AN
ARCHAEOLOGICAL
OVERVIEW
OF THE
NORTHERN
CHANNEL ISLANDS
CALIFORNIA
INCLUDING SANTA BARBARA ISLAND

by
MICHAEL A. GLASSOW
Department of Anthropology
University of California, Santa Barbara

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ABSTRACT

The subject of this overview concerns the archaeological resources of the northern Channel Islands and Santa Barbara Island, all of which lie off the southern California coast. All previous archaeological research on these islands is summarized and evaluated, the extent of knowledge of the prehistories of the islands is outlined, and the research potentials of each island's archaeological resources are discussed. In addition, a brief environmental description and history of land use is presented for each island. Management recommendations focus on the need for more effective programs to minimize vandalism and on value of contracting for the analysis of archaeological data obtained during the 1960's from those islands under federal control. No management recommendations are included for the two privately owned islands which generally have resources in better states of preservation.
This overview was prepared for the National Park Service in order to provide background information necessary for the effective management of archaeological resources on the Northern Channel Islands and Santa Barbara Island of the southern group. In its original manuscript form it consisted of two parts, the first dealing with the archaeology of Santa Barbara and Anacapa Islands and the second dealing with Santa Cruz, Santa Rosa, and San Miguel Islands. The natural and cultural resources of Santa Barbara, Anacapa, and San Miguel Islands are under National Park Service administration. The remaining two islands, Santa Cruz and Santa Rosa, are privately owned and are included in this overview largely because their better known prehistories provide a significant part of the basis for evaluating the archaeological resources of the other islands. Moreover, the northern Channel Islands together comprise a natural unit of scientific investigation.

In addition to merging the two original parts of the overview, I have also added the subsection Regional Research Problems under the General Considerations section. I felt this necessary in order to link the discussions of each island's research potential to regional research problems. I have also made minor revisions in several other portions of the overview in order to correct, clarify, or update the original text.
GENERAL CONSIDERATIONS

Introduction

The Channel Islands off the coast of Southern California are normally divided into two groups: the southern group which includes Santa Catalina, San Clemente, San Nicolas, and Santa Barbara Islands, and the northern group which includes Anacapa, Santa Cruz, Santa Rosa, and San Miguel Islands (Map 1). This overview considers the whole northern group plus Santa Barbara Island. The latter is included because it is part of the Channel Islands National Monument and thus under the jurisdiction of the National Park Service, for whom this overview was prepared.

The basic objectives of this overview are threefold: 1) to summarize the past archaeological work and the extent of knowledge of the prehistory of the islands, 2) to determine the scientific value of the archaeological resources on the islands, and 3) to provide recommendations for the management of the archaeological resources. In accomplishing these goals, the context of Channel Islands archaeology in the archaeology of the Southern Coastal California region will first be presented. Following this, the archaeological overview will focus on one island at a time and will cover all the topics specified in the instructions from the Arizona Archaeological Center, National Park Service.

I have included maps showing site locations on Santa Barbara, Anacapa, and San Miguel Islands; however, I have not included comparable maps showing site locations on Santa Cruz and Santa Rosa Islands in deference to their private owners.

A number of institutions not checked by me either do have or probably have collections from one or more of the northern Channel Islands. However, these collections all appear to have been derived from essentially nonarchaeological collecting activities. For instance, a small collection housed by the Academy of Natural Sciences of Philadelphia is reported by Wardle (1913), and there is also a collection of various ground stone and bone artifacts from Santa Rosa and San Miguel Islands housed by the Bowers Museum in Santa Ana. This latter collection was recently described by Irwin (1975). Another collection from San Miguel Island, whose present deposition is unknown, was apparently obtained by Horatio N. Rust around the turn of the century and is illustrated in the American Anthropologist (Rust 1907). The American Museum of Natural History also houses a collection made by its first curator of anthropology, James Terry. Collected between 1875 and 1887 from Santa Cruz, (53 items), Santa Rosa (9 items) and San Miguel
Map I: The Northern Channel Islands and Santa Barbara Island
(5566-plus items), as well as certain southern Channel Islands and the mainland, this collection was briefly described by N. C. Nelson (1936). As with the above collections there is no more precise provenience information beyond identification of the islands from which the objects came. Finally, mention should be made of the A. R. Sanger collection housed by the Museum of American Indian, Heye Foundation. Sanger donated this collection of about 1400 artifacts to the museum, and Arthur Woodward described it in 1927 (Woodward 1927). However, Woodward does not mention from which islands the collection came, and apparently no such provenience information is associated with the collections.

I also do not discuss the several small collections resulting from nonarchaeological collecting housed at the Lowie Museum and the Santa Barbara Museum of Natural History. The Lowie Museum, for instance, has seven accessioned collections from San Miguel Island ranging from two to 35 items each, as well as smaller collections of the same nature from Santa Rosa and Santa Cruz Islands. The research value of these various collections obtained as a result of casual, nonarchaeological activities is, of course, comparatively little, and I did not deem it worthwhile to attempt their full documentation.

In carrying out the research necessary to produce this overview, personal visits were made to a number of institutions in California where records and collections pertaining to Channel Islands archaeology are housed. I personally looked at these records and collections when they could be made available to me, which was usually the case. The institutions visited were: the Lowie Museum and the Archaeological Research Facility at UC Berkeley, the Santa Barbara Museum of Natural History, the UCLA Archaeological Survey and department of anthropology, and the Los Angeles County Museum of Natural History. The following people were helpful in either supplying me with information or aiding my search through their files, archives, and collections: Mr. Dave Herod of the Lowie Museum, Dr. Robert Heizer of the Berkeley Archaeological Research Facility and department of anthropology, Dr. Travis Hudson of the Santa Barbara Museum of Natural History, Mr. Steve Bodkin of the UCLA Archaeological Survey, Mr. Andy Christainson of the UCLA Department of Anthropology, and Dr. Charles Rozaire and Ms. Nancy P. Walter of the Los Angeles County Museum. Dr. Ralph Philbrick of the Santa Barbara Botanic Garden and Mr. Lyndal Laughrin of the UC Channel Islands Field Station were also helpful in leading me to sources of information on the environment of the Channel Islands.

Ethnographic Background

At the time of European contact all of the northern Channel Islands except Anacapa were occupied by populations speaking the Chumash language, which belongs to the Hokan linguistic family. While no permanent villages existed on the Anacapa islets, they were undoubtedly used for resource exploitation. Santa Barbara Island also did not have a permanent
population, and it is more appropriate to include it with the southern Channel Islands that were occupied by Shoshonean-speaking Gabrielino Indians that also occupied the general area of the Los Angeles Basin. The Chumash were aware of the Santa Barbara Island, however, in that they had a name for the island in their language, as they did for the other southern Channel Islands (Heizer 1955:198). The culture of the coastal and island Chumash and Gabrielino was in many ways very similar, and for the present purposes it will suffice to emphasize the Chumash in the following description.

The Chumash (and Gabrielino) were not extensively studied by the group of pioneering ethnographers who began recording data on North American Indian cultures between 1850 and 1900. The principal reason for this relative lack of attention is the fact that the Chumash cultural system(s) did not survive intact after the mission period, which ended with secularization in 1834. By 1900 there was only a remnant population living near the Santa Ynez Mission in the Santa Ynez Valley and a small number of older individuals scattered through Ventura, Santa Barbara, and San Luis Obispo Counties who still spoke the Chumash language and retained information on how aboriginal life was carried on during and to some extent before the mission era. Several of these individuals served as informants for the limited ethnographic and linguistic work of Pinart (Heizer 1952) and Henshaw (Heizer 1955) in the latter part of the 19th century. Far more extensive ethnographic investigations were made by John P. Harrington between ca. 1910 and 1940. However, Harrington managed to publish very little of the results of his extensive and diligent fieldwork (e.g., Harrington, 1942), and it has been left to a contemporary group of anthropologists to extract valuable information out of the dozens of cardboard boxes full of fieldnotes left by Harrington at the time of his death and now housed by the Smithsonian Institution. Considerably more will be known about the Chumash within the next few years as more publishing of analyses of Harrington's field data is accomplished. The best single source presently available on coastal Chumash cultural adaptations is Landberg's (1965) interpretive synthesis. L. King has added an important dimension of information on the subject of Chumash social and political organization, and C. King (1971) has reconstructed a picture of Chumash economics.

The Chumash have normally been divided into several geographic groups, each associated with a distinct language dialect. Some of these groups take their modern-day names from missions established in different locations in Ventura, Santa Barbara, and San Luis Obispo Counties. Roughly speaking, the area of these three counties, as well as western Los Angeles County, comprise the area occupied by the Chumash. The Chumash that lived in the vicinity of the Santa Barbara Mission were known as the Barbareno; however, the term "Canalino" is more popularly used today to refer to all the Chumash that lived on the northern Channel Islands and the coastal mainland between Point Conception and Malibu (named after the southernmost coastal Chumash village of Humaliwo).
The densest population on the mainland occupied several villages of several hundred people each in the vicinity of Goleta and Santa Barbara. Island villages were generally smaller than these, altogether accounting for a population in 1770 between about 1000 and 1500 out of a total estimated Chumash population of about 15,000 (Brown 1967).

The coastal Chumash, unlike other California Indians, carried on an active maritime livelihood. A significant proportion of their subsistence was derived from pelagic fish that abound in the Santa Barbara Channel in late summer and early fall. Beyond the pelagic fishery, the kelp beds that are extensive along the island and mainland coasts provided a wide variety of fish species in plentiful numbers. Much of the fishing was done from the distinctive plank canoes that were also used by the coastal Gabrielino. (The Chumash also used dugouts and balsas to some extent.) Fishing gear appears to have been quite varied, as determined by Fitch (Greenwood and Browne 1969:56-71) in his analysis of fish remains from the village of Shisholop near Ventura. Not only were crescentic fishbooks made of abalone shell used, but also a variety of nets and projectiles were used to obtain differing species of fish from a variety of marine habitats (cf. also Hoover 1973).

While fishing was certainly an important part of Chumash subsistence, archaeological, ethnohistoric, and ethnographic evidence reveal that the most characteristic feature of Chumash subsistence was its variety. As with other California Indians, acorns from the abundant oaks in the main­land valleys (and on Santa Cruz Island) were very important. These were ground into a flour using stone mortars and pestles and then leached to remove tannic acid. Shellfish were also exploited—both mussel and abalone from rock shores and cockle and littleneck clam from the mudflats of sloughs and estuaries. Finally, a wide variety of seeds were exploited—chia from various species of sage being one of the more important—and of course there was undoubtedly a considerable number of plants exploited for their roots or tubers and greens, although only a few of these have so far been demonstrated to have been used.

Landberg has developed a convincing argument that the coastal Chumash practiced a fairly regular seasonal round of population dispersal and aggregation in response to the location and seasonal availability of different food resources. According to his reconstruction the coastal villages would have had full population only in the late summer when pelagic fishing was at its peak and through the winter when the Chumash depended largely upon stored food resources. Landberg's reconstruction very likely holds for the coastal mainland, however the island populations, with access to much fewer terrestrial resources, probably practiced a modified pattern of seasonal movement. (All indications are that the island Chumash were more dependent upon fish and shellfish than their mainland neighbors.)

Chumash social and political organization appears to have been
rather complex, having some of the characteristics of small-scale chiefdoms. Social stratification was distinct, consisting of ranked lineages whose internal organizations have yet to be completely worked out. Chiefly lineages were at the top, followed by lineages associated with ritual and bureaucratic offices. Lineages of relatively high status associated with craft specializations such as canoe manufacture or economic specializations such as canoe ownership appear also to have existed. Finally, there was likely a broad base of commoner lineages and, if Bean's (1974:23) general interpretations of social stratification in aboriginal California apply, a stratum or two of lower social classes.

Chiefs or "captains" were associated with villages and perhaps segments of larger villages (lineage heads?), and there were also higher status chiefs who controlled regions containing several villages. The chiefly offices were normally inherited through the male line with a primogeniture rule in effect. Chiefs had several bureaucratic assistants to help in political affairs. These officials served as messengers, orators, and ceremonial assistants. Other offices were ostensibly ritual, but they appear also to have political overtones. The antap is the best know of these. Finally, there was a number of status positions associated with specialized knowledge and rituals—for instance, a weather prophet, a "poisoner," and an herbalist or healer.

The economy of the coastal and island Chumash was linked to that of the interior Chumash and also to that of neighboring groups, particularly the Gabrielino. The economic system was based on a primitive money which took the form of strings of beads made primarily from the callus of the olivella shell. Conventionalized lengths of strings of shell bead money had values assigned to them in terms of a variety of goods and services. Apparently, one of the most important roles of the chiefs was to control the economy through accumulation and expenditure of wealth that was defined, at least in part, in terms of shell bead money. Much of the economic exchange appears to have transpired through the institution of the "fiesta" (Blackburn 1974). Fiestas were events scheduled and planned by village or regional chiefs in which villages over sometimes very large portions of southern California were invited to attend and to bring various kinds of resources either as gifts or for exchange. Besides chiefs, there were other wealthy individuals that controlled aspects of the economy such as boat owners who were able to accumulate enough capital (shell bead money) to build and maintain boats. It is possible that boat owners accumulated their wealth through commerce between the islands and the mainland, in other words, they appear to have been middlemen in the mainland-island economic relationships.

The overall impression of coastal Chumash culture gained from presently available information is that of a comparatively dense population which carried on an elaborate economic, social, and political life. This elaboration appears to have had its foundation in a maritime subsistence and in marked differences in the distribution of
resources: the island Chumash lacking terrestrial resources but having access to abundant marine resources, the coastal mainland Chumash having access to a variety of marine and terrestrial resources, and finally the interior Chumash having access to abundant terrestrial resources—particularly acorns and presumably game.

Turning now to the island Chumash specifically, we find that much less is known about them in comparison to what is known about the coastal mainland Chumash. When Cabrillo's expedition visited the islands in 1542-43, the Indians living in the islands were typified as very poor people who ate nothing but fish, slept on the ground, and had houses in which fifty people lived. The Cabrillo journal, attributed to Cabrillo's pilot Ferrelo (Bolton 1946:1-39), lists the names of the three islands (excluding Anacapa, which was apparently unoccupied then as well as later) and also the names of villages on each of the islands. There is some difficulty, however, in correlating the village names in the Cabrillo journal with the lists compiled during the mission period and after. Except for the two villages on San Miguel Island, the Cabrillo journal includes some village names not recorded later and also fails to mention other names that were. To add to the confusion, two different lists of villages on Santa Cruz Island are found in the journal, the first having some correlates in later lists and the second apparently a list of Gabrielino villages on Santa Catalina island mistakenly attributed in the journal to Santa Cruz (King 1975:117-178).

Several scholars have in recent years published lists of Chumash villages on the Channel Islands. Brown, following Kroeber (1925) and Henshaw (Heizer 1955), lists two villages on San Miguel with a total population of less than 100, six villages on Santa Rosa having a total population of about 400, and eleven villages on Santa Cruz with a total population of 600 or 800. King (1971:30, 1975) and Whitehead and Hoover (1975) have each produced maps of Chumash territory that include village locations and population sizes estimated from historical and ethnographic information. On a general level, their maps agree with Brown's as well as with one another, however there are some significant differences in particulars which seem to reflect their somewhat different sources of information or differing importances assigned to the sources. Both King's and Whitehead and Hoover's maps indicate that the island population was probably higher than that indicated by Brown—the total being closer to 2000 according to King.

Subsequent to Cabrillo's expedition, very few others that passed the islands (Cermeno in 1595, Vizcaino in 1602, Perez in 1769) mention much about the islands' populations. Moreover, the mission fathers at the Santa Barbara and San Buenaventura Missions recorded very little information about the island Chumash. One of the few references is a list of island villages and their populations based on native informants rather than direct observation. Fr. Tapis, who compiled the list, indicated that the Indians on the islands lived in poverty and depended
for food upon fishing and seeds obtained in trade from the mainland. Beads made by the islanders were traded to the mainlanders for the seeds, according to Fr. Tapis. His comments on the Indians are difficult to interpret, however; it is very likely that by this time the island Chumash had been greatly affected by European diseases and disequilibrium in the economic relationships that they had with the mainland Chumash. The last of the island Chumash came to the mainland about 1815 or 1816 to be missionized, a date about ten years after missionization was completed on the coastal mainland.

Available evidence indicates that the island Chumash were socio-politically autonomous and to a degree ethnically distinct from the mainland Chumash, much in the manner that the coastal mainland Chumash were distinct from the neighboring Chumash of the Santa Ynez Valley. Henshaw's Santa Rosa Island informant mentioned that the inhabitants of Santa Rosa, Santa Cruz, and San Miguel all spoke the same language, however Henshaw (Heizer 1955:87) suspected that there were some dialectical differences between the islands. Nevertheless, it may be inferred that the island dialects resembled each other more than any one of them resembled any of the mainland dialects. The island Chumash, or at least those on Santa Cruz Island, are also reported to have formed a distinct political district under a regional chief (L. King 1969:41).

C. King (1971) has pieced together a number of ethnohistorical, ethnographic, and archaeological bits of evidence in an attempt to reconstruct the economic relationships that existed between the island and mainland Chumash. He argues that the island Chumash specialized to a large extent in the manufacture of shell beads and ornaments as well as other craft items such as digging stick weights (doughnut stones) and perhaps chert points or knives. As a result, the northern Channel Islands were very likely the source of much of the shell bead money that was used to one degree or another in the economic system that encompassed much of southern California. In exchange for the shell beads and other craft items, as well as sea otter pelts and fish, the islanders received acorns and other food resources, various raw materials, and steatite objects that came ultimately from Santa Catalina Island. In this way, the island Chumash were able to compensate for the meager terrestrial resources on the islands. Except for language differences, economic specializations in manufacturing craft items, and a heavy emphasis on fishing, the island Chumash culture was probably otherwise very similar to that on the coastal mainland. Yet there remains the possibility that there were subtle but significant cultural differences which may yet come to light as more information is obtained from Harrington's unpublished fieldnotes and from archaeological research.

Chronological Considerations

Chronology of the Southern Coastal Regions: Archaeological research to date in the Southern Coastal California region has resulted in a broad outline of change in subsistence and technology through a period
beginning at least by 7000 BC. There is currently some controversy among archaeologists and other scholars regarding the very earliest human occupation of this region. Some claim that occupation began as early as 35 to 40,000 years ago (Orr 1968), while others—perhaps the majority—are only willing to accept a date of 7 to 8,000 BC, a time which is represented by the earliest radiocarbon or geological dates in clear association with items of unquestioned human manufacture. One of these earliest manifestations, the San Dieguito Complex, is restricted to the coastal region of San Diego County—at least so far as is presently known (Warren 1968). The other well-dated early manifestation is represented in the lower levels of SLO-2) a coastal site at Diablo Canyon in San Luis Obispo County (Greenwood 1972). While the San Dieguito Complex appears to reflect a hunting-oriented adaptation (Warren 1968:2), the Diablo Canyon assemblage appears to represent an adaptation oriented around the exploitation of both terrestrial and intertidal resources (Greenwood 1972:90-91).

The second broad developmental period recognized in the Southern Coastal California region is represented by a relatively large number of radiocarbon dated site components that fall between about 5500 and 3000 BC. Wallace (1955:219) referred to this stage as the "Millingstone Horizon" because of the large numbers of basin metates or querns, manos, and plano-convex core tools or "scraper planes" that are found in many of these sites. Warren (1968:6), on the other hand, refers to this period of development as the Encinitas Tradition while others, wishing to emphasize the similarities between southern and central California first pointed out by Heizer (1939) refer to the period as "Early Horizon."

The third developmental stage, lasting from 3000 BC to AD 1, is represented by considerable cultural diversity from San Luis Obispo County south to San Diego County. This is the era in which marine fishing and sea mammal hunting became important, at least in the region of the Santa Barbara Channel. Farther south, in Orange and San Diego Counties, sites do not contain abundant evidence of these subsistence activities. Instead, they resemble, in both artifact assemblage and faunal remains, the sites of the previous developmental period. Wallace (1955:221) referred to this period as one characterized by "Intermediate Cultures" while Warren (1968:2) calls it the Campbell Tradition. It is roughly contemporaneous with the Middle Horizon of Central California. It should be noted, however, that Warren's Campbell Tradition is more restricted in its definition than Wallace's Intermediate horizon. Warren defines the Campbell Tradition in terms of an adaptation to marine resources, and since this form of adaptation did not really occur in Orange and San Diego Counties, he believes that the earlier Encinitas Tradition continued in this southerly area into the Christian era.

