TEJO	CIRCULAR	1	
3675	23	E121	M	15F	II		TEJO	CIRCULAR	1	DZITAS
3709	23	E123	M	15D	II		TEJO	CUADRANGULAR	1	
3682	23	E126	N	16B	II		TEJO	CIRCULAR	1	KUKULA CREMA
3681	23	E126	N	16B	II		TEJO	CUADRANGULAR	1	KUKULA CREMA
4164	23	E127	K	13C	II		PESA DE RED	IRREGULAR	1	
3721	23	E127	K	13C	II		TEJO	IRREGULAR	1	
3710	23	E127	K	13C	II		TEJO	IRREGULAR	1	
3698	23	E127	K	13C	II		TEJO	IRREGULAR	1	

Appendix C, Table C.3 (Continued)

3728...3729	23	E128	K	13F	II		PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	2	
3708	23	E128	K	13F	III		TEJO	TRIANGULAR	1	
3672	23	E130	J	12F	III	EXT	TEJO	OVAL	1	
3727	23	E132	K	13D	II		PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	1	
3685	23	E134	J	12E	II	EXT	TEJO	RECTANGULAR CON VERTICES REDONDEADOS	1	
3753	23	E135	L	14C	II		TEJO	CIRCULAR	1	XCANCHAKAN ROJA COMPACTA
3752	23	E135	L	14C	II		TEJO	OJIVA	1	MUNA
3717	23	E135	L	14C	II		TEJO	TRIANGULAR	1	
3826	23	E135	L	14C	II		NO IDENTIFICADO	FORMA DE PUNTA	1	CERAMICA EN FORMA DE PUNTA DE PROYECTIL
3570	23	E135	L	14C	II		MALACATE	CIRCULAR	1	INCISO CON AVE
3754	23	E138	J	12D	II		TEJO	CUADRANGULAR	1	XCANCHAKAN CREMA
3716	23	E139	J	12D	II		TEJO	TRIANGULAR	1	MUNA
3563	23	E139	J	12D	II		SILBATO	AVE	1	NARANJA FINA, COMPLETO
3723	23	E151	K	13D	II	PLATAFORMA/AL	PESA DE RED		1	
3702...3703	23	E159	L	14E	III		TEJO	CIRCULAR	2	
3720	23	E159	L	14E	III		TEJO	TRIANGULAR	1	
3713	23	E159	L	14E	III		TEJO	CIRCULAR	1	
3722	23	E160	L	14C	III		PESA DE RED	IRREGULAR	1	
3719	23	E160	L	14C	III		TEJO	CIRCULAR	1	
3697	23	E161	K	13B	II		TEJO	TRIANGULAR	1	
3711	23	E61	M	15A	I		TEJO	CIRCULAR	1	
3561	23	E61	M	15A	I		PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	1	DESGASTE DE HILO
3560	23	E61	M	15A	I		PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	1	
3731	23	E62	K	13G	I		PESA DE RED	RECTANGULAR	1	

Appendix C, Table C.3 (Continued)

