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EXPLORATION OF BURTON MOUND CONTINUED: FAUNAL ANALYSIS OF A
MAINLAND CHUMASH SITE

A thesis submitted in partial fulfillment of the requirements

For the degree of Masters of Arts in Anthropology,

Public Archaeology

By

Heather Renée McDaniel Wilcox

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The thesis of Heather Renée McDaniel Wilcox is approved:

Matthew Des Lauriers, Ph.D.

Date

John R. Johnson, Ph.D.

Date

Hélène Rougier, Ph.D., Chair

Date

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DEDICATION

*For my children, Connor and Chloe; and my love, Michael,
for all their patience and support*

TABLE OF CONTENTS

Signature Page	iii
Acknowledgements	iv
Dedication Page	vi
List of Figures	ix
List of Tables	xi
Abstract	xii
Chapter I: Introduction	1
Author's Notes	8
Chapter II: The Chumash Peoples	11
An Overview of the History of the Chumash Peoples	11
The Early and Middle Period of the Chumash Peoples	17
Conclusion	22
Chapter III: Site Background	24
Written Accounts of European Expeditions	24
Beginning of Santa Barbara and the End of Syujtún	28
History of Burton Mound Following the Extinction of Syujtún	30
Burton Mound after the Ambassador Hotel Fire	39
Chapter IV: Previous and Subsequent Research	41
Landowner and Neighborhood Digging	42
First Organized and Documented Excavations	44
Claude Warren 1969 Excavation of Burton Mound	46
Excavations and Research in the Late 20th Century	48

Recent Excavations and Research	49
Chapter V: Theory and Methods	51
Theory - Assertion of Chumash Complexity	53
Theory - Theoretical Perspectives Concerning Social Complexity	55
Theory - Climate Variability as a Causal Factor in Social Complexity	59
Theory - Conclusion and Research Focus	67
Methods – Identification	69
Methods - Sampling Strategy	71
Methods - Quantification	71
Methods - Stratigraphic Grouping	72
Methods - Dating	73
Chapter VI: Results	75
Carbon 14 Dating Results	76
Overall Temporal Distribution of Fully Sampled Units	79
Taxa Represented	85
Subsistence Emphasis	86
Temporal Subsistence Change	89
Patterns Found in Avian and Piscine Remains	90
Chapter VII: Summary and Conclusion	96
Summary of Results	96
Contemporary Implications	98
Future Research	99
References	101

LIST OF FIGURES

Figure 1a. Modern Topographical Map of Chumash Area	
Figure 1b. Chumash and Their Neighbors	
Figure 2. Contemporary Mosaic <i>The Syuxtun Story Circle</i>	12
Figure 3. Complete Inventory of the California Indian Tribal Groups	13
Figure 4. Painting of Chumash Settlement Syujtún	24
Figure 5. Drawing of Ánza Expedition 1775-1776	27
Figure 6. Alfred Robinson 1829 Drawing of Santa Barbara	30
Figure 7. Early Santa Barbara, circa 1880's	35
Figure 8. Santa Barbara's Potter Hotel	37
Figure 9. Modern Day Burton Mound	40
Figure 10. Burton Mound Site Map by David Banks Rogers	45
Figure 11. CA-SBA-28 Site Map – Warren	
Figure 12. Pit Line 45 - West Wall Profile	
Figure 13. Unit G-45 Weight According to Class and Level	79
Figure 14. Unit H-45 Weight According to Class and Level	82
Figure 15. Unit J-45 Weight According to Class and Level	82
Figure 16. Unit N-45 Weight According to Class and Level	84
Figure 17. Percentage of Resource Exploitation of Overall Assemblage	87
Figure 18. Unit G-45 Class Distribution According to Bone Weight	88
Figure 19. Unit H-45 Class Distribution According to Bone Weight	88
Figure 20. Unit J-45 Class Distribution According to Bone Weight	88
Figure 21. Unit N-45 Class Distribution According to Bone Weight	88

LIST OF TABLES

Table 1. Chronology for Santa Barbara Channel Region	
Table 2. Weight and Quantity Totals for Units G-45, H-45, J-45, N-45	76
Table 3. Carbon 14 Dating Results for Units H-45, N-45, J-45	77
Table 4. Unit G-45 Weight According to Class and Level	79
Table 5. Unit H-45 Weight According to Class and Level	81
Table 6. Unit J-45 Weight According to Class and Level	82
Table 7. Unit N-45 Weight According to Class and Level	84
Table 8. Vertebrate Taxon Represented - Mammal and Reptile (excluding piscine)	
Table 9. Avian Taxon Represented	
Table 10. Piscine Taxon Represented	
Table 11. Class Distribution of Fully Analyzed Units According to Weight	87
Table 12. Class Percentages of Faunal Remains per Level of Each Selected Unit	

ABSTRACT

EXPLORATION OF BURTON MOUND CONTINUED: FAUNAL ANALYSIS OF A MAINLAND CHUMASH SITE

By

Heather Renée McDaniel Wilcox

Master of Arts in Anthropology,

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The Coastal Chumash resided in permanent towns supplied by an economy of hunting, gathering and fishing practiced in a region possessing high ecological diversity. An elaborate exchange system trading food, raw resources and manufactured goods was developed most likely to deal with the occasionally unpredictable environment. Anthropologists argue that it was the environmental productivity of the region where Chumash peoples resided which contributed to higher populations and greater socio-political complexity than that of other hunter-gatherer societies. The Burton Mound site, CA-SBA-28, was consistently documented by the Spanish expeditions of the 16th-19th centuries as being adjacent to a principal town of the Barbareño Chumash. As a result of historic and modern construction, this important site and many others in the Santa

Barbara Channel Region either no longer exist or are inaccessible. Thus, the collections resulting from three excavations at CA-SBA-28 are of considerable significance. Only one of the collections has been the subject of a major publication (Harrington 1928). In 1969, Dr. Claude Warren directed excavations of the site prior to pending construction. The faunal remains recovered from the 1969 excavation are studied for the first time to investigate Coastal Chumash subsistence during phases of the Early and Middle periods for which little is known. Analysis of the faunal assemblage provides insights into timing and use of Chumash watercraft, and how climatic uncertainty may have affected subsistence and settlement patterns.

CHAPTER I

INTRODUCTION

“Archaeology is perhaps the best tool we have for looking ahead, because it provides a deep reading of the direction and momentum of our course through time: what we are, what we have come from, and therefore where we are most likely to be going.”

~ Ronald Wright (2004:10)

“The common notion of humankind’s blissful past, populated with noble savages living in a pristine and peaceful world, is held by those who do not understand our past and who have failed to see the course of human history for what it is.”

~ Steven LeBlanc (2003:xi)

Archaeology chronicles the past through the observation of varying degrees of abandonment; for ruins do not exist without some form of desertion. Whether it is massive architecture or a simple household tool, an archaeologist’s trowel cannot uncover that which is still in use. There are a myriad of reasons for a society absconding a piece of its history no matter how insignificant the portion of its culture it represents. The intrigue and mystique of archaeology is the quest for the hidden narrative, buried beneath layers of earth signifying the sum separation of past from present.

In order to reveal this hidden narrative it is imperative that the interest of general societal mechanisms shift to the functions of everyday life. Understanding the material culture which results from the everyday societal experience can best be obtained through the investigation of household activities. Winston Churchill once said of home, “There is no doubt that it is around the family and the home that all the greatest virtues, the most dominating virtues of human society, are created, strengthened and maintained” (ThinkExist.com n.d.). The very assets of dwelling with others, of perpetuating common

beliefs and activities, of cooperatively sustaining quality of life occurs centrally within and around the structural partitions considered a home.

A consistent experience among world travelers is the revelation that it is through the observation of the individual household that the culture can be experientially understood. Visiting cultural landmarks and many museums can be perceived to liken a pilgrimage where that which perpetuates the prescribed narrative is included and the ordinary is excluded. The trouble with this limited perspective is that it *is* the ordinary that reveals the commonplace or the dominating virtues of human society and it *is* the commonplace where culture can most clearly be seen free from pretenses. By the same merit, anthropologists and more specifically archaeologists have been recognizing the value of understanding a culture from the perspective of the common household unit as it is a very useful indicator of the society in which it exists or existed.

Richard Wilk and William Rathje (1982) explained why the focus for archaeology was shifting towards employing the household unit in analysis by offering it as a solution to filling the middle-level theory gap. They asserted that there is a lack of credibility in the efforts to link material typologies with societal evolution without working models that are able to bridge the gap. The impetus for this seminal article, *Household Archaeology*, was the continual deconstruction of a research design from the analysis of whole cultures to settlement patterns and intersettlement variability. Wilk and Rathje challenged the archaeological community in their exhortation to “move downward in specificity to the household unit” (Wilk and Rathje 1982:617). In her most recent book *The Chumash World at European Contact: Power Trade and Feasting Among Complex Hunter-Gatherers*, Lynn Gamble states “I firmly believed that the nature of power, the

emergence of political complexity, and the reasons that the Chumash used shell bead money could not be understood until archaeologists knew how households functioned within settlements, and whether in fact sites were once villages, towns, or places that were only temporarily visited” (Gamble 2008:xi).

One of the most important and revealing activities occurring within the parameters of the household unit is the acquisition, preparation, consumption and disposal of food. These activities were generally regulated by cultural mechanisms and in large part were dictated by the environment in which a population resided. California is one of the most environmentally diverse landscapes in the world. There is no match, in North America, of an area of equal size possessing such a wide range of geographical characteristics such as the varied display of rocks and minerals, climates, topography, and biomes present in California. The prehistoric communities that called California their home were masters of employing this varied landscape to their advantage. There is much evidence that these groups were more than collectors of resources – they were environmental managers. The nature of the hunter-gatherer lifestyle resulted in little preservable evidence of human activity. As a result, archaeologists wishing to understand the ancient ways and means of the indigenous groups of California rely greatly on the remains of food consumption to help unveil social and ecological mechanisms.

The term Chumash represents an indigenous group of peoples who inhabited Central California and were comprised of separate factions who spoke 6 distinct languages belonging to the Chumashan language family. Victor Golla (2007) suggests that the Chumash linguistic territory, consisting of three branches (Northern, Central and

Island Chumash), may have been the result of a relatively recent expansion of one language from one geographic area which itself was preceded by an even greater linguistic diversity. Those who have studied the linguistic prehistory of California assert that the area remained demographically and culturally stable from the Terminal Pleistocene (12,500 to 10,000 BP) through the Historic Period and that the earlier language diversity existed prior to this stability (Golla 2007). The Chumash peoples inhabited settlement sites, dating back thousands of years, both on the Channel Islands and on the Southern California mainland (Johnson 2000; Arnold 2001; Fagan 2003; Gamble 2008). This thesis is an attempt to illuminate a period of time in the Chumash evolution, at a locality of which little is known, and from a collection of data derived from ancient household activity. The eventual goal of this research is to have a better understanding of social processes overall and the specific mechanisms that helped shape a mobile foraging community into what is now considered a more complex version of the hunter-gatherer society.

The focus site for this thesis is CA-SBA-28, historically known as the Burton Mound. This site, along with CA-SBA-27 and possibly CA-SBA-29, has been confirmed through extensive ethnographic verification to be the locality of the Chumash town of Syujtún [*Syuxtun*] (Johnson 1988:94). Syujtún was mentioned in the logs and diaries of the Cabrillo, Portolá, Ánza, and Vancouver expeditions as being a very large town where politically powerful chiefs resided. Cabrillo, Portolá, and Ánza were Spanish explorers sent to determine the potential of Alta California for settlement, and Vancouver's purpose was to conduct a mission of exploration and diplomacy on behalf of the British crown for strategic and commercial value (Bancroft 1886; Brown 2001; Gamble 2008).

At the advent of European contact, Chumash peoples inhabited the area reaching from Paso Robles in the north to Malibu in the south, as well as to the Northern Channel Islands. The population inhabiting this region numbered from 15,000 to 25,000 (Cook 1976) and somewhere between 18,000 – 20,000 people (Gamble 2008). A majority of the population was concentrated in the coastal and island settlements, such as Syujtún, with generally smaller settlements located in the interior. The peoples inhabiting the central California coast did enjoy times of plenty, but they were also exposed to drought and resource instability caused by environmental perturbations. Chumash peoples demonstrated an adroit ability to adapt and develop technology able to profit from their environment in times of both abundance and scarcity. As a result, they established settlements within the region larger than any found north of central Mexico (Cook 1976). This combination of environment and ingenuity promoted a thriving society which would eventually possess a regional network of trade and level of cultural complexity seldom observed among non-agricultural societies. Chapter II gives an overview of Chumash culture, its significance in the understanding of complex hunter-gatherers and the periods of Chumash history to be considered in this thesis.

Chapter III documents the history of Burton Mound from the time of Syujtún to present day through ethnographic information, historical accounts, and site records. In addition, since the landscape within which Syujtún once existed no longer survives in its original state, this chapter also gives an account of the human degradation of the site since grading of the land began in early 19th century. Although this site is rich in its archaeological record, it can never be considered untouched or unaltered and therefore must be understood and observed with the knowledge that the record is distorted.

The purpose of this research is to analyze a selected portion of the faunal collection resulting from Warren's excavation of CA-SBA-28 under the auspices of the University of California, Santa Barbara. Chapter IV gives a complete chronological account, according to available field and historical records, for the archaeological research conducted at Burton Mound, and where appropriate, the adjacent site CA-SBA-27. The excavation directed by Dr. Claude Warren in 1969 is chronicled in this chapter outlining all details gleaned from available notes and labels associated with the collection, as well as personal communication with Dr. Warren.

Chapter V is comprised of two parts – theory and method. The first part concerns theory and provides the theoretical perspectives pertaining to the classification of Chumash society's complex hunter-gatherer cultural designation. This chapter also chronicles the theories espoused for the causal connections between the relative complexity of the Chumash culture and documented periods of paleoenvironmental change in which they lived for several millennia. In the second portion of the chapter, the methods employed in this research, including sampling strategy, means of identification, quantification, and the manner of stratigraphical grouping, are described and explained.

Chapter VI records the results of the employed methods listed in Chapter V in the following manners: taxonomic representation, subsistence emphasis, quantification and observable changes in subsistence. In addition, the results are interpreted with the goal of understanding the mechanisms behind any demonstrated subsistence emphasis and change over time. A summary of findings and theoretical conclusions are stated in Chapter VII.

There are several overarching themes of research focused on Chumash people, and prominent among them are those concerning the prehistory of the Santa Barbara Channel Region. The employment of faunal analysis has proven to be a valuable model for analysis due to its ability to identify change in resource procurement (Sutton and Arkush 2006; Glassow and Joslin 2012). Due to the location of the site from which this specific collection is derived and the period of time it represents, this research has the potential of providing information able to fill gaps of knowledge concerning Chumash prehistory.

As has been established earlier in this chapter, this site is unique in its significance and therefore shows potential for providing new insight into the cultural and political aspects of the Chumash society overall. Syujtún was the main historic-period settlement in the Santa Barbara area and appears to have been of considerable regional and political importance (Harrington 1928:31). Its chief, Yanonali, during the missionization was understood by the Spaniards to be the most powerful chief among the coastal Chumash towns. An account by Ferdinand Librado, Harrington's informant, was that Yanonali ruled over an area extending from Dos Pueblos to Carpenteria (Johnson 1986:21-22). Considering that a current research question regarding Chumash social evolution is centered on the emergence of the political and social elite, any information garnered from this site is undoubtedly important to the discussion concerning cultural complexity.

Although Burton Mound has been excavated on many occasions over a period of nearly 150 years, very little has been published pertaining to the resulting collections, and little analysis has been conducted on any of the archaeological assemblages. Syujtún is a

grossly understudied Chumash site relative to its documented importance, and unfortunately because of modern construction little of the site remains. The collection excavated in 1969 by Claude Warren, upon which this thesis is based, has and will certainly provide information that will shed light on the technological and subsistence mechanisms that played an integral role in the shaping of the unique culture of coastal Chumash peoples.

Author's Notes

Two particular matters of importance to note concerning the content of this thesis are the prevalent citation of John P. Harrington's 1928 published work and the spelling of the Chumash village Syujtún. First, the Indian informants gave Harrington the name of the village, which was once located at Burton Mound, as Syujtún - meaning "where the two trails run" (Harrington 1928:35). It was on Cabrillo's expedition of 1542 that the place names of the Santa Barbara Channel were documented; much discussion and many a publication have been dedicated to such. There were at least 3 (possibly 4) references to the village in these logs with various spellings: "Xocotoc", "Ciucut", and "Yutum". Harrington, being a linguist who specialized in California's native languages, gives an ample description of the spellings with a full linguistic reasoning in his 1928 publication. Based on his knowledge, he settled with the spelling Syujtún using the Spanish "j" to represent the *x* used in modern linguistic orthography. Although there are multiple modern spellings of the town's name, it is Harrington's spelling that is employed throughout this thesis.

Second, the only two published works concerning excavations at Burton Mound are those of Harrington (1928) and David Banks Rogers (1929); both were as a result of the same excavation which occurred in 1923 (with a short 1½ month additional excavation conducted by Rogers in 1924). Roger's publication consisted of a portion of a chapter in his book *The Prehistoric Man of Santa Barbara* in which he dedicates 9 pages of his manuscript to the description of the site Burton Mound. This description mainly includes the circumstances of the excavation, the attention given to the site during the time it occurred and a short interpretation of what he observed. However, no description of the specific artifacts that were found is mentioned. Harrington's 1928 publication, in the annual reports of the Bureau of American Ethnology 1926-1927, on the other hand, consists of a thorough history of the site and a complete list and physical description of the artifacts found; however, he did not discuss the nature of the excavation itself.

Harrington was a linguist and ethnologist who is credited with preserving many indigenous cultures with his examination of the few surviving people linked through firsthand experience with the "old ways". One of the cultures he examined, and on which he spent a considerable amount of time, was the Chumash. His exhaustive efforts, his prolific notes, and his published work on Burton Mound is still cited today as being the reason so much is known about the Chumash ways and language. This thesis is written with Harrington's publication *Exploration of Burton Mound at Santa Barbara, California* in mind. The title of this thesis pays homage to his original article and his structure of incorporating ethnological, historical and site information with the description of the assemblage found within the archaeological record is echoed throughout. It is the author's sincerest desire that this thesis be a worthy continuation of the work Harrington

began at Burton Mound and that as a result, it offers a new perspective and assists in a better understanding of the village of Syujtún and the rich Chumash culture overall.

CHAPTER II

THE CHUMASH PEOPLES

The first people were created from the seeds planted on Limuw (Santa Cruz Island) by Hutash, the Earth Goddess. Hutash was married to the Sky Snake (The Milky Way), who made lightening with his tongue and gave the people their first fire. The people kept the fire burning to stay warm and cook their food. Since the people were getting more comfortable, their population grew until the Island became too crowded.

They also made so much noise that Hutash could not get any sleep, so she decided it was time to allow some of the people to cross over to the mainland. Hutash made Wishtoyo, a Rainbow Bridge which extended from the tallest peak of the Island to the tallest inland mountain near Carpenteria. She told the people to cross carefully, and never look down, but some did and fell off the Rainbow Bridge and into the ocean, where they were turned into dolphins by Hutash to prevent them from drowning. This is why the Chumash Indians consider the dolphins to be their brothers. The Chumash honor Hutash every September with a great Harvest Festival named after her.

~ portion of the Chumash creation myth *The Rainbow Bridge*

An Overview of the History of the Chumash Peoples

Chumash peoples, speaking six related languages, inhabited an area of the south-central California mainland and Santa Barbara Channel coast and offshore islands (Golla 2007). They resided in the areas south to north from the Topanga Canyon, present day Los Angeles County, to the northern extent of present day San Luis Obispo County and east to west from the San Joaquin Valley to the northern Channel Islands of Anacapa, Santa Cruz, Santa Rosa and San Miguel (Figures 1a and 1b). The Santa Barbara Channel region is considered to be, geographically, the center of Chumash life both politically and economically; this is especially true of the area the residents of Syujtún once called home (Gamble 2008).

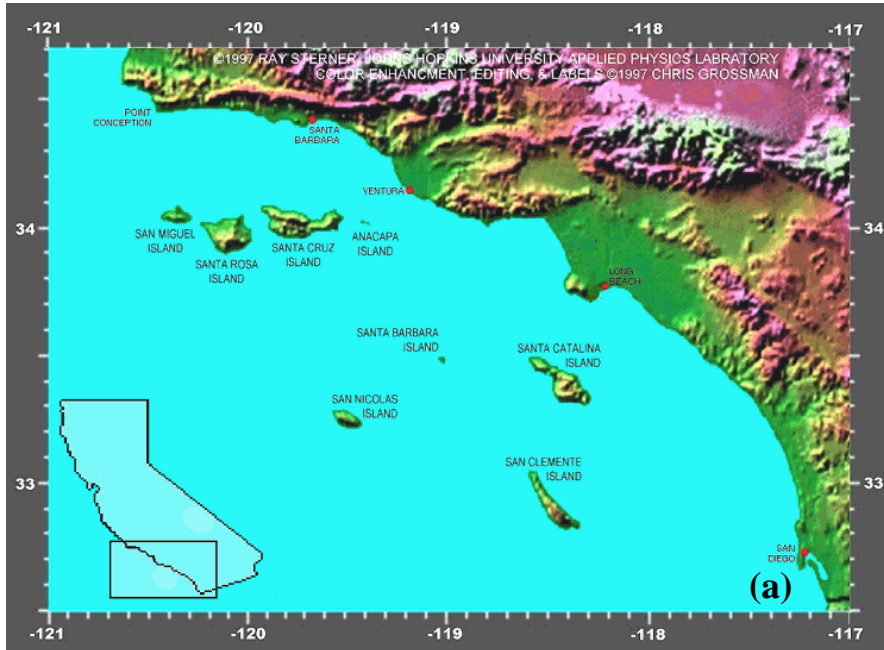


Figure 1. (a): Modern Topographical Map of Chumash Area; (b): Chumash and Their Neighbors (both courtesy of Santa Barbara Museum of Natural History). The latter shows the Chumash neighbors, as well as the various languages and dialects belonging to the Chumashan Language Family.