The last generally recognized period of prehistoric development in Southern Coastal California is not well delineated from the previous. Within a period beginning possibly as early as 2000 BC and lasting up
to about AD 800, a number of new categories of artifacts were added to the inventories of different parts of the region, however there is no evidence at present that there was any strong clustering in these introductions. Among the new artifact categories are crescentic shell fishhooks, large sandstone bowls, spherical steatite or serpentine ollas, arrowpoints, olivella "cup" beads, and chert bladlets. In addition, pottery containers were added to the artifact inventories of San Diego County.

Wallace (1955:223) refers to this period as one characterized by "Late cultures", while Warren (1968:3-5) prefers to use the linguistic terms to refer to the three major ethnographic groupings found in Southern Coastal California at the time of European contact: Chumash in the northern zone, Shoshonean in the central zone, and Yuman in the southern zone.

Chronology of the Santa Barbara Channel (Table 1): Archaeologists have normally recognized three principal developmental periods in Santa Barbara Channel prehistory which correlate with the latter three periods recognized for Southern Coastal California prehistory as a whole. In fact, the more obvious changes in artifact inventories of the Santa Barbara Channel after ca. 3000 BC have given the last two divisions of the Southern Coastal California chronology their meanings.

There is still some question as to whether there was a pre-6000 BC occupation on the channel, contemporaneous with or earlier than the San Dieguito Complex to the south. Phil C. Orr's finds on Santa Rosa Island and Rozaire and Johnson's on San Miguel Island are the only candidates so far (Orr and Berger 1966, Berger and Orr 1966, Rozaire and Johnson n.d.). Orr contends that prehistoric occupation on Santa Rosa Island was contemporaneous with the existence of dwarf mammoths—that is, man and mammoth date from ca. 35-40,000 B.P. up to about 11,000 B.P. Unfortunately, Orr's findings have not been published in enough detail for readers to obtain a high degree of confidence in his conclusions which is probably the major reason why Orr's contentions have not enjoyed widespread acceptance. Rozaire and Johnson have briefly reported in unpublished manuscripts similar finds in the northwestern sector of San Miguel Island; however, their investigations have been to date very superficial, and no evaluation of the finds is presently possible.

The earliest chronology for Santa Barbara Channel prehistory was developed by David Banks Rogers in the 1920's as a result of excavations at a number of sites primarily on the coastal mainland (Rogers 1929). He believed that three separate populations migrated into the region of the Santa Barbara Channel, each with a relatively distinctive culture, and he believed that he had found stratigraphic evidence in many of the sites he excavated to support this conclusion. He referred to these three successive populations as the Oak Grove, Hunting, and Canalino Peoples. Surprisingly, Rogers' chronology has stood the test of time and is still
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**TABLE I:** Comparative Chronological Sequences for the Santa Barbara Channel  
(adapted from Hoover 1972)
used to some extent today. Radiocarbon dating has placed the beginning of the Oak Grove "culture" at about 5500 BC, the Hunting at ca. 3000 BC, and the Canalino at ca. 1000 BC.

William Harrison has proposed a fairly complicated modification of Rogers' sequence, based on his analysis of radiocarbon dated components he excavated with a UCSB team in the 1950's (Harrison 1964, 1965, Harrison and Harrison 1965). According to Harrison, the Oak Grove and Hunting Peoples, each associated with distinctive cultures, existed side-by-side along the Santa Barbara Channel for 1000 or more years. The Oak Grove People are represented by two chronological phases, the Goleta Phase beginning at least by 5300 BC and the El Capitan Phase beginning around 3300 BC. The Hunting People are represented by one known phase, the Extranos, beginning around 2900 BC. The cultures of these peoples merged into what he calls the Rincon Phase around 2000 BC, which is the first of three phases that comprise what Rogers called the Canalino.

Ronald Olson, who excavated at a series of sites on Santa Cruz Island and on the adjacent mainland in 1927 and 1928, developed a chronology alternative to Rogers' (Olson 1930). Actually, he devised two separate chronologies, one for the mainland sites and another for the island sites. The mainland sequence is divided into three periods: Early, Intermediate, and Late Mainland. The Early and Intermediate Mainland Periods appear to fall entirely within the period of the Hunting People as defined by Rogers while the Late Mainland Period correlates with Rogers' Canalino. There are some differences of opinion, however, regarding the relationship between Rogers' and Olson's sequences, which are not worth discussing in the context of this overview.

Olson's island sequence, consisting of two periods (other than the post-contact period), is the first to be developed for the Northern Channel Islands. He felt that the Early Island period straddled the division between the Intermediate and Late Mainland Periods while the Late Island overlapped with the rest of the Late Mainland period.

Orr, whose excavations at SBA-46 (Mescalitan Island, at the mouth of the Goleta Slough) provided data for dividing Rogers' Canalino period into three subdivisions (Orr 1943), developed sequence for Santa Rosa Island that is comparable in time-span to the mainland sequence. A series of radio-carbon dates associated with definite prehistoric remains (mainly cemeteries) provided the basis for dating and arranging the periods of his sequence. His Early Dune Dweller period, dated at 7500 to 6800 B.P., is associated with sites in dune deposits, red and/or black abalone shells, a dated cemetery that contained burials in sitting positions, barrel-shaped beads, bone awls, digging-stick weights, relatively crude chert points, and other classes of artifacts not directly associated with the dated cemetery. Orr refers to his next period as that of the Highland Culture because sites tend to occur on flat-topped ridges away from the coast. Two radiocarbon dates from one of these sites dates this period around 5300 to 4800 B.P. The latter
The date is associated with a crescentic shell fishhook, making this the earliest such fishhook find yet discovered on the channel. Following this manifestation in time is the "Black Bottom" phase, a later manifestation of the Dune Dwellers, associated with greater proportions of black as opposed to red abalone and "Gypsum Cave type" points. This "phase" dates from 4000 to 3400 B.P. Orr uses Rogers' term "Canalino" to refer to the latest period of occupation on Santa Rosa Island that began ca. 3000 B.P.

The most recent attempt to develop a Channel Island chronology is that of Robert Hoover (1971). He undertook a much more detailed analysis of Olson's 1927-28 collections from Santa Cruz Island than did Olson himself. Based largely on mortuary data, Hoover defined four sequential phases. Since he was not able to obtain radiocarbon dates, he attempted to cross-date his phases with Orr's sequence on Santa Rosa Island and various mainland sequences. He correlates his earliest phase, the Christy's Beach Phase, with Orr's Early Dune Culture. The other correlations recognized by Hoover are: the Frazer's Point Phase of Santa Cruz with the Black Bottom Phase of Santa Rosa, the Posa Phase of Santa Cruz with the Canalino of Santa Rosa (and mainland), and the Smuggler's Cove Phase of Santa Cruz with the protohistoric Canalino or Chumash. The last correlation is based primarily on the presence of European artifacts, including glass beads.

Recent investigations by Spaulding and Glassow on Santa Cruz Island (summers of 1973 and 1974) are beginning to yield additional chronological information. A series of 23 radiocarbon dates have been obtained so far spanning a period from 280 to 5920 B.P., and another series of radiocarbon samples from the large-scale excavations at the Prisoners Harbor Site (UCSB SCR1-246) will be run within a year. The analysis of the collections is just beginning, however, so no refinements of Hoover's chronology can yet be presented.

There are no established chronologies for the other three islands considered in this overview. There are, however, a series of nine radiocarbon dates from sites on San Miguel Island that appear to come from archaeological contexts but not from Rozaire's site excavations (eight other dates come from nonarchaeological contexts). Rozaire and Johnson (n.d.) report six of these dates, all obtained since 1969, in an unpublished grant proposal, but they give only brief descriptions of their contexts, indicating that they pertain to midden deposits. Any artifact associations are not mentioned. All six dates come from the Simonton Cove-Harris Point vicinity of the island and range between 9,360±200 and 6,030±105 B.P. Three other radiocarbon dates obtained previously, the earliest being, 2,120 B.P., are also not associated with artifacts (Rozaire 1967:328). Taking the earliest of the San Miguel dates at face value, there appears to be some evidence of occupation about 1800 years earlier than on Santa Rosa Island and perhaps even earlier than on the adjacent mainland.
With regard to Anacapa and Santa Barbara Islands, not only are there no radiocarbon dates for prehistoric manifestations on these islands, but the limited excavations on each island have not yielded enough information for establishing a relative chronology. Nonetheless, Rozaire's excavations at Anl-8 on Anacapa exposed stratigraphy that may indicate an occupation throughout much of the Canalino period (Rozaire 1959:92-93).

Evaluation of the Channel Islands Chronologies: The chronologies for each of the five islands considered in this overview suffer from the same shortcomings as those of the channel mainland chronology: 1) poorly developed relative chronologies (such as those based on shell bead and ornament seriation), 2) relatively few radiocarbon dated components, and 3) the likelihood of anomalous radiocarbon dates. The first of these shortcomings is rapidly being eliminated through the efforts of C. King (1974), who has recently made a large-scale effort to develop a bead chronology at least as sensitive in chronological differentiation as the Central California bead chronology. His results are still largely unpublished.

Another rather unique form of relative chronology was applied to Anacapa Island. According to McKusick (1959:79), the earlier occupation of Anacapa and other islands, if this occupation is early enough, should be represented by site components with relatively higher proportions of Abalone shell than those for later site components. Because the proportion of abalone shell in the midden samples collected by McKusick are generally low, McKusick believes that all of the Anacapa sites are late—probably within the Canalino period (1959:86).

This technique for establishing relative chronology is open to serious question. Rozaire's excavations at Anl-8 at LeDreau Cove on East Anacapa revealed a greater dependence on abalone later in time rather than earlier, thus contradicting McKusick's assumption. As McKusick himself admits (1959:83), other factors beyond a broad shift through time in the availability of abalone are in operation. In the first place, abalone can be locally depleted at any time. Moreover, some shoreline habitats regularly contain much more abalone than others and the relative amount of abalone in sites adjacent to these differing habitats would be expected to vary concomitantly.

The second shortcoming of the island chronologies will take longer to resolve. The only island to have been subjected to extensive radiocarbon dating (beyond the unpublished dates obtained for Santa Cruz by Spaulding and Glassow) is Santa Rosa. But even here there are problems. Of the approximately 22 radiocarbon dates used by Orr to construct the principal aspects of his chronology between 7500 and 400 B.P., half refer to a period between 7500 and 3000 B.P. while the other half date the period after 3000 B.P. Not only this, these dates refer to only eight sites, so the dates are very thinly distributed
through both space and time. In addition, the cultural associations of some of these dates are open to question. The two very early dates (ca. 7000 B.P.) from site 131.6 are of buried strata of red abalone shells for which Orr reports no artifact associates (his samples having been taken from a bank in which shell-bearing strata are exposed). Moreover, while the dates from 131.43, the Highlander Culture type site, have good cultural associations, there is some question as to whether the site represents the manifestation of a distinct culture. Given the evidence as reported, it is just as possible that this site, and others like it, are only seasonal sites occupied by a population that lived on the coastline during other parts of the year (cf. Hoover 1971:254 for a similar reservation).

The nine radiocarbon dates from San Miguel also do not allow the construction of an archaeological chronology. Not only is the number of dates too small but none pertain to excavated collections.

The possibility of anomalous radiocarbon dates, as the third shortcoming of the island chronologies, is not quite so obvious, yet recently dated stratigraphic series of radiocarbon samples from Santa Cruz Island and Vandenberg Air Force Base give witness to its prospect. In a stratigraphic series of 10 dates from the Prisoners Harbor site on Santa Cruz Island, a date of 240 B.C. occurred directly above a date of A.D. 155. A more drastic discrepancy was found in a series from a 6-meter deep site (SBa-210, Nocto) on the south coast of Vandenberg AFB. A date of 7100 B.C. occurred stratigraphically above a date of 2700 B.C. These anomalies have led this author to become rather cautious in interpreting the chronological significance of dates from California sites, especially if only one date per component exists.

In summary, the chronology for the Channel Islands is very poorly developed. In fact, excepting Orr's published dates for Santa Rosa Island and the unpublished dates of Spaulding and Glassow for Santa Cruz Island, a firm basis for the construction of archaeological chronologies is virtually absent. The impact of poorly developed island chronologies on the rest of the aspects of this overview are obvious. It will be difficult or impossible to discuss cultural development on each of the islands. Moreover, the research potential of the islands' archaeological resources will be difficult to evaluate--at least in terms of specifics.

Regional Research Problems

Regional research problems to which the archaeological data of the Northern Channel Islands are relevant have not always been explicitly stated in the literature. Instead, problems tend to be island-specific, if they are stated at all. Nevertheless, there are a number of regional research problems that are implied in the literature and I shall make an attempt to elucidate them here, leaving a presentation of island-specific research problems for my discussion of each island's research potential.
Perhaps the most obvious research problem is the determination of the antiquity of human occupation on the Northern Channel Islands. As pointed out in the preceding section, P. C. Orr has argued that human occupation may be as ancient as 40,000 years on Santa Rosa Island. In addition, Rozaire and Johnson feel that they may have discovered similar remains on San Miguel Island, and Orr suspects that pleistocene deposits on Santa Cruz Island may also contain such manifestations. Although these purportedly ancient manifestations are not yet adequately reported, enough evidence has been presented to justify research into the possibility of pleistocene occupation on the Channel Islands.

On a more general level, the overall prehistory of the Northern Channel Islands is still poorly documented. Even the cultural sequences developed by Orr for Santa Rosa and Olson and Hoover for Santa Cruz are comparatively sketchy, primarily because they are based almost exclusively on cemetery data. Moreover, there is practically no chronological information whatsoever from the other Channel Islands.

The archaeology of the northern Channel Islands is particularly relevant to a number of cultural ecological problems having to do with the development of a maritime subsistence, and considering the poor preservation of coastal sites on the adjacent mainland, we may have our best opportunities for such studies on the islands. One of the principal problems under this topic is the evolution of a fishing subsistence. Did the earliest islanders focus primarily on the resources of the intertidal zone such as various species of shellfish, sea urchins, and fish caught in the tidepools? Did the first efforts at true fishing involve the use of nets in the surf zone? How important through prehistory was the fishing in the kelp zone and inshore waters with rocky substrates? A more specific question has arisen out of a recent analysis of Chumash fishing patterns by Landberg (1975). He questions whether the Chumash exploited the open channel fishery to any great extent and suspects instead that they probably obtained pelagic schooling fishes such as the tunas only when they neared the inshore zone. Analysis of fish remains from island sites would help in determining whether Landberg is right or wrong.

Along with a concern for identifying the different fisheries that were exploited through prehistory, attention could be given to the evolution of fishing technology. How important was net or seine fishing and in what fisheries were such techniques used? What was the evolution of fishhooks, and what relationships do different forms of fishhooks have to the species of fish actually caught? These interests have been expressed by Tartaglia (1975) in his recent doctoral dissertation. He argues that change in shape and size of fishhooks was determined by changes in the species of fish sought prehistorically. While his analysis may have applicability beyond his study area of the southern Santa Barbara Channel Islands, preliminary results of my analysis of Santa Cruz Island fish remains indicate significant geographical differences.
through the Santa Barbara Channel region.

The importance of watercraft in the fishing economy is also little known. The distinctive Chumash plank canoe used at the time of Spanish contact was probably the end product of a lengthy process of technological evolution. But was it developed primarily as a mode of transportation to support the economic relations between the islands and the mainland or was it developed to allow exploitation of offshore fisheries? The use of the plank canoe and its presumed antecedents may be identified in the archaeological record of the Channel Islands by the presence of the stone and bone tools used in its manufacture, many of which are documented in ethnographic records (Hudson, personal communication).

The explication of Channel Island settlement patterns is closely related to the research problems just mentioned. There has been no comprehensive study of settlement patterns on any of the Channel Islands (this is one of my current research activities, however), although there have been fairly comprehensive site surveys on all of the islands except Santa Rosa. These surveys indicate that settlement patterns were very likely much different on the Channel Islands in comparison to those on the adjacent mainland. These apparent differences are reflected in the higher density and possibly smaller average size of sites on the islands than on the mainland. This is true not only of the lands next to the coast but also of adjacent interior areas. The surveys on Santa Cruz and San Miguel Islands indicate that it would be difficult to find sites more than 1000 feet distant from any given locus on these islands whereas on the mainland there are tracts of relatively undisturbed land many acres in extent on which no sites have been located. However, the relatively high density of sites on the Channel Islands does not mean that population density was unusually high. Instead, it apparently reflects rather complex settlement patterns that involved frequent movement between sites during the course of an annual cycle and perhaps also frequent shifts in the placement of whole settlements. It will undoubtedly take considerable research effort to work out even the rough outlines of island settlement patterns and their changes through time.

An important question that the study of settlement patterns will help to elucidate is how important terrestrial resources were to each of the island's populations. The grinding implements found on all of the islands covered in this overview may have been used to process seeds or nuts obtained from the islands rather than from the mainland through import. Terrestrial plant resources of many kinds may have been especially important on Santa Cruz Island, which has many more such resources than the other Channel Islands.

This brings up another interesting realm of cultural ecological research to which the archaeological resources of the northern Channel Islands are relevant. Their comparatively small, finite land areas undoubtedly imposed constraints on cultural adaptation and evolution
that would not have been present on the mainland. The exploitation of terrestrial plant resources may very well have been of considerably less importance on the Channel Islands than on the mainland. But in spite of the smaller variety and lesser abundance of these resources on the islands, certain plant products may have been exploited that were not so on the mainland. In other words, what were marginally exploited plant species on the mainland could have been relatively more important on the islands, even though plant resources as a whole may have comprised a smaller proportion of the islanders' diets. A related problem is the role of population growth or fluctuation in causing adaptive changes through time. Certainly the aboriginal cultural systems of the islanders would feel the effects of population growth much more quickly and profoundly than would have been the case on the mainland where migration and expansion of the resource base would have been much easier.

A comparison between the adaptations and cultural developments of each of the Channel Islands could be made from the same perspective. The variety and abundance of terrestrial resources is closely related to island size, as island biogeographers have pointed out (e.g., MacArthur and Wilson 1967). Oaks, for instance, are very abundant on Santa Cruz Island and could probably have provided more than enough acorns to the prehistoric populations living on this island, but oaks are much more sparse on Santa Rosa Island and may always have been absent on San Miguel Island. These vegetational differences, which are generally more pronounced in the distribution of arborescent species, would likely have produced significant differences between islands in those aspects of prehistoric subsistence that were derived from terrestrial resources.

The marked differences in the distribution and abundance of both terrestrial and inshore resources between each of the islands and between the islands and the mainland may have formed the basis for the economic differentiation that is documented in Chumash ethnography and ethnohistory. As was pointed out in the section on ethnographic background, the island Chumash apparently produced most of the shell beads and ornaments found in coastal southern California sites. If the beads and ornaments and perhaps other manufactured products were flowing out from the islands in an economic network of trade, what was flowing in? Various food resources are mentioned, but these are difficult to document in the archaeological record of the Channel Islands. Moreover, there does not appear to be any necessary reason for import of food resources to Santa Cruz Island, at least. If this is so, what role did environmental differences play in determining the nature of the Chumash economic system? At the same time, we would wish to know the evolutionary background to this economic system.

The available ethnographic information indicates that economic activity was closely linked to sociopolitical organization. The high social statuses of the village or regional chief and the canoe owner in Chumash society appear to have been defined largely in terms of
economic activities. In addition, it is possible that craft specialists enjoyed high status. What differences in social and political organization existed between each of the islands and between the islands and the mainland? Were some island villages occupied only by craft specialists? Were others occupied only by fishermen or sea mammal hunters? These and similar questions may be investigated through the analysis of the geographic distributions of trade goods, industrial debris such as the byproducts of shell bead manufacture, and mortuary practices reflected in the distribution of grave goods in cemeteries.

The final realm that I would like to highlight centers on the possibility of environmental change affecting prehistoric adaptations on the Channel Islands. Hubbs (1967) indicates that Oxygen-18 analysis has revealed that sea temperature changed through time and that the changes in the distribution of certain species of abalone (Haliotis spp.) and chitons (Cryptochiton spp.) also reflect these changes. Both genera are known to have been exploited aboriginally by Santa Barbara Channel populations. Hubbs' reconstruction of environmental changes is not universally accepted (see discussion in Tartaglia 1975), but there is at least general agreement that climatic—and thus environmental—changes of some sort did take place. Thus, we might expect that both terrestrial and inshore resources fluctuated in their abundance through prehistory and that some aspects of cultural change may be explained by reference to environmental change. Incidentally, another potential source of data for studying environmental change is fossil pollen preserved in sites and alluvial deposits exposed on arroyo walls. Pollen studies have been demonstrated to be feasible on the Channel Islands by Hevly and Hill (1970).