3674	23	E80	N	16A	I		NO IDENTIFICADO	SEMIESFERICA	1	
3668	23	E89	N	16C	I		TEJO	TRIANGULAR	1	
3667	23	E89	N	16C	I		TEJO	CUADRANGULAR	1	
3666	23	E89	N	16C	I		TEJO	CIRCULAR	1	
3732...3734	23	E95	J	12G	I		PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	3	
3724...3725	23	E98	J	12D	I		PESA DE RED	RECTANGULAR CON VERTICES REDONDEADOS	2	
3677	23	E99	J	12C	I		TEJO	SEMICIRCULAR	1	
3676	23	E99	J	12C	I		TEJO	CIRCULAR	1	
3583	30	G1	J	12L	I		TEJO	TRIANGULAR	1	NARANJA FINA
3582	30	G1	J	12L	I		TEJO	RECTANGULAR	1	DZITAS
3755	30	G2	J	12L	II	EXT	TEJO	CIRCULAR	1	XCANCHAKAN ROJA; MARCA CENTRAL DE FRICCIÓN
3651	30	G2	J	12L	II	EXT	PESA DE RED	RECTANGULAR CON LADOS REDONDEADOS	1	KUKULA CREMA
3650	30	G2	J	12L	II	EXT	PESA DE RED	RECTANGULAR CON LADOS REDONDEADOS	1	NARANJA FINA
3649	30	G2	J	12L	II	EXT	FIGURILLA	CAPARAZÓN DE TORTUGA	1	PERFORADO
3587	30	G2	J	12L	III	EXT	TEJO	TRIANGULAR	1	
3586	30	G2	J	12L	III	EXT	TEJO	CUADRANGULAR	1	
3585	30	G2	J	12L	II	EXT	TEJO	CIRCULAR	1	MARCA CENTRAL DE FRICCIÓN
3584	30	G3	J	12L	III	EXT	TEJO	RECTANGULAR	1	DZITAS
3338	30	G1	J	12L	I		NAVAJA	SEMIELIPTICA	1	SILEX, FRAGMENTO
3149...3150	30	G2	J	12L	II	EXT	CANTO RODADO	REDONDEADA	2	CALIZA
3345	30	G2	J	12L	II	EXT	NAVAJA PRISMÁTICA	RECTANGULAR	1	OBSIDIANA, FRAGMENTO
3344	30	G2	J	12L	II	EXT	NAVAJA DE PERCUSIÓN	CUADRANGULAR	1	OBSIDIANA, FRAGMENTO

Appendix C, Table C.3 (Continued)

3336	30	G2	J	12L	III	EXT	MACERADOR	RECTANGULAR CON LADOS REDONDEADOS	1	CALIZA, FRAGMENTO
3335	30	G2	J	12L	II	EXT	PIEDRA DE MOLER	IRREGULAR	1	CALIZA, COMPLETO
3334	30	G2	J	12L	II	EXT	PIEDRA APLANADA	TRIANGULAR	1	CALIZA, 2 FRAGMENTOS
3333	30	G2	J	12L	II	EXT	ALISADOR	TRIANGULAR	1	PIEDRA DE RIO, FRAGMENTO
3148	30	G2	J	12L	II	EXT	NO IDENTIFICADO	REDONDEADO Y APLANADO	1	CALIZA
3147	30	G2	J	12L	II	EXT	ALISADOR	RECTANGULAR CON LADOS REDONDEADOS	1	CALIZA
3146	30	G3	J	12L	III	EXT	PIEDRA REDONDEADA	CIRCULAR	1	
3591	PATIO	275	AA	24M	II		TEJO	CIRCULAR	1	
3601	PATIO	276	AA	24M	III		TEJO	CIRCULAR	1	KUKULA CREMA
3303	PATIO	277	AA	24M	IV	ENTIERRO # 19	BOLITA DE BARRO	ESFÉRICA	1	LIGERAMENTE PERFORADO
3573...3574	PATIO	H10	AA	24L	II		PESA DE RED	RECTANGULAR	2	
3756	PATIO	H10	AA	24L	II		TEJO	CIRCULAR	1	XCANCHAKAN ROJA
3599	PATIO	H10	AA	24L	II		TEJO	RECTANGULAR CON VERTICES REDONDEADOS	1	
3598	PATIO	H10	AA	24L	II		TEJO	TRIANGULAR	1	
3597	PATIO	H10	AA	24L	II		TEJO	RECTANGULAR	1	
3596	PATIO	H10	AA	24L	II		TEJO	IRREGULAR	1	
3830	PATIO	H11	AA	24N	III		BOLITA DE BARRO	ESFÉRICA	1	SONAJA?
3652	PATIO	H11	AA	24N	III		BOLITA DE BARRO	ESFÉRICA	1	
3595	PATIO	H11	AA	24N	III		TEJO	CUADRANGULAR	1	
3590	PATIO	H11	AA	24N	III		TEJO	TRIANGULAR	1	
3589	PATIO	H11	AA	24N	III		TEJO	TRIANGULAR	1	
3654...3655	PATIO	H12	AA	24L	III		NO IDENTIFICADO	SEMIESFÉRICA, HUECO	2	BARRO BURDO, BOLITA HUECO
3653	PATIO	H12	AA	24L	III		BOLITA DE BARRO	ESFÉRICA	1	
3602	PATIO	H12	AA	24L	III		TEJO	CUADRANGULAR	1	
3600	PATIO	H12	AA	24L	III		TEJO	IRREGULAR	1	NARANJA FINA, FRAGMENTO