Figure 2. California Indian Ethnolinguistic Groups. Note: the territory occupied by peoples speaking Chumash languages located just south on the central coast of the state (Copyrighted by California Indian Library Collections).

Chumash society possesses unique characteristics when compared to other indigenous cultures of California. At least 500 distinct socio-political groups resided in California prior to European contact. Archaeological evidence from the Arlington Springs site documents occupation on the islands as dating to at least 13,000 years before present (BP; Johnson et al. 2002). There are currently 100 federally recognized tribes in California and still more without federal recognition. A commonly understood list of California ethnolinguistic groups is illustrated above in Figure 2 to provide reference. However, it is important to note that the list has both distinct languages and language families expressed in the same way. Chumash peoples are frequently referred to in popular vernacular as a group or a tribe when in fact the term “Chumash” represents a language family consisting of 6 related languages, some possessing varying dialects (Figure 1b; Golla 2007). The groups demonstrated on the maps (Figures 1b and 2) are

extant communities with vibrant cultures which while negotiating this modern society continue to honor, in varied ways, the traditions of their rich history. An example pertinent to this research is the recent commissioning of a mosaic (see Figure 3) for the Santa Barbara beachfront. The mosaic was installed by contemporary Chumash and the City of Santa Barbara in honor of the village of Syujtún and depicts aspects of the Chumash culture and their long history in the area.



Figure 3. Mosaic titled *The Syuxtun Story Circle* commissioned in honor of the village of Syujtún. It is located along Cabrillo Blvd. in Santa Barbara very near the original location of the village as a reminder of the area’s rich Chumash history.

Human occupation of California can be traced back at least 13,000 years (see above) and is considered to be one of the more densely populated regions in North America prior to European contact (Fagan 2003; Erlandson et al. 2005; Gamble 2008; Timbrook and Johnson 2013). The Chumash are considered to have greater sociopolitical complexity than many other California indigenous groups. The Chumash example has given rise to challenges regarding the traditional paradigm of hunter-gatherers being of a primitive nature with minimal complexity (Arnold 2001, 2004;

Gamble 2008). Because of the abundant resources the Southern California area provides, the Chumash indeed demonstrated cultural traits not associated with most hunter-gatherer societies. This environmental reality proved to be the catalyst for cultural luxuries such as: storytelling, music, games, artistic expression, and religious festivals. In addition, the plentiful quantity of flora and fauna allowed for continual advancement in tool technology which is, in part, represented in their adroit utilization of their seagoing watercraft, the *tomol*. The employment of this innovation facilitated various aspects of Chumash culture such as trading and subsistence. In addition, trading from the Channel Islands to coastal villages, like Syujtún, was common and assisted in the increasing complexity of the Chumash way of life. Because of its location, it is easy to understand why Syujtún would have been chosen as a regional capital (Harrington 1928:35-36). The village of Syujtún was located to the west of the mouth of Mission Creek in what is now just north of the intersection of Cabrillo and State streets in the heart of modern day Santa Barbara (Figure 2).

Although Chumash peoples have been categorized as hunter-gatherers, they managed the surrounding landscape to their benefit, practiced a high degree of residential permanence, and grew crops such as tobacco. They were adroit fishermen and subsisted considerably on the marine environment employing various strategies to exploit sea mammals, shellfish, deep sea fish and the myriad of species inhabiting the coastal kelp forests (Johnson 1982; Salls 1992; Glassow et al. 2007; Glassow and Joslin 2013). Coastal Chumash groups took advantage of the terrestrial resources by collecting local plants and seeds and hunting land mammals and at times birds; however, not to the same degree as marine mammals and fish (Arnold 1992; Salls 1992; Bowser 1993; Glassow

1993; Rick et al. 2001; Gamble 2008). The Chumash lived much of the year on stored goods including dried meat and fish as well as botanicals such as seeds and acorn, which could be stored for years (Timbrook 1990; Glassow 1993; Gamble 2008). The California coast proved abundant in resources for the Chumash; however, not all seasons were as fruitful as others and climatic variability was a reality resulting in years of drought. Food storage certainly allowed for population density and according to some scholars such practices certainly could have served as an impetus for social complexity (Hayden 1995; Arnold et al. 1997; Arnold 2004).

Evidence for storage by the Chumash can be found in the ethnohistoric descriptions and archaeological evidence for subterranean pits, some with fired clay walls, and storage baskets found cached in various rock shelters located in the inland mountains (Gamble 2008:175). Father Juan Crespi, who accompanied Captain Gaspar de Portola on his expedition, noted in his diary that the roofs of the Chumash houses that he observed located at coastal settlements in the Santa Barbara Channel were covered with both dried and fresh fish in large amounts (Gamble 2008:174). In addition, it has been documented that the Chumash were very skilled at keeping birds and small animals out of their granaries as well mitigating the occurrence of bacteria, fungi and moisture (Anderson 2005:54).

Through ethnographic research, the population of the Chumash at European contact has been estimated by Cook (1976) to be between 15,000 – 25,000, and by Gamble (2008) at somewhere between 18,000 – 20,000 people. As Gamble points out these population figures are “rough estimates because of the difficulty in measuring the impact that European diseases had on population sizes during the contact era” (Gamble

2008:7). The population estimate for villages in the Santa Barbara Channel Region, such as Syujtún, ranged anywhere from 60 to 800 and possibly 1,000 people. A majority of mainland coastal settlements had 200 inhabitants; however, some had upwards of 500 or more inhabitants (Gamble 2008:110). This is supported by the accounts of the explorers which estimated Syujtún's population to be from 500 to almost 700 residents.

The Chumash society was organized on a village level with each town having one chief and sometimes more than one (Johnson 2000; Gamble 2008). There were also regional chiefs that were said to have had political authority over several villages. Of these appears to have been the female chief who stayed on board Cabrillo's ship. She informed him that she was, in addition to Syujtún's chief, a regional leader of the area spanning from her village to Point Conception (Johnson 1988:114). At the point of colonization by Spain, Syujtún's chief was Yanonalit; his political influence may have extended over 13 separate villages from Dos Pueblos to Rincon according to Rev. Juan Caballeria y Collel's 1892 account and from Dos Pueblos (Mikiw and Kuya'mu) to Carpinteria according to Harrington (Johnson 1986:25). This is the area known presently as west of Goleta to just south of Carpinteria with Santa Barbara being located in the middle, but nearer Goleta (see Figure 2). He originally opposed the settlement of the Spaniards and placement of the Presidio very near Syujtún. Four years later, the Mission was established and over the next two decades Yanonalit was baptized along with most of the remaining coastal Chumash. As a result of relocation to the Mission and death by introduced diseases, Syujtún's population dwindled to 125. In 1803, twenty years after Spanish settlement, the thriving regional capital Syujtún no longer existed (Gamble 2008).

Period	Kennett (2005)	Arnold (1992, 2001)	King (1990)	Lambert (1994)	Glassow (2007)
Historic Late 2	AD 1782-1804 AD 1670-1782	Historic, 1782+ Late, AD 1300-1782 Late 1b, AD 1250-1400 Late 1a, AD 1150-1250 Transitional, AD 1150-1300	Late 3, AD 1782-1804 Late 2b, AD 1650-1782 Late 2a, AD 1500-1650 Late 1c, AD 1400-1500 Late 1b, AD 1250-1400 Late 1a, AD 1150-1250	Late	Late, AD 1300-1804
Middle 5	AD 1170-1380	Middle, 600 BC-AD 1150	Middle 5c, AD 1050-1150 Middle 5b, AD 1000-1050 Middle 5a, AD 900-1000	Late Middle	Middle, 2000 BC-AD1300
Middle 4	AD 980-1170		Middle 4, AD 700-900		
Middle 3	AD 660-980		Middle 3, AD 400-700		
Middle 2	AD 170-660		Middle 2b, AD 200-400	Early Middle	
Middle 1	490 BC-AD 170		Middle 2a, 200 BC-AD 200		
Early z	970-490 BC	Early, 5500-600 BC	Middle 1, 600-200 BC	Late Early	Terminal Early, 4500-2000 BC
Early yb	3590-970 BC		Early z, 1000-600 BC		
Early ya	4650-3590 BC		Early yb, 3000-1000 BC		
Early x	6120-4650 BC		Early ya, 4000-3000 BC	Early Early	Initial Early, 6500-4500 BC
			Early x, 5500-4000 BC		

Table 1. Comparative Chronology for Santa Barbara Channel Region

The Chumash society was structured by a complex web of political, social, economic and religious practices aimed at management of the varied and abundant resources made available as a result of the relatively temperate and productive environment (Arnold 1995, 2001, 2004; Johnson 2000; Gamble 2008). As a consequence of a higher population density and more sedentary lifestyle, the Chumash developed craft specialization and guilds, such as the Brotherhood of the *Tomol*, to organize people engaged in different professions (Blackburn 1975). Religious specialists studied the heavens and had an understanding of astronomy which guided their everyday actions and annual celebrations (Hudson and Underhay 1978; Saint-Onga et al. 2009). The Chumash had developed an economic system based on trade and shell bead money (King 1976, 1981; Arnold and Graesch 2004). Through trade, the Chumash had great influence which extended to intertribal transactions with neighboring villages, regionally with other tribes and possibly even outside their immediate geographical area with other aboriginal groups (King 1976; Gamble 2005, 2008).

The Early, Middle, and Late Periods of Chumash Prehistory

The cultural and settlement patterns of Chumash peoples have been delineated over the years by several scholars based on the archaeological record and ethnographic information. Chumash prehistory can be broadly characterized into three distinct time periods – Early, Middle, and Late (King 1990). Various chronologies have been developed over the years, the most widely applied of these to the Santa Barbara Channel Region listed in Table 1, but generally the Early Period roughly spans from 6120 BC – 490 BC, the Middle Period from 490 BC – AD 1380, and the Late Period from AD 1380 – AD 1782. Another term employed often in Chumash chronology is Arnold’s Middle to

Late Transition Period spanning from AD 1150-1300 (Table 1) which she characterizes as a “series of notable changes, several of which directly underpinned the greater complexity of the Late and Historic periods” (Arnold 2004:4). Finally, The time demarcated by the introduction of the missions is characterized as the Historic Period (Gamble 2008).

For the purpose of this research, the periods of Chumash development just outlined are used in conjunction with the terms Early, Middle, and Late Holocene. In general, the Holocene Epoch begins near 11,000 BP as the Early Holocene which lasts until approximately the end of the Chumash Initial Early Period (6500-4500 BC); the Middle Holocene begins around what King (1990) and Kennett (2005) term as the Chumash Early x (see Table 1) and ends around the Early to Late Period transition; the Late Holocene correlates with the Chumash Middle and Late Periods. The term Holocene is a geological epoch which begins with the end of the last glacier age and continues to the present age. The delineations are made based on geological and biological information but are often correlated with cultural changes which have been documented as occurring within divisions of the epoch (Warrick et al. 1993; Issar and Brown 1998; Wanner et al. 2008; Mann et al. 2009).

The Initial Early Period is sometimes referred to as the “Oak Grove” or “Millingstone Horizon” because of the proliferation of millingstones, more commonly known as *manos and metates*, that have been found at sites associated with this time period. Glassow (1996) also makes a point that little data, other than the abundance of millingstones, is known concerning the Initial Early Period making any data able to be attributed to this period essential to a continuous chronology. King (1981) argues that

social complexity was on the rise by the end of the Early Period, referred to by Glassow as the Terminal Early Period (Glassow et al. 2007). Permanent settlement evidenced by cemeteries existed during the Terminal Early period as did some long distance trade and trade between the island and mainland. Large game hunting of marine mammals and storage of gathered and processed botanical resources all occurred. Settlements were generally small in size with some having regional influence and ceremonial importance. Technologies included the already mentioned millingstones and the *atlatl* (Fagan 2003; Arnold 2004; Glassow et al. 2007).

The Middle Period is defined by invention and/or mastery of key tools, cultural traits and socio-political mechanisms (Arnold 1992, 2004; Fagan 2003; Jones and Klar 2007; Gamble 2008). It is the period scholars consider to be a time of change and advancement resulting in the greater sociopolitical complexity. The Chumash watercraft, the *tomol*, was created and perfected during this period, olivella beads began to be used as a form of Chumash currency (*'anchum*) during the Middle to Late Transition (Arnold 1992, 2004; Fagan 2003; Glassow et al. 2007; Gamble 2008) and in AD 650-900 the bow and arrow was introduced to the Santa Barbara Channel Region (Kennett et al. 2013). In particular, the bow and arrow is argued by Kennett and his colleagues (2013) as stimulating the higher populations, increased sedentism and expansion of settlements through intragroup “law enforcement” and intergroup cohesion needed for successful involvement in warfare which had become more common. Each of these developments revolutionized the Chumash way of life and contributed to their increased growth and success in the Southern California area. Most relevant to this research is the possible

changes in subsistence behavior both in the resources available and the tools implemented.

Although scholars vary on their interpretation of the chronological phases (Table 1), the Middle Period represents some cultural, economic, and political changes that took place between 1200 BC – AD 1300 (King 1990; Arnold 1992, 2001; Lambert 1994; Kennett 2005). This period is defined by the existence of hereditary leaders for political control, stratification of the economy, increased influence of spiritual leaders, beginning of distinct and separate cemeteries, and elaboration of beads and ornaments (Johnson 1988; King 1990; Arnold 1992, 1995, 2001, 2004; Hayden 1995; Fagan 2003; Coupland 2004; Gamble 2005, 2008). Recent research has discovered that the Middle Period marked a change in settlement patterns revealing that in coastal villages, homes were used year-round (Erlandson and Rick 2002). It is generally agreed that the coastal Chumash had adopted a sedentary lifestyle by the Middle period and possibly even before. The change in lifestyle from seasonal and defensible settlements to year-round occupation certainly encouraged increased village size, and social and political ranking, which are some of the features signifying emergence of complexity that has inspired much research and scholarly debate.

Prominent among theories attempting to discern causal factors for societal change within the Chumash culture are those investigating the effect of climatic variability during the Middle Period. The employment of faunal analysis has proven to be a valuable model for analysis due to its ability to identify change in subsistence practices (Lyman 2008; Reitz and Wing 2008; Glassow and Joslin 2012). For example, with transformation exhibited during the Middle Period it is important to understand any

apparent changes in exploitation of both terrestrial and marine resources over time. Faunal analysis sheds light on identified shifts in regional behavior as it relates to social, economic, climatic and ecological factors. Another issue which can be addressed is the possible incidence and nature of subsistence trade between the coastal mainland Chumash communities and their counterparts residing on the Channel Islands of the Santa Barbara Channel region as well as those communities located on the interior mainland.

The later phases of the Middle Period and the transition to the Late Period chronologically coincide with a documented time of world-wide warmer temperatures referred to as the Medieval Climatic Anomaly (MCA), also known as the Medieval Warming Period or Medieval Climate Optimum lasting from AD 950-1250 with warmest temperatures from AD 950-1100 (Mann et al. 2009). This climatic phenomenon is best known, in a historical example, as the impetus behind the downfall of the Viking settlements in Greenland. However, many other climatic events associated with the MCA have been credited with lasting effects on societies around the world. Specifically affecting the Pacific Coast were the influx of droughts and relatively warmer sea surface temperatures (Trouet et al. 2009:79). These changes in climate have been documented in tree ring studies (Stine 1994) and the presence of warm water fish species in the archaeological record (Salls 1992; Glassow 1993; Rick et al. 2001).

The effects of the MCA and related smaller climatic events have been a focal point of attention in theories regarding societal change in prehistoric California (Perlman 1982; Glassow 1993; Arnold 1995, 2004; Arnold et al. 1997; Raab and Larson 1997; Jones et al. 1999; Johnson 2000; Kennett and Kennett 2000; Raab 2004; Gamble 2005;

Allen 2006; Jones and Schwitalla 2008). Increases in bead production, trade and sociopolitical complexity, as well as subsistence strategies both on the Channel Islands and Southern California Coast are all changes that have been attributed to drought related stress during the MCA (Johnson 1990, 2000; Raab and Larson 1997; Graesch 2004; Raab 2004; Gamble 2005, 2008; Jones and Klar 2007). With further and improved archaeological research, some of these noted patterns have been substantiated such as decreased long distance trade beyond the Chumash region and settlement relocations. Still other patterns like decreased health, violence and warfare have been determined to be much more complicated than just a reaction to challenging climatic conditions (Jones and Schwitalla 2008).

Finally, the Late Period can be defined by more developed techniques of controlling the growth of seed-bearing plants through selective burning. Gathering of wild seed resources and storage of surplus supplemented the primary source of protein in the Chumash diet – marine hunting and fishing. Increased focus on trade with the Channel Islands is evidenced by development of shell bead money. King (1990) asserts that a “secular economy” based on bead making is a hallmark of the Late Period. Lastly, by the Late Period warfare was customary as a means of protecting territory and resources (Lambert 1994; Fagan 2003; Glassow et al. 2007; Johnson 2007; Gamble 2008; Kennett et al. 2013).

Conclusion

The study of Chumash society presents a unique opportunity of general anthropological significance because the social complexity developed and sustained by

the Chumash occurred without the presence of agriculture. The two, social complexity and agriculture, have been thought for some time to be dependent on one another; that one is a result or catalyst of the other (Drew 2000; Parikh and Bruce 2012). Subsistence practices do have ramifications in other aspects of culture. Heizer and Baumhoff (1962) introduced the hypothesis regarding “hunting magic” and its role in rock art images. Myths with animals as the key characters permeate Chumash oral tradition and belief systems (Gamble 2008; Timbrook and Johnson 2013). It is not a far leap to suggest that the animals existent in the immediate environment and which provide sustenance might serve as a strong inspiration for art, myth and other cultural features. The Chumash of the Santa Barbara Channel region were surrounded with ecological diversity, natural productivity and at times an uncertain climate; all elements thought to play a potential role in the development of cultural features aimed at resource management.

The analysis of faunal remains is of a specialized nature; considering the few remnants of ancient cultures that remain, such research is imperative to our understanding of past lifeways. The site Burton Mound, CA-SBA-28, has within its archaeological record a wealth of evidence able to uniquely illuminate Chumash prehistory and to evaluate the theories mentioned in Chapter V. The fact that the town of Syujtún, which was once located at this site, is documented as being a mainland regional center of the Chumash peoples at European contact, that it has been understudied archaeologically, and that no research concerning subsistence has been previously conducted makes this study relevant for improving our understanding of Chumash cultural evolution.

CHAPTER III

SITE BACKGROUND

“Probably no prehistoric site within the area known as the Santa Barbara region has aroused and retained the public interest as much as that which lies beneath the grassy crest and slopes of Burton Mound. Here, from early days until it became a residential sub-division, citizens of every class came to hold their festivities upon fête days.”

~ David Banks Rogers (1928:100)

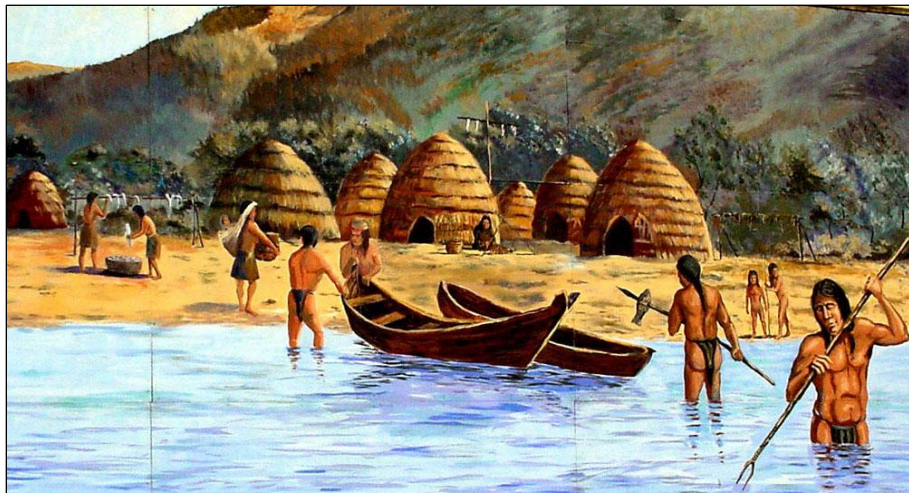


Figure 4. Painting of Chumash Settlement Syújtun. This illustration includes homes, ‘aps; canoes, tomols; drying racks and cemetery (artist: San Manuel, 2012).

Written Accounts of European Expeditions

Positioned at the mouth of Santa Barbara’s Mission Creek and very near present day Stearn’s Wharf pier was the location of what was referred in the logs of Cabrillo’s expedition of 1542 to be a politically important Chumash town. Following is an excerpt from Cabrillo’s log mentioning Syujtún for the first time, “*el pueblo de Ciucut parescia ser cabecera de otros pueblos*”; in English he states that, “the village of Ciucut [Syujtún] appeared to be a capital of the other villages” (Harrington 1928:36). Rogers, who

excavated Burton Mound with Harrington in 1923 and again in 1924, conveys to the idea that the site known by area residents as Burton Mound served as a center for communal activity since time immemorial (Rogers 1929). As millennia have come and gone, the site of Burton Mound has served a continuum of functions from a Chumash capital; to a sprawling, 19th century ranch; to an early 20th century, luxurious resort; to a condominium complex. Located in the axis of “America’s Riviera”, there is no wonder the site has never lost its appeal to generations drawn to its natural beauty and plentiful resources.