In concluding this section I would like to point out some of the distinctive characteristics of Channel Island archaeological resources that make them important to a much broader range of problems than I have been able to discuss here. The first and most obvious is the unusually good state of preservation of the archaeological resources. There are few comparable regions on the adjacent coastal mainland where the majority of sites are still largely intact. This means that those aspects of prehistoric development held in common between the Channel Islands and the adjacent mainland may be more effectively investigated on the Channel Islands, especially those aspects requiring comparison between sites within a region.

Second, the Channel Islands contain many deep sites with sharply stratified deposits. Because there have been no burrowing animals on the Channel Islands, midden strata are generally much more distinct in island sites than in comparable sites on the mainland. This means that components may be more easily isolated and that the contemporaneity of different types of artifacts and cultural debris in island sites may be established with a much higher degree of certainty. Also, given that little is known about how midden sites were built up through the course of prehistoric occupation, island sites could be studied in order to
establish models of depositional processes that could have potentially broad application in archaeology.

Third, many of the deeper sites on the Channel Islands appear to have been occupied, at least intermittently, over very long periods of time—some in the order of 3000 or 4000 years. Through the study of such sites it would be possible to deal with a variety of research problems that require geographic variability to be held constant while looking at cultural change through long sequences of time.

A fourth characteristic is the great abundance of a variety of different kinds of faunal remains in many of the sites, including many species of fish and shellfish and several species of sea mammals. These remains are actually much more abundant than artifacts per se and would require the excavation of relatively small volumes of midden deposits to obtain representative samples. Consequently, a variety of problems based on analysis of faunal remains could be tackled using data from Channel Island sites.

In conclusion, the archaeological resources of the northern Channel Islands have many kinds of potential for dealing with a variety of archaeological research problems, both regional and general in scope. In fact, it would be no exaggeration to say that the island's archaeological resources should be considered as some of the most valuable on the west coast of North America. It is incumbent, therefore, that as much as possible be done to insure their preservation through responsible management programs.
Environmental Description

Santa Barbara Island is about one square statute mile in area, being roughly triangular in shape with an east-facing, a north-northwest-facing, and a west-southwest-facing coastlines. Its length is approximately 1.8 miles. A ridge with a central saddle runs roughly north-south through the center of the island. The highest peak on the island, on the south-western coast, has an elevation of 635 ft. Marine terraces flank both sides of the ridge, although they are much broader on the eastern side. The eastern terrace is cut by several well-developed canyons. The comparatively irregular coastline consists largely of cliffs with a few narrow sand beaches. Landing on the island is therefore difficult and is best made at only one location on the northern half of the east side. This location is also relatively protected from a heavy surge from the south (Dunkle 1950:270). There are two islets adjacent to the much larger island: Sutil Island (0.02 square statute miles in area), about a half mile off the southerwestern margin of the main island, and Shag Rock, a couple hundred yards off the northern coastline.

The island is made up of breccias and tuffs, and the Pleistocene terrace formation appear to indicate that the island was completely submerged sometime during the early Pleistocene (Dunkle 1950:270). The soils of the terraces, consisting of silts and clays, are deep on the upper portions of the terraces, shallow near the terrace edges, and
nearly absent from the windswept headlands (Dunkle 1950:273).

The island receives about 12 inches of rainfall per year, and the rain occurs almost exclusively in the winter months (October-April), as it does for all of Southern California. Humidity is usually high, and wet fogs are prevalent during the summer months (Dunkle 1950:273-274).

Santa Barbara Island is 38 statute miles from the nearest mainland, being about equidistant from Point Dume (west of Malibu) and Palos Verdes Point. The closest of the other Channel Islands, Santa Catalina, is 24 miles directly east. San Nicolas Island is 27.5 miles to the southwest, San Clemente 39 miles to the southeast, and Anacapa Island 41 miles to the north. Thus, Santa Barbara Island is centrally located in relation to the Northern Channel Island group and the rest of the Southern Channel Islands. Dunkle depicts the island's central location with the following words:

The central location of the island can be most graphically visualized on certain clear, late afternoons, when, from its high central ridge, a magnificent spectacle is presented by the encircling islands. Every island in the entire group can be seen, except San Miguel which is hidden behind Santa Rosa (1950:269).

Conversely, one should be able to see Santa Barbara Island from each of these islands on clear days. These facts, as shall be seen, may be important to the interpretation of the prehistory of the island.

Santa Barbara Island's flora has undergone extensive study, especially in comparison to published studies of the flora of other
Channel Islands. Important sources of information on the island's flora, as well as other aspects of natural history, are found in the works of Dunkle (1942, 1950) and Philbrick (1972). Dunkle reported 77 species of endemic and nonendemic plants on the island, while Philbrick reported 96. The discrepancy is due largely to failures of earlier workers to identify relatively inconspicuous species and the introduction of more exotics since the time of Dunkle's fieldwork (Philbrick 1972:342).

Dunkle (1950:277-280) divides the island's flora into four major communities: a grassland community with *Hordeum* (barley grass) and *Avena* (wildoats) as dominants, an ice plant community with *Mesembryanthemum crystallinum* dominant, a suffrutescent community with *Suaeda californica* (sea-blite) or *Lycium californicum* (box-thorn) dominant, and a coreopsis association with *Coreopsis gigantea* (giant coreopsis) dominant. There are no chaparral or woodland communities on the island. The dominants of the first two communities are both exotic while the dominants of the latter two are both endemic. The exotics, especially *Mesembryanthemum*, have been expanding their area of coverage at the expense of the endemic communities, largely as a result of the patterns of land-use in the earlier part of this century (Philbrick 1972:342-344). At the time of Philbrick's observations 29 of the 96 reported species were introduced to the island (and California) during historic times—some apparently within the last decade (Philbrick 1972:335). Apparently as a result of these floristic changes, five endemic species have become extinct.

When Dunkle made his observations the grassland community covered
the upper portion of the eastern terrace, most of the central ridge, and the perimeter of the main eastern terrace. The ice plant community covers the east and west flanks of the northern peak, the east flank of the south peak, and the north and south ends of the eastern terrace. The suffrutescent community is found primarily on the western terrace where cultivation was not undertaken. The coreopsis association has been the big loser. As an indirect and direct result of man's intervention within this century, the large and nearly continuous stands of Coreopsis gigantea that covered most of the lower half of the eastern terrace have been depleted to a few small colonies, and in their place Mesembryanthemum has become dominant. Much of the depletion took place within the period between Dunkle's 1939-41 observations and Philbrick's 1969-70 observations (Philbrick 1972:343).

Expectably, the fauna of the island is composed of very few species. Native to the island are a night lizard, a small bat, and a deer mouse. During this century rabbits and domestic cats were introduced and became feral. While the cats are extinct, some rabbits apparently still exist on the island in spite of recent extermination programs (Philbrick 1972:353). Seventy different species of birds have been seen on the island. One of these, the endemic Santa Barbara Island Song Sparrow, is now apparently extinct since its nesting habitat of coreopsis stands has largely been destroyed (Philbrick 1972:342, 352). Some of the more abundant sea mammals of the Southern California coast frequent the island's shoreline, including the California sea lion (Zalophus californianus), the northern elephant seal (Mirounga angustirostris)
and the harbor seal (*Phoca vitulina*) Bartholomew 1967).

**History of Land Use**

For being so small and distant from the mainland, an unusual amount of historic human activity has transpired on the island. Philbrick's (1972:344-353) concise history of land use on Santa Barbara Island, particularly with regard to its effect on vegetation, is the basis for this section. As early as 1846 the island may have been used to pasture goats, although the extent of usage is not well documented. Feral domestic cats were reported to be very abundant on the island in the 1890's and early 1900's, and these may have caused the extinction of nesting populations of certain birds. At the turn of the century ice plant (probably *Mesembryanthemum c.*) was reported on the island, and a lobsterman's hut was present. Around 1915 a group headed by the Alvin Hyder family moved to the island, building 11 structures and a series of reservoirs to store rainwater and imported water. They used draft animals to plow field located on the upper portion of the east terrace, and they would burn off the giant coreopsis and ice plant from the areas of their fields. They eventually went into sheepherding, pasturing a maximum of about 200 at any one time. The Hyders also introduced 2000 Belgian hares, but this enterprise was considered a failure because of predation by the feral cats. Other farm animals raised by the Hyders include geese, ducks, chickens, turkeys, pigs, and goats. The Hyders moved off the island in 1926, leaving the rabbits to persist on their own until their apparent extinction sometime before about 1940. The
feral cats persisted up to about 1957.

A lighthouse was established on the northeast corner of the island in 1929 and is still in existence. A lighthouse is now also in place on the southwestern highlands of the island, and a dirt road runs up to it from the landing on the eastern shore. The island along with Anacapa Island, became part of the Channel Islands National Monument in 1938.

Between 1942 and 1946 an aircraft early warning post was established on the island. As part of this operation motor vehicles were used on the island, and dirt roads were constructed. New Zealand red rabbits were introduced during these years, and a few sheep were also grazed. Barracks and other buildings were constructed, and in 1949 the cable car track and wood landing platform that still exist were built.

The rabbits that were reintroduced during this period did not become noticeably abundant until the early 1950's. Apparently feral cats were never again abundant enough to control the rabbit populations, and consequently the rabbit population continued to grow until the island's flora was profoundly affected. Throughout the 1950's the rabbits devastated the coreopsis stands dominant on the eastern side of the island, and in its place the ice plant expanded. A rabbit extermination program was started in 1954 by the National Park Service and the U.S. Fish and Wildlife Service, and as a result, the rabbit population dropped from a peak of about 2600 to a population in 1972 of around 30.

These various historic land use activities inevitably would have affected the condition of the archaeological sites on the island, however impact of these activities is not well documented. Further consideration
of the possible direct and indirect effects of the land use activities will be taken up in a subsequent section.

Description of Projects

Project Name: Archaeological Reconnaissance of Santa Barbara Island, carried out as part of UCLA Archaeological Survey's Channel Islands Research Project.

Principal Investigator: B. K. Swartz, Jr.

Institutional Sponsor: UCLA Archaeological Survey

Dates of Fieldwork: August 8 to 15, 1958


Location of Fieldwork: Their reconnaissance involved "as thorough a survey of the island as possible." Their excavation was restricted to SBaI-1.

Theoretical and Empirical Goals of Research: Determination of whether Santa Barbara Island was occupied prehistorically. Beyond this, the objective was to determine the nature and extent of occupation.

Types of Data Collected: They recorded the location of one archaeological site and made a collection of cultural items from a test excavation at this site.

Site Nos. or Locations from which Data was Collected: SBaI-1

Person-days and Crew Size: A crew of two (Swartz and Sutton) spent two days in their survey of the island for a total of four person-days. Presumably the rest of the time, about five days, was spent in excavation,
for a total of about 20 person-days in excavation.

Data Collection Procedures: Swartz and Sutton report that their survey on the island was thorough; however, they failed to locate more than one of the sites now known to exist on the island. They claim that the ice plant (Mesembryanthemum) covered much of the ground surface of the island, making observation difficult. But since the ice plant does not cover the whole island's surface, and certainly not the surface of every known site, the quality of their survey may be questioned.

Their excavation at SBaI-1 consisted of three 5 x 5-ft. pits aligned on a north-south axis and apparently spaced five feet apart. These pits were labeled nos. 1, 3, and 5. Pit 1 was excavated to a 24-inch depth while pits 3 and 5 were excavated to an 18-inch depth. They apparently excavated each pit in 6-inch depth intervals, and presumably all deposit was screened.

Significant Descriptive and Theoretical Conclusions of the Research: Swartz concludes that the island "was inhabited, but only temporarily or by periodic visits, perhaps for quarrying manufacturing materials" (Swartz 1960:9). Swartz and Sutton "believe that Santa Barbara Island does not offer abundant archaeological materials" (Swartz and Sutton 1958:4). The former conclusion was based on the abundant lithic debris found on the surface of the site and the fact that there is an abundance of cryptocrystalline rock on the island (Swartz 1960:9).

Nature of the Archaeological Collections: The collection from the excavation at SBaI-1 is accessioned under no. 199 in the anthropological collections of the UCLA department of anthropology. The collection
consists of 43 catalog entries, and one 4 x 5" black-and-white negative (neg. no. 1735) is associated with the collection. The accession records include a statement, presumably by Swartz, mentioning that "only a representative sample is cataloged. Specimens from pit 5 were discarded." This statement implies that some of the material collected, possibly including some of that from pits 1 and 3 as well as 5, were discarded. What is meant by a "representative sample" is not clear, and therefore the collection should probably be treated as nonrepresentative. The extant collection consists primarily of quartzite and basalt flakes, however some unmodified bone and shell is also included. A bone abalone pry and a worked bone tube fragment are the most distinctive artifacts.

The collection is stored by the department of anthropology under good conditions, and it is accessible for research purposes.

**Project Name:** Unknown. The work involved a surface reconnaissance of Santa Barbara Island.

**Principal Investigator:** Paul J. Schumacher

**Institutional Sponsor:** National Park Service

**Dates of Fieldwork:** Late summer 1958

**Published and Unpublished Mss.:** A letter from Schumacher to the UCLA Archaeological Survey describing his work is on file at the UCLA Archaeological Survey.

**Location of Fieldwork:** The reconnaissance apparently involved a thorough coverage of the whole island.
Theoretical and Empirical Goals of Research: The goal was apparently an inventory of the archaeological sites on the island and descriptions of their locations. Any information on the site records beyond locational information was apparently added by subsequent workers.

Types of Data Collected: Schumacher recorded the location of four archaeological sites. Site records contain scanty information.

Site Nos. or Locations from which Data Was Collected: SBaI-2 through 5.

Person-days and Crew Size: Unknown

Data Collection Procedures: Unknown. The work at least involved surface reconnaissance.

Significant Descriptive and Theoretical Conclusions on the Research: The survey demonstrated more archaeological resources on the island than reported by B. K. Swartz in 1958.

Nature of the Archaeological Collections: Apparently no collections were made.

Project Name: Unknown. A surface reconnaissance of Santa Barbara Island

Principal Investigator: J. Nichols?

Institutional Sponsor: UCLA Archaeological Survey? However, there is no record of this project in the Archaeological Survey Annual Report.

Dates of Fieldwork: October 1961

Published and Unpublished Mss.: None. The only reference to this work is in the UCLA Archaeological Survey site records for Santa Barbara Island and the UCLA department of anthropology accession records under accession no. 312.
Page Missing.
Location of Fieldwork: The reconnaissance apparently covered most or all of the island.

Theoretical and Empirical Goals of Research: The goal was apparently to reassess the island's archaeological resources, building upon the data base of known site locations.

Types of data collected: Surface collections of artifacts were obtained from SBaI-2, 4, 5, and 6, and the location of one new site, SBaI-6 was recorded. The site record for SBaI-6 is the most comprehensively filled-out of the records for the island's sites on file at the Archaeological Survey.

Person-days and Crew Size: Unknown. The initials of one other person besides J. Nichols appear on the site record for SBaI-6, indicating that the crew may have consisted on only two people. There is no indication of the length of their stay.

Data Collection Procedures: Unknown. The work presumably involved surface reconnaissance and casual surface collection of artifacts and faunal remains.

Significant Descriptive and Theoretical Conclusions of the Research: Record of one more site on the island.

Nature of the Archaeological Collections: The surface collection consists of 33 catalog entries, including mortar and pestle fragments, other ground stone objects, flake tools, and a "fragment of a boat effigy." Ground stone artifacts, the most numerous, are largely of sandstone and basalt (?). Flake tools are of chalcedony or chert. Steatite is also represented. Unmodified shell and mammal bone is also
present in the collection. All items in the collection are provenienced by site number only. The collection is housed under accession no. 312 in the UCLA department of anthropology. The conditions under which the collections are stored is good, and they are accessible for study.

**Project Name:** 7th Dorado Expedition, Western Speleological Institute  
**Principal Investigator:** Phil C. Orr, at least so far as the archaeological observations are concerned.  
**Institutional Sponsor:** Western Speleological Institute, Santa Barbara Museum of Natural History.  
**Dates of Fieldwork:** February 13-16, 1964  
**Published and Unpublished Mss.:** Orr(?) 1964; an unpublished journal of the expedition with mention of having seen an archaeological site. Orr 1964 is an essay on Orr's views (mainly critical) on the quality of management by the National Park Service of Santa Barbara Island.  
**Location of Fieldwork:** The expedition apparently ranged over much of the island's area. No specific mention is made of portions of island subjected to archaeological observation beyond the location of the one archaeological site mentioned in the journal.  
**Theoretical and Empirical Goals of Research:** The expedition's purpose was the "scientific observation of Santa Barbara Island." Archaeological observation of any sort was apparently a minor and casual interest of the expedition.  
**Types of Data Collected:** Description of the location of one archaeological site: "on a steep hillside 900 yards SSW from landing, at elevation of ca. 150-200 ft."
Site Nos. or Locations from which Data was Collected: The site described cannot be correlated with any known site.

Person-days and Crew Size: Does not apply.

Data Collection Procedures: Casual observation of the land surface.

Significant Descriptive and Theoretical Conclusions of the Research:
The opinion is expressed in the journal that the island prehistorically was probably a stopping-off point for voyagers on their way to San Nicolas Island.

Nature of the Archaeological Collections: Apparently no collections were made; none were found in the collections of the Santa Barbara Museum of Natural History.

Project Name: Survey of Santa Barbara Island

Principal Investigator: Charles E. Rozaire

Institutional Sponsor: Los Angeles County Museum and Cabrillo Historical Association

Dates of Fieldwork: May 5 and 6, 1964

Published and Unpublished Mss.: Apparently no report was written. Site records, fieldnotes, and photographs are on file with Rozaire at the Los Angeles County Museum. (These were not available for this overview because of construction at the museum.)

Location of the Fieldwork: Complete area of the island

Theoretical and Empirical Goals of Research: Rozaire's objective was a thorough survey of the island with the intent of checking the locations of sites recorded earlier and locating any other sites not previously
reported.

**Types of Data Collected:** Rozaire located 15 archaeological sites on the island. Only two of these were in the exact spots where sites had previously been reported. Three other sites located by Rozaire were within about 100 yards of previously reported sites, while the rest were apparently never located in previous surveys. Rozaire filled out the conventional UC site records for each of the 15 sites, and he plotted their locations on a contour map of the island.

**Site Nos. or Locations from which Data Were Collected:** Rozaire assigned his own numbers to all of the 15 sites he located and recorded. These are designated R-1 through R-15. See the map of the island for the correlations between Rozaire's site numbers and the numbers used by the UCLA Archaeological Survey.

**Person-days and Crew Size:** Rozaire was accompanied by a crew of two experienced persons. They spent in the order of six person-days to complete the survey.

**Data Collection Procedures:** The survey was done on foot. There is no indication of how the ground was covered in the course of doing the survey.

**Significant Descriptive and Theoretical Conclusions of the Research:** Rozaire was able to demonstrate quite conclusively that all previous surveys were inadequate and that prehistoric utilization of the island was considerably more intensive than previously believed. Rozaire produced thorough descriptions of each site (in terms of the UC site record form), which had not been done for all of the previously reported sites.
Nature of the Archaeological Collections: Rozaire apparently made no collections in the course of the survey.

Project Name: Excavations at Rozaire's Site R-9 on Santa Barbara Island
Principal Investigator: Charles E. Rozaire
Institutional Sponsor: Los Angeles County Museum
Dates of Fieldwork: June 3-5, 1964
Published and Unpublished Mss.: Apparently no report was written.
Fieldnotes, photographs, and collections are housed at the Los Angeles County Museum. (The collections were not available for observation because of construction at the museum.)
Location of the Fieldwork: Rozaire's site R-9, near the northwestern corner of the island.
Types of Data Collected: Rozaire and his crew collected from their excavations all artifacts, flakes, bone, and apparently all shell. Provenience information was also kept.
Site Nos. or Locations from which Data Were Collected: Rozaire's site no. R-9.
Person-days and Crew Size: Rozaire was accompanied by a crew of three experienced persons, and they spent three full days in their excavations, making a total of about 9 person-days of fieldwork.
Data Collection Procedures: Six 5 x 5-ft. square test pits were placed in different portions of the site (no site map was available for the overview). Pits were dug in 6-inch levels, and all deposit was screened through quarter-inch (?) mesh screen. This site was selected for
testing because of the relatively large number of artifacts on its surface. All pits were taken down to sterile deposit, the average depth being about 12 inches. One of the pits was taken down to 20 inches to verify the depth of the archaeological deposit.