Appendix C, Table C.3 (Continued)

3604	PATIO	H14	AA	25N	I		TEJO	TRIANGULAR	1		
3603	PATIO	H14	AA	25N	I		TEJO	PENTAGONAL	1		
3577...3578	PATIO	H15	AA	25N	II		PESA DE RED	CUADRANGULAR	2		
3758	PATIO	H16	AA	24N / 25N	III	ENTIERRO # 20	TEJO	CIRCULAR	1	XICANCHAKAN ROJA	
3300	PATIO	H16	AA	24N / 25N	III	ENTIERRO # 20	TEJO	CUADRANGULAR	1	BORDE SILHO	
3299	PATIO	H16	AA	24N / 25N	III	ENTIERRO # 20	TEJO	CUADRANGULAR	1		
3301...3302	PATIO	H17	AA	24L / 24M	IV	ENTIERRO # 21	BOLITA DE BARRO	ESFÉRICA	2	2 TAMAÑOS DIFERENTS	
3656	PATIO	H21	AA	24N	IV		NO IDENTIFICADO	ESFÉRICA	1	LIGERAMENTE PERFORADO	
3588	PATIO	H3	AA	22N	II		TEJO	TRIANGULAR	1		
3592	PATIO	H4	AA	22N	III		TEJO	PENTAGONAL	1		
3593	PATIO	H7	AA	24N	II		TEJO	TRIANGULAR	1		
3594	PATIO	H9	AA	24L	I		TEJO	RECTANGULAR	1		
								TOTAL	169		

Table C.4: Worked and Unworked Shell by Species, Distribution, and Provenience

PROYECTO ARQUEOLÓGICO ISLA CERRITOS, YUCATÁN

TEMPORADA 2010

ARTEFACTOS DE CARACOL

PATIO (INCLUYENDO POZO 28); ESTRUCTURAS 19, 23 Y 30

ESTRUCTURA	NO. IC	LOTE	CALA	CUARDO	CAPA	CLASE	ESPECIE	ARTEFACTO
19	3647	E94	S	21Q	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10479	F60	W	18P	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10554	F154	U	20O	II	GASTERÓPODO	*Strombus costatus*	CUCHARA
19	10555	F31	S	21R	I	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10556	F45	S	21R	II	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10558	F50	W	18O	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	12648	F94	S	21Q	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10559	F50	W	18 O	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	12649	F94	S	21Q	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10560	F50	W	18O	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10561	F50	W	18O	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10562	F50	W	18O	II	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10563	F50	W	18O	II	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10564	F50	W	18O	II	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10565	F16	W	18K	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10575	F25	W	18M	I	GASTERÓPODO	*Busycon Contrarium*	SEMITRABAJADO
19	10589	F45	S	21R	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10590	F45	S	21R	II	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10591	F89	S	21R	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10592	F89	S	21R	III (EXTERIOR)	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10593	F45	S	21R	II	GASTERÓPODO	*Strombus costatus*	HACHA
19	10603	F144	V	19R	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10604	F144	V	19R	III (EXTERIOR)	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10605	F2	T	21J	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10606	F2	T	21J	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10608	F58	S	21L	II (INTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10609	F58	S	21L	II (INTERIOR)	GASTERÓPODO	*Strombus costatus*	HACHA
19	10610	F58	S	21L	II (INTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO

Appendix C, Table C.4

Appendix C, Table C.4 (Continued)

19	10612	F18	S	21M	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10613	F18	S	21M	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10614	F18	S	21M	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10615	F18	S	21M	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10616	F18	S	21M	I	PELECÍPODO	*Lucina pectinata*	PENDIENTE- COLGANTE
19	10617	F123	U	20R	II (INTERIOR)	GASTERÓPODO	*Strombus costatus*	HACHA
19	10618	F97	S	21P	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10619	F107	S	21N	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10620	F65	S	21M	II (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10621	F65	S	21M	II (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10622	F65	S	21M	II (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10623	F65	S	21M	II (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10624	F45	T	20J	I (INTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10625	F45	T	20J	I (INTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10626	F45	T	20J	I (INTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10628	F46	W	18L	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10629	F46	W	18 L	II	GASTERÓPODO	*Conus spurius atlanticus*	PENDIENTE
19	10650	F118	U	20R	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	1 PULIDOR
19	10651	F118	U	20R	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	HACHA
19	10653	F90	T	19J	II	GASTERÓPODO	*Strombus costatus*	TROMPETA
19	10654	F90	T	19J	II	GASTERÓPODO	*Strombus costatus*	TROMPETA
19	10655	F90	T	19J	II	PELECÍPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10656	F147	V	19Q	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10657	F94	S	21Q	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	HACHA
19	10660	F94	S	21Q	III (EXTERIOR)	PELECÍPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10661	F94	S	21Q	III (EXTERIOR)	PELECÍPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10663	F48	W	18K	II	GASTERÓPODO	*Strombus costatus*	HACHA
19	10664	F48	W	18K	II	GASTERÓPODO	*Strombus costatus*	NO IDENTIFICADO
19	10665	F48	W	18K	II	PELECÍPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10693	F45	S	21R	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10694	F45	S	21R	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10695	F62	S	21K	II (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10696	F62	S	21K	II (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO

Appendix C, Table C.4 (Continued)

19	10702	F63	S	21P	II (INTERIOR)	GASTERÓPODO	*Strombus costatus*	TROMPETA
19	10703	F83	T	20J	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10704	F83	T	20J	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10715	F75	T	17J	III	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10716	F75	T	17J	III	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10719	F49	S	21R	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10720	F49	S	21R	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10721	F96	T	21J	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10730	F78	X	17M	I	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10731	F78	X	17M	I	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10732	F35	W	18O	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10734	F35	W	18O	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10746	F64	S	21K	II (INTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10747	F64	S	21K	II (INTERIOR)	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10749	F60	W	18P	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10752	F134	V	19R	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10753	F134	V	19R	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10754	F20	W	18L	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10755	F20	W	18L	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10756	F20	W	18L	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10762	F114	T	17I	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10763	F59	S	21P	II (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10764	F57	S	21N	II (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	HACHA
19	10767	F41	W	18P	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10768	F41	W	18P	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10770	F44	W	18M	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10771	F44	W	18M	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10772	F44	W	18M	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10773	F44	W	18M	II	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10774	F128	V	19K	II	GASTERÓPODO	*Strombus costatus*	HACHA
19	10780	F135	V	19R	II (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10781	F135	V	19R	II (EXTERIOR)	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	10784	F98	W	18R	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	HACHA