Both Cabrillo in 1542 and Fr. Juan Crespí in 1769 ascribed their assessment of Syujtún as a “capital” to various observations such as those which are illustrated in Figure 4. These observations include number of house structures, approximate population, number of boats (*tomols*), the community’s level of hospitality, and a leader’s perceived level of prowess and influence (Harrington 1928; Brown 2001; Gamble 2008). The Cabrillo expedition reached the site on the 13th of October 1542 and stayed there three days at which point they were provided by the natives both water and food for their continuing journey (Harrington 1928). Of interest during their stay were the guests they entertained on board. Along with some villagers, an elder female chief stayed overnight on the ship. Cabrillo understood that she was leadership paramount chief over the native towns between Syujtún and Point Conception (Johnson 1986). This is significant because most ethnographic research supports the assertion that the archetypal Chumash chief was male. There were notable exceptions, such as the paramount chief Cabrillo encountered, cannot be attributed to the influence of colonization.

A second mention of Syujtún in written records was in the diary of Sebastián Vizcaíno from 1602-1603. During his voyage representing Spain, intent on exploring the coast of California, he found passage through the Santa Barbara Channel. He describes the area believed to be present day Santa Barbara as “In this place there were numbers of Indians, and the mainland has signs of being thickly populated. It is fertile, for it has pine groves and oaks, and a fine climate, for although it gets cold it is not so cold as to cause discomfort” (Harrington 1928:40).

The third known reference of the site did not take place until the 1769-1770 Portolá expedition. Within the diaries of those accompanying the expedition, Fr. Juan Crespí , Miguel Costanzó and Pedro Fages, are various accounts that when put together provide a very useful description of Syujtún. The expedition set up camp a distance of two rifle shots from the town. Crespí ’s diary states that Syujtún was located “near a long point of land that enters the sea; we crossed with great difficulty a large estero which runs some distance inland” (Crespí on August 18, 1769, in Harrington 1928:39). “It is situated near a lake of fresh water, from which the inhabitants supply themselves” (Fages on August 18, 1769, in Harrington 1928:46). Each account portrays those inhabiting the village of Syujtún to number between 500 and well over 600 and having a generous and affable demeanor. “The most populous of all the towns that we, so far, had seen; we estimated that it might contain more than 600 souls [...] In no other place had we met natives so affectionate and good-natured” (Costanzó on August 18, 1769, in Harrington 1928:43). Portolá furnished a more succinct description giving a count of homes he estimated as “40 or more houses inhabited by over 500 natives” and having 10 canoes (Portolá on August 18, 1769, in Harrington 1928:45).



Figure 5. Drawing of Anza Expedition 1775-1776 (artist unknown, copyright by Tubac Presidio Park).

In each account from Cabrillo's and Portolá's encounters with the inhabitants of Syujtún, the exploitation of fish for subsistence is mentioned with a sense of awe, describing both the generosity of the people, as well as the quantity and varied fish procured in one instance. The 1776 Anza expedition (Figure 5) provides no exception:

Rancheria de la Laguna (Syujtún) where we traded beads for some baskets and provided ourselves with some fish, because on this occasion a canoe landed which was coming from fishing and brought various and diverse fishes and very good ones, of distinct colors and shapes which I did not recognize" (Fr. Pedro Font on February 25, 1776, in Harrington 1928:46).

Font also gives a valuable description of the food procurement and technological strategies in his observations regarding how the men of the village removed the canoes from the ocean and what tools they utilized for catching fish. "The implements with which they fish are large fish traps, and hooks which they make of shell, and also a kind of little net made of a very strong hemp twine" (Font on February 25, 1776, in Harrington 1928:46).

Beginning of Santa Bárbara and the End of Syujtún

The expeditions intended for exploration of a new land for the purpose of settlement eventually lead to the naissance of Santa Bárbara. The first step in such a venture was the founding of the Presidio at Santa Bárbara. Aimed at serving as a fortress to protect those given the task of settling a largely unknown environment, the Presidio was equipped with a fortified wall, sleeping quarters, surrounding land for grazing animals and a chapel for worship. In 1782, the Santa Barbara Presidio was “established away from the beach and Rancheria (Syujtún), at a good distance from the laguna (Santa Barbara estero) on the edge of a grove of live oaks” (Fr. Palou in 1782, in Harrington 1928:49). The spot said by some to be dismal, with little water, but within sight of the beach, was chosen for optimal protection rather than most efficient access to resources. Fr. Palou notes, “not the slightest opposition being made on the part of the natives” (Harrington 1928:49). In fact, many of inhabitants of Syujtún were hired to build the Presidio being paid in glass trade beads, clothing, and food (Bancroft 1886).

In line with the modus operandi of European settlement, the Santa Barbara Mission was founded soon after on December 4, 1786 “half a league [approx. 2.7 km] northwest of the Presidio” (Harrington 1928:49). The Mission established by the Franciscan order boasted, along with Mission structure itself, an extensive water treatment system which included aqueducts, reservoirs and filter system all constructed by the inhabitants of Syujtún under the direction of the fathers. Although they were compensated for their labor, like most colonization scenarios, little good came to the Chumash as a result of their collaboration with the Spanish. The Chumash population

quickly dwindled and the village of Syujtún was abandoned soon after the establishment of the Presidio and Mission.

The renowned Vancouver expedition, which circumnavigated the globe with a charge of exploration and diplomacy, traveled along the Pacific Coast in 1793. Vancouver noted his experiences within his diaries. Of his first encounter with the Chumash, in part he writes, “They seem to possess great sensibility, and much vivacity, yet they conducted themselves with the most perfect decorum and good order; very unlike the inanimate stupidity that marked the character of most of the Indians we had seen under the Spanish jurisdiction at St Francisco and Monterey” (Captain George Vancouver, November 1793, in Harrington 1928:50). Vancouver was directed by the Chumash to the location of the Presidio and Mission where he was surprised and pleased to be received graciously by all he encountered. From the commanders of the Presidio to the fathers at the Mission to the Indian inhabitants of Syujtún, he and his charge were treated with the utmost care and concern. Of the village of Syujtún, which he passed by on his journey to the Presidio, he remarks, “Within this bay, a very large Indian village was pleasantly situated, from whence we were visited by some of its inhabitants; amongst whom was a very shrewd intelligent fellow, who informed us, in the Spanish language, that there was a Mission and a Presidio not much further to the eastward” (Vancouver, November 1793, in Harrington 1928:50).

Vancouver described Syujtún as a “very large Indian village” in 1793. By 1796, Captain Felipe de Goycoechea, the same commander who graciously greeted Vancouver and his men, recorded that the town of Syujtún was extant; its chief Yanonali still alive and the population as 125. By the first two decades of the 19th century, the village of

Syujtún had been completely abandoned. From then on, the once “thickly populated” and “most populated we have seen” town of Syujtún would be relegated to a footnote in sojourners’ logs as El Puerto or La Playa. The structures may have been burned by their inhabitants upon their last exit, and the last of the canoes only “used by the Indians themselves who were detailed to fish for the padres” (Harrington 1928:55).

History of Burton Mound Following the Extinction of Syujtún

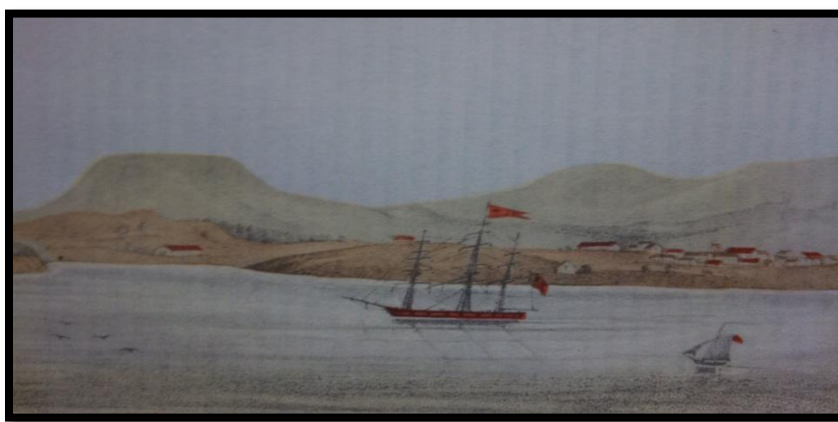


Figure 6. Alfred Robinson’s 1829 Drawing of Santa Barbara. This, the earliest picture of Santa Barbara, was drawn by Alfred Robinson and American businessman and author of *Life in California before the Conquest*. Burton Mound can be seen depicted in the foreground (Harrington 1928).

American businessman and eventual author of *Life in California before the Conquest*, Alfred Robinson, would be the first to illustrate Burton Mound in a drawing of the area (see Figure 6). He served as an agent for the Bryant, Sturgis & Company, a firm invested in the hide and tallow trade in California and would ultimately set up a small business in Santa Barbara, California (Robinson 1947). The illustration Robinson drew of Santa Barbara, which clearly shows Burton Mound in the foreground, was drawn in 1829 and was included in the book he published in 1846. Robinson depicts Santa Barbara as seen from the ship he was aboard when he first laid eyes on the area.

He also provides a description of the landscape he observed as he eventually went ashore for business. In his detailed account, there was absolutely no mention of a native village even though he clearly described the land upon which once stood the village of Syujtún; this supports the contention that the village was extinct near the beginning of the 19th century (Harrington 1928).

From the genesis of the land's title, later known as Burton Mound, in 1828 in the name of Santiago Burke until the acquisition of the property for the purpose of a luxury hotel in 1875, the property exchanged hands no less than 7 times. In his report to the Bureau of American Ethnology, Harrington painstakingly researched and documented a history of the land and its physical evolution over this 42 year period by interviewing in person and through written correspondence any individual able to give an account. He was astute in his resolution to investigate these alterations of the property, because the landmark described as a mound in so many early accounts was, at the point of the 1923 excavation, no longer present. Harrington understood that any alterations of the land must be taken into account before the interpretation of any archaeological finds could be made. The following history is a result of research done employing Harrington's report and field notes, as well as David Banks Rogers' accounts provided in his book *Prehistoric Man of the Santa Barbara Coast, California* and field notes from both his excavation with Harrington in 1923 and his own in 1924.

The first in this succession of ownership was the granting of title in 1828 by the Mexican government to Captain James Burke, Irish businessman and master of the merchant ship *Joseph Porter*. Burke was known to his Santa Barbara neighbors as Don Santiago Burke (Harrington 1928). Nothing is known about Burke's stewardship of the

property other than the fact that on December 23, 1833, he gave title of the property to Joseph Chapman, also known as Don José Chapman. According to an interview Harrington conducted with Joseph Chapman's grandson, Chapman took residence on the property as he understood that his mother had been born at a small home located on the property (Harrington 1928:57). This small home would later become a wing of a large adobe built by the third owner, Thomas Robbins of the later renowned Hope Ranch, which is still in existence today. The expanded adobe residence that Robbins built on the property became a landmark of Santa Barbara, being the most prominent structure on the landscape during the early years.

The next owner of the property is not so certain, but according to an interview Harrington had in the 1920s with Mrs. J.F. Freeman, a resident of Santa Barbara, "her husband's great grandfather, Foxen, owned the place for a short period after Robbins gave it up" (Harrington 1928:57). There is a lack of clarity as to ownership versus occupation of the property from 1833-1840; however it is understood that Robbins at least lived on the property if he did not own it. The same scenario is possible for Mr. Foxen. In the fall of 1840, Captain George Nidever, of the Lone Woman of San Nicolas fame, purchased the property, most likely from Joseph Chapman, and resided on it for 10 years. According to Nidever's own words, "In the fall of 1840 I bought what is now known as the Burton Mound property from Joseph Chapman, who had purchased it from the Mission. It had formerly been used to store hides in by [sic] the fathers" (Bancroft Library 1879 in Harrington 1928:57).

Although Nidever and his party of sea otter hunters discovered the Lone Woman (also known by her baptismal name Juana Maria) around this time, it was not at Burton

Mound that she lived on the mainland for 7 weeks until her unfortunate death. Juana Maria was discovered and brought mainland in 1853 at which time the mound property had already been sold to a prominent Santa Barbara attorney A.F. Hinchman in 1851. Hinchman and his partner, both having graduated from Harvard Law School, had come to Santa Barbara for a short visit, but were so enchanted with the area that they set up a law office shortly thereafter. Hinchman bought the mound property from Nidever which, according to Hinchman's daughter in a letter to Harrington dated July 3, 1923, had told her father that the mound was the locality of an old Indian burial ground (Harrington 1928:58). The letter written to Harrington by Hinchman's daughter provides an account of the first known discovery of artifacts from the property, "As soon as my father acquired the property, he started to beautify the place, laying out a garden and planting trees. As soon as they commenced to work, they unearthed mortars, pestles, skulls and bones. About that time, a member of the Smithsonian Institution was in California and my father entertained him and gave him many relics for the Smithsonian" (Miss Stella Hinchman on July 1923 in Harrington 1928:58).

Mr. Hinchman himself gives a valuable description of the mound in a letter dated December 6, 1851, written soon after his arrival to Santa Barbara. By this depiction it seems that the property has yet to be physically modified,

One of the first things that strikes the eye of a stranger, who comes to Santa Barbara, is a little hill which breaks the uniformity of the plain, rising perhaps 20 feet above the general level of the surrounding land. The hill has a gradual slope on all sides to its base and covers about 15 acres. All the year round it is green, because in every part of it are welling up beautiful little springs. On the highest part of the hill is an adobe house, which was when new one of the best houses of the country, though now it is somewhat out of repair. There lives a man by the

name of Nidever, an otter hunter, in these parts long before the Americans came here (Harrington 1928:59).

Miss Stella Hinchman corresponded back and forth with Harrington for awhile, him asking questions of her and her mother's (age 95 in 1923) recollections of the property. She gives account of several letters between her, her mother and her father relating stories of many relics and bones being found on the property during landscaping and how they had been given to different individuals who showed interest in them. One exception was the bones which were cremated. She also speculated to Harrington if the burials and artifacts unearthed on the property during her father's ownership perhaps originated from the ancestors of the Lone Woman whom her grandmother had recalled meeting (Harrington 1923).

In 1860, Hinchman sold the property to Lewis T. Burton of Tennessee, with whom he had a business relationship and co-owned a store located on the beach at the foot of the mound. The partnership was dissolved in 1860 at the same time Hinchman sold Burton the property. Burton and his business partners, including Isaac J. Sparks and John Peck Stearns, which the current wharf is named after, offered to Santa Barbara among other amenities a pier able to anchor large seagoing vessels, improved streets, and the beginnings of an eventual railroad stop (Harrington 1928; Graham et al. 1994) (Figure 7).



Figure 7. Early Santa Barbara, Circa 1880s. This drawing features the Burton Mound tract as it looked during the ownership of Lewis T. Burton (Courtesy of Santa Barbara Museum of Natural History).

The 19-year period in which the property was owned and occupied by Burton brought much change to Santa Barbara. Soon the remote village would be thought of as a premier and fashionable resort for the rich and influential to vacation. However, the mound and its surrounding land remained relatively untouched until Burton's death; any items belonging to the Chumash period were unearthed as a result of superficial modification to the land by way of landscaping. Burton would live on the property until his death in 1879, at which point the property was acquired by the Seaside Hotel Association with the intent of erecting a luxury resort without delay. The property, however, would sit idle in their possession until the turn of the 20th century when the construction of the Potter Hotel commenced.

The first earth was turned for the erection of the Potter Hotel in the winter of 1902 with the foundations being installed a little over a year later. Mr. Max Aman was an occupant of the property before and during the construction of the hotel and recalled to

Harrington an interaction he had with the property's agent, Mr. Henry Tallant, at the time regarding the digging of relics. He, Mr. Aman, had asked Tallant if he would take issue with him digging for relics around the property. According to Aman, Tallant forbid it saying "Don't you dare dig for relics" (Aman in Harrington 1928:61). Consequently, Aman said the only relics he had possession of were found in the process of cultivating a garden on the property.

A few other residents living in the area of Burton Mound attest to a good portion of the mound being wild and marshland complete with tules and willows extending "parallel from the beach from Chapala Street as far as the present eastern driveway of the grounds" (Arthur Greenwall interview, Harrington 1928:62). Others recalled that in the 1880s a second mound nearer to the beach than Burton Mound was 6 feet higher than the land around it and consisting of both sand and earth. A resident living across the street from Burton Mound, Mr. Charles T. Hall, shared with Harrington that he felt the Indian burial ground was located on the ocean side of Burton Mound and a second located at the site covered by the intersection of Chapala and Cabrillo streets (Harrington 1928:64). What has proven to be the most informative details of the mound's alteration as well as the partial destruction of the site, which once was part of the location of the ancient Chumash town of Syujtún, is an interview granted Harrington by Mr. Milo Potter, the Los Angeles hotelman who built the Potter Hotel (Figure 8).



Figure 8. Santa Barbara’s Potter Hotel. This illustration was created to show the hotel in its heyday, circa 1910 (Copyrighted by Penny Postcards).

In the interview, Potter described in great detail the methods and extent of the grading of Burton Mound for purposes of preparing for the hotel’s foundation. Potter explained that during grading, among other relics, a redwood box of bones, which he referred to as a “coffin,” as well as a cache of relics was discovered on the grounds. According to Potter they were buried at a location which he declined to reveal to Harrington, but which was later discovered during the 1923 Heye Foundation excavation overseen by Harrington himself (see Chapter IV).

The secondary site of the objects Potter alludes to in his interview was illuminated when Harrington interviewed James M. Carter who was in charge of the construction of the Potter Hotel and whom Potter chose to give the task of burying the relics and bones which had been found. Carter explained that a great amount of relics had been found near the crest of the mound rather than atop the mound itself. He reported that “skulls,

bowls, beads, arrowheads, and other curiosities [...] [that] were put in a room at the western end of the old Burton adobe house. After a few months there was quite a museum in that room” (Harrington 1928:63). Eventually, Potter came to Carter and instructed him to bury all that had been found and said,

A great many of our guests will be actors, and especially theatrical people have a superstition about ghosts and spirits from the dead. It would be very unfortunate if they got the report going that this place here was a potter’s field, and to me it seems the thing to do for us is to bury everything of every kind before the reporters get hold of it and give us an advertizing that will do no good” (James Carter interview in Harrington 1928:63).

Interestingly, Potter’s efforts were to no avail as is evidenced by an August 17, 1902, article published in the New York Times that depicts the site as a “battle ground of the ancients” which had been unearthed during construction of the hotel (Anonymous 1902).

With a small audience present, hotelman Milo Potter, broke ground on January 19, 1902, and proclaimed that a grand hotel would stand at that very spot just one year later. Good to his word, Potter would open his grand hotel exactly one year later to great fanfare, as one report stated, “anyone who was anyone was there [...] there was more money at the Potter that day than there was at Fort Knox” (Graffy 2010). Santa Barbara’s new landmark stood six stories high and boasted 390 luxury guest rooms, a 700 seat capacity grand ball room, manicured lawns, rooftop garden, its own post office and a zoo (Figure 8).

Burton Mound After the Ambassador Hotel Fire

On April 13, 1921, the then Ambassador Hotel (the hotel's name had been changed in December of 1919 when it was bought by the Ambassador Hotel Franchise) caught fire, reportedly due to faulty wiring, and burned to the ground in less than three hours. The 110 guests were escorted to safety and the owners pledged that another hotel even grander than the first would soon be erected on the ashes. This never happened and the property sat idle awaiting its fate for years. The City of Santa Barbara attempted to acquire the property by way of a bond measure and turn it into a park, but the proposal was rejected by voters. Soon after, a group of Los Angeles businessmen bought the property and only realized a fraction of their plan to develop the area with small quaint cottages. Only a few cottages were built; some of which still exist today surrounded by a collection of small apartment buildings, homes, and quaint motels.

All that remains of the hotel are two parallel rows of beautiful giant palm trees that once flanked its grand entrance (Figure 9). As for Burton Mound and the town of Syujtún, their remains are scattered. In order to make way for the Potter Hotel, Burton Mound was graded and the scraped earth deposited in the surrounding areas to level the landscape in preparation for the unrivaled grounds that would encase the hotel. Harrington was able to get extensive detail of all the grading activities; these are included in Chapter IV. Some of the artifacts that were excavated and removed from the site are housed in various museums: Smithsonian Institute in Washington D.C., Museum of the American Indian in New York City, Santa Barbara Museum of Natural History, and the Musée de l'Homme in Paris. However, hundreds perhaps thousands of artifacts are in private collections or in boxes stored in garages and warehouses totally undetected

by their captors. All that can be done is to piece together the various accounts provided and collected from numerous sources in order to compile the most comprehensive record of the site. Undoubtedly, this will be a continuing account as more information is discovered.



Figure 9. Modern Day Burton Mound. This current view of Burton Mound was captured standing along Cabrillo Boulevard; the rows of trees were planted originally to flank the front entrance to the Potter Hotel. The property, now completely graded to surrounding elevation, consists of single family homes, condominiums, and an apartment building (photo by Heather McDaniel, 2012).

CHAPTER IV

PREVIOUS AND SUBSEQUENT RESEARCH

“Vancouver, the English explorer, in his three volumes published in 1798, speaks of this mound as the abode of the Great Chief, which undoubtedly it was; in the year 1883, or 95 years since his visit, it is yet unexplored, and is covered with luxuriant vegetation and embowered with vines and fruit trees. MacGregor in his three volumes, Progress in America, published in 1847, speaks of this mound. It is certainly an interesting spot and well worth the consideration of the directors of various universities throughout the world who might seek to obtain the buried relics of a past race.”

~ excerpt from the book *Santa Barbara as It Is*
(Hall-Wood 1884)

The above quote is correct in its assessment of the importance of the Burton Mound site; however, even in 1886 it had not remained untouched, as the article contends, but instead had been subject to nefarious digging by several individuals (see Chapter III and below). The first certified and disciplined excavation of the site would not be conducted until the fire of the then Ambassador Hotel gave opportunity for research promptly proposed by the Museum of the American Indian and funded by the Heye Foundation. Fortunately, a majority of the owners of the Burton Mound property officially forbid any digging at the site, so although there had been promiscuous digging in areas around the property it appears that the site itself was protected to some degree from a great deal of looting. However, it is necessary to consider all work certified or otherwise to be thorough in the understanding of the site contextually and the provenience of the artifacts which were eventually rendered from it.