Significant Descriptive and Theoretical Conclusions of the Research:
In comparison to Swartz's excavation at SBaI-1 Rozaire was able to demonstrate that at least one site on the island does contain a comparatively wide variety of different classes of artifacts and faunal remains. He has not yet written an analytical report, however.

Nature of the Archaeological Collections: The collection contains an estimated 50 artifacts and perhaps 100 each of flakes and faunal remains. Artifacts include: fishhook fragments, fishhook blank, projectile point fragments, bone awl tips, and mortar and pestle fragments. Mortar and pestle fragments are probably the most abundant classes of artifacts in the collection. Flakes were of chert, milky quartz, and basalt. Faunal remains include bones of fish, sea mammals, and birds, and shells of black abalone, owl limpet, and others. Shell was sparse in the deposit.

Project Name: Archaeological Survey of Santa Barbara Island
Principal Investigator: Marcia Bright (deceased)
Institutional Sponsor: UCLA Archaeological Survey
Dates of Fieldwork: May 21-22, 1966
Published and Unpublished Mss.: Bright 1966
Location of the Fieldwork: All of the island except the "southwest area"
Theoretical and Empirical Goals of the Research: Resurvey of the island with the intent of checking the locations of the known sites and the discovery of any other archaeological resources.

Types of data collected: Bright relocated sites SBaI-1 and 3 and made notes on their condition at the time of her observation. She also discovered some isolated finds whose locations were recorded on a map of the island, labelled "A" through "F", described, and apparently not collected.

Site Nos. or Locations from which Data Was Collected: SBaI-1 and 3 and 6 other localities where isolated finds were made.

Person-days and Crew Size: There was at least one other person with Bright. The minimum number of person-days would probably be two and the maximum would probably be five or six.

Data Collection Procedure: Unknown beyond that the reconnaissance was undoubtedly exclusively on foot.

Significant Descriptive and Theoretical Conclusions of the Research:
Bright verified the presence of at least one other site beyond SBaI-1. She also reported that a number of surface manifestations not closely associated with obvious midden deposits exist on the island. She noted that SBaI-3 appears to have been tested by someone in the past. SBaI-3, in her opinion, has the deepest midden seen on the island (approx. 12 inches) and contains a "heavy concentration of shell, some chipped basalt," and a light tan soil.

Nature of the Archaeological Collections: Bright apparently made no surface collections.
Condition of the Archaeological Resources

As mentioned in the section on the island's environment, the reported data are not adequate for determining the full extent of disturbance to the archaeological resources on Santa Barbara Island. Nevertheless, published comments by various researchers regarding the natural processes and historic human activities that have been in operation on the island, as well as the data contained in an aerial photograph of the island (Philbrick 1972:333), provide some basis for believing that some of the archaeological sites have undergone some destruction.

SBaI-6 (Rozaire's R-3), located in the saddle area between the two peaks on the island, appears to be the most extensively damaged, primarily due to both wind and water erosion and perhaps also some construction that may have occurred at this spot. The erosion is well documented since the aerial photograph of the island shows that the site is located where arroyo-cutting is very extensive. Moreover, the site is situated so as to be exposed to the severe westerly winds. (It is the only site so exposed on the island.) SBaI-2 and 3 (Rozaire's site R-13) appears also to have been affected by arroyo-cutting. In fact, the identification of this site is based on the exposure of shell in an arroyo (Rozaire, personal communication).

The sites in the vicinity of the landing, SBaI-1 (unnumbered by Rozaire) and SBaI-4 (Rozaire's site R-1), are both probably extensively disturbed by the variety of construction and other activities that occurred there. In fact, Swartz (1960:8) documents the fact that SBaI-1 is disturbed.
Beyond these more obvious disturbances to the archaeological sites on Santa Barbara Island, little can be said about any disturbance to the others. The intensity of human activity during the first 50 years of this century undoubtedly has had both direct and indirect impact on all of the sites. Grazing by sheep and goats and burrowing by rabbits are the likeliest candidates for significant disturbers; however, the farming and burning of vegetative cover in the early part of the century appear to have taken place in an area with no archaeological sites. Moreover, the cluster of sites in the northwestern corner of the island appear to be in an area where the farming and other activities were minimal or absent.

Some consideration should also be given to the possibility that some sites may be completely missing due to wave erosion of the coastal cliffs. Norris has measured the rate of wave-cut cliff recession in the vicinity of Goleta, California, as being in the order of six inches per year. While this rate may not be representative of all of the Southern California coasts, even a much slower rate could result in the recession of several tens of feet over possibly two or three thousands of years of prehistory. If sites on Santa Barbara Island have tended to be located along the coast throughout the island's prehistory, then the remaining sites may only represent the latest phase of occupation.

**Evaluation of Past Work**

**Surveys:** Without a personal resurvey, the evaluation of the previous surveys—those of Schumacher, Nichols, Rozaire, and Bright—
must be made in terms of the adequacy of information presented in the reports on surveying techniques and the quantity and quality of the descriptive information reported about the sites. Considering the reporting of survey techniques first, very little information has been presented regarding the survey techniques used in any of the surveys. Presumably all were on-foot surveys, but the manner in which each investigator covered the ground is virtually unknown. It is known that Bright did not cover the whole area of the island and that Rozaire and Swartz did so, but the extent of coverage by the other investigators is unknown.

The time of year of the surveys may have had some effect on their quality. The ice plant becomes very thick in the summer, completely covering extensive areas of the island, but it dies back later on in the fall, making the late fall or early winter the best time to survey. Presumably this is why Swartz failed to locate more than one site in his survey. On the other hand, Rozaire's Survey took place in May, when the ice plant would be becoming verdant and when the annual grasses had not yet died back, yet his survey located all but one of the previously reported sites in addition to several additional ones. Consequently, the care with which a survey was carried out would seem to compensate, at least to some extent, for the presence of extensive ground cover.

The information recorded on the site records varies considerably. Bright, Nichols, and Rozaire all filled in most or all categories of information on the conventional UC archaeological site records for the
island's sites that they recorded. Of these, Rozaire's, on file with him at the Los Angeles County Museum, are the most complete, and they include good sketch maps of each site's location as well.

To summarize, the most comprehensive and best recorded survey, although unpublished, is Rozaire's. It is possible that he located all of the archaeological manifestations on the island that had not been previously reported, excepting individual surface finds such as those reported by Bright. Nevertheless, some of the discrepancies between Rozaire's survey and earlier surveys are perplexing and cannot be resolved without further work. In particular, Rozaire recorded only one site, his R-13, where previous workers reported two--SBaI-2 and 3. Moreover, Rozaire failed to report SBaI-1 in his survey.

**Excavations:** There were only two known professional excavations at sites on Santa Barbara Island: that of Swartz at SBaI-1, in 1958 and that of Rozaire at a site numbered by him as R-9 in 1964. Swartz's excavation was reported in his 1958 manuscript but only mentioned in his 1960 publication. Rozaire's more extensive excavation is unpublished but well-documented by field records.

While Swartz's and Rozaire's excavations differ in magnitude, they seem roughly comparable with regard to technique. Both used the same provenience controls and apparently also collection techniques. However, Rozaire's excavation is associated with extensive fieldnotes and photographs while Swartz's is not. Moreover, apparently all material collected by Rozaire was retained and is curated at the Los Angeles County Museum, while an unknown portion of Swartz's collection was
discarded. Consequently, as a study collection, Rozaire's has considerably more value than Swartz's. In fact, Rozaire's collection, even though comparatively small, could provide considerable insight into how the island was used by its prehistoric inhabitants.

**General evaluation:** The extent of archaeological knowledge generated by all of the archaeological research so far undertaken on the island is still very limited. There is only one published report on the archaeology on the island, and this report is extremely limited in scope and quite misleading regarding the magnitude of archaeological resources that exist on the island. Nevertheless, the existing data base, especially that obtained by Rozaire, certainly has the potential of being converted into considerable knowledge about prehistoric adaptation on the island, even with no further data collection.

**Research Potential of the Archaeological Resources**

In the absence of extensive reporting and analysis of the archaeological data obtained from Santa Barbara Island to date, the evaluation of the research potential must proceed with due caution. The available data indicates that archaeological deposits are not extensive on the island. The number of sites is small (although large in terms of the size of the island) and the deposits, where they can be identified as having any depth at all, are shallow--probably not over 50 cm in depth. Moreover, the area of the sites is, with few exceptions, comparatively small. So, in terms of absolute volume of archaeological deposits on the island, the research potential is rather limited.
Nevertheless, the value of what deposits there are on the island cannot be discounted simply because of their limited volume. The archaeological resources on the island are unique and potentially scientifically valuable simply because they exist on a very small and relatively isolated island. Why would a human population ever bother to inhabit such a small and remote island? There are several hypotheses that may be proposed as possible answers to this question, and each is related to more general theoretical considerations that have characterized California archaeology in recent years.

To begin with, it may be hypothesized that the island was inhabited, at least on a seasonal basis, as a result of population growth and pressure on neighboring and larger islands such as Santa Catalina or on the adjacent mainland. In terms of this hypothesis, the island would be considered to be marginal in comparison to larger islands and the mainland in terms of subsistence resource productivity and the abundance of basic raw materials such as firewood, and consequently, it would only be inhabited when the ratio of population size to resource abundances in more optimal environments made it profitable to do so. This would predictably have been at a comparatively late time in Southern Coastal California prehistory, when adaptations were centered around the exploitation of wide variety of marine resources and the utilization of a sophisticated technology involving the use of seaworthy boats, various types of fishing gear, and perhaps also reliable long-term water storage containers. Parenthetically, this hypothesis would also cover circumstances in which environment changed in the Southern Coastal California region
in such a manner that the island became economically more profitable to exploit. For instance, in a period characterized by a damper and perhaps cooler climate than present, fresh water would possibly have been available on the island during substantial portions of an annual cycle. This condition may have made the critical difference between uninhabitable and habitable, and the island's other resources, even if they were no more abundant than they are today, would have made the island very attractive indeed—especially in consideration of the abundant marine life that inhabits the kelp beds that surround the island.

To put it simply, the archaeological resources of the island are potentially important to the investigation of the theory of ecological (or economic) marginality. Moreover, the archaeological resources are potentially important to the study of population growth and its implications for changing subsistence, technology, and settlement patterns.

The island's archaeological resources may also be important to the elucidation of the trade networks that are known, albeit poorly, to have extended over the whole of the Southern Coastal California region at the time of European discovery. In particular, many of the steatite artifacts found in sites throughout much of Southern California, including the Santa Barbara Channel, are known to have come from quarries on Santa Catalina Island. Given that Santa Barbara Island is centrally located between the Northern and Southern Channel Islands, it may have served as a logistical "stopping-off" point or a "rest-and-refresh" station for those travelling between the islands by boat. Thus, the
island's archaeological resources would be critical to documenting whether or not such an aspect of the Southern Coastal California trade network existed.

A related hypothesis is that the island was used by inhabitants of San Nicolas Island as an intermediate stop between that island and Santa Catalina. The voyages between San Nicolas and Santa Catalina (or the mainland) may or may not have been associated with trade from the perspective of this hypothesis. What is important is the logistical convenience of the location of Santa Barbara Island.

Still another hypothesis has been proposed by Swartz (1960:9). He suggests that the island was used to quarry crypto-crystalline rock, which he asserts is abundant on the island. In Swartz's eyes, then, the island was a source of raw materials that were taken elsewhere, perhaps to neighboring islands.

Finally, the island's archaeological resources are relevant to the study of prehistoric settlement patterns, particularly with regard to the relationship between settlement patterns and resource exploitation. It is readily evident, at the offset, that the sites on Santa Barbara Island tend to be located in those parts of the island relatively more sheltered from the wind. This appears to be the reason why there are no sites on the west side of the ridge running roughly north-south through the middle on the island. Moreover, the concentration of sites on the northern extreme of the island may be related to the types of marine resources available off the northern shore.

This brings up an interesting aspect of the artifact assemblages
obtained from the island—that is, mortar and pestle fragments are relatively abundant on the sites. On the mainland, mortar and pestles are known to have been used to grind acorns into a flour. But, of course, there are no oaks on the island, so the question arises as to what use were these mortars and pestles put. They may have been used to grind other kinds of seeds into flour—for instance, native grass seeds, cactus seeds, or perhaps giant coreopsis seeds. On the other hand, they may not have been used to grind seeds at all, being used instead to pulverize or soften abalone or certain kinds of fishes. In fact, the presence of mortars and pestles on the island gives the impression that prehistoric peoples were utilizing the island for more than just a temporary stop. It would appear that they were there to exploit a wide variety of resources and were probably resident for more than just a few days. Perhaps the island was occupied only during the rainy season when a fresh water supply would probably have been available. But the lack of fresh water during the dry season, even in modern times, does not appear to have been adequately demonstrated. It is possible that one or more of the sea caves, beyond the one reported by Holder (1910:310), does provide enough fresh water to sustain a small group of people for much longer periods than scholars have presumed.

In summary, the unpretentious archaeological resources of Santa Barbara Island may bear on a variety of regional and theoretical interests of archaeologists working in Southern Coastal California. Considering that very little research has been undertaken to determine how the island's archaeological resources relate to the various hypotheses mentioned here
(and probably others as well), their value is even more enhanced.

Recommendations

1. The National Park Service would be best advised to obtain copies of all site records and unpublished reports presently filed at the UCLA Archaeological Survey and with Rozaire at the Los Angeles County Museum as a permanent archive of information on Santa Barbara Island archaeology.

2. A resurvey of the island should be undertaken during the season when vegetative cover is least—probably in November, and care should be taken to accurately map the boundaries of each of the sites so as to reconcile the differences between surveys as much as possible.

3. Small-scale testing and analysis of the findings should be undertaken at a representative sample of sites in order to determine the research potential of the island's archaeological resources. Along with this, radiocarbon dating should be undertaken in order to determine the period(s) of occupation—an important piece of information in determining the relevance of the resources to some of the hypotheses outlined in the previous section.

4. In conjunction with the above recommendation, it is suggested that Dr. Rozaire be contracted to produce a report of the findings from his excavations at the site designated in his records as R-9.

5. Assuming that recommendations 3 and 4 are carried out, certain or all of the sites on the island should be nominated to the National Register.
Environmental Description

Anacapa Island is the smallest and easternmost of the Northern Channel Islands, being five miles from its neighbor, Santa Cruz Island. Of all the Channel Islands, Anacapa is closest to the mainland. The nearest point on the mainland, Port Hueneme, is only 13 statute miles distant. There is no detailed published topographic map coverage of the island (to my knowledge), making the task of accurately mapping the archaeological sites particularly difficult.

The island is actually three elongate islets aligned along a roughly east-west axis. The islets are actually segments of a submarine ridge composed of Miocene Conejo Volcanics with interbedded San Onofre Volcanics (Lipps 1964:1169-1170). The total land area of the islets is 1.1 square statute miles, with West Anacapa comprising about 50 percent of this land area and East Anacapa having slightly less land area than Middle Anacapa. The highest elevations on the islets are 930 feet on West Anacapa, 325 feet on Middle Anacapa, and 250 feet above sea level on East Anacapa. Each of the islets is bounded by steep vertical cliffs except where the ridge of West Anacapa descends to a low terrace on the eastern end of the islet. The cliffs are particularly high on the southern or seaward side of the islets, rising to the ridge tops on each islet. Conversely, the land on the northern side of the islets is more gently sloping. Lipps (1964:1174) points out that the more pronounced wave erosion on the seaward side of the island probably accounts for
the higher southern cliffs. This marked geomorphic contrast between the north and south sides of the islets has been cited by some (e.g., Mc Kusick 1959:77) as a possible reason why the Chumash named the island "Eneeapah," which translates as "deception." That is, the island appears to have a much larger landmass when viewed from the north than it actually does. The modern name is dervied from this Chumash term, and Vancouver was the first European to use the name in a formal sense.

Habitable locations exist on all the islets. West Anacapa, having the largest landmass, has perhaps the least among of relatively flat land while Middle and East Anacapa both have relatively flat-lying terraces. There are several landing spots on the islets, all of them difficult. Perhaps the most accessible location is the sandy beach at LeDreau Cove on the north side of West Anacapa near the eastern end of the islet. Canyons are best developed on West Anacapa, primarily because the islet's breadth is about three times that of the other two. Fresh water is today restricted to four reported locations (Mc Kusick 1959:76), all of which apparently are located along the sea cliffs not far above sea level.

Rainfall on Anacapa averages between 12 and 13 inches annually and is concentrated in the months from December through March, as is typical of the Mediterranean climate of Southern Coastal California (Dunkle 1950:254). Summer fogs are frequent and dense enough to provide a secondary although minor source of fresh water for the island biota.

The natural environment of Anacapa Island is not known in as much detail as that of Santa Barbara Island. Nevertheless, there have been
geological and paleontological studies of the islets (cf. Lipps 1964), several botanical surveys of varying degrees of thoroughness (cf. Dunkle 1942, 1950), and several surveys of the island's fauna (cf. Banks 1966). My summary is based primarily on these sources.

The flora of Anacapa is relatively diverse, ranging from small herbaceous annuals to oak trees of moderate size. Dunkle (1942:128) lists 154 indigenous plant species that have been found on the islets, 24 of which are endemic. Another 25 species found on the islets are introduced or exotic. West Anacapa, as to be expected, has the widest floristic diversity, primarily because of the different habitats afforded by the small canyons on its north side.

Summarizing from Dunkle (1942, 1950), Banks (1966:175), and Mc Kusick's abstraction of Sumner's study (Mc Kusick 1959:75-76), there are at least four major plant communities on Anacapa. The steep southern slopes of the islets are variously reported to be covered with coastal sage (*Artemisia californica*) (Dunkle 1950:288-89) and dense patches of prickly-pear cactus (*Opuntia oricola*) (Banks 1966:175). Grasslands occur on the terraces of each of the islets, although Dunkle (1950:296) suspects that the grasslands were less prevalent on the two western islets prior to sheep grazing. On the relatively flat portions of the tops of the islets the grasslands are broken by stands of giant coreopsis (*Coreopsis gig.)*. A "low shrub savanna" occurs on West Anacapa which includes, besides various grasses, *Haplopappus canus* (no common name), *Eriogonum arborescens* (buckwheat), and *Baccharis pilularis* (coyote brush). The heads of the canyons on West Anacapa are filled with dense groves of
Quercus tomentella (live oak), which forms the fourth plant community on the island. Also occurring in some of these groves are Heteromeles arbutifolia (toyon) and Prunus Lyonii (Catalina cherry). Mesembryanthemum chilense (really crystallinum, ice plant) also occurs on the island, but there is no indication of its extent or expansion since introduction. Expectably, species of fauna on the island are very few in number. Banks (1966:175) reports 69 species of birds, five species of mammals, two species of reptiles, and one species of amphibian. The native white-footed mouse (Peromyscus maniculatus) is common on all three islets. Two other mammals are recently introduced European species: the European rabbit (Oryctolagus cuniculus) identified as the European hare, Lepus europaeus, by von Bloeker 1967:245-46), present as of 1963 on East Anacapa, and the black rat (Rattus rattus). Sea mammals abound in the waters surrounding the islets where kelp provides habitats for a variety of fishes that they exploit. Holder (1910:188) reports seeing several sea lion (Zalophus californianus) "rookeries" on the shores of Anacapa, however he may have meant that several rocky shelves were popular sea lion resting spots. Expectably other sea mammals (e.g., the harbor seal, Phoca vitulina) either do or probably did frequent the waters off the islets in pre-European times. Although not reported in detail, various species of shellfish are probably abundant and accessible along the shores of each islet. Mussel (Mytilus californianus) and abalone (Haliotis spp.) probably predominate.

In summary, the environment of Anacapa island would probably provide sustenance to a small population of aboriginal inhabitants for perhaps a full annual cycle, especially if many of the food resources were
derived from the intertidal and kelp habitats around the islets. That the Chumash Indians were apparently not living on Anacapa on a permanent basis at the time of European contact does not preclude the possibility that aboriginal populations were at an earlier time.