19	10785	F98	W	18R	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	10786	F98	W	18R	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	HACHA
19	10787	F98	W	18R	III (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
19	12410	F118	U	20R	III (EXTERIOR)	PELECÍPODO	*Mercenaria campechiensis*	SEMITRABAJADO
19	12455	F68	S	21M	II (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	3564	E118	J	12C	II	PELECÍPODO	*Spondylus americanus*	CUENTA
23	3566	E159	L	14E	III	GASTERÓPODO	*Strombus costatus*	DESGRANADOR?
23	3568	E121	M	15F	II	GASTERÓPODO	*Oliva reticularis*	PENDIENTE
23	3821	E119	J	12D	II	GASTERÓPODO	*Strombus costatus*	DESGRANADOR?
23	3823	E110	K	13B	II (EXTERIOR)	GASTERÓPODO	*No identificado*	NO IDENTIFICADO
23	3824	E128	K	13F	II	GASTERÓPODO	*Strombus costatus*	RAEDERA
23	4162	E159	L	14E	III	GASTERÓPODO	*Busycon contrarium*	PUNZÓN
23	4163	E160	L	14C	III	GASTERÓPODO	*Busycon contrarium*	PUNZÓN
23	10566	E 128	K	13F	II	GASTERÓPODO	*Oliva reticularis*	PENDIENTE
23	10567	E 128	K	13F	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10568	E 128	K	13F	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10569	E 128	K	13F	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10570	E128	K	13F	II	GASTERÓPODO	*Busycon contrarium*	SEMITRABAJADO
23	10571	E128	K	13F	II	GASTERÓPODO	*Busycon contrarium*	SEMITRABAJADO
23	10573	E68	M	15G	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10574	E68	M	15G	II	GASTERÓPODO	*Mercenaria campechiensis*	SEMITRABAJADO
23	10576	E134	J	12E	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10577	E134	J	12E	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10578	E134	J	12E	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10581	E108	M	15A	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10582	E122	M	15E	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10583	E135	L	14C	II	GASTERÓPODO	*Oliva reticularis*	PENDIENTE
23	10584	E133	L	14F	I	GASTERÓPODO	*Strombus costatus*	HACHA
23	10585	E133	L	14F	I	PELECÍPODO	*Mercenaria campechiensis*	SEMITRABAJADO
23	10586	E73	K	13C	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10597	E110	J	12L	II	GASTERÓPODO	*Strombus costatus*	HACHA
23	10598	E110	J	12L	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10630	E114	J	12B	II	GASTERÓPODO	*Conus spurius atlanticus*	SEMITRABAJADO

Appendix C, Table C.4 (Continued)

23	10631	E114	J	12B	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10632	E114	J	12B	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10633	E114	J	12B	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10634	E114	J	12B	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10635	E114	J	12B	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10637	E96	J	12F	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10638	E108	M	15A	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10639	E108	M	15A	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10640	E108	M	15A	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10641	E108	M	15A	II	GASTERÓPODO	*Busycon contrarium*	PERFORADOR
23	10642	E107	J	12B	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10643	E107	J	12B	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10645	E107	J	12B	II	PELECÍPODO	*Mercenaria campechiensis*	SEMITRABAJADO
23	10646	E160	L	14C	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10647	E100	J	12B	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10648	E96	J	12F	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10649	E101	J	12A	I	GASTERÓPODO	*Busycon contrarium*	PUNZÓN
23	10667	E160	L	14C	III	GASTERÓPODO	*Strombus costatus*	HACHA
23	10668	E160	L	14C	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10673	E112	M	15B	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10674	E126	N	16B	II	GASTERÓPODO	*Busycon contrarium*	PERFORADOR
23	10697	E75	K	13B	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10698	E75	K	13B	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10699	E75	K	13B	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10700	E75	K	13B	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10701	E115	J	12E	II	GASTERÓPODO	*Strombus costatus*	1 TROMPETA
23	10705	E113	M	15A-15B	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10706	E132	K	13D	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10707	E132	K	13D	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10708	E119	J	12D	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10709	E119	J	12D	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10710	E141	L	14F	II	GASTERÓPODO	*Strombus costatus*	HACHA
23	10711	E141	L	14F	II	GASTERÓPODO	*Strombus costatus*	HACHA