Landowner and Neighborhood Digging

As was mentioned previously in Chapter III, A.F. Hinchman had accumulated many relics over his length of residence at Burton Mound, at least some of were said to have made their way to the Smithsonian Institution (Harrington 1928:59). In 1878, French anthropologist Léon de Cessac and linguist Alphonse Pinart visited the coast of California conducting an archaeological expedition on behalf of the French Ministry of Education. Among the sites investigated was Burton Mound, but by all accounts, at a cursory level. Resulting artifacts were reported to have been brought back for research and exhibition in France (Harrington 1928; Gamble 2008; Golla 2011). Reverend Stephen Bowers, who made a living as a journalist and popular writer of his time, (also later considered a respectable ethnographer in his own right) conducted another cursory excavation in the early 1880s at the foot of Chapala Street (Harrington 1928:66; Benson 1997).

Several area residents helped themselves to the archaeological record hidden in the Burton Mound over the years. Gill Kimberly and two brothers of the Streeter family, residents of Santa Barbara in the early 1900s, told Harrington of occasions where they would dig up bones while playing around the mound (Harrington 1928:68). On one instance, they reportedly unearthed four skeletons located in between the Burton well and Chapala Street, all of which were found in a “seated” position. Chico Leyva, a well-known artifact collector, is said to have dug repeatedly on the site and would extract larger and what he considered more valuable items, discarding the bones back into the

holes he had created (Harrington 1928:66). Eventually, agents of the Seaside Hotel Association forbid and actively guarded the site to mitigate looting; nonetheless, pot hunting would continue to occur to some extent. In addition, it was known locally that on occasion of a low tide relics could be found easily at the juncture of Chapala Street and the beach (apparently CA-SBA-27) where there existed a sulphur spring. Many objects thought to be of Indian origin were extracted from this adjacent site over the years and landed on local curiosity shelves. Some of these objects found their eventual way to museums, but many are no doubt still in private hands.

As a result of undisciplined and unorganized digging in the area of Burton Mound, as well as unassuming residents collecting curiosities, there are several accounts of artifacts and human remains surfacing and resurfacing in the possession of various individuals, some of whom were not even aware of their origin (Harrington 1928; Rogers 1929; Gamble 2008). For example, a skull (maybe two) reported to have Indian arrowheads embedded in the side seem to have found their way from one individual to another and then eventually were forfeited to either the Santa Barbara Society of Natural History or the Smithsonian according to an interview Harrington conducted with a Miss Laura Holt, employee of the Santa Barbara post office (Harrington 1928:67). Bones dug up at Burton Mound by a Mr. William Hayward found their way to a bicycle shop in Santa Barbara and were purportedly stored with some other relics taken from a Gaviota site (Harrington 1928:69). As was stated earlier (Chapter III), many relics and skeletons were extracted from Burton Mound during the construction of the Potter Hotel and were stored over a period in the Burton adobe before being buried back on the site. As a result of interviews with informants who were involved at the time, Harrington was able to pin

point the location and exhume the cache from the ground once again. The artifacts within the cache were transported along with the product of Harrington's and Rogers' excavations to the Museum of the American Indian then located in New York (see below).

First Organized and Documented Excavations

The most extensive and best documented excavation of Burton Mound, archaeological site number CA-SBA-28, was funded by the Heye Foundation for the benefit of the Museum of the American Indian in 1923 and through the arrangement of the Bureau of American Ethnology. John P. Harrington, who was beginning to become well known as a linguist and ethnographer in North America, was given the task by the Bureau to supervise the project and eventually published the results in the Bureau's annual report of 1928 (Harrington 1928). Harrington enlisted David Banks Rogers to assist in the excavations of Burton Mound. Rogers would return to the site a year later to conduct excavations on behalf of the Santa Barbara Museum of Natural History and eventually published his findings of both projects in his 1929 book *Prehistoric Man of the Santa Barbara Coast*.

As a result of Harrington's 1923 excavation, several different occupation sequences were discovered including numerous intact artifacts representing the village of Syujtún during Historic period. The report Harrington prepared for the Bureau of American Ethnology included a detailed site description, history of the site, chronology of ownership, details of grading conducted for various constructions, previous excavations and relic hunting, and a full description of all the artifacts recovered

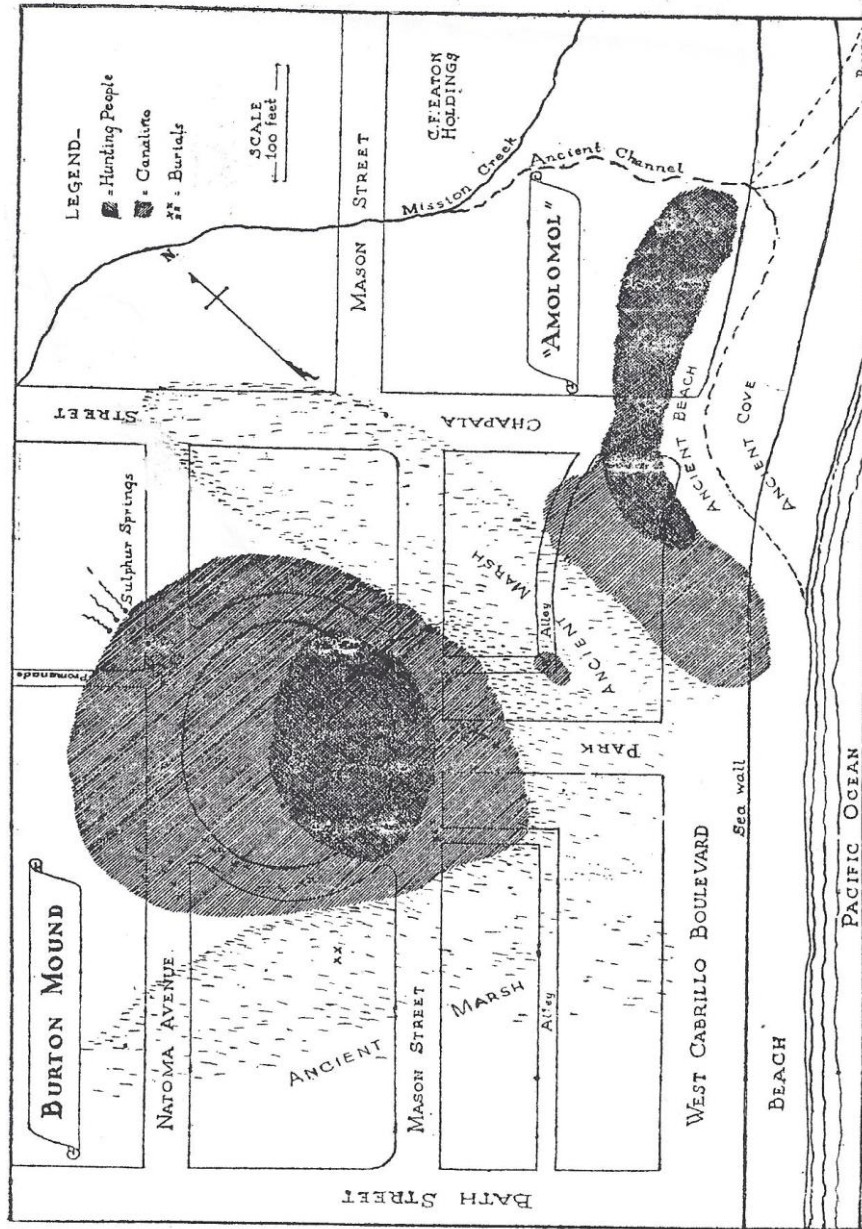


Figure 10. Burton Mound Site Map drawn by David Banks Rogers (Courtesy of Santa Barbara Museum of Natural History).

(Harrington 1928). Unfortunately, few facts were provided in Harrington's report concerning the methods of the excavation other than a mention that shovel test pits were dug on each part of the hotel property as well as the adjacent property. Although his

artifact descriptions are complete with visual portrayals, measurements and interpretation of use, Harrington (1928) gave little information regarding the burials that were recovered and offers no detail of where the collections could be accessed for future research.

The section Rogers reserved for Burton Mound in his book chronicles both the 1923 and 1924 excavations in which he was involved (Rogers 1929). He does provide some details left out of Harrington's report, such as the site map shown in Figure 10, but very little information of the field methods and locations of the areas excavated are given. As did Harrington, Rogers included detailed artifact descriptions in his publication, but fails to distinguish which artifacts are from which occupation sequences. He mentions that the overall collection recovered had been shipped to New York:

Throughout this entire length, and to a width of forty feet, we were in continuous contact with material that spoke eloquently of the intimate lives of prehistoric and historic peoples. Our success may be measured by the fact that, in the course of the season, we shipped to New York no less than two tons of material and the skeletal remains of three hundred individuals (Rogers 1929:101).

Claude Warren 1969 Excavation of Burton Mound

It would not be until 1969 that the Burton Mound site would see another archaeologist's trowel. During the summer of that year, Dr. Claude Warren, then an assistant professor at University of California Santa Barbara (UCSB), led a field team of students on an excavation of the site. Because the faunal collection that resulted from this excavation is the basis for this thesis, a detailed account of Warren's work at Burton Mound is given below.

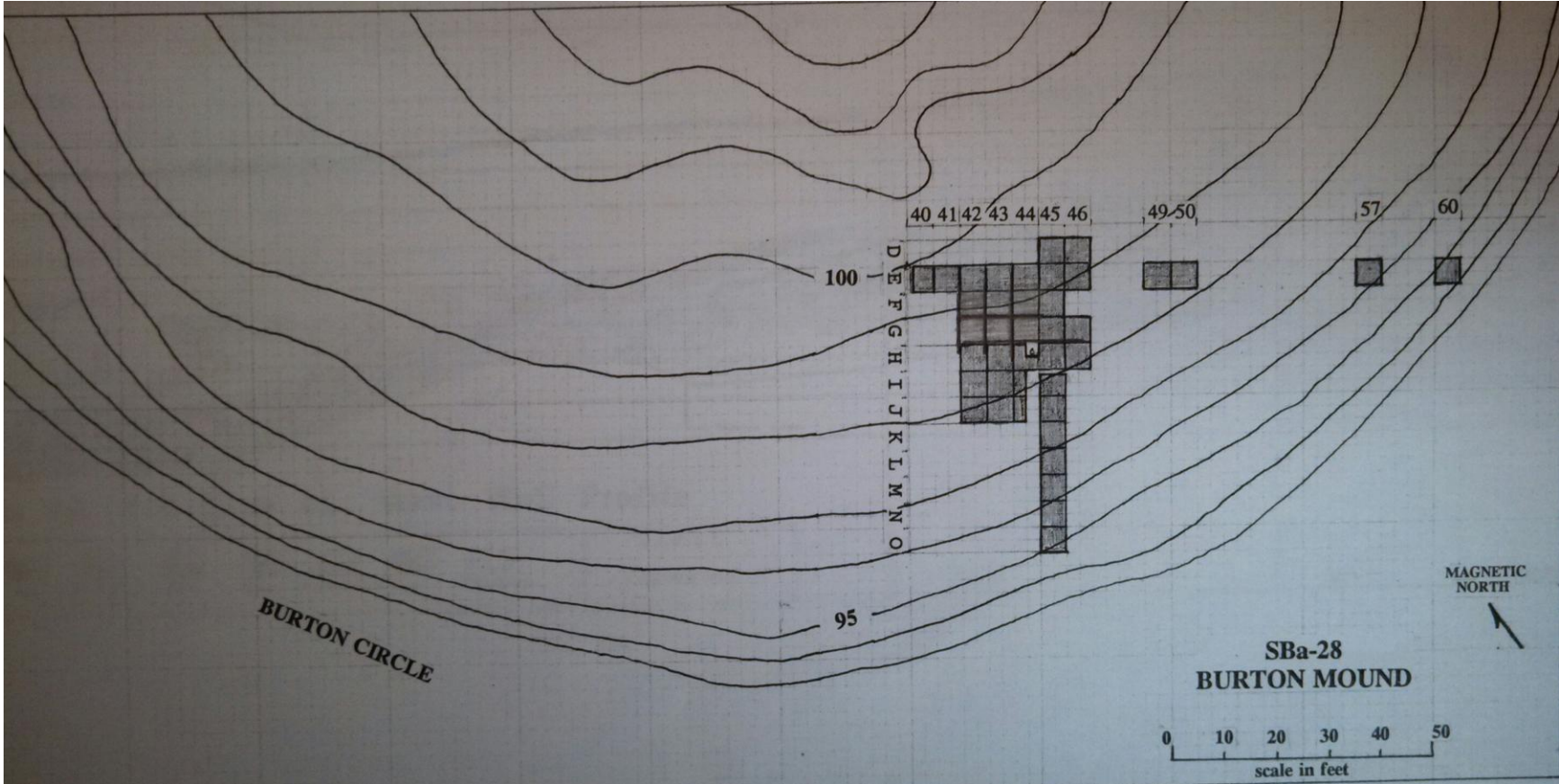


Figure 11. CA-SBA-28 Site Map – Warren

Dr. Claude Warren is known as a leading expert on the early man of the Far West and is credited with defining what are known as the San Dieguito and La Jolla cultural complexes in San Diego area prehistory. During his time (1967-1969) at UCSB, Warren conducted research in the Mohave Desert and led field schools at sites along the Santa Barbara Coast of which CA-SBA-28 was one. Warren took a bulk of the collection garnered from his 1969 excavation of Burton Mound to University of Nevada Las Vegas in 1969 (Dr. Claude Warren, personal communication, March 18, 2012). Graduate students under his direction carried out initial sorting, numbering and cataloging of the entire collection. In the 1990's, the faunal collection was moved to the Santa Barbara Museum of Natural History (SBMNH) for eventual analysis. No publication specifically concerning this excavation or the resulting collections has been completed.

Following are the details known by the researcher concerning the methods of excavation and cataloging of recovered remains. This information was acquired through personal communication with Dr. Claude Warren, as well as notes and labels associated with the collection. During the period of the excavation, a total of 45 units were excavated; 41 were complete 1x1 meter units, 3 were partial units approximately half a 1x1 unit, and 1 unit included an intrusive pit about a quarter the size of a 1x1 unit. The site map (Figure 12) included with the collection shows a grid extending north-south labeled by numbers 40-60 and extending east-west labeled by letters D-O. Each pit line included anywhere from 1 to 12 units; the greatest of these was Pit Line 45 for which this research is focused. The units possessing the highest density of remains were located in pit line 45. Two wall profiles were included with the collection housed at SBMNH; they are Pit Line 45 – West Wall Profile and Pit Line H – South Wall Profile. One quarter

inch screen was used for screening in the field and it appears from the condition of the remains that no wet screening was conducted (personal observation). Unfortunately, no field notes were available to the researcher and the above is the extent of information currently available.

Other Excavations and Research in the Late 20th Century

In 1971, an excavation took place under the direction of Dr. Dennis Ringer, a professor of anthropology at Santa Barbara City College (SBCC). Information regarding this excavation is limited due to the fact that it was abruptly ended before it could be completed (Dr. Ray Corbett, personal communication, March 28, 2013). The excavation took place during construction of an apartment complex which required the owner to grade off the top portion of the remaining mound in order to comply with city ordinances. The project consisted of four excavation units located on the southwest side of Burton Circle (SBCC, student field notes, 1971). The class was never allowed to be complete their excavation to the base of the deposit because the owner shut down the project and filled in the units without consulting the field crew (Dr. Ray Corbett, personal communication, April 9, 2013). The collection is housed at Santa Barbara Museum of Natural History.

Of note is a subsequent excavation conducted in 1992 by Ogden Environmental and Energy Services for the City of Santa Barbara at Burton Mound's neighboring site CA-SBA-27 for the expansion of a hotel located at 28 W. Cabrillo Blvd (Santoro et al. 1992). The village of Syujtún, at least during the Historic period, includes both CA-SBA-27 and CA-SBA-28 (Johnson 1988:94) and is located in the present block flanked

by Chapala, State, Mason streets and Cabrillo Blvd. The faunal analysis included in this CRM report is germane to this research and especially helpful as a comparative study, because no other faunal analysis has been conducted for these sites.

Recent Excavations and Research

Most recently in June of 2012, Dr. Lynn Gamble of UCSB was called upon to undertake test excavations before plans to erect a three story museum on CA-SBA-27 were carried any further. Gamble oversaw a field crew comprised of UCSB students as they dug three five foot deep units and recovered “397 shell and glass beads, nine arrow tips, 27 fish hooks, a few bead drills, many stone tools, a bone hair piece, and the bones of countless fish, sea mammals, and even a giant whale vertebra that Gamble suggested might have been used as a stool” (Welsh 2012:9). The discovery of human remains brought an end to the excavation and changed the plans for construction of a new elevator to a handicapped stair lift. The plans for a new building to house the museum have been put on indefinite suspension (Welsh 2012).

Having such a rich deposit encountered during a small scale excavation not only verifies the significance of CA-SBA-27 as a site that still has much to offer in our overall understanding of the Chumash people both temporally and spatially, but should inspire the examination of collections already taken. As this chapter documents, the Burton Mound site vicinity has attracted consistent attention for well over 150 years. Unfortunately, previous excavations have either been very limited in their scope or not published at all. The fact that a majority of this site has been destroyed or at the least disturbed, that many of the excavations were conducted during a period when faunal

remains were not considered worthy of collection, and that those excavations conducting faunal analysis produced rich results with limited material, the present study has the potential to contribute significantly to the discourse concerning California prehistory and history.

CHAPTER V

THEORY AND METHODS

“As soon as we arrived all the people came to visit us, and brought much roasted and baked fish for us to eat until the boats came in with fresh fish, and these shortly landed on the beach, and from them after a little they brought a great abundance of bonitos and jewfish, which they gave us, and offered us in such quantity that we would have been able to load the animals if we had had the opportunity to prepare and salt it. They gave us in addition to the above, dried fish without salt (which they do not use in their food); which we took along as a precaution and which was of much help on the journey.”

~ Miguel Costanso of the Portolá expedition on Wednesday, August 16, 1769 in Harrington (1928:36-37)

Theory

Throughout the accounts of explorers, and the Franciscans that accompanied them, there is an appreciative awe accorded to the reception they received as they encountered each Chumash town. Sumptuous feasts were held in their honor with a wide array of foods being served; as well, surplus fish was lavished upon them, beyond their capacity to store, for their continuing journeys. Understanding the subsistence strategies the Chumash developed over thousands of years is integral to considering their socio-political complexity overall. These strategies allowed for the notable feasts referred to by Cabrillo, Portolá, and Ánza, and they allude to a well-developed society structured in a manner that allowed for efficient resource exploitation and the proficient management of surplus. How did these strategies develop and by what catalysts? At what point did these strategies begin differing from their neighboring societies? Are they simply a result of the need to manage the resources that were afforded them during times of plenty, or did

periods marked with climatic fluctuations stimulate the emergence of social complexity within the Chumash culture?

A preeminent theme of archaeological research conducted in Southern California has been the effort towards discovery of mechanisms and trajectories for the emergence of social and political complexity among the Chumash. Attention to the archaeological sites of California where Chumash peoples resided has been steady for over 125 years (Gamble 2008). As a result of the data extracted from these sites, the consensus among most scholars is that the Chumash had reached a considerable level of political and social complexity by AD 1300 (Arnold 1992, 2004; Arnold et al. 1997; Kennett and Kennett 2000; Gamble 2008). Theoretical consideration of the causal connections and processes concerning social, economic, and political complexity among Chumash peoples was initially developed in the second half of the twentieth century (Raab 2004; Gamble 2008). Many recent explanations for the evolution of complexity among the Chumash have been centered on paleoclimatic variability (Arnold 1992, 2004; Arnold et al. 1997; Johnson 2000; Kennett and Kennett 2000). This explanatory focus can be attributed, in large part, to the scientific advancements that allow us to trace markers of climatic variability. This theoretical section will explore the most prevalent theoretical perspectives concerning the unique cultural evolution of Southern California's Chumash peoples, its possible correlation to periodic events of climatic variability, and how the faunal assemblage collected at CA-SBA-28 can contribute to current discourse on the subject.

Assertion of Chumash Complexity

Based on their work concerning Northwest Coast cultures, Kenneth Ames and Herbert Maschner (1999) suggested criteria by which we could label groups as “complex hunter-gatherers”. These societies, they argued, were sedentary or at least semi-sedentary and had dense populations. Because of relative lack of mobility, these societies lived in substantial dwellings and stored large amounts of processed food in order to support these dense populations year round. Ames’s and Maschner’s characterization also asserts that complex hunter-gatherers depended on a few consistently available resources supplemented with less reliable resources (Ames and Maschner 1999).

Indigenous societies of the Northwest Coast of North America have been considered for decades to be the “cultural zenith of hunter-gatherers on the world stage” (Arnold and Graesch 2004). In the last few decades, a growing collection of work by ethnographers and archaeologists has provided a good case for the identification of the Chumash as a complex hunter-gatherer society (Arnold 1991, 1992, 2001; Arnold et al. 1997; Raab and Larson 1997; Johnson 2000; Raab 2004; Gamble 2008). Gary Coupland, recognized expert of Northwest Coast hunter-gatherers, recognized the validity of identifying the Chumash as a complex hunter-gatherer society in his synthesis of Arnold’s 2004 edited volume presenting some foundational perspectives of Chumash complexity (Coupland 2004).

The Chumash now provide one of the best and best-documented cases of complex hunter-gatherers in the archaeological literature [...] Where anthropologists once looked only to the Northwest Coast for their models of hunter-gatherer complexity, our attention is increasingly being drawn to the southern California coast and the Chumash example (Coupland 2004:174).

This distinction of “complex hunter-gatherer” bestowed on the Chumash society certainly challenges a portion of the commonly held definition that hunter-gatherers had a limited array of staple foods from which they provided for their communities. The Chumash exploited a wide range of resources available to them; especially those mainland communities which had both terrestrial and marine reserves at their daily disposal (King 1990; Kennett 1998). There is a general understanding that the Chumash communities inhabiting the coastal regions relied most significantly on marine resources, specifically fish and sea mammals. Also, that fish found close to shore and in deep water became progressively more central to the Chumash subsistence (Johnson 1982; Glassow 1992; Salls 1992). This is evidenced in consistent accounts of the explorers being welcomed and presented with great quantities of fish.