History of Land Use

The history of land use of Anacapa Island is not well documented in the literature. Holder (1910:189) reports that the island was used to pasture several hundred sheep by "sheepmen from San Buenaventura" at the time of his observations in the early part of this century. However, there is some question whether all of the islets were exploited in this manner, the evidence being firmest for Middle Anacapa (Dunkle 1950:261). Presumably this use of the island extends back for some decades into the last century. At least one fisherman lived on West Anacapa for many years (Banks 1966:175), and LeDreau Cove on West Anacapa apparently takes its name from a fisherman who lived there (Rozaire, personal communication, see also Mc Kusick 1959:76). The sheep were reportedly taken completely off the island in 1938 when it was included along with Santa Barbara Island in the Channel Islands National Monument.

A lighthouse has existed on East Anacapa since 1912. Prior to 1932, this lighthouse was unattended, but it has been manned by a Coast Guard crew ever since (Hillinger 1958:105). The simple road system that extends over much of East Anacapa and the landing facilities on the north side of the islet were built in conjunction with the lighthouse facilities.
Hillinger (1958:110) reports that the Los Angeles County Museum introduced rabbits to the island in 1935 (see also Miller 1959:172-3), however, Banks (1966:183) was told that the rabbits were either introduced during the Second World War as an emergency food supply for Coast Guard personnel or were the result of pet rabbits escaping into the wild. They apparently reached a top population of around 1000 in the early 1940's, and in 1947-48 the population declined rapidly due to depletion of food supply (Hillinger 1959:105). Banks (1966:183) indicates that the population in the mid-1960's consisted of only a few rabbits on the eastern extreme of the islet.

Description of Projects

Project Name: de Cessac Expedition to the Channel Islands
Principal Investigator: L. de Cessac
Institutional Sponsor: The French Ministère de l'Instruction publique
Dates of Fieldwork: Sometime within the years 1877-79
Published and Unpublished Mss.: Only brief accounts of the expedition were written by Hamy and de Cessac, both of which have been republished by Heizer. There was never any comprehensive report of the expedition, and most of the original records kept by de Cessac are apparently lost.
Location of Fieldwork: Somewhere on Anacapa Island
Theoretical and Empirical Goals of Research: de Cessac and his sponsors were primarily interested in exploration and discovery of unique archaeological resources. Their collecting seems to have been partly oriented toward producing exhibitable museum specimens.
Types of Data Collected: Collections were made of artifacts and human skulls from burials. De Cessac probably emphasized the collection of unique and complete artifacts. He apparently did not keep accurate provenience records as to where on the Santa Barbara Channel his materials came from. If so, these records are apparently lost.

Site Nos. or Locations from which Data Were Collected: De Cassac visited one or more of the Anacapa islets, and he apparently undertook some limited excavation at at least one site, however he does not mention the islet or islets from which he collected. He insinuates that he collected all of his items from one "little village."

Person-days and Crew Size: Apparently a very short time was spent on Anacapa--probably no more than a few days. Crew size is unknown.

Data Collection Procedures: De Cessac provides no information on the nature of his excavations. He was apparently interested in cemetery excavation, and he undoubtedly exercised little or no provenience control--in other words, his excavations probably conformed to the norms of the day, being rather haphazard.

Significant Descriptive and Theoretical Conclusions of the Research: De Cessac demonstrated that aboriginal occupation did take place on the island. He was apparently the first investigator to demonstrate this.

Nature of the Archaeological Collections: De Cessac mentions collecting "two skulls and a basin," the latter probably being a mortar. There is no knowledge as to whether these items are still curated by the Musée de L'Homme in Paris.
Project Name: Unknown. Yate's expedition to the Channel Islands

Principal Investigator: L. G. Yates

Institutional Sponsor: Unknown. He may have sponsored his own work.

Dates of Fieldwork: 1880's (?)

Published and Unpublished Mss.: Yates 1890:46-47. Yates alludes to his visit to Anacapa Island in his article.

Location of Fieldwork: Somewhere on Middle Anacapa. He may also have made his collections in a shelter site on west Anacapa, but this is very uncertain.

Theoretical and Empirical Goals of Research: Yates was primarily interested in exploration and discovery of unique archaeological resources. He was also interested, if not more so, in many different aspects of natural history, and the bulk of his collecting appears to have been in terms of these other interests.

Types of Data Collected: A small collection of artifacts was made.

Site Nos. or Locations from which Data Were Collected: Yates visited at least one site on Anacapa Island. He mentions in his article a cave referred to him as Freshwater or Indian Cave, however, it is not obvious that this was even on Anacapa Island, since he was speaking of caves on the other Channel Islands in the same context. Notes associated with items in his artifact collection indicate that he visited at least one open site on Middle Anacapa.

Person-Days and Crew Size: He makes no mention at all of how much time he spent on Anacapa Island, and it is not evident that he was working with a crew.
Data Collection Procedures: He does not mention at all how he obtained his collection.

Significant Descriptive and Theoretical Conclusions of the Research: None.

Nature of the Archaeological Collections: The Yates collection from Anacapa Island, curated by the Santa Barbara Museum of Natural History, contains the following: A yucca-leaf(?) plaited sandal, a shist stone disk from the top of Middle Anacapa, and a doughnut stone from "middle of Anacapa" are the only items specifically attributed to Yates. Also in the collection, but not as certainly attributed to Yates' collecting, are the following: 2 seagrass 3-strand braided rope fragments, about 25 bladelets that are either blanks or tipped, misc. shell and stone beads, 1 fishhook fragment, 1 complete fishhook. This collection is accessible and available for study.

I personally question the attribution of the plaited sandal to Anacapa Island. It strongly resembles plaited sandals from the American Southwest.

Project Name: Unknown. Rogers' Reconnaissance of the Channel Islands

Principal Investigator: David Banks Rogers

Institutional Sponsor: Santa Barbara Museum of Natural History

Dates of Fieldwork: Sometime in the 1920's

Published and Unpublished Mss.: Rogers 1929:262. No associated fieldnotes could be located at the Santa Barbara Museum of Natural History.

Location of Fieldwork: He may have only landed on West Anacapa, although there is no specific mention of where he visited on the islets in his report.
Theoretical and Empirical Goals of Research: Rogers' reconnaissance was primarily exploratory. He was apparently doing a survey in order to determine where he would spend his time in excavation in a later phase of his work.

Types of Data Collected: Record of the presence of archaeological sites on Anacapa Island.

Site Nos. or Locations from which Data Were Collected: Unknown.

Person-days and Crew Size: He probably made a very cursory survey on foot.

Significant Descriptive and Theoretical Conclusions of the Research: Rogers believes that the sites were only temporarily occupied by Canalino populations—that there were no permanent villages on the island. His description of his findings consume only one short paragraph in his book.

Nature of the Archaeological Collections: Rogers apparently made no collections.

Project Name: Channel Islands Biological Survey by the Los Angeles County Museum

Principal Investigator: Richard Van Valkenburg(?)

Institutional Sponsor: Los Angeles County Museum

Dates of Fieldwork: McKusick, apparently using information supplied by M. Wissler of the Los Angeles County Museum, attributes the survey to the year 1939. However, Comstock (1946:100, 102) mentions archaeological observations on Anacapa having taken place in 1941.

Published and Unpublished Mss.: A cursory report in the form of an
unpublished manuscript is on file at the Los Angeles County Museum. Mc Kusick published this manuscript as an appendix to his report (1959). The manuscript is unsigned but was attributed to Van Valkenburg by Mildred Wissler on the museum staff. It is possible that Wissler was mistaken, since the only archaeologist mentioned by Comstock as having visited Anacapa Island was a person named John Shrader.

**Location of Fieldwork:** West and Middle Anacapa only.

**Theoretical and Empirical Goals of Research:** The museum archaeologist's survey was associated with a wide-ranging biological survey. The archaeologist's objective appears to have been the recording of locations of archaeological sites.

**Types of Data Collected:** Locations of sites on Middle and West Anacapa with brief descriptions of each.

**Site Nos. or Locations from which Data Were Collected:** Mc Kusick believes that the archaeologist visited and described the following sites recorded by him: AnI-5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 21. These sites are located on West and Middle Anacapa.

**Person-days and Crew Size:** No indication is given that any more than the museum archaeologist was involved in the archaeological survey. The amount of time spent in the survey is not given; however, if the expedition is really that mentioned by Comstock, then it is known that the museum party's stay on Anacapa lasted five days.

**Data Collection Procedures:** A comparatively thorough survey was made on foot, but there is no indication as to how thorough his coverage of the islets was.
Significant Descriptive and Theoretical Conclusions of the Research:
The archaeologist presents brief descriptions of each site located, giving area dimensions and estimated depths of deposits. This report is the first detailed account of the nature of sites on Anacapa Island. 

Nature of the Archaeological Collections: The archaeologist collected a number of "unfinished arrowheads" from a site Mc Kusick believes to be AnI-11. The location of this collection is unknown.

Project Name: None. Orr's Survey and Excavation on East Anacapa
Principal Investigator: Phil C. Orr
Institutional Sponsor: Santa Barbara Museum of Natural History
Dates of Fieldwork: March 9-10, 1956.
Published and Unpublished Mss.: Orr wrote no report of his work; however, he filled out site records on file at the Santa Barbara Museum of Natural History, using his numbering system for sites recorded by UCLA as AnI-1 through 4. Mc Kusick (1959:77) refers to Orr's work.
Location of Fieldwork: Orr restricted his fieldwork to East Anacapa during this expedition; however, he mentioned in personal communication to Mc Kusick that he visited Fish Camp on West Anacapa at a later date.

Theoretical and Empirical Goals of Research: Apparently Orr wished to make an inventory of the archaeological sites on East Anacapa. Reports to him of archaeological resources on East Anacapa may have provided the inducement to make this survey.
Types of Data Collected: Locations of sites on East Anacapa with brief descriptions of each site.
Site Nos. or Locations from which Data Were Collected: He recorded AnI-1 through 4 on his record forms. He designated the sites 129.2 through 129.4 on his records. No record exists for 129.1, although it is recorded on his small scale map of East Anacapa. He undertook his test excavation at AnI-3 (129.3).

Person-days and Crew Size: Orr was accompanied by a crew of two. One to 3 person-days were spent in the survey, and two to three person-days were spent in the excavation.

Data Collection Procedures: His survey was apparently on foot, and he probably covered the whole islet. The thoroughness of his survey is unknown. Orr excavated a 5x5-ft. square test pit into AnI-3, however he gives no indication of his collection procedures.

Significant Descriptive and Theoretical Conclusions of the Research: Orr's survey was the first relatively systematic survey of East Anacapa. It is comparable to Van Valkenburg's(?) survey of Middle and West Anacapa.

Nature of the Archaeological Collections: No collections from Anacapa were located at the Santa Barbara Museum of Natural History that pertain to Orr's work. There are about 10 photographs of Orr's work on file at the museum, and one shows a private collection made by one Larry Boylan from Anacapa sites. This collection includes five points made of black or grey chert.

Project Name: Archaeological Reconnaissance on Anacapa Island, carried out as a segment of the UCLA Archaeological Survey's Channel Islands Program.
Principal Investigator: M. B. Mc Kusick
Institutional Sponsor: UCLA Archaeological Survey
Dates of Fieldwork: July 29 - August 1, 1958
Published and Unpublished Mss.: Mc Kusick and Clune 1958, Mc Kusick 1959
Location of Fieldwork: Mc Kusick and Clune apparently spent most of their time on East Anacapa, and West Anacapa was also briefly visited (cf. Mc Kusick 1959:82).
Theoretical and Empirical Goals of Research: The survey was undertaken as part of a program to obtain basic information on the nature of the archaeological resources on the Channel Islands. The immediate objective of their survey was to record all sites on East Anacapa.
Types of Data Collected: Locations of archaeological sites on East Anacapa, with brief descriptions of each, using the conventional UC site record form.
Site Nos. from which Date Were Collected: AnI-1 through 4.
Person-days and Crew Size: The crew consisted of Mc Kusick and Clune. Their manuscript mentions that four days were spent in the survey, but Mc Kusick mentions in his publication that only two days were spent. Therefore, the number of person-days spent in the survey was either four or eight, the former probably being closer to being correct.
Data Collection Procedures: Their foot survey apparently covered the whole islet. They do not mention the manner in which the ground was covered.
Significant Descriptive and Theoretical Conclusions of the Research:
Mc Kusick's report is the first published survey since the early
explorations of Yates, Rogers, and others. It essentially duplicates
the unpublished survey of Phil Orr.

Nature of the Archaeological Collections: The surface collections derived
from this project were accessioned with those obtained in December 1958.
The site records are on file at the UCLA Archaeological Survey, however,
the map on which they were originally plotted could not be located by
Survey personnel. A copy of the missing map was made by C. Rozaire and
is on file at the Los Angeles County Museum.

Project Name: Anacapa Expedition, carried out as a segment of the UCLA
Archaeological Survey's Channel Islands Program.

Principal Investigator: M. B. Mc Kusick (C. Rozaire directed the
excavation at AnI-8)

Institutional Sponsor: UCLA Archaeological Survey

Dates of Fieldwork: December 19-22, 1958

Published and Unpublished Mss.: Mc Kusick 1958, Mc Kusick 1959, Rozaire
1959, Swartz 1959.

Location of Fieldwork: Survey of Middle and West Anacapa, excavation at
AnI-8 at Le Dreau Cove on West Anacapa.

Theoretical and Empirical Goals of Research: The survey was undertaken
as part of a program to obtain basic information on the nature of the
archaeological resources on the Channel Islands. Mc Kusick's collection
and analysis of midden samples had the purpose of seriating sites on a
time scale. The excavation at AnI-8 apparently had the purpose of
collecting a stratigraphic sample of material in order to help in the
Page missing.
construction of a chronology for the island.

Types of Data Collected: Mc Kusick recorded minimum information on the sites located during his survey on the conventional UC archaeological site record forms, and he plotted the locations of the sites on a very small scale map. In addition he collected from the surfaces of sites on Middle Anacapa shallow midden samples. Rozaire collected artifacts and faunal remains from the excavations at AnI-8.

Site Nos. from which Data Were Collected: AnI-5 through 21

Person-days and Crew Size: Mc Kusick spent three days alone surveying Middle and West Anacapa. He mentions spending only a half day surveying West Anacapa west of Le Dreau Cove. Rozaire and a crew of three spent three days in the excavation at AnI-8, making a total of 12 person-days.

Data Collection Procedures: In the Middle Anacapa survey, Mc Kusick apparently covered the whole area of the island (although Rozaire's subsequent surveys indicate that this is probably not so). Mc Kusick's midden sample collection from sites on Middle Anacapa involved obtaining one 96 cu. in. sample of midden per site by scraping up the midden from the surfaces of the sites. Samples were screened in the field through quarter-inch-mesh screen, with all residues retained for analysis. Four samples instead of one were collected from a cut bank at AnI-6. The excavation at AnI-8 involved a 6 by 18 ft. trench with an estimated average depth of three feet, making a total of about 324 cu. ft. of excavated deposits. About one-sixth of the total deposit was excavated. No clear indication of provenience controls kept in the course of excavation beyond that the deposit was excavated in 6-inch levels, and
all deposit was screened through one-half-inch mesh screen. The burial encountered in the excavation is plotted on a map of the excavation, but no depth is given. The depth of a fire hearth feature is given, but its horizontal location is not indicated on the map of the excavation.

**Significant Theoretical and Descriptive Conclusions of Research:**

Mc Kusick attempted to construct a chronology based on a seriation of the abalone-mussel ratios of the midden samples taken from sites on Middle Anacapa. This is the only known example of such an endeavor. The excavation at AnI-8 revealed the presence of an apparently late or Canalino occupation, as indicated by the presence of chert bladelets and cores and a burial in a flexed position. The stratigraphic change in the abundance of different species of shellfish at AnI-8 appears to reflect some sort of change in subsistence or settlement pattern.

**Nature of the Archaeological Collections:** The Collection obtained from the surfaces of the sites on all three islets (apparently including that obtained from Mc Kusick and Clune during their summer 1958 survey on East Anacapa) are housed by the UCLA department of anthropology under accession number 206. The collection is accessible for study. The surface collections from AnI-2, 3, 5, 6, 11, and 19 consist of flake tools, cores, bladelets, fishhooks, a bone barb, tarring pebbles, knives, points, and a sandstone bowl. The collection from AnI-8 consists of 30 items altogether and includes principally chipped stone items: scrapers, knives, multiface cores, choppers, 1 bladelet (microblade) core, 1 bladelet, and 1 complete and 1 incomplete burial.
Project Name: Rozaire's 1961 "Cursory Survey"

Principal Investigator: Charles Rozaire

Institutional Sponsor: Sierra Club

Dates of Fieldwork: June 24-25th, 1961

Published and Unpublished Mss.: Rozaire 1961

Location of Fieldwork: Rozaire surveyed the central portion of Middle Anacapa and a small portion of the top of West Anacapa.

Theoretical and Empirical Goals of the Research: Rozaire was a member of a Sierra Club expedition, and his activities were governed by the club's activities. Since it was convenient for him to do so, he recorded any sites that he encountered.

Types of Data Collected: Rozaire filled out thoroughly the conventional UC site record form for each site he encountered. These included sketch maps of the site locations.

Site Nos. from which Data Were Collected: Rozaire recorded one site on West Anacapa, which he gave the temporary designation of Site "A". The location of Rozaire's site does not appear to correlate with the location of any site recorded by Mc Kusick, however, from the description Rozaire suspects that his site correlates with AnI-11, which he feels was mismapped by Mc Kusick. Rozaire recorded four sites on Middle Anacapa, none of which appear to correlate with sites recorded by Mc Kusick. The UCLA Archaeological Survey, to whom Rozaire gave copies of his site records, eventually assigned the numbers AnI-22, 23, and 24 to three of Rozaire's four sites on Middle Anacapa.

Person-days and Crew Size: Rozaire spent the better part of one day in
the Middle Anacapa survey and only a few hours in the West Anacapa survey. While he was accompanied by members of the Sierra Club, he worked alone.

Data Collection Procedures: Rozaire carried out a casual foot survey with no intention of making a thorough survey of either Middle or West Anacapa. Nevertheless, the area covered on Middle Anacapa was apparently covered thoroughly.

Significant Descriptive and Theoretical Conclusions of the Research:
Rozaire was able to demonstrate the serious shortcomings in Mc Kusick's 1958 surveys of Anacapa Island.

Nature of the Archaeological Collections: Apparently no collection was made.

Project Name: Rozaire's 1962 "Archaeological Site Survey of Anacapa Island."

Principal Investigator: Charles Rozaire

Institutional Sponsor: Nevada State Museum

Dates of Fieldwork: May 26-30, 1962

Published and Unpublished Mss.: Rozaire 1962

Location of the Fieldwork: West and Middle Anacapa, excluding the inaccessible eastern extreme of Middle Anacapa.

Theoretical and Empirical Goals of the Research: Rozaire wished to obtain accurate records of sites on West and Middle Anacapa, and he wished to assess the nature of the archaeological record on these islets.

Types of Data Collected: Rozaire thoroughly filled out UC site record
forms for six sites on Middle Anacapa beyond the four recorded by him in 1961. He labelled these E through J. He also similarly filled out records for AnI-5 and AnI-6 at Le Dreau Cove on West Anacapa. In addition, he put in a small test pit into AnI-6, collecting a number of artifacts (mostly bladelets) and a sample of fish and sea mammal bone. Rozaire failed to locate any more sites on West Anacapa beyond the sites at Le Dreau Cove and the one he recorded in 1961 west of the cove.

Site Nos. from which Data Were Collected: Rozaire recorded sites on Middle Anacapa labelled by him as "E" through "J". He also re-recorded AnI-5 and 6 on West Anacapa.

Person-days and Crew Size: Rozaire was accompanied by one other co-worker. They spent one day on West Anacapa and one day on East Anacapa in their survey. They spent a portion of one day in testing the AnI-6 deposit.

Data Collection Procedures: Rozaire believes that he made a thorough foot survey of West and Middle Anacapa, excluding the inaccessible eastern extreme of Middle Anacapa. However, he gives no indication of how the ground was covered. The test pit dug into AnI-6 was 30x40 inches and was dug to the base of the deposit at about two feet below surface. He gives no indication of vertical controls, if any, and he does not say whether the deposit was screened.

Significant Descriptive and Theoretical Conclusions of the Research: Rozaire attempted to reconcile his survey with that of Mc Kusick. He concludes that there are errors in the numbering of sites on Mc Kusick's published map and that site locations were not even plotted with rough
Pages missing.
accuracy on the small-scale map used by Mc Kusick. The errors on the published map of site locations on West Anacapa are as follows: "12 should be 14, 14 should be 12, 8 should be 5, 5 should be 6, and 6 should be 8." He suspects that the one site he recorded west of Le Drewu Cove may be AnI-11, but this is far from certain since there is considerable discrepancy between Rozaire's site location and Mc Kusick's. Concerning Mc Kusick's locations of sites on Middle Anacapa, Rozaire believes that possibly only AnI-17 is plotted by Mc Kusick where it should be.