Appendix C, Table C.4 (Continued)

23	10712	E141	L	14F	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10713	E141	L	14F	II	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
23	10714	E141	L	14F	II	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
23	10717	E112	M	15B	II	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
23	10718	E112	M	15B	II	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
23	10722	E103	J	12G	II	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
23	10723	E110	K	13B	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10724	E110	K	13B	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10725	E110	K	13B	II	GASTERÓPODO	*Strombus costatus*	HACHA
23	10726	E110	K	13B	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10727	E121	M	15F	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10728	E121	M	15F	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10729	E121	M	15F	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10735	E95	J	12G	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10736	E95	J	12G	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10737	E119	J	12D	II	GASTERÓPODO	*Strombus costatus*	TROMPETA
23	10738	E61	M	15C	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10739	E61	M	15C	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10740	E157	L	14B	II (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10741	E115	J	12E	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10742	E115	J	12E	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10743	E115	J	12E	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10744	E115	J	12E	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10745	E61	M	15A	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10748	E135	L	14C	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10750	E97	J	12E	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10751	E159	L	14E	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10757	E159	L	14E	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10758	E100	J	12B	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10759	E128	K	13F	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10760	E81	K	13A	II	GASTERÓPODO	*Strombus costatus*	HACHA
23	10761	E130	J	12F	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10766	E110	J	13B	II	GASTERÓPODO	*Strombus costatus*	HACHA

Appendix C, Table C.4 (Continued)

23	10782	E81	K	13A	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10783	E81	K	13A	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10791	E104	J	12A	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10792	E104	J	12A	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
23	10793	E104	J	12A	II	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
23	10579	E134	J	12E	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
30	10596	G3	J	12 L	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
30	3648	G2	J	12L	II (EXTERIOR)	GASTERÓPODO	*Strombus costatus*	PECTORAL
30	10594	G3	J	12L	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
30	10595	G3	J	12L	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
30	10627	G1	J	12L	I	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
30	10669	G2	J	12L	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
30	10670	G2	J	12L	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
30	10671	G2	J	12L	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
30	10672	G2	J	12L	II	GASTERÓPODO	*Pleuroploca gigantea*	CINCEL
PATIO	3317	AA	H18	24L	III (ENTIERRO 23)	GASTERÓPODO	*Strombus costatus*	
PATIO	10552	14	AA	25N	I	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
PATIO	10553	H9	AA	24L	I	GASTERÓPODO	*Strombus costatus*	HACHA
PATIO	10572	H10	AA	24L	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10587	277	AA	24 M (POZO 28)	IV (ENTIERRO 19)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10588	277	AA	24 M (POZO 28)	IV (ENTIERRO 19)	GASTERÓPODO	*Strombus costatus*	HACHA
PATIO	10599	275	AA	24 M (POZO 28)	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10600	275	AA	24 M (POZO 28)	II	GASTERÓPODO	*Strombus costatus*	CUCHARA
PATIO	10601	275	AA	24 M (POZO28)	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10607	H7	AA	24N	II	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
PATIO	10611	H7	AA	24N	II	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10662	H16	AA	25N	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10666	H15	AA	25N	II (EXTERIOR)	GASTERÓPODO	*Conus spurius atlanticus*	SEMITRABAJADO
PATIO	10675	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10676	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	HACHA
PATIO	10677	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10678	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10679	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO

Appendix C, Table C.4 (Continued)

PATIO	10680	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10681	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	HACHA
PATIO	10682	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10683	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10684	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10685	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10686	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10687	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	HACHA
PATIO	10688	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	HACHA
PATIO	10689	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	CUCHARON
PATIO	10690	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	CUCHARON
PATIO	10691	H12	AA	24N	III	GASTERÓPODO	*Strombus costatus*	CUCHARON
PATIO	10769	H23	AA	24N	IV (ENTIERRO 25)	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10775	H11	AA	24N	III	GASTERÓPODO	*Strombus costatus*	SEMITRABAJADO
PATIO	10776	H11	AA	24N	III	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
PATIO	10777	H11	AA	24N	III	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
PATIO	10789	H7	AA	24N	III	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO
PATIO	10790	H7	AA	24N	III	PELECIPODO	*Mercenaria campechiensis*	SEMITRABAJADO