Fr Juan Crespí of the Portolá expedition on Wednesday, August 17, 1769 referring to the expedition’s arrival to El Rincón “...*Upon our arrival they brought us so much bonito fish, fresh, dried and roasted that they exceeded in their gift the previous Rancherías.*” Wednesday, August 18, 1769 referring to the expedition’s arrival to Syujtún “...*Soon after we arrived all the people came with a great present of fish that were brought in seven large bundles [...] Soon afterwards the canoes which were out fishing came in and straightway all the Indians, big and little, came over with their present of fish, of which alone we got four mules loads...*” (Brown 2001:15).

The seasonality cannot be ignored as these accounts were taken in August when fish would have provided a good portion of the Chumash diet. In addition, fish would have been a preferred gift for visitors as it was easily acquired and quickly preserved making for a good present, as the accounts stated, to travelers needing food easy to carry and store with limited space. These details must be considered when employing the expedition accounts as evidence for the composition of the Chumash diet during the Late Period.

In order to interpret the role climate variability played in the emergence of complexity within the sociopolitical organization of the Chumash, it is important to understand the proposed evidence and various points of view concerning the possible causal connections. The prevailing arguments for possible causal forces of sociopolitical complexity of the Chumash can be broadly organized into three categories – resource abundance, resource scarcity, and management of trade networks. No matter the cause, there is little argument regarding the characteristics marking the emergence of the Chumash as a “simple chiefdom” during the Late Holocene period (Arnold 2004).

Theoretical Perspectives Concerning Social Complexity of the Chumash

At the time of European contact, the Chumash possessed the criteria used to define complex hunter-gatherers suggested by Ames and Maschner (1999) with some additional traits that have also been connected to complexity. These supplementary traits included an economic system utilizing shell beads as its form of monetary exchange and a hierarchical economic organization (Raab 2004). It was during the Middle to Late Transitional Period that the precursors to these traits were exhibited through a series of extraordinarily distinct and accelerated changes in cultural patterns. They included an increase in the consumption of marine foods; the expansion of trade commodities incorporating items such as steatite and marine shell beads; and growth of certain coastal settlements to unprecedented sizes (Raab 2004:4). Arnold and Graesch (2004) identify some key features of Chumash complexity resulting from the Transitional Period: (1) development of highly specialized occupations; (2) production of sophisticated watercraft by means of organized craft guilds; (3) presence of hereditary chiefly families with

ascribed status and elite control of nonkin labor; and (4) a consortium of well-defined religious, political and cultural roles (Arnold and Graesch 2004:3).

A traditional theoretical strategy concerning the Chumash is to cite the geographical region in which the Chumash resided as possessing ecological diversity and great natural productivity. One functionalist approach has suggested that because of the abundant resources Southern California provided, social and economic organizational strategies were formed to manage the redistribution of surplus. According to Chester King's approach, the benefits of a stable and productive environment resulted in consensual elite control of the resources to ensure efficient redistribution of surpluses (King 1990). Brian Hayden (1995:21-22) also suggests that abundance led to social complexity by creating socioeconomic inequalities and eventual hierarchy. In other words, a case of the "haves and have-nots" stimulated by abundance and managed by elite-controlled redistribution.

Conversely, Arnold and Colten (1998) propose that it was resource depletion caused by environmental stress that served as the impetus for sociopolitical complexity among the Chumash. This model argues that a significant change in sea temperature as well as drought affected resources deleteriously. As a response, elite control was acquired coercively through the exploitation of this crisis by control of trade networks (Colten and Arnold 1998). Another aspect of this model offered by Arnold and Colten is that elite control was also wielded through the control of specialized watercraft which was necessary for trade to and from the Channel Islands.

The models proposed by King and Arnold and Colten are disparate in the manner in which they envision the way leaders materialized and the mechanisms which created complexity. However, they are similar in that they believe that environmental conditions played a large part in the development of social and political complexity existent in Chumash society during the Late Holocene. In addition, as Raab contends, they both approach the challenge of explicating the existence of sociopolitical complexity among the Chumash by employing the “socio-economic aspirations of modern social classes” (Raab 2004:5). In summary, King’s proposed trajectory is that environmental stability created gradual change and resource abundance which encouraged consensual elite control to manage surplus. Arnold’s and Colten’s trajectory is that environmental instability created abrupt change and resource depletion which was exploited to promote coercive elite control.

Raab (2004) asserts that there are major and consistent flaws in the models proposed by King and Arnold and Colten. Their more general error, he contends, is a theoretical formulation that imbues contemporary motivations on an ancient society. He cautions researchers to be careful of such analogies, “if we begin with the assumption that the ancient Chumash were motivated by contemporary socio-economic impulses, it hardly seems surprising that some archaeologists then ‘discover’ prehistoric political-economic patterns remarkably like those of contemporary state-level societies” (Raab 2004:5). Raab also challenges the popularity of redistribution models to explain the complexity of ancient California societies especially when, as he insists, there is little to no archaeological evidence of an amount of food surplus necessary to sustain the proposed motivations of a social elite (Raab 2000:5).

Frustrated with the limitations of certain research strategies such as functionalist systems theories, historical models, simplistic ethnographic analogies, and assertions of post-modernist “contextualism” (Raab 2004:3), Raab provides a good argument for the evolutionary ecology approach. He maintains, it “even at a fairly heuristic level, yields more logically consistent, realistic, and empirically-warranted hypotheses about many aspects of California prehistory than alternative theoretical schemes” (Raab 2004:4). Raab (2004) cites that long held functionalist approaches are hinged on the insistence that California was a proverbial land of milk and honey and that the Chumash were “affluent hunter-gatherers enjoying an optimally-adapted cultural climax – an adaptation built on a system of cultural-environment relations that were highly productive, stable and nature-friendly” (Raab 2004:4).

Raab contends that by utilizing the principals of evolutionary ecology that consider foraging efficiency and by employing diet breadth and prey choice models, a viable alternative to the functionalist redistribution models is clear to see. Warfare, Raab asserts, may have been a more significant factor in the cultural changes observed in the archaeological record of the Chumash. When prey choice and diet breadth models are measured against the fauna and flora assemblages of the Late Holocene, and particularly of the Transitional Period, patterns of declining foraging efficiency are evident. The patterns suggest that the climatic stress linked to the Late Holocene may have been answered with efforts towards resource intensification. According to Raab, this response had its limits and in some areas warfare became a mechanism for controlling access to scarce resources (Raab 2004:7).

Raab is not alone in his assertion that resource distribution, whether as a response to abundance or scarcity, was not the primary causal factor in the sociopolitical complexity of the Chumash. Lynn Gamble (2008) suggests that it was the management of trade networks that contributed most significantly to Chumash complexity. To Gamble, climatic stress would not have had a large impact on the Chumash since they were a maritime hunter-gatherer society. Also, because of their exposure to periodic climatic events, the Chumash had developed well honed strategies to address and manage risk caused by climatic variability. (More about the possible effects of climate change on the Chumash culture from Gamble's perspective in the following section.) Overall, Gamble's perspective cites the demand for prestige goods from the growing mainland settlements as the impetus for increasing status of certain powerful individuals (Gamble 2008:13).

Climate Variability as a Causal Factor in Social Complexity

As is evident in the preceding section, it is not possible to exclude the discussion of social responses to climate change when considering the development of sociopolitical complexity among the Chumash. There is no debate that exists without some reference to the effect climate change had on the Chumash culture. Although many studies (Arnold 1992, 2001; Hayden 1995; Arnold et al. 1997; Raab and Larson 1997; Johnson 2000; Kennett 2000; Gamble 2005, 2008) generally correlate environmental stress and the rise of cultural complexity among the Chumash, there is little agreement about the specific relationship or causal trajectory. The following section will focus more specifically on how the previously mentioned theoretical perspectives, and others, have considered the role of climatic events as a causal factor in social complexity.

According to Blackburn and Anderson (1993), the Chumash culture's ability to adapt to an ever-changing environment has been well documented in both ethnohistoric and ethnographic records; in fact, they not only adapted, they conceived numerous and varied strategies in order to adjust to their environment (Blackburn and Anderson 1993). It is because of this aptitude and the societal traits that ensued, Arnold asserts, that the Chumash and their state of simple chiefdom at the time of European contact has been notably established (Arnold 1992). However accustomed the Chumash may have been to periodic climatic anomalies, most recent studies of Southern California's paleoenvironmental record, and in particular the Santa Barbara region, have demonstrated the Chumash certainly experienced stressful climatic conditions that would have most certainly challenged even the most highly adaptable subsistence regimes (Kennett 2000).

The most extreme of these stressful climatic conditions is the time span from AD 950-1250 (also thought to last from AD 800 to 1350) referred to as the Medieval Climatic Anomaly (MCA). This period of global climatic perturbations ushered in some of the most extreme droughts inflicted on North America. Coinciding with these droughts are considerable changes in social organization, trade, settlement and human health throughout California and other portions of the American West (Raab and Larson 1997). However, Raab and Larson (1997) are quick to point out that "climatic stresses, even highly punishing conditions, are not in themselves an adequate explanation of cultural change" (Raab and Larson 1997:9).

In 1992, Jeanne Arnold introduced a new model to explain the rise of Chumash complexity offering chiefdom emergence based on "population-resource imbalances, political opportunism, and the manipulation of labor by rising elites" (Arnold 1992:64).

She stated her purpose as being a discussion to “show how variables relating to environmental instability, subsistence stress, and the manipulation of labor involved in transportation, production, and exchange may be used to understand rising complexity” (Arnold 1992:64). The data used to assess this model were: paleoenvironment, chronology, settlement, craft specialization, production and exchange processes, dietary components, and osteological investigations conducted on human remains found on the Channel Islands (Arnold 1992:64).

Arnold and her colleagues (Arnold et al. 1997) used a multidisciplinary approach to investigate the relationship between cultural patterns and environmental factors. As a result, they concluded that cultural diversity was only partially the result of ecological diversity; although California’s prehistoric peoples certainly adapted to environmental factors, they were by no means limited by them. This historical ecology approach employed by Arnold and her colleagues to understand the contexts of culture change in insular California habitats discusses various lines of evidence including: changes in diet, social organization, the organization of labor and exchange networks. They attempt to correlate these lines of evidence with changes in climate.

Another stated objective of this article was to encourage colleagues to employ a consortium of data rather than rely, like an earlier study (Raab 1995), on limited faunal assemblages which provide a restricted and often skewed scope of analysis. This article is certainly aimed at Raab’s critique of Arnold’s (1992) paleotemperature model and her contention that environmental stress in the form of drought and sea temperature flux depressed resources and served as the impetus for elite control and eventual emergence of hereditary chiefs.

Employing paleoenvironmental data, human osteological data and the archaeological record, Raab and Larson (1997) again challenged Arnold's (1992) assertion that the cultural changes expressed in increased social complexity, declining health and amplified violence, for example, are due to maritime subsistence trouble caused by elevated sea temperatures existent along the Southern California Coast from AD 1150 to 1300. Instead, they contend that persistent drought conditions in both California and the American Southwest resulted in significant cultural changes during the Late Holocene. The scholars also suggest that further study employing social change and environmental correlates among two distinct areas of North America could contribute a better understanding of the processes which connect egalitarian with ranked chiefdoms on the hunter-gatherer continuum (Raab and Larson 1997).

Raab (2004) contends, in his argument for resource intensification and warfare as casual factors in the various culture changes of the Chumash, that the food redistribution models fail to provide ample evidence for successful management strategies. In other words, according to Raab, what several scholars insisted was a society of "storage-dependent" hunter-gatherers whose social complexity can be attributed to food redistribution and flexibility in settlement patterns and resource procurement is a fallacy. "What we may now have to accept is that populous, storage-dependent hunter-gatherers of southern California were at greater risk from climatic deterioration than many had been led to suppose by a simple faith in Kroeberian food abundance scenarios" (Raab 2004:9).

John Johnson (2000) explains that because the Southern California Coast has been established as an environment rich in resources, ecologically diverse, and climatically

variable, there has been a theoretical focus on the effects major climatic anomalies have had on the social responses of indigenous populations of the area. The primary rationale for this emphasis on climate change, Johnson (2000:301) says, has been the attempt at understanding the adaptive environment of the Chumash during the Late Holocene. He explains that this has led to several hypotheses centered on attributing to these anomalies certain aspects of social change as well as adaptations in subsistence and technology. In response to his dissatisfaction with aspects of the debate, Johnson (2000) proposed an alternative hypothesis to the theories of Arnold and Colten (1998) and King (1990) which suggest abundance and scarcity are the cause of Chumash complexity.

The focal point of Johnson's perspective is the role of Chumash chiefs in a social and economic environment heavily influenced by climatic uncertainty. He challenges what he considers a theoretical hole in the debate over the effects of climate on the social response of the Chumash and answers it with the inclusion of ethnohistoric records, cross-cultural surveys, new paleoenvironmental and archaeological evidence (Johnson 2000). The theoretical hole referred to by Johnson is the lack of a regional perspective concerning social evolution among the Chumash. The evidence of matrilineal post-marital residence, Johnson says, points to an adaptive response to external aggression and is associated to certain models of warfare. "Matrilocal residence prevents the creation of feuding residence groups of patrilineally related males and is therefore given a selective advantage under conditions of external aggression" (Johnson 2000:318). Raab (2004) employs Johnson's (2000) assertions to support his contention that compared to food surplus redistribution, warfare may have played a greater role in the emergence of social complexity among the Chumash. In conjunction with Johnson's hypothesis, Raab notes

that ethnohistoric records associate the Chumash at European contact with external aggression in the form of inter-village feuds and warfare (Raab 2004:12).

Gary Coupland (2004) offers unique insight into the understanding of complex hunter-gatherers through his systematic comparison of the Chumash to the complex hunter-gatherer societies of the Northwest Coast. This article serves as a commentary to Arnold's (2004) edited volume concerning Chumash complexity and highlights the similar and disparate trajectories of each culture. Similarities between the two groups are high population density, relative sedentism, social inequality and use of marine resources (Coupland 2004:180). However, the differences are compelling and have been connected causally by various scholars to the emergence of Chumash complexity. The differences according to Coupland are: the intensification of craft production exhibited by shell bead production and the centralization by elites to gain power. As the author points out, this change in understanding regarding complex hunter-gatherers should be of no surprise as the breadth of research expands so should the interpretation include the effects of climatic variability on social response and eventual cultural change (Coupland 2004).

By titling his chapter *The World of the Tomol*, Brian Fagan (2003) underscores his belief that the complex Chumash culture can be attributed to their innovation of the plank canoe, the *tomol*. The climatic fluctuations of the Transitional period, which are apparent within biological and archaeological records, are addressed in relation to increased complexity, warfare, trade and resource intensification. Fagan contends that the Chumash invented the *tomol* in response to a shortage of resources, caused in large part by climatic variability. The *tomol* allowed for expanded trade and stimulated

increased social complexity because managerial elites established hegemony over its production and use (Fagan 2003).

Terry Jones and colleagues (1999) assert that climatic variability is a significant factor in culture change and the emergence of complex hunter-gatherer societies. As a result of considering the paleoenvironmental and cultural variability of four distinct regions of Western North America, Jones and his colleagues demonstrate through the archaeological record how drought and other climatic variances and changes in the corresponding prehistoric cultural frameworks correlate. The authors contend that environmental factors including climatic variability played a major role in the materialization of social complexity in prehistoric cultures across Western North America even among populations with disparate subsistence strategies (Jones et al. 1999).

Douglas Kennett (2000) employed oxygen isotope analysis and marine climate records, as well as updated evidence from the archaeological record of the Northern Channel Islands, to support his assertion that cultural complexity and changes in human behavior coincided with certain climatic events. These events demonstrating extreme variability include: cold and unstable marine environments coupled with a cool, dry terrestrial atmosphere beginning in AD 500 and finding its climax in AD 1300 (Kennett 2000:381). The author makes a correlation with the established evidence of political, social, and economic change within the Chumash culture inhabiting the Northern Channel Islands and the climatic events that occurred throughout the Holocene period from AD 450 to AD1300. In addition, Kennett cites increased marine exploitation, sedentary settlement patterns, as well as an increase in warfare and trade among coastal

communities of the Northern Channel Islands as social responses resulting from unstable climatic patterns (Kennett 2000).

Scott Perlman (1982) employs two models to demonstrate his assertion that the variability in hunter-gatherer behavior over long periods of time should be considered in relation to the environments they settle in and the possible demographic pressures they encounter versus focusing primarily on opportunistic responses that do not represent an overall pattern of behavior. In an attempt to resolve why there is variability in behavior between interior and coastal populations, he utilizes a two model approach. Model 1 expresses the specific variables ascribed to coastal productivity. Model 2 attempts to illuminate the variables in model 1 by employing the optimum foraging model. Since coastal environments typically require less effort and fewer risks to acquire resources than do insular environments, the variables in coastal climate, Perlman suggests, could also have played a role in the behaviors evident within the archaeological record. Faunal records are considered in conjunction with carrying capacity, sea level change, topography and bathymetry in order to understand their combined effects on behavior of coastal populations (Perlman 1982).

As stated earlier, Lynn Gamble (2008) proposes that it was the organization of trade networks that contributed most significantly to Chumash complexity. To Gamble, climatic stress would not have had a large impact on the Chumash since they were a maritime hunter-gatherer society. She contends that the effects of climatic change, specifically drought, are experienced more by agricultural societies than by hunter-gatherers especially those that subsist primarily of marine resources such as the Chumash. According to Gamble, the Chumash peoples developed strategies aimed at

decreasing their vulnerability including: surplus food storage, active and far reaching exchange networks and a system of currency (Gamble 2003). As a result, Gamble suggests “that powerful individuals gained ever-increasing status and control over exchanges as the demand for prestige goods in the burgeoning mainland settlements increased” (Gamble 2008:13). Gamble’s perspective contrasts Arnold’s contention that stress induced by climatic change served as the impetus for emergence of elite control through the manipulation of resources and labor by suggesting that the impetus for the emergence was not control of resources but the trade of prestige goods (Gamble 2008).

Conclusion and Research Focus

The second half of the twentieth century ushered in an era of vigorous debate about the cause of sociopolitical complexity among the maritime hunter-gatherers of South-central California. Not only has this created a growing collection of scholarly work on the Chumash and other prehistoric Southern California societies but it has brought to light the unique contribution the scholars who study the Chumash have to offer the anthropological community on a whole. Individuals such as Arnold, Gamble, Johnson, Fagan, Hayden, Kennett and Raab have all contributed influential perspectives that are being considered outside the realm of California archaeology and their students are sure to do the same as well as other up and coming scholars who only need to avail themselves of the rich archaeological record of California. This is not to say that the interpretations made so far or those to come are limited to the benefit of the anthropological community. Any knowledge gained concerning the effects of environment on society and the evolutionary mechanisms of culture has the potential of profiting many disciplines and the public as well.

Understanding timing and creating more accurate schematics concerning the paleoenvironment in which the Chumash subsisted for several millennia will certainly assist archaeologists in explaining the emergence and prolonged existence of social complexity amidst shifting environments. There is little scholarly argument as to the existence of dynamic culture change among the Chumash of South-central California or even the emergence of social complexity and resulting augmentation of economy, trade and settlement patterns. Rather, the debate lies in the types of adaptive mechanisms that created these patterns and the theoretical frameworks that best explicate the evident cultural change of the pre-contact Chumash.

Faunal analysis of a mainland Chumash site such as CA-SBA-28 has the potential of illuminating questions concerning the timing of resource scarcity and abundance in the Santa Barbara Channel Region and how it affected the subsistence strategies of its inhabitants. The examination of species variance and quantification temporally is necessary to identifying subsistence choices during specific periods as well as change over time specifically during periods noted for significant climatic variability. In addition, documenting the faunal remains of a town having been identified as a regional center could eventually elucidate the possible differences in subsistence activities between coastal towns with varying roles and importance. With these research aims in mind, the following section of this chapter documents the methods used to gather the necessary data for interpretation.

Methods

Identification

The faunal collection studied in this work was previously processed under the direction of Dr. Claude Warren at the University of California, Santa Barbara (UCSB), and University of Nevada, Las Vegas, Archaeology Laboratory (UNLVAL) to the point of a preliminary sort in the following categories: mammal, fish, shell, avian, human modified bone, and, at times, sea mammal. As a result, the remains were already washed, bagged, numbered, and catalogued before this project began. The collection was housed at the Santa Barbara Museum of Natural History (SBMNH) in the 1990's after this processing was conducted at the UNLVAL in 1980's. Data regarding the cultural components found in association with the faunal remains, stratigraphic level, wall profiles, and unit descriptions were obtained through review of the full catalogue of all material, faunal or otherwise, created by UNLVAL and documents accompanying the collection. Contextual veracity was maintained by continuing to employ the same catalogue numbering system created by UNLVAL. All remains were identified, weighed, counted, and observed for anomalies and modification, then bagged and tagged separately and placed within one bag identified according to the original UNLVAL catalogue numbers.

Mammal identifications were confirmed utilizing the comparative osteological collections housed at the SBMNH, Cotsen Institute of Archaeology's Zooarchaeology Laboratory (CIOAZL), and the Los Angeles County Museum of Natural History (LACMNH). The latter two comparative specimen collections were only used when no specimen could be found at the SBMNH that matched the bone element being evaluated. If no match was found in the comparative collection at CIOAZL or LACMNH, the bone was

determined unidentified. Since it was not practical to treat each unmatched bone element in the way just explained, this strategy was used only for those bone elements determined by the researcher as significant. Bones that were not able to be identified were categorized as “unidentified”.