Nature of the Archaeological Collections: The collection from AnI-6 is apparently housed at the Los Angeles County Museum, although it is presently inaccessible due to construction. Rozaire obtained from the test pit over 200 bladelets, a bladelet core, five bone barbs, and a shell fishhook blank. From the surface of the same site bladelets, tarred pebbles, awl tips, a fishhook shank, olivella disc beads, a steatite bead, and a willow-leaf point were collected.

Project Name: Unknown. Survey by K. Johnson
Principal Investigator: Keith Johnson
Institutional Sponsor: UCLA Archaeological Survey
Dates of Fieldwork: August 18-19, 1962
Published and Unpublished Mss.: None. The project is only mentioned in the UCLA Archaeological Survey Annual Report, 1962-63, p. xiii.
Location of the Fieldwork: West Anacapa
Theoretical and Empirical Goals of Research: Unknown
Types of Data Collected: Unknown
Site Nos. from which Data Were Collected: Unknown
Person-day and Crew Size: No crew is mentioned, but the reference in the Archaeological Survey Annual Report indicates that four person-days were spent in the project.
Data Collection Procedures: Unknown
Significant Descriptive and Theoretical Conclusions of the Research: None
Nature of the Archaeological Collections: A search through the UCLA department of anthropology collection accession records failed to reveal any collection derived from this project.

Project Name: Unknown
Principal Investigator: Charles Rozaire
Institutional Sponsor: Nevada State Museum
Dates of Fieldwork: July 4-7, 1963
Published and Unpublished Mss.: Rozaire does not have a report of his work undertaken in this project. Maps, photographs, and other records are on file with him at the Los Angeles County Museum.
Location of Fieldwork: Excavation was undertaken at AnI-8 on West Anacapa, and Rozaire performed a complete survey of East Anacapa as well. This was also apparently the time when he located three more sites on West Anacapa and one more site on Middle Anacapa, although he does not specifically remember this.
Theoretical and Empirical Goals of the Research: Rozaire wished to obtain a complete sample from AnI-8 since this site was so vulnerable to looting
by visitors to the National Monument. (A burial had been reported eroding out of this site a short time earlier.) He also wished to complete his survey of Anacapa in the course of this project.

Types of Data Collected: Rozaire thoroughly filled out UC site record forms for the East Anacapa sites (and apparently also for the three new West Anacapa and the one new East Anacapa sites). They also collected cultural materials from the excavation at AnI-8, which included one burial missing its cranium.

Site Nos. from which Data Were Collected: The excavation took place at AnI-8. Rozaire re-recorded AnI-1 through 4 on East Anacapa, and he apparently also recorded his site "K" on Middle Anacapa and his sites "B" and "C" on West Anacapa.

Person-days and Crew Size: One other person accompanied Rozaire in his survey. While the survey was going on, a crew of four experienced excavators carried out the excavation at AnI-8. Therefore, around 6 to 8 person-days were spent in survey and about 12 to 16 person-days were spent in the excavation.

Data Collection Procedures: Rozaire appears to have undertook a thorough foot survey of East Anacapa, however there is no information available on the manner in which he covered the ground. There is also no information on the nature of his excavations at AnI-8 since Rozaire did not have access to his fieldnotes at the time of my inquiries. Presumably the data collection techniques resembled those of the 1958 excavation at AnI-8.

Significant Descriptive and Theoretical Conclusions of the Research: Rozaire completed his survey of Anacapa Island in the course of this
project. Since analysis of the collection from AnI-8 has not yet been undertaken, no other conclusions are presently available.

**Nature of the Archaeological Collections:** I did not have access to these collections due to construction at the Los Angeles County Museum. Presumably they are similar to the earlier collections from this site.

**Project Name:** Unknown. Excavations at AnI-2 in 1970  
**Principal Investigator:** Clement W. Meighan  
**Institutional Sponsor:** UCLA department of anthropology  
**Dates of Fieldwork:** Sometime in 1970.  
**Published and Unpublished Mss.:** No account of this project is known to exist. Reference to the work having been undertaken was found in the UCLA department of anthropology collection accession records under accession no. 571.  
**Location of Fieldwork:** Site AnI-2 on East Anacapa.  
**Theoretical and Empirical Goals of Research:** Unknown.  
**Types of Data Collected:** A collection of artifacts and faunal remains from an excavation.  
**Site Nos. from which Data Were Collected:** AnI-2  
**Person-days and Crew Size:** Unknown  
**Data Collection Procedures:** Apparently one test pit was dug to about 18 inches below surface. A surface collection was also made.  
**Significant Descriptive and Theoretical Conclusions of the Research:** Apparently none.  
**Nature of the Archaeological Collection:** A collection of 16 artifacts and 26 faunal fragments are housed by the UCLA department of anthropology
under accession no. 571. The artifacts include chert and quartzite utilized flakes, a chert reamer, a sandstone pestle fragment, a quartzite chopper, a chert core, and a quartzite biface. The faunal remains are mostly seal bones. The collection is accessible for study.

Condition of the Archaeological Resources

Because of the detail provided in Rozaire's site records, some relatively specific comments may be made about the condition of archaeological sites on Anacapa Island. It is evident that there is considerable variation in condition from intact or nearly intact sites to sites that are nearly completely removed. Rozaire's Middle Anacapa sites "B" and "E" through "H", all have foot path running over them, which may have some deleterious effect on "C" in particular. Site "D" on the same islet apparently has been almost completely destroyed by wavecut cliff recession, and Rozaire recommends salvage before the site is completely gone. Sites "F", "G", and "I", on Middle Anacapa are in a similar condition.

On West Anacapa, AnI-5 has been dug into for the construction of buildings once located on the site, and Rozaire believes that construction of the buildings destroyed most of it. The lower end of AnI-6 has also been affected by construction that involved earth-moving to produce two level areas for buildings that no longer stand. Rozaire's site "A" on West Anacapa is heavily eroded, and a path crosses the site. I was not able to see Rozaire's records for AnI-1 through 4 on East Anacapa, but his map indicates that a road passes directly through AnI-2.
The sites that are badly disturbed by cliff recession may indicate that some sites are already completely destroyed by this natural process. In particular, sites that may have once overlooked the south coast may have been removed relatively quickly after abandonment.

Because of the more intensive use of East Anacapa in this century, the sites on this islet are likely in relatively poorer condition in comparison to those on the other islets. The burrowing of the rabbits would probably have affected all of the East Anacapa sites, and the construction of the buildings and roads in close proximity of the sites probably also has resulted in some damage. Perhaps more significant damage has been caused by the Coast Guard personnel who have lived on the islet for several decades now. Orr described a private collection taken from one or more sites on East Anacapa, and Hillinger (1958:109) reports that at the time of his visit two of the crew living on the island had obtained Indian skeletons and that "nearly all the men have fine collections of arrowheads." There is no reason to assume that looting by Coast Guard personnel has not been going on for many years.

**Evaluation of Past Work**

**Surveys:** Without question Rozaire's survey work is much more accurate than Mc Kusick's. There is really no comparison. Rozaire's descriptions of the site locations are detailed, and he produced sketch maps of each site location. Moreover, he drafted a large-scale map (using aerial photographs?) on which he plotted his sites. Mc Kusick's site records are nearly completely lacking in locational information, and
he apparently only plotted site locations on the small-scale map appearing on the nautical chart covering this portion of the Santa Barbara Channel. On top of this, as Rozaire points out, the information on McKusick's site records is not consistent with the information presented in his published report. In fact, the published map of Anacapa site locations does not even agree with the one that used to be on file in the UCLA Archaeological Survey.

All of these problems pertain to sites on Middle and West Anacapa. Rozaire, McKusick, and Orr all appear to completely agree with each other on the locations of sites on East Anacapa, although, here again, Rozaire's map (and probably also his site records) is the most detailed.

In sum, Rozaire may have located nearly all of the sites that exist on the unsurveyed eastern extreme of Middle Anacapa and in the more rugged portions of West Anacapa. Even more confidence in Rozaire's surveys would be possible had he mentioned the manner in which he covered the ground, which neither he nor the other surveyors specified.

Excavations: Rozaire's excavations, excepting his published 1958 excavation, have not yet resulted in detailed descriptive and analytical reports. Even his 1958 report, however, should ideally have been better documented with regard to data collection techniques and provenience controls kept during excavation. Nevertheless, Rozaire's field records appear to be sufficiently detailed so that he or anybody else could generate this information. This cannot be said of Orr's casual test at AnI-3.

McKusick's method of seriating sites chronologically has been
extensively criticised in the section on regional chronology, so little more need be said here about this aspect of Mc Kusick's work. His seriation is essentially meaningless.

**General Evaluation:** For all of the many projects that have taken place on Anacapa Island, there has been comparatively little archaeological knowledge generated. An excellent data base exists in the form of Rozaire's site records and his excavated collections, but he has not been able to carry out the analyses necessary to produce information on prehistoric cultural development on Anacapa. On the other hand, Rozaire's data base derived from excavation does not represent the apparent range of variability in the sites on Anacapa Island, being that they are concentrated at only two sites on the east end of West Anacapa. In order to obtain some idea of variability in settlement patterns and a reasonably detailed chronology for the island, test excavations will inevitably have to be undertaken at sites on other portions of the islets. Moreover, in the absence of distinctive time-markers in Anacapa Island sites, radiocarbon dating will eventually have to be undertaken.

**Research Potential of the Archaeological Resources**

For such a small land mass, the approximately 23 sites recorded for the island seems like an unusually large number. Yet considering that fresh water is available on West and probably also Middle Anacapa, that the intertidal zones surrounding the island would have offered abundant supply of fish, the high density of sites is not surprising. In fact, given these resources, in addition to some terrestrial resources (grass seeds, island cherry seeds, acorns, cactus fruit and seeds, and others),
there is good justification for proposing that the island was occupied by a permanent population at least during certain portions of its prehistory. The fact that it was not permanently occupied by the Chumash at the time of European contact may be more a result of the logistical constraints imposed on island settlement patterns by the nature of Chumash socio-economic organization that the lack of adequate resources on the island for human survival.

Nevertheless, Anacapa certainly does not have the abundance of terrestrial resources and broad expanses of easily accessible intertidal zones that exist on neighboring Santa Cruz Island. In this respect, therefore, Anacapa may be considered a marginal habitat for the aboriginal maritime populations of the Santa Barbara Channel. Assuming this, the archaeological resources on Anacapa, as on Santa Barbara Island, may be relevant to testing hypotheses concerning resource marginality and its relationship to population growth and environmental change. To wit, Anacapa Island may have been occupied by overflow population from either Santa Cruz Island or the adjacent mainland, and the type of adaptation practiced by such a population would be expected to differ in some ways because it was exploiting resources which were not exploited on the larger land masses.

The high density of chert bladelets at AnI-6 and their relatively low densities at neighboring sites such as AnI-8 presents an interesting research problem. Sites containing very high densities of bladelets have been found on Santa Cruz Island. Some of these sites were obviously bladelet manufacturing sites since they are located near chert sources
and also contain large numbers of bladelet cores. Other Santa Cruz sites, however, contain a high density of bladelets, many of which are flaked to produce small, sharp tips, but these sites contain no bladelet cores. These latter sites appear to be bead manufacturing loci. It is not clear which category AnI-6 would best fit into, and a future research objective would be to determine how Anacapa sites relate to the bladelet manufacturing and bead manufacturing complexes, and perhaps associated trade networks, observed elsewhere on the Channel Islands.

The stratigraphic changes in the proportions of mussel and abalone shells noted by Rozaire in his 1958 excavations at AnI-8 also provide fodder for developing other research problems relevant to Anacapa archaeological resources. The explanation proposed in the report was that abalone would become temporarily depleted by the site's inhabitants. Another possible explanation is that environmental change affected the relative abundances of the species. In addition, it may be hypothesized that changes in the size of the population inhabiting Anacapa may have affected the patterns of shellfish exploitation. That is, when population density was higher, there would be less abalone to go around and therefore a greater dependence on mussel. That such possible changes may be studied over a greater time span than that represented in the deposits of AnI-8 indicated by Rozaire's observations that some sites located in his Middle Anacapa survey seem older than others because of the lighter-colored deposits and the more weathered appearance of midden constituents.

The adjacency of Anacapa to Santa Cruz Island may turn out to be of prime importance in understanding certain prehistoric events that occurred
on both islands. During certain periods of prehistory, Anacapa may have been used almost exclusively for the purpose of fishing by populations who resided for the greater portion of the year on Santa Cruz. This may have been the protohistoric Chumash use of the island, for example. Consequently, the settlement patterns on either island cannot be understood without reference to the other. This may also hold true in viewing the relationships that Anacapa may have had with mainland populations. The Chumash village of Hueneme, for example, is not all that distant, and trips to Anacapa would not necessarily have been that difficult. Moreover, Anacapa is logistically located so that the Chumash of Ventura County would have found it a convenient stop-off point on their way to Santa Cruz Island.

These ideas presented above, based partly on data already obtained from Anacapa Island, give some indication of the great research potential that is associated with the island's archaeological resources. Even the badly disturbed sites probably contain data relevant to these and other research problems. Perhaps most important, an understanding of prehistoric events in other areas of the Santa Barbara Channel may not be properly understood without knowledge of what was happening prehistorically on Anacapa Island.

Recommendations

1. The NPS would be best advised to obtain copies of Rozaire's site records and reports for an archive of data pertaining to the archaeological resources on Anacapa Island. The proper management of
the archaeological sites on the island implies that the NPS knows where they are, their condition, and their individual research potentials.

2. Rozaire should be contracted by NPS to prepare reports of his excavations, and he should be properly compensated for such endeavors, especially in light of the fact that he has accumulated information valuable to the management of the resources at little or no cost to NPS.

3. A reconnaissance should be made of Anacapa Island sites to determine their present condition and any changes in their condition that may have occurred since the time of Rozaire's work. In particular, attention should be given to sites that have considerable public access such as the sites at Le Dreau Cove, on the central portion of Middle Anacapa, and on all of East Anacapa.

4. In light of the above recommendations, some or all sites on Anacapa Island should be nominated for inclusion on the National Register.

5. If any endangered sites are discovered as a result of carrying out recommendation three, then salvage excavations should be undertaken.

6. Some effort should be made to stop the looting by Coast Guard personnel stationed on East Anacapa. Perhaps the island should be posted with copies of the Federal Antiquities Act, or perhaps some sort of ongoing educational program concerning the value of preserving archaeological resources could be developed for new personnel assigned to the island.

7. If possible, a survey should be made of the unsurveyed eastern
The extreme of Middle Anacapa. It would probably be a good idea to recheck West Anacapa as well, given that Rozaire apparently located additional sites after he presumed that he made a thorough survey. The survey should be done when the vegetation is lowest—probably in late summer or in the fall.
Environmental Description

Santa Cruz Island is the largest, most environmentally diverse, and perhaps the most rugged of all the Channel Islands, both northern and southern. Its area is 96 square statute miles, and its maximum length on an approximately east-west axis is about 24 miles. Its width varies from less than two miles at the isthmus and at the extreme western end to nearly seven miles near the center of the island. The eastern end of the island is closest to the mainland (Port Hueneme), which is only 19 miles distant. The western end is 23 miles from Coal Oil Point near Goleta. Topographically, the island consists of a northern and southern mountain range which are separated from each other by a valley system that follows a major east-west trending fault. The northern range, with a maximum height of over 2400 feet above sea level at Mount Diablo (Devils Peak), has generally sharper and more rugged relief than the southern range, which has a maximum altitude of 1523 feet above sea level. The northern range continues east of Prisoners Harbor, but the southern range terminates at Valley Anchorage. The eastern and western ends of the island are relatively flat and have dissected marine terraces overlooking the ocean. The north flank of the island consists of a series of ridges descending from the main ridge of the northern range to the coast. These ridges are divided
from one another by deep, steep-sided canyons that are often very
difficult to cross. The southern flank of the island has more gradual
slopes and the drainages tend to be broader with more branching. As a
result, access by foot across the canyons on the south side of the
island can be made with relative ease. The interior valley between
the two ranges consists of two major segments: Canada Cervada, which
drains to the west, and the Central Valley, which has an east and
west branch that meet in the vicinity of the Stanton Ranch buildings
to drain to the north through the northern range. This latter drainage,
having its mouth at Prisoners Harbor, is by far the largest on the
island.

The coastline around the island is highly variable. The northern
coastline consists of many stretches of cliff which are particularly
sheer east of the isthmus and on the extreme western end. The water-
line is very accessible, however, along many short stretches of
coastline in between. The south side of the island also has many
stretches of cliff that meet the sea, but on the southwestern coastline
there are broad stretches of sandy beach, largely absent on the north
side. In comparison to the other islands of the northern group, the
Santa Cruz coastline has numerous relatively protected coves, most often
at the mouths of canyons. Several that are particularly well protected
on the south coast have become favorite haunts of modern-day yachtsmen.

There are innumerable seeps and springs of fresh, potable water
on the island (although many are presently fouled by sheep and pigs), and
the number and volume of flow of these probably was much greater prior
to the damage to the island's watersheds caused by overgrazing of sheep. Many, however, are still perennial, and the impression given by their present frequency is that fresh water was usually available at no great distance from any point on the island in aboriginal times.

The complex geology of the island has been studied by Bremner (1932) and Weaver, et al. (1969). The northern mountain range and the extreme western end of the island consist predominantly of mid-Tertiary volcanics (basalts, andesites, and breccias). These are overlain with siliceous Monterey shales in a few localities west of Prisoners Harbor, and in the vicinity of the isthmus, east of Prisoners Harbor, these shales are the predominant exposed bedrock. Pleistocene terrace deposits may overlay each of these. The southern range is geologically much more complex. Basement rocks of shists and diorites are exposed along the whole length of the main ridge. To the south is another series of Tertiary volcanics composed of breccias and diorites. Also exposed, in the southwestern sector of the island, is a long series of sedimentary rocks, including shales, mudstones, and sandstones.

Thus, Santa Cruz Island offers an unusually wide variety of rock materials for the manufacture of stone tools. Particularly noteworthy is the presence of a relatively high grade of chert, which occurs in easily accessible beds in the Monterey formation just east of the isthmus. This chert was quarried and transported to all parts of the island and possibly even to the other islands and the mainland for the manufacture of chipped stone tools. Certain of the volcanic rocks were also used in the manufacture of larger chipped stone and ground
stone tools. Certain of the volcanic rocks were also used in the manufacture of larger chipped stone and ground stone tools. The sedimentary rocks were also used to some extent, but these are generally too soft for most prehistoric industrial purposes.

The flora of Santa Cruz Island owes its relative diversity not only to the size of its land area but also to the presence of drainages that are large enough to provide perennial water and to contain many protected spots. Climatically, the Central Valley has some of the characteristics of the mainland coastal canyons in that temperatures range to higher extremes than those on the island's coasts, and fogs are not so prevalent. Nevertheless, in spite of the relatively unique, pleasant groves of large live oak (*Quercus* spp.) on relatively flat alluvial terraces, the Central Valley contains essentially an island flora in which grasslands predominate and true chaparrel communities, so prevalent on the mainland, are absent. The Central Valley, similar to other larger drainages on the island, has a flood plain that is covered in some areas with dense stands of mulefat (*Baccharis vimenea*) and some willow (*Salix* sp.). A few well watered spots in other canyons on the island contain small stands of poplars (*Populus* sp.) and verdant stands of several different species of ferns.

On the north flank of the northern range of the island the grasslands are interspersed with groves of island pines (*Pinus muricata*) (restricted to an area just west of Prisoners Harbor), individuals or groves of live oaks (*Quercus* spp.), and individuals or clumps of toyon (*Herteromeles arbutifolia*), manzanita (*Arctostaphylos insularis*),
and Catalina cherry (Prunus Lyonii), steeper north-facing slopes often have groves of ironwood (Lyonothamnus floribundus), and the deep canyons are often choked with various species of oaks that form a continuous canopy overhead. The south slopes of the northern mountain range are rocky and comparatively devoid of vegetation in their upper portions (in part due to overgrazing by sheep and consequent erosion), while grassland with abundant clumps of prickly pear cactus (Opuntia sp.) predominate on the lower slopes. Oaks, of course, are abundant in the lower reaches of the larger canyons. The north slope of the southern range, flanking the Central Valley, is relatively abrupt and is covered with a nearly continuous and dense cover of oaks in which isolated groves of ironwood and manzanita are interspersed. In Canada Cervada, which experiences frequent foggy weather, the north slope of the southern range is covered by a spectacular forest of island pine—the largest stand on the island. The south slope of the northern range has a rather mixed vegetation. Arborescent growth is not as prevalent, yet dense groves of oaks and ironwood do occur on north-facing slopes and in protected upper reaches of canyons. The grasslands contain much higher frequencies of clumps of lemonade berry (Rhus integrifolia) than anywhere else on the island, however scattered clumps of manzanita and toyon are also relatively frequent.