Table C.5: Carbon Samples

PROYECTO ARQUEOLÓGICO ISLA CERRITOS, YUCATÁN

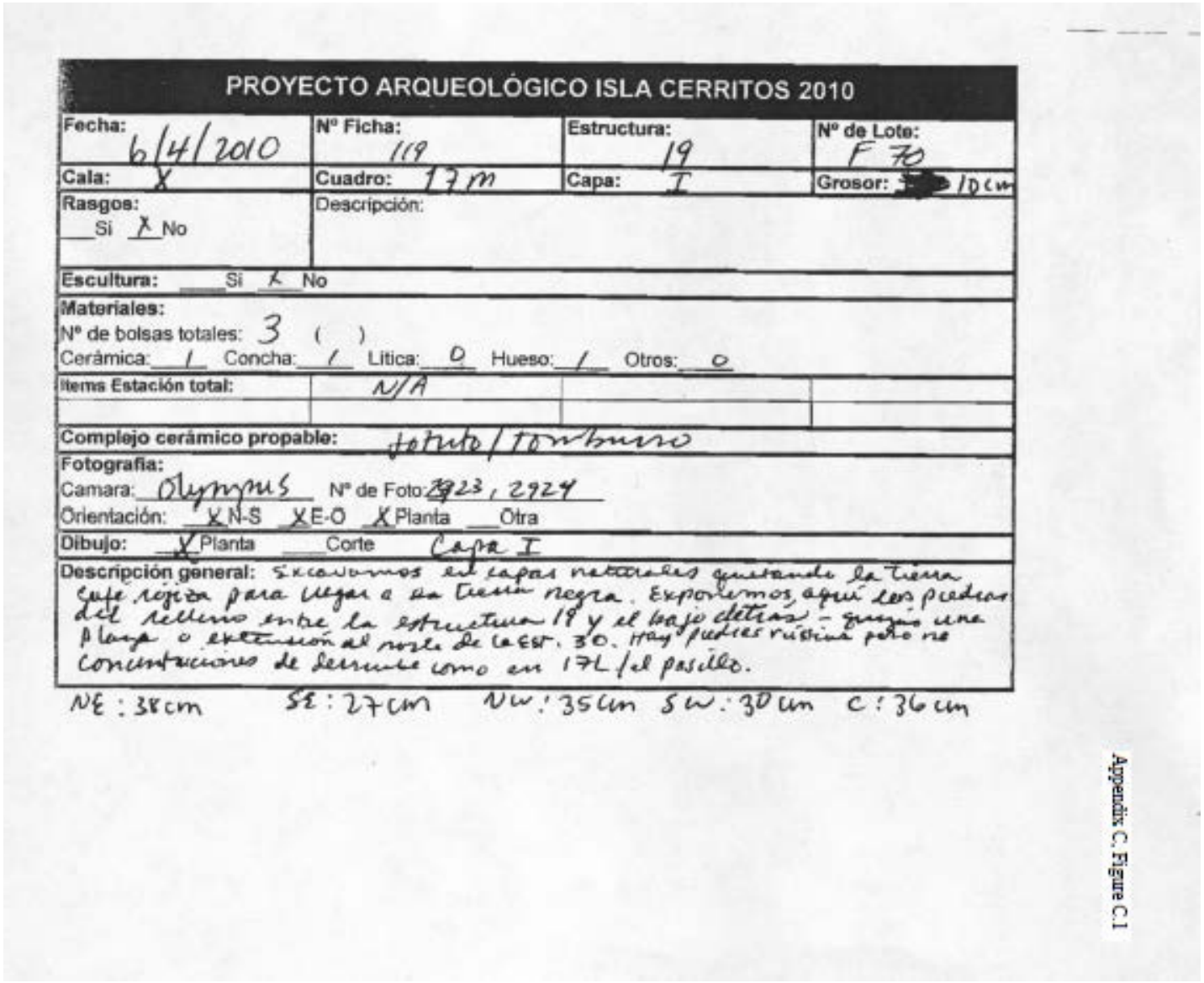
TEMPORADA DE CAMPO 2010

MUESTRAS DE CARBÓN

Appendix C, Table C.5

NO. IC	EST.	POZO	LOTE	CALA	CUADRO	CAPA		CLASE	FREC.
3605	PATIO	28	277	AA	24M	IV	ENTIERRO 19	CARBÓN	1
3606	30		G2	J	12L	II		CARBÓN	1
3607	19		F157	U	20Q	II		CARBÓN	1
3608	19		F76	T	20J	II	EXT	CARBÓN	1
3609	19		F18	S	21M	I		CARBÓN	1
3610	19		F139	X	17P	I		CARBÓN	1
3611	19		F144	V	19R	III	EXT	CARBÓN	1
3612	19		F25	W	18M	I		CARBÓN	1
3613	19		F154	U	20O	II		CARBÓN	1
3614	19		F122	V	19O	I		CARBÓN	1
3615	19		F29	W	18N	I		CARBÓN	1
3616	19		F33	S	21P	I		CARBÓN	1
3617	19		F94	S	21Q	III	EXT	CARBÓN	1
3618	19		F45	S	21R	II	EXT	CARBÓN	1
3619	19		F51	T	18J	II		CARBÓN	1
3620	19		F16	W	18K	I		CARBÓN	1
3621, 3626	23		E118	J	12C	II		CARBÓN	2
3622	23		E114	J	12B	II		CARBÓN	1
3623	23		E110	K	13B	II	EXT	CARBÓN	1
3624	23		E159	L	14E	III		CARBÓN	1
3625	23		E145	L	14D	II		CARBÓN	1
3627	23		E125	J	12E	II	INT RASGO CU	CARBÓN	1
3628	23		E119	J	12D	II		CARBÓN	1
3629	23		E127	K	13C	II		CARBÓN	1
3630	23		E102	J	12H	II		CARBÓN	1