Each bone specimen was identified by part and to the most discrete taxonomic level possible. For all identifications, an initial sort was conducted first into broad categories - fish, avian, sea mammal, terrestrial mammal, reptile, and crustacean, then genus and species whenever possible. Very few bones within the collection were found in complete anatomical condition. Even further, a portion of the bone elements were either fragmented into such small pieces or the fragment itself had no distinguishable features rendering it unidentifiable. Bones not able to be identified for these reasons were categorized as “unidentifiable”. Bones which lacked distinguishable features for identification into species or genus were categorized into class. The mammals were then categorized into broad size ranges as follows: *large* represents those mammals deer size or larger (including sea lion or larger), *medium* represents those mammals which are smaller than a deer or larger than a rabbit (including smaller than a sea lion), and *small* represents those mammals which are rabbit size or smaller.

Each bone able to be identified at least to the level of class was recorded noting a series of data which included catalogue number, date identified, unit number, stratigraphic level, screen size, class/genus/species, bone element, part of element present, side, age (if determinable), presence of burning and modification. Documented modifications included evidence of gnawing, cut marks, and signs of manufacture. All bones were weighed using the same electronic scale.

Sampling Strategy

Due to the sheer size of the collection and the time available for analysis, a sampling strategy was designed. The first step was an initial survey of the bags of faunal remains prepared by the UNLVAL. The initial survey was conducted on a sample of bags comprised from all 45 excavated units. Faunal remains had been systematically collected from just 17 of the 45 units. From the 17 units, bags previously cataloged were selected for a preliminary identification process to determine which units should be chosen for complete analysis. Each bone element was identified taxonomically from these selected bags to class (genus/species if quickly identifiable) and by part, then counted, weighed, and observed for anomalies and modification. Once the preliminary identification process was conducted on the bags chosen for the sample survey, analysis was performed in order to identify which 4 units out of the 17 for which faunal remains existed would be chosen for final identification and analysis. These units were chosen for their relevance to the developed research questions, their location, evidence of soil differentiation observed in the wall profiles, correlation to midden samples stored at UCSB, and for their density of faunal remains. Once the four units were chosen as a result of the original survey, two were distinguished for full identification to species when possible (G45 and J45) and another two were chosen for general class identification (H45 and N45) according to the methods stated in the previous subsection.

Quantification

Each sampled bone was weighed to the nearest 0.01 gram using an electronic scale. Each sampled bone was counted and appraised for the purpose of calculating minimum number of individuals (MNI). MNI was calculated based on the most abundant element represented for each specific taxon. The identification of the most abundant element took

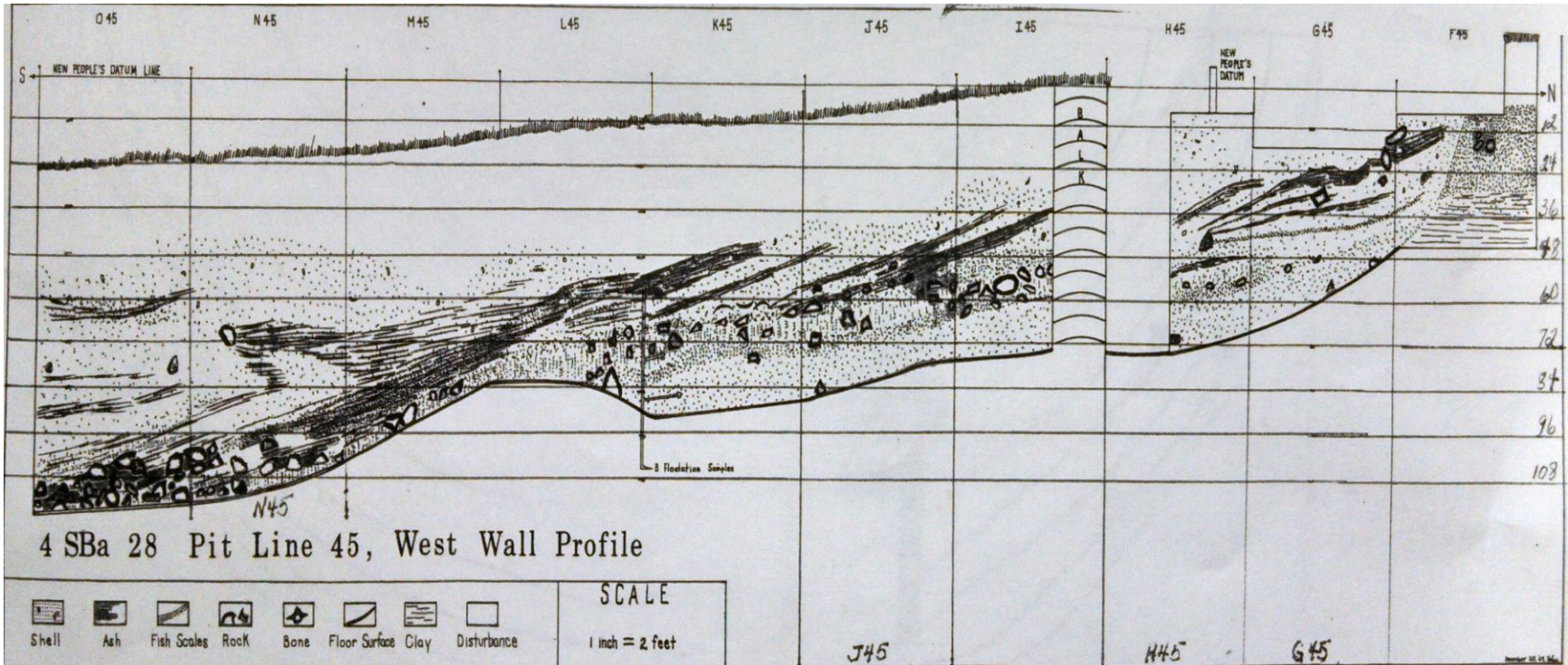


Figure 12. Pit Line 45 - West Wall Profile
Note: scale is not correct

into account side and age of the individual. Three categories of levels were determined based on stratigraphy observed in the wall profile (Pit Line 45 seen in Figure 12) of all units sampled. Subsistence prominence was determined employing bone weight rather than MNI. This decision was based on the assertion that bone weight is the best value for determining meat weight and therefore more directly representative of potential dietary contribution (Binford 1978; Grayson 1981; Horton 1984; Spiess 2011).

Stratigraphic Grouping

No field notes were available to shed light on the excavation process or the reasoning behind some of the methods used, so the site map (Figure 11), west wall profile for Pit Line 45 (Figure 12) along with radiocarbon dates obtained for this research (see next subsection) were consulted in order to establish stratigraphic grouping of the levels sampled. The grouping method employed in this research consisted of two steps. First, because levels from unit to unit were not excavated according to consistent depths, some of the levels were combined. The levels were consolidated where necessary in order to achieve 12" intervals as follows: 12"-24"; 24"-36"; 36"-48"; 48"-60"; 60"-72"; 72"-84"; 84"-96"; 96"-108"; 108"-clay. Second, for the purpose of calculating MNI and to facilitate the observation of change in subsistence over time, the vertical grouping of levels was divided into three strata.

A wall profile associated with the collection shows the west wall of the entire Pit Line 45 including units F45, G45, H45, I45, J45, K45, L45, M45, N45, and O45 (Figure 12). This pit line demonstrated sporadic as well as concentrated areas consisting of shell, ash, fish scales, rock, bone, and clay. In addition, areas confirmed as disturbed soil were identified; therefore, no samples were taken for the purposes of obtaining radiocarbon dates from these disturbed areas. The sterile floor surface ranged from a level depth of 36"-48" to 108"-clay.

Soils containing concentrated ash are illustrated on the profile as existing in level depth of 12"-36" in units F45, G45, H45; level depths 36"-48" and 48"-60" in units I45, J45, K45, L45; level depths 60"-72" and 72"-84" in units L45, M45; level depths 84"-96", 96"-108", and 108"-clay in units N45, O45. Concentration of rock, shell, and bone similarly followed this pattern.

Dating

Based on observed patterns of stratigraphy and density within the faunal collection (see above), samples were taken to obtain 5 radiocarbon dates – 1 based on charcoal and 4 based on shell. The one charcoal date was taken from unit N45 from the level depth 66"-72". The shell samples are as follows: unit H45, level depth 30"-36", species *Astraea undosa*; unit J45, level depth 54"-clay, species *Chione fluctifraga*; unit N45, level depth 60"-72", species *Chione californiensis*; unit N45, level depth 96"-108", species *Haliotis rufescens*. These samples were submitted to DirectAMS, a commercial accelerator mass spectrometry (AMS) laboratory located in Bothell, Washington. The samples were processed and measured under the direction of Dr. Ugo Zoppi and each sample successfully provided a date representing a radiocarbon age (see Chapter VI). All results were corrected by DirectAMS for isotopic fractionation with $\delta^{13}\text{C}$ values measured on the prepared graphite using the AMS spectrometer.

The dates were calibrated using the program CALIB, developed by Minze Stuiver and colleagues (2005). Since the calculation of radiocarbon age erroneously assumes that the particular quantity of the ^{14}C in the atmospheric CO_2 has been constant, it is necessary to convert conventional radiocarbon ages into calibrated years employing an appropriate calibration dataset. In addition, marine organisms, such as the shell used in this research, are

exposed to different levels of ^{14}C than terrestrial organisms existing in the atmosphere. This marine calibration integrates a time-dependant global ocean reservoir correction of about 400 years (Stuiver et al. 2005). In order to accommodate local effects existent in the Santa Barbara Channel Region, the difference Delta R in reservoir age, 225, is employed with an uncertainty of ± 35 (per consultation with Fred Schaeffer, Santa Barbara Museum of Natural History). The resulting calibrated dates can be found in Chapter VI.

CHAPTER VI

RESULTS

“Many societies in the past believed that they had a sustainable way of life only to find sometime later that it was not so and that they were not able to make the social, economic, and political changes necessary for survival. The problem for all human societies has been to find a means of extracting from their environment food, clothing, shelter, and other goods in a way that does not render it incapable of supporting them. Some damage is clearly inevitable. Some depredation is tolerable. The challenge has been to anticipate or recognize at what point the environment is being badly degraded by the demands placed upon it and to find the political, economic, and social means to respond accordingly. Some societies have succeeded in finding the right balance, some have failed.”

~ Clive Pointing (1991:407)

The selected collection sample from 17 units of the original CA-SBA-28 faunal collection studied in this research comprised a total of 15,943 whole and fragmented pieces of animal bone weighing 26,003 grams. After surveying this sample, four units were chosen for further identification to determine weights and frequencies – G45, H45, J45, N45 totaling 10,103 in quantity and 12,452 grams in weight. The sampling strategy used for determining which units would be chosen for the small sample is outlined in the method section of Chapter V. Units G45 and J45 were chosen to be identified to species where possible and to class or genus when species identification was not determinable. Unmodified remains from all four units were identified and attributed when possible to one of eight categories – fish, avian, sea mammal, terrestrial mammal, reptile, crustacean, unidentified, and unidentifiable. The remains found in these units were documented according to stratigraphic level, screen size, class/genus/species (especially in the case of Units G45 and J45), bone element, part of element present, side, age (if determinable),

quantity, weight, presence of burning, and modification (i.e. evidence of gnawing, cut marks, and signs of manufacture). The totals based on quantity and weight for the selected sample comprised of Units G45, H45, J45 and N45 can be found in Table 2.

Unit	Quantity	Weight (g)
G45	904	730.3
N45	5,230	6,207.3
H45	2,087	3,148.1
J45	1,882	2,366.4
Total	10,103	12,452.0

Table 2. Quantity and Weight Totals for Faunal Remains of Units G45, H45, J45 and N45

All four selected units were unique in their stratigraphy from the point where floor surface was reached to the levels of disturbance to the presence of ash lens and the density of remains. This can be observed by examining the wall profile provided in Figure 12. The stratigraphic composition of the site portion where the fully analyzed remains were recovered was varied vertically, but somewhat consistent horizontally. The initial 24"-36" of the deposit was disturbed and the surface floor was encountered anywhere from 60"-110" at a continuous slope, the most shallow portion being the northern extent. The term "floor surface" is employed in the associated wall profile (Figure 12), catalog labels, and notes. It appears to be defined by the point at which excavators reached a sterile clay-soil layer underlying the midden. Evidence of change in stratigraphy, varied density of remains, and a desire to obtain dates representing the full range of levels found within Units G45, H45, J45 and N45 prompted the choice of the

following samples found in Table 3 and the resulting radiocarbon dates obtained through accelerated mass spectrometry.

Radiocarbon Dating Results

Material Used	Accession #	Unit	Level	$\delta^{13}\text{C}$ (‰)	Fraction of Modern (pMC)	Fraction of Modern - 1 σ error	Radio carbon Age (BP)	Radio carbon Age - 1 σ error	Calibrated Age - 2 σ (BC)	Medium Probability
Charcoal	176-1108	N45	66"-72"	-25.5	75.60	0.23	2,247	24	390-209	280 BC
Shell	176-4630	H45	30"-36"	-10.9	71.38	0.24	2,708	27	339-64	195 BC
Shell	176-1125	N45	60"-72"	-9.3	44.10	0.16	6,577	29	4994-4745	4871 BC
Shell	176-3256	J45	54"-clay	-8.9	43.02	0.16	6,776	30	5242-4987	5120 BC
Shell	176-1423	N45	96"-108"	-15.4	71.34	0.21	2,713	24	342-76	203 BC

Table 3. Radiocarbon Dating Results for Units H45, N45 and J45

The results of the radiocarbon dating indicate an occupation range of at least 6776 +/- 30 to 2247 +/- 24 radiocarbon years before present (BP). Taken into account the marine reservoir effect in the case of the shell samples, the radiocarbon dates suggest that CA-SBA-28 was occupied at least between 5120 BC and 195 BC. However, as articulated in Chapter III, ethnographic evidence demonstrates occupation at Syujtún to have ceased sometime during the first two decades of the 19th century. These dates place the strata analyzed for this study between King's (1990) Early x phase (5500-4000 BC) of the Early Period and Glassow's (2007) Initial Early Period to the Middle 2a phase of the Middle Period. It is important to note that samples for the purpose of radiocarbon dating were only taken from levels not marked as being disturbed. Consequently, the results of the radiocarbon analysis may not reflect the totality of the site's occupation.

An anomalous medium probability date of 203 BC from Unit N45 level 96"-108" is much later than other dates for the lower strata at the site. This reading could be the

result of disturbance to the deposit by various means, including deposit of older material over younger during later phases of prehistoric occupation or more than likely as a result of bioturbation. Consequently, this anomalous date will not be considered further when discussing chronology. The results of level 60"-72" at 4871 BC and 66"-72" at 280 BC in N45 may appear anomalous and could possibly be the consequence of bioturbation. However, even though there is more than a 4000 year difference, there is no evidence to suggest that the two samples are necessarily out of chronological sequence either. Consequently, these two results have the potential of substantiating the researcher's hypothesis concerning occupation which is outlined below.

Analysis of the radiocarbon dating indicates that the initial occupation of this portion of Burton Mound began sometime in the early part of the Early Period (Millingstone Horizon) and again in the early part of the Middle Period. Considering the fact that almost 5000 years separate two major periods of occupation indicated by samples located only approximately 30 inches apart, these units demonstrate two very intense periods of occupation and a lack of continuous activity in this portion of Burton Mound. It is important, however, to remember that this site has been heavily disturbed as is evidenced by the wall profile provided in Figure 12. Anywhere from the first 12 to almost 36 inches of soil in each respective unit were described as disturbed, and according to Harrington (1928) the area had been graded for the purpose of historic construction. As a result, these dates demonstrate that occupation of the site did occur between 5120 BC and 195 BC, but probably not continuously.

Overall Temporal Distribution of Selected Sampled Units

As previously mentioned, each unit varied stratigraphically in composition of soil and density of remains. In addition, there was a continuous ash lens spanning the entire west wall of Pit Line 45 (Figure 12) which followed the sloped stratigraphy at points. This stratigraphic characteristic was observed at the following depths: G45 at the 12"-24" and 24"-36" levels; H45 at the 24"-36" and 36"-48" levels; J45 at the 36"-48" and 48"-60" levels; N45 at the 60"-72", 72"-84", 84"-96" and 96"-108" levels. Following is a faunal assemblage description of each unit with accompanying tables and figures. Weights are shown rather than quantity because quantity totals can be deceiving due to the fragmentation of remains.

Unit G45 Temporal Distribution

Class	12"-24"	24"-36"	36"-48"	48"-60"	60"-72"	Total
Avian	7.44	0	4.23	4.40	0	16.1
Fish	49.57	0	47.17	22.96	0	119.7
Mammal	98.88	0	40.42	15.01	0	154.3
Sea Mammal	104.67	0	67.03	63.64	0	235.3
Terr. Mammal	91.54	0	85.66	27.64	0	204.8
Reptile	0	0	0	0	0	0
Crustacean	0	0	0	0	0	0
Total	352.1	0	244.5	133.7	0	730.3

Table 4. Unit G45 Weight (in g) According to Class and Level

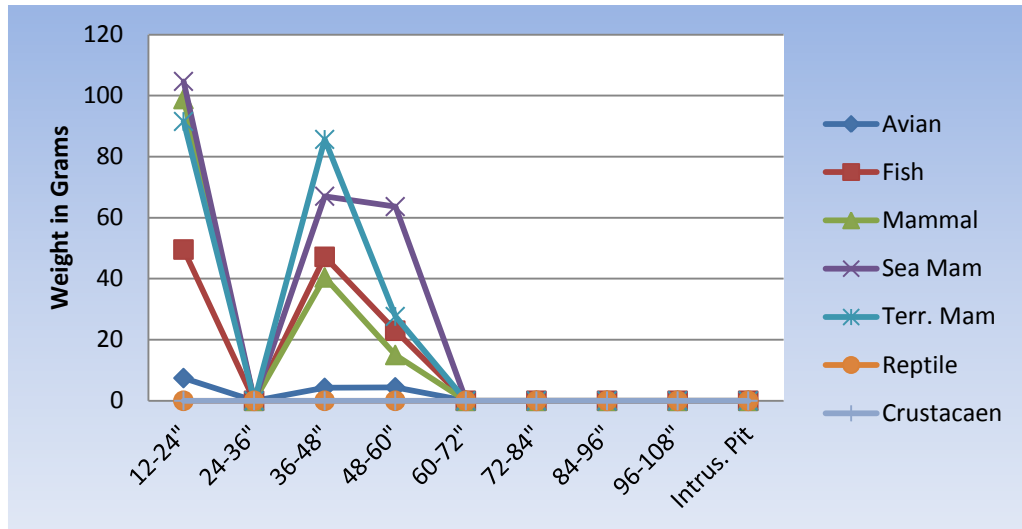


Figure 13. Unit G45 Faunal Remains – Stratigraphical Class Distribution According to Weight (in g)

Unit G45 was excavated to a sterile clay-soil layer underlying the midden.

According to the wall profile (Figure 12), the depth sloped from approximately 43” on the north end of the unit to 66” on the south end adjoining Unit H45. Faunal remains existed only for the following levels: 18”-24”; 36”-48”; 48”-54”; 54”-60”; 60”-66” (clay/sterile soil (66”). As can be seen in Table 2, the assemblage found in Unit G45 was the least abundant of the four analyzed units (G45, H45, J45 and N45). Table 4 and Figure 13 demonstrate that temporal distribution according to weight for Unit G45 was most abundant for the 12”-24” level associated with continuous ash lens. No remains were found in level 24”-36” and a sharp increase was in found in levels 36”-48” and 48”-60” and no remains were found from 60” to floor surface. According to weight in level 12”-24”, sea mammals, terrestrial mammals, and undifferentiated mammals were similar in rank with fish remains at fifty percent weight. According to weight, terrestrial mammals ranked highest peaking strongly in level 36”-48” and decreasing just as strongly in level 48”-60”. Sea mammals peaked strongly and remained consistent from

levels 36"-48" and 48"-60". Fish did peak as well in level 36"-48" but remained at fifty percent weight of the mammals. Species found within Unit G45 are listed in the subsection "Taxa represented" below.

Unit H45 Temporal Distribution

Class	12"-24"	24"-36"	36"-48"	48"-60"	60"-72"	72"-84"	Intrusive Pit	Total
Avian	0	0	3.06	38.19	0	0	0.05	41.3
Fish	1.67	0	48.6	49.94	3.29	0	29.46	133
Mammal	40.71	0	203.28	244	26.45	0	63.17	577.6
Sea Mam.	15.61	0	590.2	497.98	125.89	81.79	97.59	1409.1
Terr. Mam.	4.69	0	188.46	769.48	3.62	0	13.56	979.8
Reptile	0	0	0	0.89	0	0	0	0.90
Crustacean	0	0	0	6.45	0	0	0	6.5
Total	62.68	0	1033.6	1606.9	159.25	81.79	203.83	3148.1

Table 5. Unit H45 Weight (in g) According to Class and Level

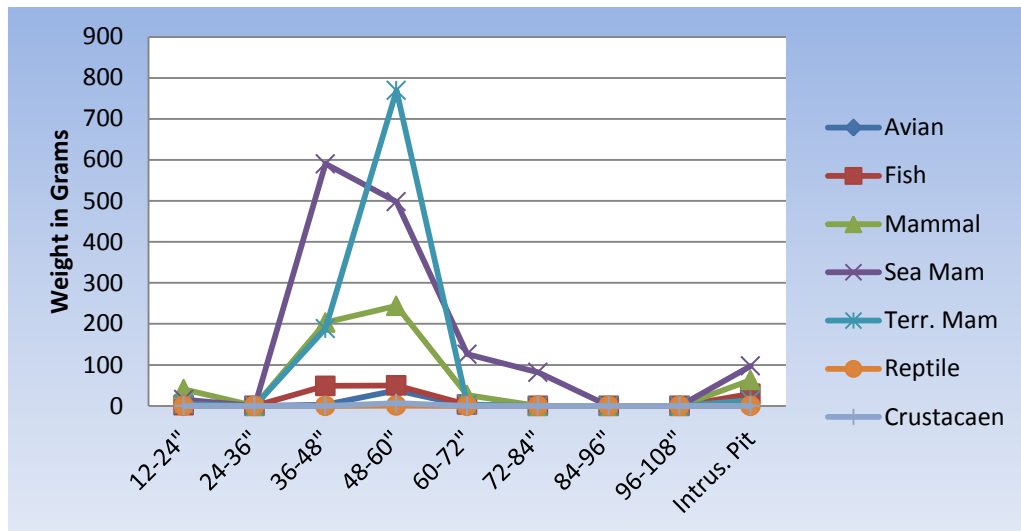


Figure 14. Unit H45 Faunal Remains – Stratigraphical Class Distribution According to Weight (in g)

Unit H45 was excavated to a depth of 74 inches. Faunal remains were present for the following levels: 15"-18"; 36"-42"; 48"-54"; 54"-60"; 60"-66"; 66"-72"; 72"-74". In addition, the volume excavated from Unit H45 was lessened by an intrusive pit. Little is

known about this intrusive pit because field notes were not available; however, its location is shown on the wall profile (Figure 12). Some data recovery from this intrusive pit is indicated because there are catalog numbers assigned to remains extracted from it. It is important to note that remains designated as “intrusive pit” lacked depth provenience; therefore, these remains are classified separately without temporal context. As can be seen in Table 2, the Unit H45 assemblage was less abundant than units J45 and N45, but was greater than unit G45. Table 5 and Figure 14 illustrate that Unit H45 had a significant increase in faunal remains beginning in level 36”-48”, peaking in level 48”-60”, and decreasing significantly in levels 60”-72” and 72”-84” (floor surface reached at approximately 74”). As in Unit G45, the highest density of remains is associated with the continuous ash lens. According to weight, sea mammals peak in level 24”-36” and remain steady through level 48”-60” then steadily decrease to sterile soil. Terrestrial mammals peaked strongly in level 48”-60” and decreased just as strongly in level 60”-72” with almost no remains. Fish never peak throughout the stratigraphy and are a nominal factor in the overall weight of this unit. Species found within Unit H45 are listed in the subsection “Taxa represented” below.