The vegetation on the western portion of the island shows some of the effects of the strong, steady winds from the northwest. Dwarf oak (Quercus sp.) is dense on some north-facing slopes, however the wind has sculptured it into dense, low, smooth-canopied thickets.
As one moves toward the western extreme of the island and, at the same
time, descends in altitude, the grasslands become continuous. However,
in the spring a large number of annuals and perennials come into
bloom. Of these, the blue dick (*Brodiaea* sp.) was likely an important
food resource in aboriginal times.

In the vicinity of the isthmus, which is the continuation of the
north range, large oaks are not as prevalent as they are to the west.
However, on north-facing slopes in the vicinity of Chinese Harbor
several stands of island pine are found. The south flank of the isthmus
is covered with the most extensive stands of coastal sage (*Artemisia
californica*) on the island. The eastern extreme of the island, beyond
the isthmus, is, like the western extreme, almost exclusively grasslands.

The marine fauna surrounding the island is very bountiful.
The intertidal zones abound in a variety of shellfish. Mussels
(*Mytilus californianus*) is predominant on rocky shores around most
of the island, especially on the north coast. However, the broad
intertidal and subtidal bedrock shelves of the south coast provide an
ideal habitat for black abalone (*Haliotis cracherodi*) and, farther out
from shore in the subtidal zone, red abalone (*Haliotis rufescens*).
The wavy-top (*Astraea undosa*) is another relatively abundant subtidal
species. Sea urchins of at least two different species are also
abundant (and were certainly exploited aboriginally).

Kelp beds are found at many spots around the island and are
particularly prevalent on the south and west coasts. These, in combi-
 nation with the rocky subtidal zones, provide an excellent habitat for
rock/kelp fish. The protected anchorages on the south shore are perhaps optimal spots for obtaining these fish from relatively simple watercraft or even from shore. The fish of the kelp beds attract several species of sea mammals. Today, harbor seals (*Phoca vitulina*) and California sea lions (*Zalophus californianus*) frequent the offshore kelp beds and often bask on rocks along the shore.

The terrestrial mammals on the island comprise only four species (excepting several species of bats) (von Bloeker 1967). Of these, the small, cat-like island fox (*Urocyon littoralis*) is ubiquitous and easily encountered. Two species of mice are presently found on the island: a harvest mouse (*Reithrodontomys megalotis*), which was probably introduced in baled hay in historic times, and the deer mouse (*Peromyscus maniculatus*), an endemic that is widespread on the island. The remaining species is the island or spotted skunk (*Spilogale gracilis*). As is the case on Santa Rosa Island, none of the native mammals are prodigious burrowers, so the archaeological sites retain considerably more of their stratigraphic integrity than comparably ancient sites on the mainland.

In conclusion, Santa Cruz Island provided prehistoric inhabitants with a far greater variety and abundance of terrestrial resources than are found on any of the other northern Channel Islands. Even Santa Catalina Island of the southern group does not seem to be a close match. Moreover, the varied shoreline, especially noteworthy because of the abundance of protected coves in comparison to the other Channel Islands, provided another prolific food resource base to the island's prehistoric inhabitants.
History of Land Use

Santa Cruz Island was granted by the governor of Mexican California to Andres Castillero in 1838, roughly 25 years after the last of the island Chumash were removed to the Santa Barbara or San Buenaventura Missions. Prior to 1838, the only recorded use of the island by Europeans was that of a short-lived penal colony in 1829, which gave Prisoners Harbor its name. Ellison (1937) does not specify what use, if any, Castillero made of the island, however subsequent court testimony seems to indicate that he did not construct any buildings during the Mexican period (Ellison 1937:276). The United States government honored Castillero's claim to the island, although competing claimants took their case all the way to the U.S. Supreme Court, which in 1859 acknowledged Castillero's exclusive ownership. By this time, an English company gained control of the island, and, under the supervision of Dr. J. B. Shaw, introduced stock animals to the island, sheep apparently being the most important. Pigs, which are now wild on the island along with the sheep, were probably also introduced at this time. Shaw built a number of ranch buildings in several parts of the island, some of which still stand (e.g., Christi Ranch), and the island became well known as a wool-producing sheep ranch of the highest quality (Ellison 1937:278).

In 1869 the island was sold to Justinian Caire who, with members of his family and other associates, founded the Santa Cruz Island Company. Under the direction of the Caire family and their associates the company built additional buildings at what is now the Stanton
Ranch headquarters in the Central Valley and at Prisoners Harbor, which had become, and still is today, the island's principal port. Under Caire's management a winery was established in the Central Valley, and vineyards were planted on the slopes of the valley near the ranch and winery buildings. The production of wool, however, remained a principal concern of the company, and sheep ranged over all parts of the island.

After a long court conflict between members of the corporation, the island was partitioned in 1937, and the western four-fifths were sold to Edmund L. Stanton. The eastern fifth remained in the hands of descendants of the Caires, who still herd sheep as a primary business concern. Edmund Stanton and his son, Dr. Carey Stanton, have shifted the main business of the Santa Cruz Island Company from sheep to cattle raising, which has continued up to the present. The dirt road system on the island, which Caire had built to both the eastern and western sectors of the island, was extended, primarily in the southern half of the island which is more appropriate than the northern half for cattle grazing. There are also two unimproved airstrips on the island, one located near Valley Anchorage and the other at Christy Ranch. By the 1930's, however, the pasturage on the island was heavily damaged in many parts by sheep overgrazing. The number of sheep running wild over the island must at that time have been well over 100,000. As a consequence, the Stantons have killed most of the sheep in the southern range, much of the isthmus area, and the western end of the island. Today the sheep are limited
by fences to most of the northern mountain range east of Prisoners Harbor, which is still inaccessible to vehicles. Several thousand sheep, at least, are still present on the island today.

As a result of the removal of the sheep, the vegetation on the southern half of the island has markedly improved in recent years, and erosion scars are beginning to heal. However, the vegetation and topsoil on the northern half of the island continues to be devastated by the sheep in spite of relatively intensive sports hunting. Many archaeological sites on the northern flank of the island have undergone extensive erosion as a result of sheep overgrazing.

Presently, the U.S. Navy operates a radar station on a high point of land in the isthmus area. Their facilities consist of several buildings and a substantial graded gravel road between the station and Prisoners Harbor--by far the best road on the island.

The Santa Cruz Island Company entered into an agreement with the University of California in 1974 in which that portion of the island owned by the company was included in the university system of natural preserves. This arrangement extended the relationship between the university and the company which began in the early 1960's with the establishment of the Channel Islands Field Station. This facility, consisting of three buildings and associated equipment, has been used by a number of scientists within and outside the university as a base of operations for geological, biological and archaeological studies. The office of the field station, located on the U.C. Santa Barbara campus, handles all requests to do academic
research on the island. In addition, General Motors operates a research station at Valley Anchorage consisting of several temporary buildings.
Descriptions of Projects

Project Name: Schumacher's Excavations on Santa Cruz Island
(see also Table 2)

Principal Investigator: Paul Schumacher
Institutional Sponsor: Smithsonian Institution
Dates of Fieldwork: May 9 - June 12, 1875
Published and Unpublished Mss.: Schumacher 1877. No journal or fieldnotes could be located at the Smithsonian Institution.
Location of Fieldwork: Seven coastal sites scattered around island—see Table 2 for details.

Theoretical and Empirical Goals of Research: Generally to obtain an artifact collection from a region for which very little was known archaeologically.

Types of Data Collected: Artifact collections, primarily associated with cemeteries. Schumacher also drew sketch maps of the site locations.

Data Collection Procedures: Schumacher appears to have carried on very casual excavations with no provenience controls to speak of. In fact, artifacts in the collection at the Smithsonian Institution are not even provenienced to the site from which they came.

Significant Descriptive and Theoretical Conclusions: Schumacher's excavations are the first recorded for the island, and his report is the first publication on the subject of the island's archaeology.
TABLE 2: Schumacher's Excavations on Santa Cruz Island in 1875

<table>
<thead>
<tr>
<th>Geographic Location</th>
<th>UCSB or UCB</th>
<th># of days excavation</th>
<th>Types of Data Collected</th>
<th>Page #</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Orizaba and West Twin Harbor</td>
<td>UCB-158</td>
<td>7</td>
<td>2 cemeteries, yielding 225 skeletons. Graves in one cemetery marked by whale bone and had wood shorings of graves</td>
<td>40-41</td>
<td>He mislocated Tinkers Cove on his map of the island at the location of Pelican Harbor</td>
</tr>
<tr>
<td>Coches Prietos Shellmound</td>
<td>UCSB-1</td>
<td>2</td>
<td>140 skeletons, fishhooks, wood board, canoe planks, perforated stones, points drills</td>
<td>41-42</td>
<td></td>
</tr>
<tr>
<td>Prisoners Harbor Mound</td>
<td>UCSB-240</td>
<td>ca. 2</td>
<td>40 skeletons, fishhooks, and few other tools</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Prisoners Harbor Shellmount</td>
<td>UCB-147</td>
<td></td>
<td>100 skeletons, fishhooks, bone &quot;fish-spears&quot;</td>
<td>42</td>
<td>Schumacher says he excavated at Alamos however, his map of the site is obviously that at Willows</td>
</tr>
<tr>
<td>Willows Anchorage Mound</td>
<td>UCB-122</td>
<td>?</td>
<td>fishhooks and fishhook blankes, borers, points</td>
<td>42-43</td>
<td>200 skeletons from the 2 sites combined</td>
</tr>
<tr>
<td>Smugglers Cove, north side of creek mouth</td>
<td>UCB-138</td>
<td>?</td>
<td>Whalebone grave markers, wooden &quot;sword&quot;</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Smugglers Cove, southern point of cove</td>
<td>UCB-135</td>
<td>?</td>
<td>Whalebone grave markers, wooden &quot;sword&quot;</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Near Forney's Cove</td>
<td>UCSB-328?</td>
<td>?</td>
<td>burials in 3 house depressions</td>
<td>43-44</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UCB-14?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Nature of the Archaeological Collections: the collection contains primarily complete artifacts. Since Schumacher was on the island only some 60 years after abandonment of some of the sites he excavated, preservation of perishables—particularly wood—was still relatively good, and the collection contains several wood objects, including hafted knives. Also in the collection are ground and chipped stone artifacts, and worked bone and shell artifacts. The only locational information associated with the collection is the fact that they came from Santa Cruz Island. The collection is accessible at the Smithsonian Institution, although some of the objects are either missing or have been exchanged.

Project Name: The French Scientific Expedition to California
Principal Investigator: Leon de Cessac
Institutional Sponsor: The French Ministère de L'Instruction publique
Dates of Fieldwork: 1877
Location of Fieldwork: No specific information is given in the very short accounts of the expedition. He apparently excavated in some of the sites in which Schumacher had a few years before, but "without success." He does explicitly mention collecting at "flint quarries" in the interior of
the island near which were "workshops." These are almost certainly in the interior of the eastern sector of the island.

Theoretical and Empirical Goals of Research: Apparently simply the acquisition of artifact collections. However, the brief reports of the expedition also mention that botanical and marine faunal collections were made and that a geological relief map was prepared.

Types of Data Collected: Not yet completely known. Heizer and Kelley report the presence of burins (bladelet cores) and bladelets in the collection.

Site Nos. from which Data Were Collected: Unknown.

Person-days and Crew Size: de Cessac spent four months on the island, however much of this time was spent in natural history investigations. The presence of any crew is unknown.

Data Collection Procedures: Unknown. Probably very casual excavation and surface collection.

Significant Descriptive and Theoretical Conclusions: de Cessac was apparently the first to collect bladelets and bladelet cores from Santa Cruz Island.

Nature of the Archaeological Collections: The collection from the Channel Islands is still largely uncataloged. It is only known at present that the collection contains bladelets and bladelet cores or burins. They are presently curated by the Musée de L'Homme in Paris, France.
Project Name: Outhwaite's Survey

Principal Investigator: Leonard Outhwaite (this person is undoubtedly the "Mr. Hebblewaite" referred to in Rogers 1929:261).

Institutional Sponsor: University of California, Berkeley.

Dates of Fieldwork: 1916

Published and Unpublished Mss.: Mentioned in Kroeber 1925:922.

A blueprint map of the island showing Outhwaite's site locations and numbers is on file at the U.C. Berkeley Archaeological Research Facility.

Location of Fieldwork: Primarily on the island's coastline, although a few sites in the interior were also recorded.

Theoretical and Empirical Goals of Research: Apparently the sole objective was to record the locations of the larger sites on the island.

Types of Data Collected: 86 sites are located on the map, and an artifact collection consisting of 34 catalog entries attributed to the Outhwaite survey by the Lowie Museum. Rogers claims that Outhwaite carried out extensive excavations at Prisoners Harbor, but this appears doubtful considering the size of the collection.
Site Nos. or Locations from which Data Were Collected: The original 86 sites recorded by Outhwaite have been renumbered by personnel at U.C. Berkeley. The blueprint map has Outhwaite's, Olson's, and a third set of numbers for the sites.

Person-days and Crew Size: Unknown

Data Collection Procedures: Apparently a foot survey was made of the coastal zone and portions of the Central Valley.

Significant Descriptive and Theoretical Conclusions: Outhwaite's was the first large-scale survey of the island. He demonstrated that the density of sites on the island is rather high.

Nature of the Archaeological Collections: The artifacts attributed to Outhwaite appear to be casual surface finds--mainly stone artifacts. Records pertaining to the project are filed under accession numbers 100JR and 583 in the U.C. Berkeley Lowie Museum; however, most of the records are missing. The collections are also housed at the Lowie Museum.
Project Name: Rogers' First Reconnaissance of Santa Cruz Island

Principal Investigator: David Banks Rogers

Institutional Sponsor: Santa Barbara Museum of Natural History

Dates of Fieldwork: March 27-30, 1927

Published and Unpublished Mss.: Rogers 1929 and his fieldnotes on file at the museum.

Location of Fieldwork: North side of the island, including specific visits to sites at Stanton Ranch, Prisoners and Pelican Harbor, the Twin Harbors and Orizaba region, and Chinese Harbor.

Theoretical and Empirical Goals of Research: Rogers was apparently prospecting for sites to excavate in the summer of that year.

Types of Data Collected: Commentaries on site characteristics and locations. No map of site locations was found at the museum, although a small-scale map is published in Rogers 1929.

Site Numbers from which Data were Collected: Unknown

Person-days and Crew Size: About two days of survey. (Part of the period was spent in excavating test pits at Prisoners Harbor—see Table 3).

Data Collection Procedures: A boat was used to gain access to various spots along the coast. The survey itself was on foot. No rigorous attempt was made to observe and record all the sites in any particular region.

Significant Descriptive and Theoretical Conclusions: None

Nature of the Archaeological Collections: It is not evident that Rogers made collections.
Project Name: Rogers' Second Reconnaissance of Santa Cruz Island

Principal Investigator: Davis Banks Rogers

Institutional Sponsor: Santa Barbara Museum of Natural History

Dates of Fieldwork: June 15-17, 1927

Published and Unpublished Mss.: Rogers 1929, and his fieldnotes on file at the museum.

Location of Fieldwork: Along north coast of the island from Ladies Harbor to "slightly west of the center of the northern shore" and the Forneys Cove vicinity.

Theoretical and Empirical Goals of Research: Rogers was apparently prospecting for sites to excavate later in the summer.

Types of Data Collected: His fieldnotes consist of narrative descriptions of sites. Some surface artifacts apparently were collected.

Site Nos. or Locations from which Data Were Collected: Unknown. Rogers apparently did not plot site locations on maps.

Person-days and Crew Size: No more than three people including Rogers surveyed for slightly more than one day on the north coast and only a few hours at Forneys Cove.

Data Collection Procedures: Access to points along the coast were gained from a boat. The actual survey was on foot. No effort was made to systematically cover particular regions on the island.

Significant Descriptive and Theoretical Conclusions: None

Nature of the Archaeological Collections: No collections definitely associated with this survey were located at the Santa Barbara Museum of Natural History.
Project Name: Rogers' Third Reconnaissance of Santa Cruz Island

Principal Investigator: David Banks Rogers

Institutional Sponsor: Santa Barbara Museum of Natural History

Dates of Fieldwork: August 13-16, 1927

Published and Unpublished Mss.: Rogers 1929 and his fieldnotes on file at the museum.

Location of Fieldwork: Visits were made to Gull Rock, Morse Point, Punta Arena, Coches Prietos, Smugglers Cove, San Pedro Point, and Scorpion Anchorage.

Theoretical and Empirical Goals of Research: Rogers was apparently prospecting for sites to excavate. Since he indicates that he thought he located all of the sites on the island, it would seem that his objective was also a complete survey of the island.

Types of Data Collected: Commentary on the surface characteristics of sites and their locations. Little or no surface collections made.

Person-days and Crew Size: Portions of four days. (Parts of 14th-16th were spent in excavating at Dicks Harbor--see Table 3).

Data Collection Procedures: Access to points along the coast was made from a boat. The survey itself was on foot. It involved only a casual survey of any one area of the island.

Significant Descriptive and Theoretical Conclusions: None

Nature of the Archaeological Collection: No collection housed at the Santa Barbara Museum of Natural History could be definitely associated with this survey.
Project Name: Rogers' Excavations on Santa Cruz Island (see also Table 3).

Principal Investigator: David Banks Rogers

Institutional Sponsor: Santa Barbara Museum of Natural History

Dates of Fieldwork: March 28-29, May 14-August 16, 1927 with a few gaps (see Table 3).

Published and Unpublished Mss.: Rogers 1929 and fieldnotes on file at the museum.

Location of Fieldwork: 19 coastal sites scattered around the island, five of which were excavated with Olson of the University of California, Berkeley.

Theoretical and Empirical Goals of Research: Apparently Rogers wished to obtain a range of variation in artifacts from the island. He appears not to have been specifically interested in establishing a chronology.

Types of Data Collected: He collected primarily artifacts associated with burials and normally retained only the crania from the human skeletons. A small collection of photographs is associated with Rogers' excavations and reconnaissances. His handwritten fieldnotes contain only verbal descriptions of his excavations with very few rough sketches.

Person-days and Crew Size: Rogers worked with two or three hired crew members whom he would frequently leave for a week at a time to carry out excavations with no direct field supervision. Two of the crew were, in Olson's words (Olson personal communication), "sewer diggers" from Santa Barbara. The other was apparently a
student. (See Table 3 for length of excavation time at each site.)

Data Collection Procedures: Rogers does not give adequate descriptions of his excavation techniques. His excavation units varied from test pits presumably about five feet in length to broad area exposures more than ten feet on a side. He would occasionally screen deposits, but according to Olson (personal communication) this was seldom, if at all at some sites. Rogers normally restricted most of his excavations to areas of sites yielding burials.

Many of the objects in the collections are catalogued with information recorded on burial number or burial location or pit designation. With some difficulty it would be possible to ascertain those artifacts associated with specific burials, although the quantities of beads and ornaments found in the cemetery areas, but not recorded as pertaining to a specific burial, leads one to believe that careful attention was not always devoted in the field to recording all burial associations. Since no maps of excavations or burial plots were made (excepting a crude sketch map of the large Arch Rock cemetery) the locations of burials in relation to one another or to the area of the site is unknown.

Significant Descriptive and Theoretical Conclusions: Rogers' book contains only general descriptions of his excavations, with mention made of unique or spectacular finds. Nevertheless, some idea of the nature of the archaeological record on the
Table 3: Rogers' Excavations on Santa Cruz Island in 1927.