3631	23		E99	J	12C	I		CARBÓN	1
3632	23		E132	K	13D	II		CARBÓN	1
								TOTAL	**28**

Figure C.1: Lot Sheet Template, ICAP 2010



PROYECTO ARQUEOLÓGICO ISLA CERRITOS 2010

Fecha: 6/4/2010	Nº Ficha: 119	Estructura: 19	Nº de Lote: F 70
Cala: X	Cuadro: 17m	Capa: I	Grosor: [redacted] 10 cm
Rasgos: ___Si _X_No	Descripción:		

Escultura: ___Si _X_No

Materiales:
Nº de bolsas totales: 3 ( )
Cerámica: 1 Concha: 1 Lítica: 0 Hueso: 1 Otros: 0

Items Estación total:	N/A		

Complejo cerámico propable: Jotuto / Tombuto

Fotografía:
Camara: Olympus Nº de Foto: 2923, 2924
Orientación: X N-S X E-O X Planta ___Otra

Dibujo: X Planta ___Corte Capa I

Descripción general: Excavamos en capas naturales quitando la tierra café rojiza para llegar a la tierra negra. Exponemos aquí los pedazos del relleno entre la estructura 19 y el bajo detrás - guarda una planta o extensión al norte de la Est. 30. Hay pedazos rústica pero no concentraciones de derrumbe como en 17L / el posible.

NE: 38cm SE: 27cm NW: 35cm SW: 30cm C: 36cm

Appendix C, Figure C.1

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