Unit J-45 Temporal Distribution

Class	12”-24”	24”-36”	36”-48”	48”-60”	60”-72”	72”-84”	Total
Avian	0	2.59	3.56	12.32	0	0	18.5
Fish	21.1	29.3	52.71	168.55	0	0	271.7
Mammal	17.07	4.63	190.6	320.95	0	0	533.3
Sea Mam.	47.59	172.88	304.11	558.64	0	0	1083.2
Terr. Mam	6.16	75.2	327.52	109.25	0	0	518.1
Reptile	0	0	0	1.66	0	0	1.7
Crustacean	0	0	0	0	0	0	0
Total	91.92	284.6	878.5	1171.4	0	0	2426.4

Table 6. Unit J45 Weight (in g) According to Class and Level

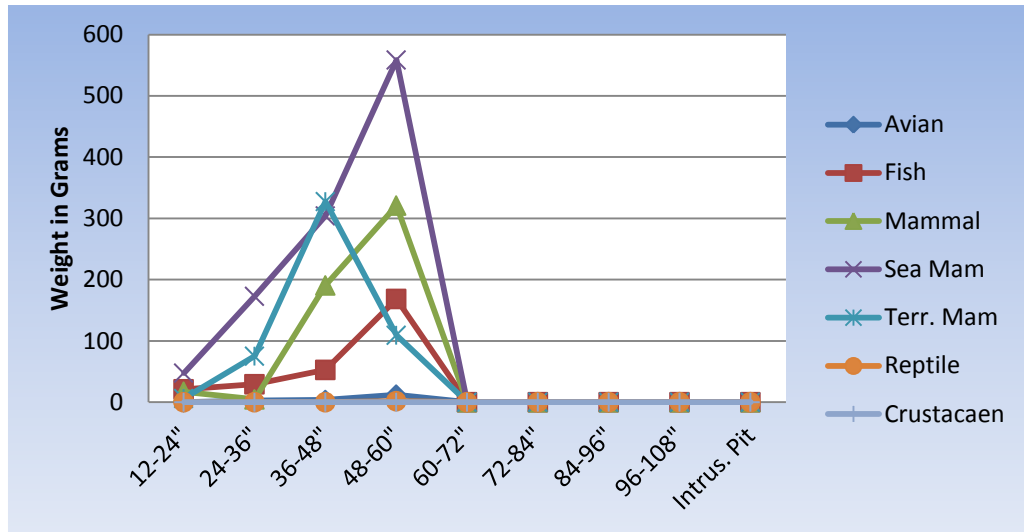


Figure 15. Unit J45 Faunal Remains – Stratigraphical Class Distribution According to Weight (in g)

Unit J45 was excavated to sterile clay-soil layer underlying the midden.

According to wall profiles and surrounding unit depths, the depth slopes down approximately 74” on the north end of the unit adjoining Unit I45 and 84” on the south end adjoining Unit K45. Faunal remains existed only for the following levels: 18”-24”, 24”-30”; 36”-42”; 42”-48”; 54”- clay (between 74” and 84”). As can be seen in Table 2, the Unit J45 assemblage was less abundant than Units N45 or H45, but was greater than Unit G45. Table 6 and Figure 15 illustrate that Unit J45 had a steady increase in faunal remains from level 12”-24” to level 48”-60”, but ended abruptly below the 48”-60” level. The continuous ash lens coincides with part of the 36”-48” level and the 48”-60” level. According to weight, sea mammals clearly outrank all other class; they peak steadily from level 12”-24” to 48”-60” with a sharp decrease to level 60”-72” at no remains. Fish increase slightly and consistently from level 12”-24” to level 48”-60”. Species found within this Unit J45 are listed in the subsection “Taxa represented” below.

Unit N-45 Temporal Distribution

Class	12-24"	24-36"	36-48"	48-60"	60-72"	72-84"	84-96"	96-108"	Total
Avian	0	0	0.7	13.2	13.16	15.14	0	30.78	73
Fish	0	0	20.56	250.75	165.26	307.88	0	229.37	973.9
Mammal	0	0	36.47	527.96	246.56	205.1	0	184.42	1200.5
Sea Mam.	0	0	13.49	387.63	862.91	641.72	0	396.35	2302.1
Terr. Mam.	0	0	89.46	474.81	396.88	402.41	0	273.69	1637.3
Reptile	0	0	3.2	0	0	9.56	0	0	12.8
Crustacean	0	0	0	0	2.16	3.46	0	2.24	7.9
Total	0	0	163.88	1654.35	1686.93	1585.27	0	1116.85	6207.3

Table 7. Unit N45 Weight (in g) According to Class and Level

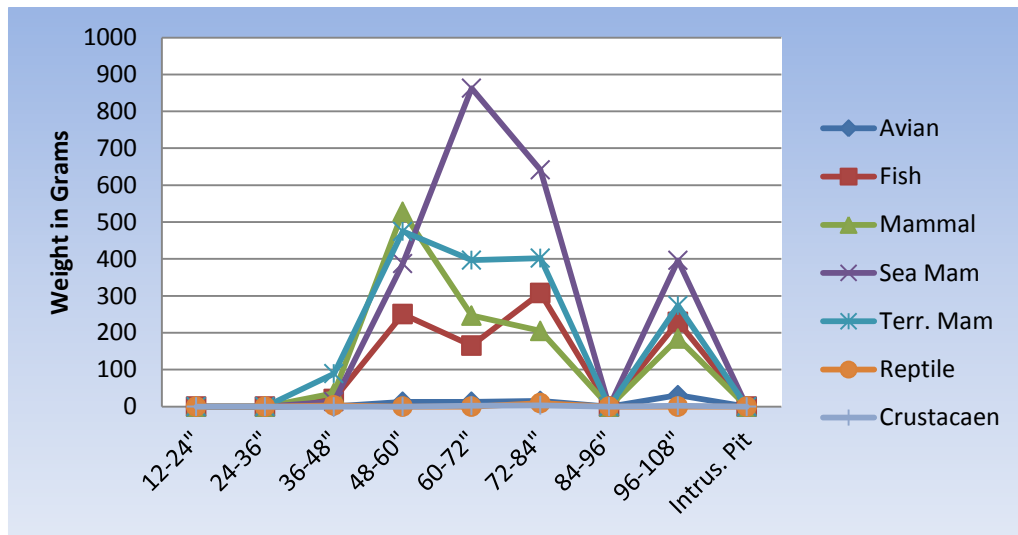


Figure 16. Unit N45 Faunal Remains – Stratigraphical Class Distribution According to Weight (in g)

Unit N45 was excavated to sterile clay-soil layer underlying the midden and sterile soil. According to wall profiles and surrounding unit depths, the depth was approximately 116". Faunal remains existed for the following layers: 36"-48" 48"-60"; 60"-66", 66"-72", 72"-84", 96"-108", 108"-clay/sterile soil. As can be seen in Table 2, the Unit N45 assemblage was the most abundant of the four fully analyzed units. Table 7 and Figure 16 illustrate that unit N45 had a significant increase in faunal remains beginning in level

Common Name	Taxon	Habitat
Brush Rabbit	<i>Sylvilagus bachmani</i>	dense, brushy cover, most commonly chaparral vegetation
Coyote	<i>Canis latrans</i>	open prairies and deserts, mountains, forests
Desert Cottontail Rabbit	<i>Sylvilagus audubonii</i>	edges of open spaces such as fields and meadows
Dog	<i>Canis</i>	diverse depending on specific species - deserts, mountains, forests, and grasslands
Mule Deer	<i>Odocoileus hemionus</i>	prefer hill terrain especially oak woodland
Pocket Gopher	Geomyidae (family)	underground in irrigated and non-irrigated areas with loose soil
Raccoon	<i>Procyon lotor</i>	deciduous and mixed forests, mountainous areas, coastal marshes
Tule Elk	<i>Cervus canadensis</i>	grasslands, tule marshes, coastal grassy hills
Western Pond Turtle	<i>Emys marmorata</i>	marshes, streams, rivers, ponds and lakes with emerged logs or rocks
California Sea Lion	<i>Zalophus californianus</i>	shallow coastal and estuarine waters, sandy beaches
California Sea Otter	<i>Enhydra lutris</i>	offshore and shallow coastal waters, rocky beaches
Dolphin	Phocoenidae (family)	offshore and shallow coastal ecotypes, harbors, bays, lagoons, estuaries
Guadalupe Fur Seal	<i>Arctocephalus townsendi</i>	offshore and coastal waters, coastal rocky caves (breeding)
Harbor Seal	<i>Phoca vitulina</i>	offshore and shallow areas where sandbars, rocks, and beaches are uncovered during low tide
Porpoise	Phocoenidae (family)	shallow, murky coastal waters less than 165 ft deep and within 13.5 nautical miles from shore
Whale	Cetacea (order)	offshore waters less than 600 ft during migration

Table 8. Vertebrate Taxa Represented in the CA-SBA-28 faunal collection - Mammal and Reptile (excluding piscine) (habitat information after Hudson 1992; Dr. Paul Collins, pers. comm.)

48"-60", peaked in level 60"-72" and continued until the unit reached a sterile soil or clay deposit at just below 116". No remains were found for level 84"-96". The abundance of faunal remains between 48" and 84" in depth within this unit is consistent with the presence of the continuous ash lens shown in the profile in Figure 12. According to weight, sea mammals clearly outrank all other classes; they peak steadily from level 36"-48" to 60"-72", then decreasing slightly to level 72"-84", sharply decreasing to level 84"-96" with no remains and a significantly smaller peak at level 96"-108". Terrestrial mammals increase in level 48"-60" and remain steady through level 72"-84", then decrease to no remains in level 84"-96" and also demonstrate a significantly smaller peak in the 96"-108" with three quarters to weight of sea mammals. Fish increase slightly and consistently from level 48"-60" to level 72"-84", but are always outranked by sea, terrestrial, and undifferentiated mammals. Fish do, however, slightly surpass undifferentiated mammals at the 96"-108" level. Species found within the Unit N45 are listed in the subsection "Taxa represented" below.

Taxa Represented

The diversity of the fauna represented within the four fully analyzed units is considerable. Forty-seven distinct taxonomic categories are represented in units G45, H45, J45, and N45; these include 16 piscine, 15 avian, 8 terrestrial mammal, 7 sea mammal, and 1 reptile. The terrestrial and sea mammal and reptile taxa are listed in Table 8; the avian taxa are listed in Table 9; the piscine taxa are listed in Table 10. These results address important issues in Santa Barbara Channel Region prehistory, such as shifts in exploitation of terrestrial and marine resources over time and possible

Common Name	Taxon	Habitat
American Coot	<i>Fulica americana</i>	reed-ringed lakes/ponds, open marshes, sluggish rivers
Brandt's Cormorant	<i>Phalacrocorax penicillatus</i>	inshore coastal especially near kelp beds, large bays, estuaries, coastal lagoons
Brown Pelican	<i>Pelecanus occidentalis</i>	sandy coastal beaches and lagoons, waterfronts, rocky cliffs
Common Loon	<i>Gavia immer</i>	prefer forested lakes and rivers, coastal bays and oceans (winter)
Double-Crested Cormorant	<i>Phalacrocorax auritus</i>	coastal waters, lakes, rivers, swamps
Heermann's Gull	<i>Larus heermanni</i>	beaches, rocky shorelines, estuaries, and lagoons
Mallard Duck	<i>Anas platyrhynchos</i>	ponds, lakes, marshes, small river bends, and bays
Peregrine Falcon	<i>Falco peregrinus</i>	tundra, savannas, coasts, and mountains
Red-Throated Loon	<i>Gavia stellata</i>	southern coastal areas (winter)
Ruddy Duck	<i>Oxyura jamaicensis</i>	freshwater marshes, marshy lakes, ponds, shallow coastal bays (winter)
Short-Tailed Albatross	<i>Phoebastria albatrus</i>	southern coastal areas (winter)
Snow Goose	<i>Chen caerulescens</i>	salt marshes, marshy coastal bays, and freshwater marshes
Tufted Puffin	<i>Fratercula cirrhata</i>	selected islands or cliffs with soft soil and protective waters, high areas
Western Grebe	<i>Aechmophorus occidentalis</i>	prefer large lakes with reeds or rushes, shallow coastal bays and estuaries
White-Winged Scoter	<i>Melanitta deglandi</i>	breeds on large lakes, winters on ocean and large coastal bays

Table 9. Avian Taxa Represented in the CA-SBA-28 faunal collection (habitat information after Dr. Paul Collins, pers. comm.)

subsistence trade. The horizontal distribution of faunal remains to a limited extent provides better understanding of site structure.

In addition to the common name and taxonomic name, the habitat, and in the case of the piscine remains, the method of capture, are included in each table. The prehistoric terrestrial environment of the Santa Barbara area consisted of Coastal Sage Scrub, Chaparral, and scattered Riparian Woodland (Thorne 1976; Timbrook 2007). The prehistoric marine environment was much the same as it is now generally including open-coast sandy beach with the following secondary environments: rocky intertidal, shallow rocky-reefs, kelp beds, midwater, and small estuary (Salls 1992). The methods of capture in the case of the piscine remains have the potential of establishing the timing of certain technologies.

Subsistence Emphasis

Employing broad analytical categories of taxonomic classes (avian, fish, mammal, sea mammal, terrestrial mammal, reptile, and crustacean) and tabulation of bone weight, prehistoric exploitation of vertebrate resources was determined. As Figure 17 illustrates, the assemblage present in units G45, H45, J45, and N45 indicates an overall prehistoric exploitation of vertebrate resources which focused on marine fauna and large fauna. Sea mammal and piscine remains combine to make over half of the total bone weight. Large terrestrial mammals outrank fish in importance. Avian, reptile, medium and small mammal, and crustacean remains are insignificant in the overall patterns of exploitation represented by this assemblage.

Common Name	Subclass	Genus/species	Habitat	Method of Capture
Leopard Shark	Elasmobranchi	<i>Triakis semifasciata</i>	bays and shallow coastal	spear, hook/line, seine/gill net
Pacific Angel Shark	Elasmobranchi	<i>Squalina californica</i>	shallow, sandy areas near rocky outcrops	spear, hook/line
Shovelnose Guitarfish	Elasmobranchi	<i>Rhinobatos productus</i>	bays and shallow coastal, surf zone, sand or mud substrates	hook/line, beach seine, spear, by hand
Bat Ray	Elasmobranchi	<i>Myliocatis californica</i>	shallow coastal, prefer flat rocky bottom, or sandy patches among rocks, occasionally rest on kelp	spear, hook/line, beach seine
Soupfin Shark	Elasmobranchi	<i>Galeorhinus galeus</i>	pelagic, occasionally shallow waters (spring and summer)	harpoon, hook/line
California Scorpionfish	Osteichthyes (bony fishes)	<i>Scorpaena guttata</i>	shallow waters to 600 ft, mostly rocky areas or reefs with crevices and caves	hook/line, nets
Gopher Rockfish	Osteichthyes (bony fishes)	<i>Sebastes carnatus</i>	shallow rocky reefs with protective caves and crevices	hook/line
Yellowtail Amberjack	Osteichthyes (bony fishes)	<i>Seriola lalandi</i>	kelp beds (summer), deep reefs	harpoon, hook/line
White Seabass	Osteichthyes (bony fishes)	<i>Atractoscion nobilis</i>	schools over rocky bottoms, occasion along inner margins of kelp beds, also pelagic	hook/line, harpoon, gill nets
Black Surfperch	Osteichthyes (bony fishes)	<i>Embiotoca jacksoni</i>	rocky areas and around kelp, prefer reefs with mixed environment	hook/line, nets
California Barracuda	Osteichthyes (bony fishes)	<i>Sphyraena argentea</i>	near shore, outside surf zone, kelp beds (summer)	hook/line
Jack Mackerel	Osteichthyes (bony fishes)	<i>Trachurus symmetricus</i>	pelagic, mainly offshore at depths from surface to 600 ft	hook/line
Pacific Mackerel	Osteichthyes (bony fishes)	<i>Scomber japonicas</i>	kelp beds, rocky headlands (summer), may school w/ sardines	hook/line, nets
Pacific Bonito	Osteichthyes (bony fishes)	<i>Sarda chiliensis</i>	pelagic schooling, often along outer edges of kelp beds (summer)	hook/line, spear
Albacore	Osteichthyes (bony fishes)	<i>Thunnus alalunga</i>	pelagic schooling (summer), rarely near shore	harpoon
California Halibut	Osteichthyes (bony fishes)	<i>Paralichthys californicus</i>	shallow coastal on flat sandy bottoms, especially near rock and sea weeds	hook/line, beach seines

Table 10. Piscine Taxa Represented in the CA-SBA-28 faunal collection (habitat information and method of capture after Johnson 1982; Salls 1992)

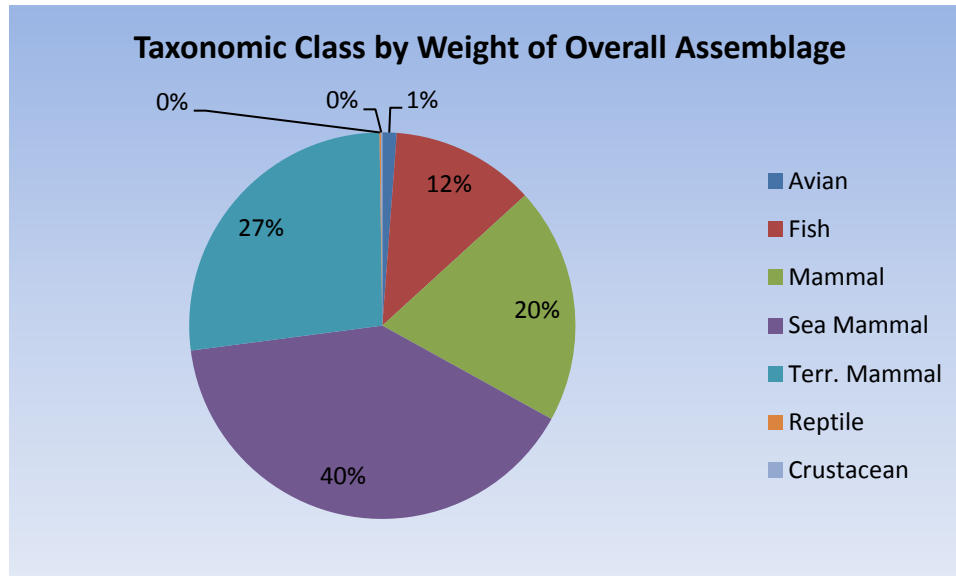


Figure 17. Percentage of Overall Assemblage of Resource Exploitation by Taxonomic Class

More specifically, following are the species most prominent in each taxonomic class: avian – Brown Pelican (*Pelecanus occidentalis*); fish – Pacific Bonito (*Sarda chiliensis*); sea mammal – California Sea Lion (*Zalophus californianus*); terrestrial mammal – Mule Deer (*Odocoileus hemionus*); reptile – Western Pond Turtle (*Emys marmorata*); crustacean - Crab (Brachyura).

Class	G45	H45	J45	N45	Total
Avian	16.07	41.3	18.47	72.98	148.82
Fish	119.7	132.96	271.66	973.82	1498.14
Mammal	154.31	577.61	533.25	1200.51	2465.68
Sea Mammal	235.34	1409.06	1023.22	2302.1	4969.72
Terr. Mammal	204.84	979.81	518.13	1637.25	3340.03
Reptile	0	0.89	1.66	12.76	15.31
Crustacean	0	6.45	0	7.86	14.31
Total	730.26	3148.08	2366.39	6207.28	12452.01

Table 11. Class Distribution of Fully Analyzed Units According to Weight (in g)

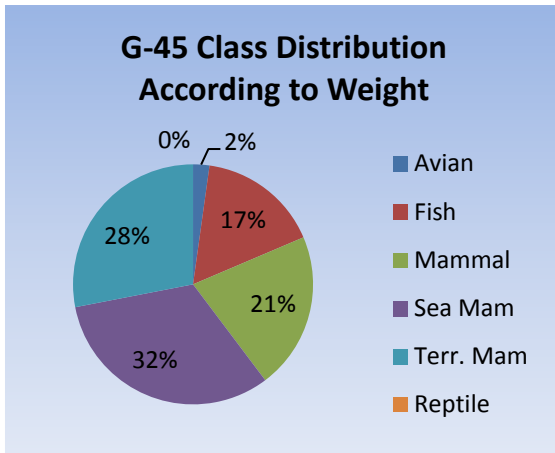


Figure 18

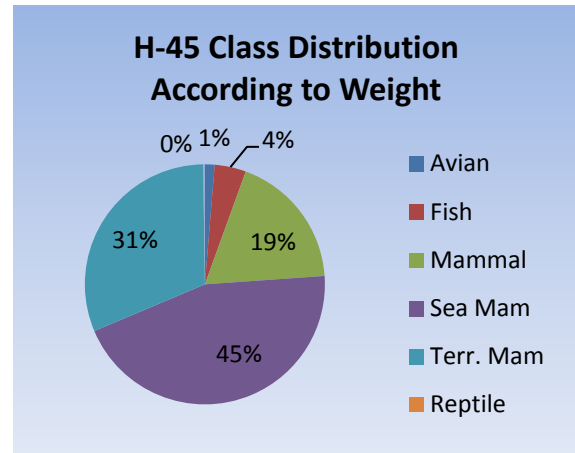


Figure 19

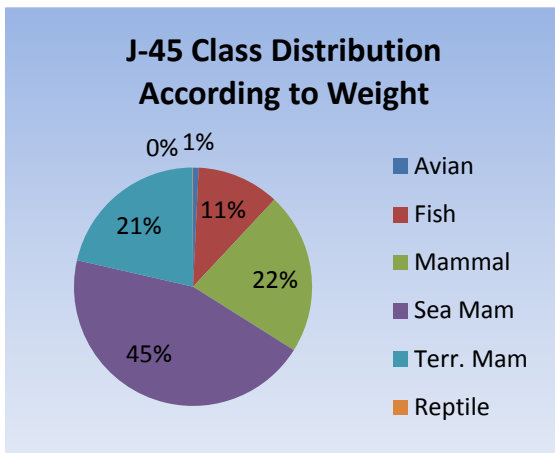


Figure 20

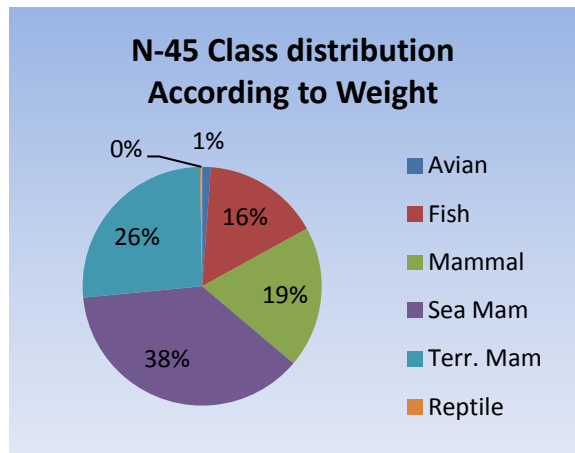


Figure 21

As illustrated in Table 11 and Figures 18 – 21, there is little difference in the overall class distribution from unit to unit. In fact, there is no more than a 7% range of difference with the exception of unit H45 where there is a 10% range of difference (possibly attributable to effects of the intrusive pit on tabulations, see above). However, there is significant difference temporally which will be demonstrated in the following section.

Avian	12-24"	24-36"	36-48"	48-60"	60-72"	72-84"	84-96"	96-108"	Intrus. Pit
G45	2.1%	0.0%	1.7%	33.0%	0.0%	-	-	-	n/a
H45	0.0%	0.0%	0.3%	2.4%	0.0%	0.0%	-	-	0.1%
J45	0.0%	0.9%	0.4%	1.1%	0.0%	0.0%	-	-	n/a
N45	0.0%	0.0%	0.4%	0.8%	0.8%	1.0%	0.0%	28.0%	n/a
Fish	12-24"	24-36"	36-48"	48-60"	60-72"	72-84"	84-96"	96-108"	Intrus. Pit
G45	14.1%	0.0%	19.4%	17.8%	0.0%	-	-	-	n/a
H45	2.7%	0.0%	4.7%	3.1%	2.1%	0.0%	-	-	14.0%
J45	0.2%	10.3%	6.0%	14.4%	0.0%	0.0%	-	-	n/a
N45	0.0%	0.0%	12.5%	15.2%	9.8%	19.4%	0.0%	20.5%	n/a
Mammal	12-24"	24-36"	36-48"	48-60"	60-72"	72-84"	84-96"	96-108"	Intrus. Pit
G45	28.1%	0.0%	16.5%	11.2%	0.0%	-	-	-	n/a
H45	65.0%	0.0%	20.0%	15.2%	16.6%	0.0%	-	-	31.0%
J45	18.6%	1.6%	22.0%	27.4%	0.0%	0.0%	-	-	n/a
N45	0.0%	0.0%	22.3%	32.0%	14.6%	12.9%	0.0%	12.9%	n/a
Sea Mammal	12-24"	24-36"	36-48"	48-60"	60-72"	72-84"	84-96"	96-108"	Intrus. Pit
G45	29.7%	0.0%	27.4%	47.6%	0.0%	-	-	-	n/a
H45	24.9%	0.0%	57.1%	31.0%	79.1%	100.0%	-	-	47.9%
J45	51.8%	60.7%	34.6%	47.7%	0.0%	0.0%	-	-	n/a
N45	0.0%	0.0%	8.2%	23.4%	51.1%	40.5%	0.0%	13.5%	n/a
Terr. Mammal	12-24"	24-36"	36-48"	48-60"	60-72"	72-84"	84-96"	96-108"	Intrus. Pit
G45	26.0%	0.0%	35.0%	20.7%	0.0%	-	-	-	n/a
H45	7.5%	0.0%	18.2%	47.9%	2.3%	0.0%	-	-	6.7%
J45	6.7%	26.4%	37.3%	9.3%	0.0%	0.0%	-	-	n/a
N45	0.0%	0.0%	54.6%	28.6%	23.5%	25.4%	0.0%	25.5%	n/a
Reptile	12-24"	24-36"	36-48"	48-60"	60-72"	72-84"	84-96"	96-108"	Intrus. Pit
G45	0.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	n/a
H45	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	-	-	0.0%
J45	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	-	-	n/a
N45	0.0%	0.0%	2.0%	0.0%	0.0%	0.6%	0.0%	0.0%	n/a
Crustacean	12-24"	24-36"	36-48"	48-60"	60-72"	72-84"	84-96"	96-108"	Intrus. Pit
G45	0.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	n/a
H45	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	-	-	0.0%
J45	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-	-	n/a
N45	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%	0.2%	n/a

Legend




End of unit	
Nothing found	
N/A	

Table 12. Class Percentages of Faunal Remains per Level of Each Selected Unit

Temporal Subsistence Change

For the purpose of examining patterns of subsistence change occurring during the span of time represented in units G45, H45, J45, and N45, levels were grouped into 12-inch intervals (see the presentations of each unit above). Totals from levels of each unit were combined, and dates acquired through radiocarbon testing were considered. Figures 13, 14, 15 and 16 and Table 12 illustrate a fairly consistent pattern in relative abundances over time of remains assigned to the broad class distinctions. In almost each case where there is a peak in abundance chronologically, the most distinct peak demonstrated in the overall assemblage can be assigned to sea mammal remains.

The greatest difference in class abundance occurs in level 48-60" with a significant increase in mammal remains. Fish remains do increase and surpass those assigned to unidentifiable mammal remains in both levels 72-82" and 96-108"; however, fish remains fail to surpass either sea mammal or terrestrial mammal in abundance. In light of dates obtained for this assemblage, and when combining the relative abundances of sea and large terrestrial mammals, it is apparent that there was a heavy reliance on large mammals and that fish remained a relatively minimal resource. It is important to note, however, that 1/4" screens were used rather than 1/8" screens during the process of this excavation which was common practice in 1969. There are several species the Chumash peoples are documented to have exploited, such as sardine, anchovy and smelt, which are difficult to recover using 1/4" screens. As a result, the relative abundances of certain species can be misrepresented when screens larger than 1/8" are utilized during the screening process (Johnson 1982).

Whale remains were only found in two levels, both were associated with the Early Period. The remains were not significant in weight but were concentrated stratigraphically suggesting that its consumption was a result of coincidental availability. The early California archaeologist, Stephen Bowers, quotes a Santa Rosa Island informant in his 1878 article on the island for the annual report of the Smithsonian as saying that the islanders killed whales and would then eat the blubber raw (Bowers 1878:319). The minimal and concentrated remains of whale support the suggestion by Campbell Grant (1978) that Bowers's informant may have been referring to the porpoises or pilot whales and that whales were not typically hunted by the Chumash. Grant contends that the most common whale occurring in the region was the California Gray Whale which grew to the size of 45 feet and that as a result was too dangerous to be hunted by the Chumash from their light canoes (Grant 1978:517). Rather, when whales were consumed, it was as a product of the Chumash making use of ailing or dead whales that had found their way into the Channel and became stranded.

Patterns found in Avian and Piscine Remains

Some interesting patterns emerged concerning the avian and piscine remains represented in this assemblage. Ethnographic data demonstrate that the exploitation of fish was a prominent part of the Chumash peoples' way of life (see Chapter II). Due to the varied species available in the Santa Barbara Channel Region and their varied corresponding habitats, multiple means of capture were devised. These devised subsistence strategies lead to development of tool technology evident in the local archaeological record (Johnson 1982; Salls 1992). Table 10 gives an account of each

species found within the CA-SBA-28 assemblage and includes a corresponding description of each habitat and method of capture.

No less than five distinct habitats emerged as commonly exploited by Chumash fishermen during the time span represented in this assemblage: rocky, near-shore areas; kelp beds near rocky substrates; near-shore areas off sandy beaches; surface waters of the open ocean; and moderate depths of off-shore waters, especially near rocky areas. As a result, it is reasonable to presume the following methods of capture were utilized: hook and line, spear, beach seine, gill net, and harpoon (Johnson 1982; Salls 1992). Species present in freshwater appear to be absent from this assemblage demonstrating a heavy focus on ocean fishing which is understandable considering the location of CA-SBA-28.

In rocky near-shore areas, a combination of hook and line and traps were most likely employed to capture the following species found in this assemblage: rockfish, pacific angel sharks, surfperch (Johnson 1992). Gill nets and beach seines were most likely used for the capture of shovel-nosed guitarfish, leopard shark, and smaller surfperch in the habitat of near-shore areas off of sandy beaches. Hook and line could have also been employed and watercraft would have proved helpful in the employment of the nets and seines (Johnson 1982). The habitats characterized by moderate depths of off-shore waters, kelp beds near rocky substrates, and surface waters of the open ocean would have all been best exploited with the use of hook and line, spears, harpoons and traps from the plank canoe, but the kelp beds near rocky substrates could have also been effectively reached utilizing the less sturdy tule rafts (Johnson 1982). The species found within this assemblage which are associated with these habitats are rockfish, surfperch, pacific angel shark, barracuda, yellowtail, bonito, and white seabass. In addition, mackerel and bat

rays could have been found in both the kelp beds and the areas between the shore and kelp beds (Johnson 1982).

The presence of pelagic fish in levels associated with the medium probability radiocarbon results dating to 4871 BC and 5120 BC points to the use of watercraft as early as the Early Period. Even though pelagic species are known to be captured in kelp beds, they are much more abundant in the open ocean surface water existent beyond kelp beds (Johnson 1982; Salls 1992). Of all the species identified within this assemblage, pelagic fishes appear to be the most prominent, suggesting that open ocean exploitation occurred, but inferring more than this would be unwise because small-mesh screens were not used to obtain this sample.

The two classes demonstrating the greatest diversity within this assemblage were fish and avian. Although only 1 percent of the remains found within this assemblage were determined to belong to the avian class (Table 11; Figure 17), no less than fifteen distinct species were represented; and less than 1% of the total avian remains recovered were burnt. Two avian species found within this collection have the potential by virtue of their presence of illuminating the prehistoric environment. The Short-tailed Albatross and Tufted Puffin typically occupy colder regions and may serve as evidence to a colder climate. The Peregrine Falcon is typically found in estuaries and not in Southern California. In addition of the avian remains found, a large majority of the bone elements were from the limb and wing and only less than 1% were burnt. This could suggest that the avian captured were used for something other than consumption.

Harrington listed only seven avian species in the “animals eaten” category in his Cultural Element Distribution (CED) list compiled for his 1942 publication on the Central California Coast (Timbrook and Johnson 2013). Of those represented in this assemblage, only the American Coot and certain duck species were listed as eaten. However, it seems this list is lacking and not consistent with even Harrington’s own informant interviews (Timbrook and Johnson 2013); Harrington was said to have compiled his CED list from memory and did not consult his notes. The list omits several common species found in Burton Mound’s assemblage that are documented to have provided food for the Chumash peoples, including ducks, geese, and certain waterfowl and seabirds (Timbrook and Johnson 2013). Leif Landberg suggests in his 1965 monograph *The Chumash Indians of Southern California* that meat derived from migratory birds may have been an important substitute for fish in winter months when rough weather could have prevented the use of watercraft essential to the exploitation of certain key fish species (Timbrook and Johnson 2013). The methods of capture of birds employed by the Chumash peoples were the following: hand capture, trapping with snares, maze traps, or nets. They would use blinds and decoys to attract the birds in preparation for capture (Timbrook and Johnson 2013).

So considering the diversity of species represented in this assemblage and the fact that birds have been documented as playing a prominent role in belief systems and material culture with Chumash peoples having integrated birds into their place names, ceremonies, myths, symbolism and medical practices (Timbrook and Johnson 2013), what can the avian remains found in units G45, H45, J45 and N45 tell us about the activities of those inhabiting the town of Syujtún during the Early and Middle Periods?

The next few paragraphs will attempt link the species present in the assemblage with possible meanings and activities.

Ten of the fifteen species are represented in Chumash taxonomy: Snow Goose – Ventureño *wa'wa'w*; Mallard Duck – Ineseño *'oloxwoshkoloy*, Ventureño *'anixwoshkoloy*; White-winged Scoter – Barbareño *mut*, Ventureño *hoti*; Common Loon – Barbareño *nut*; Grebe – Barbareño *'alqintap*, Ventureño *'alqiltap*; Brown Pelican – Barbareño *xe'w*, Ineseño *hew*, Ventureño *hew*; Double-crested Cormorant – *mut* (cormorant in general, but also used for White-winged Scoter); Peregrine Falcon – Barbareño *kwich*, Ineseño *xelax*; American Coot – Barbareño *kse'n*, Ineseño *kse'n*, Ventureño *kse'n*; Gull – Barbareño *'aniso*, Ineseño *'aniso*. Bird names were also used to assign a title to certain locations in the Chumash peoples' physical world. Those place names associated directly or indirectly to the species present in this assemblage (only those possibly associated with Early and Middle Period locations are included) are *ch'oloshush* for the location of the village at Christy Beach, Santa Cruz Island, with a translation of “seagull gathering place”; *pi'awap'ew* for the location of the island at the east end of Anacapa Island with a translation of “house of pelican”; *qwa'* for the location of a place on Goleta Slough with a translation of “kind of duck” (Timbrook and Johnson 2013).

With respect to spirituality, elder informant Fernando Librado depicted the Peregrine Falcon as a captain's “dream helper” who intervened and prevented a disastrous sinking of a canoe at sea (Timbrook and Johnson 2013). The Chumash peoples believed that a person would find more certain success and safety through the relationship of a personal spirit guide which often would take on the form of a bird. The

Chumash peoples also thought that animals possessed a society before humans existed which resembles the Chumash peoples' social organization. Of the species present in the assemblage the following were thought to have assigned societal roles or tasks: the Coot served as the messenger for the chief or ceremonial leader; and the Pelican or Cormorant were thought to be fishermen of canoes owners.

Clothing, both ceremonial and secular, jewelry, tools, ceremonial implements, musical instruments, and even medicine were made from bird parts (Hudson and Blackburn 1986). Limb bones, crania, feathers, down, quills and talons were utilized in the manufacture of these objects of material culture. Of the species present in the assemblage the following are known to be used: albatross, pelican, gull, duck, cormorant and goose. Although these species were involved in each category of material culture, wing bones and limb bones were prevalent suggesting a focus on the possible manufacture of jewelry, musical instruments, and dress.

The results in this chapter have demonstrated evidence for patterns of subsistence, resource exploitation and technology use, as well as the possible involvement of certain faunal remains, represented in the assemblage, in the manufacture of the Chumash people's material culture. The diversity of the species found and the richness of the assemblage provides promise to the overall understanding of an area where preservation of coastal sites is rare, but in the case of CA-SBA-28, is essential to interpreting the role of mainland sites in the Chumash peoples' way of life.

CHAPTER VII

CONCLUSION

Summary of Results

The faunal remains analyzed during the process of this research bear witness to at least two occupations at Burton Mound during both the Early and Middle Periods. Over 22,000 bones weighing over 33,000 grams were analyzed, resulting in the identification of 47 distinct species of avian, mammal, piscine, reptilian, and crustacean classes. The radiocarbon dates acquired for the site suggest that it had two distinct and intense periods of occupation.

The overall temporal distribution of the remains analyzed demonstrated a consistent subsistence emphasis on marine fauna and more specifically large marine fauna and to a lesser extent large terrestrial fauna. The pattern of subsistence was consistent throughout the two time periods represented (Table 12). This consistency could possibly signify steady resource abundance and fixed technology use. Sea mammals outranked all other classes of fauna present. Terrestrial mammals were second in rank, with undifferentiated mammal coming in third in overall rank. Typically, sea lion, sea otter, seals and porpoises or dolphins were hunted using harpoons which were released from the side of a watercraft.

Fish only represented twelve percent of the overall weight, but fluctuated temporally between nine percent and twenty-one percent (Table 12). The weight of fish remains may be underrepresented because small mesh screen was not employed;

however, fish may have been less important during the time periods represented by this assemblage. Some of the reasons why sea mammals may have been more important are: an easily exploited abundance of sea mammal; diversified use of watercraft; introduction of new hunting technology favoring large animal exploitation; and/or status consumption as result of Syujtún's regional importance. Of the fish remains recovered, pelagic fishes were predominant, pointing to methods of capture dependent on the use of canoes to gain access to the fish inhabiting open waters located beyond the edge of the kelp forests. The species recovered also represent several resource zones and methods of capture, including harpoon, hook and line, beach seines and gill nets.

Of this entire assemblage of faunal remains, the results gleaned from the analysis of the avian remains have the greatest potential for illuminating various aspects of Chumash material culture. The fact that 15 distinct species were identified in a total bone weight of 148.82 grams is striking. The species identified not only suggests difference from the contemporary environment, but strong evidence for use in material culture. Presence of certain species such as the Short-tailed Albatross and Tufted Puffin serve as evidence to a colder climate and Peregrine Falcon serves as evidence for the existence of estuaries. A majority of the bone elements recovered were limb and wing bones with less than 1% burnt possibly indicating the production of material culture items rather than for pure consumption. This is especially likely considering the amount of sea mammal present in every stratigraphic level which would be a much more efficient source of protein (Tables 11 and 12).

Contemporary Implications

The faunal remains recovered from CA-SBA-28 have added considerably to an understanding of subsistence activities of the ancestral Barbareño Chumash people residing in the principal coastal town of Syujtún over an extensive period of time including both the Early and Middle Periods. The units examined during the initial survey and the full analysis of units G45, H45, J45, and N45 have revealed a rich deposit, deeply buried below a highly disturbed layer. Regardless of the prevalent modern construction in the area, a portion of the prehistoric midden may remain intact. As a result, CA-SBA-28 shows considerable potential for contributing data suitable for testing current and generating new hypotheses concerning subsistence change during the Early and Middle Periods which undoubtedly could lead to a better understanding of the social and economic evolution of the Chumash peoples overall.

For the past 125 years the archaeological sites of California in which the Chumash resided have received increased attention (Gamble 2008). As a result, the patterns identified in the data gained from the archaeological record have demonstrated that the Chumash had reached a considerable level of social and political complexity by AD 1300 (Arnold 1992, 1997, 2004; Kennett and Kennett 2000; Gamble 2008). The underlying conditions, both naturally and culturally, which served as the impetus for change had begun much earlier than when the effects became manifest. Hypotheses centered on the causal connections and processes responsible for the complexity existent in Chumash society began to penetrate scholarly discourse in the second half of the twentieth century and most recently have focused on paleoclimatic variability (Raab 2004; Gamble 2008). Not only has a vigorous debate created a growing collection of

scholarly work on the Chumash and other prehistoric southern California societies but it has brought to light the unique contribution the scholars who study the Chumash have to offer the anthropological community on a whole.

Future Research

The Early and Middle Periods have distinct differences in climate that certainly would have affected resource abundance and corresponding subsistence strategies. The later part of the Middle Period also corresponds with periods of drought, the Medieval Climatic Anomaly, which affected ranging behavior of terrestrial species and their availability. Coastal sites of Southern California which date to the Middle Period tend to produce a marine-oriented faunal assemblage (Johnson 1982; Anakouchine 1990; Arnold 1992, 2007; Glassow 1992; 1993; Salls 1992; Erlandson 1994; Erlandson et al. 1999). This specific site, due to its size and richness of its assemblage, has proven its potential to contribute important information regarding populations, site catchment, and settlement patterns. As a result, this information has the prospect of providing insights regarding the development of watercraft, the emergence of elites, as well as changing fishing technology on the Northern California Bight.

Considering the fact that 40 units were excavated and that there appears to be patterns of density in the units not considered in this research, continued analysis of other units should prove advantageous. This would be especially true if certain levels are able to be associated with the later portion of the Middle Period or the Late Period, offering a complete span of documented subsistence emphasis and change in one site. Finally, comparative analysis with other sites in the Santa Barbara Channel Region, especially

those not known as having regional political importance, could test hypotheses regarding how social and political status may affect consumption.

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