<table>
<thead>
<tr>
<th>Site Location</th>
<th>SBMNH Site No.</th>
<th>UCSB and/or UCB Site No.</th>
<th>Pages in Rogers 1929</th>
<th>Dates of Excavation</th>
<th>Extent of Excavation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ridge east of east canyon at Cueva Valdez</td>
<td>130.157</td>
<td>UCB-185</td>
<td>285-291</td>
<td>July 6-10</td>
<td>12</td>
</tr>
<tr>
<td>East of Cueva Valdez ca. 1/2 mile</td>
<td>above?</td>
<td>UCB-184</td>
<td>291-293</td>
<td>July 18</td>
<td>3</td>
</tr>
<tr>
<td>100 yards northeast of above site, called: &quot;Arch Rock West.&quot;</td>
<td>above?</td>
<td>293-295</td>
<td>July 14-18</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>1 mile east of Cueva Valdez, north or larger mound</td>
<td>130.158?</td>
<td>UCB-183?</td>
<td>295-298</td>
<td>July 11-12</td>
<td>5</td>
</tr>
<tr>
<td>1 mile east of Cueva Valdez, south or smaller mound</td>
<td>130.158?</td>
<td>UCB-183?</td>
<td>298-299</td>
<td>July 12-14</td>
<td>6</td>
</tr>
<tr>
<td>2 small sites northeast of previous site</td>
<td></td>
<td></td>
<td>300</td>
<td></td>
<td>90</td>
</tr>
<tr>
<td>1/4 mile east (actually overlooking) of Arch Rock, Site &quot;A&quot; or Crescent-shaped site</td>
<td>130.158</td>
<td>UCSB-307</td>
<td>300-301</td>
<td>July 23-29</td>
<td>18</td>
</tr>
<tr>
<td>Smaller site just north-east of above, site &quot;C.&quot;</td>
<td>130.158</td>
<td>UCSB-314</td>
<td>301</td>
<td>Rogers absent</td>
<td></td>
</tr>
</tbody>
</table>

continued
<table>
<thead>
<tr>
<th>Site Location</th>
<th>SBMNH Site No.</th>
<th>UCSB and/or UCB Site No.</th>
<th>Pages in Rogers 1929</th>
<th>Dates of Excavation</th>
<th>Est. Labor Days</th>
<th>No. of Catalog Cards</th>
<th>Extent of Excavation</th>
</tr>
</thead>
<tbody>
<tr>
<td>East side of eastern inlet of Ladies Harbor, called &quot;Babies.&quot;</td>
<td>130.170</td>
<td>UCSB-178</td>
<td>302</td>
<td>July 19-23</td>
<td>12</td>
<td>2</td>
<td>Large-scale excavation of cemetery.</td>
</tr>
<tr>
<td>1/3 mile southeast of Dicks on hill 600 ft. alt.</td>
<td></td>
<td>UCB-171?</td>
<td>304</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West side of stream at Coches Prietos.</td>
<td>130.125</td>
<td>UCSB-125</td>
<td>309</td>
<td>May 14-21</td>
<td>36</td>
<td>99</td>
<td>&quot;Rather extensive trenching,&quot; Few burials.</td>
</tr>
<tr>
<td>Rock shelter northwest of above.</td>
<td>130.125</td>
<td>UCB-131</td>
<td>309-310</td>
<td>May 21-28</td>
<td></td>
<td></td>
<td>Test excavations.</td>
</tr>
<tr>
<td>Main mound on east side of stream at Coches.</td>
<td>130.125</td>
<td>UCB-131</td>
<td>310-313</td>
<td>Rogers Absent.</td>
<td></td>
<td></td>
<td>Large-scale excavations with area exposures and test trenches cemetery; some historic material.</td>
</tr>
<tr>
<td>Willows Anchorage.</td>
<td>130.159</td>
<td>UCB-122</td>
<td>313-316</td>
<td>May 30-June 9</td>
<td>30</td>
<td></td>
<td>Excavations directed by Olson. See Olson's projects.</td>
</tr>
<tr>
<td>Beach at Christies, next to creek &amp; cliff.</td>
<td>130.156</td>
<td>UCB-83</td>
<td>318-320</td>
<td>June 9-July 5</td>
<td>443</td>
<td></td>
<td>Excavations directed by Olson. See Olson's projects.</td>
</tr>
<tr>
<td>Beach at Christies, north of above.</td>
<td>130.156</td>
<td>UCB-81</td>
<td>320</td>
<td>Rogers Absent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beach at Christies, on brink of cliff.</td>
<td>130.156</td>
<td>UCB-82</td>
<td>320</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prisoners Harbor mound</td>
<td>130.1</td>
<td>UCB-147</td>
<td>306-7</td>
<td>March 28-29</td>
<td>4</td>
<td>2</td>
<td>Ca. 3 test pits on each side of present wash.</td>
</tr>
</tbody>
</table>
island may be obtained from his book. It is the second publication on the island's archaeology.

**Nature of the Archaeological Collections:** There is a definite emphasis on larger and more complete artifacts in the collection. Artifacts include large quantities of shell beads and ornaments and smaller collections of chipped and ground stone artifacts, bone artifacts, fiber and wood artifacts, and asphaltum objects. (See Table 3 for the number of catalog cards per site. Each catalog card pertains to one of several dozen objects.) Very few postcranial bones exist in the skeletal collection. The collection is easily accessible at the Santa Barbara Museum of Natural History. Portions of the collections obtained with Olson are at the Lowie Museum.

**Project Name:** Olson's Excavations on Santa Cruz Island (see also Table 4)
**Principal Investigator:** Ronald L. Olson (faculty director was A. L. Kroeber)
**Institutional Sponsor:** U. C. Berkeley Department of Anthropology
**Dates of Fieldwork:** May 29 to beginning of August, 1927, and July 9 - August 4, 1928
**Published and Unpublished Mss.:** Olson 1930, Hoover 1971, McKern 1960, and handwritten fieldnotes on file at the Lowie Museum at the University of California, Berkeley.
**Location of Fieldwork:** 16 coastal sites scattered around island--see Table 4 for listing.
Theoretical and Empirical Goals of Research: Olson appeared to be concerned with determining the nature of variation in the contents of sites and establishing a prehistoric chronology for the island.

Types of Data Collected: Olson concentrated on cemetery areas and recorded burial position and location and artifacts in terms of burial numbers. He also made stratigraphic excavations and recorded artifacts according to depth. Stratigraphic drawings of trench sidewalls were made. Some faunal remains were collected, but they have apparently been discarded by the Lowie Museum some years ago. Comparatively few postcranial human bones were collected in comparison to the number of crania. A small photographic collection accompanies the field records. Olson made several excursions to other parts of the island to locate and record sites. He located 120 sites additional to the 86 located previously by Outhwaite. The locations were plotted on a copy of Outhwaite's map.

Data Collection Procedures: Olson normally started an excavation at a site with a long strata-trench through the center of the site. Portions of the deposit were quarter-inch screened, but in terms of the number of labor days spent to excavate a given volume of deposit, comparatively minimal screening was done. This phase of excavation was followed or replaced by the excavation of a series of test pits. Once a cemetery was located, excavations normally consisted of a cluster of pits of varying shapes (usually rectangular) and sizes separated from one another by balks. Burials were apparently cleared with small hand tools,
and screening was used, at least selectively, when beads and ornaments were encountered.

**Significant Descriptive and Theoretical Conclusions:** Olson's preliminary report includes general descriptions of the sites, brief descriptions of some artifact classes, a seriation of sites based on artifact frequencies, and a description of broad changes in material culture. Olson was the first person to establish a chronology for the prehistory of the island. Hoover's dissertation is a more detailed presentation of the data and his analysis includes a more refined chronological analysis.

**Nature of the Archaeological Collection:** See Table 4 for details. Olson's collections are generally better provenienced than Rogers'. Burial associations may be ascertained, and to varying degrees of precision the provenience of burials and artifacts within the area and depth of each site may be ascertained. The collections are stored at the Lowie Museum at U.C. Berkeley, however, the location of portions of those collections obtained in 1927 when Olson and Rogers were working together are stored at the Santa Barbara Museum of Natural History. Hoover (1971) presents maps of Olson's excavations showing unit numbers and in some cases burial locations. These were not located for me by personnel at the U.C. Berkeley Archaeological Research Facility.
<table>
<thead>
<tr>
<th>Olson's Field No.</th>
<th>Berk. Site No.</th>
<th>Olson's Site No.</th>
<th>Locality</th>
<th>Dates of Excavation</th>
<th>Pages in Hoover 1971</th>
<th>Data Collection Procedures</th>
<th>Nature of the Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 131 1 and 3</td>
<td>Coches Prietos mound</td>
<td>May 29-June 1, 1927</td>
<td>186-197</td>
<td>34 pits of varying sizes, 27 of which are clustered in center of mound.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 122 --</td>
<td>Willows anchorage mound</td>
<td>June 4-9, 1927</td>
<td>175-185</td>
<td>16 pits, 5 x 80 ft trench, ca. 3 x 20 ft trench.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 83 191 and 257</td>
<td>Christis Beach, north side of mouth of Canada Cervada</td>
<td>June 10-29, 1927</td>
<td>108-129</td>
<td>Trench 10.9 ft long and ca. 10 ft wide with several lateral extensions forming area exposures.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 81 253</td>
<td>Christis Beach</td>
<td>June 23-25, 1927</td>
<td>100-103</td>
<td>75 ft trench connected to a ca. 30 x 30 ft area exposure at one end.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4W 82 236</td>
<td>Christis Beach</td>
<td>June 27-30, 1927</td>
<td>104-107</td>
<td>5 pits clustered together in 1 portion of site.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 39 --</td>
<td>Rock shelter, 1/3 mile from coast and 1 1/4 mile east of Forneys Cove</td>
<td>June 8-10, 1927</td>
<td>94-99</td>
<td>6 pits near mouth of shelter and 2 on slope below.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 3 --</td>
<td>On knoll north of Forneys Cove</td>
<td>July 12-18, 1927</td>
<td>69-93</td>
<td>17 pits clustered in cemetery area.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Continued
<table>
<thead>
<tr>
<th>Olson's Field No.</th>
<th>Berk. Site No.</th>
<th>UCSB Site No.</th>
<th>Locality</th>
<th>Dates of Excavation</th>
<th>Pages in Hoover 1971</th>
<th>Data Collection Procedures</th>
<th>Nature of the Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 162</td>
<td>--</td>
<td>--</td>
<td>Between Platts and Orizaba Coves.</td>
<td>July 23-25 1927</td>
<td>231-237</td>
<td>8 pits, 6 of which are clustered in area of cemetery.</td>
<td>27 burial, misc. chipped and ground stone artifacts, shell beads and ornaments, misc. shell and bone artifacts. 134 catalog cards at Lowie Museum.</td>
</tr>
<tr>
<td>179 154</td>
<td>--</td>
<td>--</td>
<td>On ridge on west side of West Twin Harbor drainage.</td>
<td>July 1927</td>
<td>223-224</td>
<td>6 pits (no map)</td>
<td>5 burials, few chipped stone artifacts, few ground stone artifacts, shell beads, few bone artifacts. 55 catalog cards at Lowie Museum.</td>
</tr>
<tr>
<td>8 159</td>
<td>--</td>
<td>--</td>
<td>On ridge on west side of Onzaba Cove</td>
<td>July 26-27 1927</td>
<td>225-230</td>
<td>7 pits (no map)</td>
<td>19 burials, points and other chipped stone tools, ground stone artifacts, few shell artifacts, misc. bone and fiber artifacts. 130 catalog cards at Lowie Museum.</td>
</tr>
<tr>
<td>180 161</td>
<td>--</td>
<td>--</td>
<td>Vicinity of West Twin Harbor and Orizaba Cove</td>
<td>July 1927</td>
<td>--</td>
<td>2 catalog cards at Lowie Museum.</td>
<td>2 catalog cards at Lowie Museum.</td>
</tr>
<tr>
<td>9 147 240</td>
<td>Prisoners Harbor Mound</td>
<td></td>
<td></td>
<td>July 31-1927</td>
<td>214-222</td>
<td>3 x 50 ft step-trench to maximum depth of 17 ft, located on top of mound.</td>
<td>No burials, abundant chipped stone artifacts, misc. ground stone artifacts, shell beads, misc. shell and bone artifacts. 339 catalog cards at Lowie Museum.</td>
</tr>
<tr>
<td>49 138</td>
<td>--</td>
<td>--</td>
<td>North side of creek at Smugglers Cove</td>
<td>July 9-1928</td>
<td>198-213</td>
<td>11 pits, 9 of which are clustered to form area exposure in area of cemetery.</td>
<td>69 burials, historic objects, points, and other chipped stone artifacts, quartz crystals, ground stone artifacts, shell beads, ornaments, and fish hooks, misc. shell, bone, and fiber artifacts. 452 catalog cards at Lowie Museum.</td>
</tr>
</tbody>
</table>

Cont'd
Table 4 - continued.

<table>
<thead>
<tr>
<th>Olson's Field No.</th>
<th>Berk. No.</th>
<th>UCSB Site No.</th>
<th>Locality</th>
<th>Dates of Excavation</th>
<th>Pages in Hoover 1971</th>
<th>Data Collection Procedures</th>
<th>Nature of the Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>192 135</td>
<td>--</td>
<td>--</td>
<td>On southern extreme of Smugglers Cove</td>
<td>July 13-16, 1928</td>
<td>192-197</td>
<td>3 test pits (no map).</td>
<td>22 burials, points and other chipped stone artifacts, ground stone artifacts, shell beads and ornaments, bone artifacts. 88 catalog cards at Lowie Museum.</td>
</tr>
<tr>
<td>62 104 192</td>
<td>192</td>
<td></td>
<td>Johnson's Landing, just east of Morse Point</td>
<td>July 20-22, 1928</td>
<td>171-174</td>
<td>23 test pits, 4 of which were inside house depressions.</td>
<td>No burials, misc. stone, bone, shell, and fiber artifacts. 75 catalog cards at Lowie Museum.</td>
</tr>
<tr>
<td>193 103 292</td>
<td>Morse Point</td>
<td></td>
<td>Morse Point</td>
<td>July 23, 1928</td>
<td>169-170</td>
<td>1 test pit to depth of 4 feet.</td>
<td>2 burials, shell beads and ornaments, few bone artifacts. 9 catalog cards at Lowie Museum.</td>
</tr>
<tr>
<td>64 100</td>
<td>--</td>
<td>West side of mouth of Paso Creek</td>
<td>July 24-Aug. 4, 1928</td>
<td>130-168</td>
<td>Ca. 50 x 65 ft area exposure in cemetery, 7 test pits scattered in other areas of site, and a 3 x 30 ft trench in midden area.</td>
<td>180 burials, large collection of chipped stone tools and steatite beads and ornaments, ground stone tools, over 15,000 shell beads, over 400 shell ornaments, misc. shell, bone, and fiber artifacts. 1260 catalog cards at Lowie Museum.</td>
<td></td>
</tr>
</tbody>
</table>
Project Name: Welcom-Moodie Expedition

Principal Investigator: Richard VanValkenburgh (D. B. Rogers was probably VanValkenburgh's overseer, but he was not in the field with him.)

Institutional Sponsor: Santa Barbara Museum of Natural History

Dates of Fieldwork: September 1932


Location of Fieldwork: Large site at Forney's Cove called "El Monton" by VanValkenburgh

Theoretical and Empirical Goals of Research: Beyond the collection of artifacts, research goals are unknown.

Types of Data Collected: Artifact collection associated with 130 burials. Field notes include a list of 13 of the burials indicating age, depth, position, orientation bone condition, type of grave marker, type of soil matrix, and artifact associations. A map of the site shows location of excavation pits. There is also a topographic plan of two associated burials and their accompaniments. There is no correlation in the museum catalog between burial number and artifact. About 130 photographs are associated with the collection.

Site Nos. or Locations from which Data Were Collected: In the Santa Barbara Museum of Natural History records, this site is
designated 130.155, and in the University of California Berkeley Archaeological Research Facility Records it is designated SCrI-3.

**Persons-days and Crew Size:** One month with a crew of four plus Van-Valkenburgh--150 person days.

**Data Collection Procedures:** Hand excavation with shovels and small tools. The excavation was restricted to an area where undisturbed burials were located (near where Olson excavated in 1927).

**Significant Descriptive and Theoretical Conclusions:** None

**Nature of the Archaeological Collection:** The fieldnotes list 238 artifacts and an unspecified number of beads and ornaments. Comparatively little of this collection is still curated by the Santa Barbara Museum of Natural History.

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**Project Name:** Edwards' Excavations on Santa Cruz Island

**Principal Investigator:** H. Arden Edwards

**Institutional Sponsor:** Southwest Museum (?)

**Dates of Fieldwork:** ca. July 28, 1933

**Published and Unpublished Mss.:** Edwards 1956 (this is a transcription of Edwards' journal found in a small notebook housed by the Southwest Museum.)

**Location of Fieldwork:** In the vicinity of Fry's Harbor.

**Theoretical and Empirical Goals of Research:** Presumably to collect artifacts for museum collections.
Types of Data Collected: Edwards apparently found very few, if any, artifacts in excavation. Several surface items may have been collected from this and other sites in the vicinity.

Site Nos. from which Data Were Collected: The UCLA Archaeological Survey designated this site SCrI-210. (There are no sites recorded in this area in the U.C. Berkeley Archaeological Research Facility records.) No map of the island showing the location of this site could be located at the UCLA Archaeological Survey, and Edwards may have excavated at more than one site in the vicinity of Fry's Harbor in any regard. He mentions two "flint working sites" three-quarters of mile up from the coast on ridges, in addition to the sites on the coast.

Person-days and Crew Size: Edwards mentions working with three other people. They may have spent only one day in survey and excavation.

Data Collection Procedures: Edwards says that he "trenched and dug" to a depth of five feet without finding the bottom of the site. Apparently no records beyond the journal exist.

Significant Descriptive and Theoretical Conclusions: None

Nature of the Collection: Edwards mentions finding very few artifacts and no burials. What collections that may exist are probably at the Southwest Museum.

Project Name: Orr's Excavations at the Prisoners Harbor Mound

Principal Investigator: Phil C. Orr

Institutional Sponsor: Santa Barbara Museum of Natural History
Dates of Fieldwork: 1950

Published and Unpublished Mss.: Referred to in Orr's unpublished field report of a 1957 trip to Santa Cruz Island. There are also burial record cards pertaining to this excavation. No field notes were located.

Location of Fieldwork: The Prisoners Harbor Mound. The location on the site is unknown, however, it appears that he salvaged two burials out of the erosion bank adjacent to the stream channel.


Types of Data Collected: Artifacts associated with two burials and portions of the skeletons.

Site Nos. or Locations from which Data Were Collected: UCSB-SCri-240, designated by UCB Archaeological Research Facility as SCri-147.

Person-days and Crew Size: Unknown. Apparently a very small-scale excavation, possibly no more than a few hours.

Data Collection Procedures: Unknown.

Significant Descriptive and Theoretical Conclusions: None

Nature of the Archaeological Collections: Shell beads and ornaments, bone objects, chipped stone artifacts. Four catalog cards on file at the museum pertain to the collection.

Project Name: Orr's 1959 Reconnaissance of Santa Cruz Island

Principal Investigator: Phil C. Orr
Institutional Sponsor: Santa Barbara Museum of Natural History

Dates of Fieldwork: May 25-29, 1959

Location of Fieldwork: Canada de los Sauces and generally the western end of the island, Canada Laguna, and the Central Valley.

Published and Unpublished Mss.: Five page typewritten field report on file at the museum.

Theoretical and Empirical Goals of Research: A preliminary reconnaissance apparently to obtain some idea of the nature of sites on the island.

Types of Data Collected: One doughnut stone from a midden stratum exposed in an arroyo bank under about 20 feet of alluvium.

Site Nos. or Locations from which Data Were Collected: Orr's site record on file at the museum with the designation "donut" appears to pertain to this site. Several such sites in the vicinity described by Orr, in Canada de los Sauces between grove of cyprus and windmill, were recorded by UCSB. This particular site may be UCSB-SCRI-61.

Person-days and Crew Size: Orr and botanist Cliff Smith for about four days.

Data Collection Procedures: Casual reconnaissance by jeep and on foot. Apparently no systematic effort was made to cover a particular portion of the island.

Significant Descriptive and Theoretical Conclusions: Orr reported the presence of deeply buried middens on the island, which he thought were very ancient—perhaps of Pleistocene age. (They probably are not.)
Nature of the Archaeological Collection: Apparently only the doughnut stone was collected.

Project Name: Santa Cruz Island Expedition (Ground Survey)
Principal Investigator: Phil C. Orr
Institutional Sponsor: Santa Barbara Museum of Natural History
Dates of Fieldwork: May 1963, prior to the helicopter survey (see next project).
Location of Fieldwork: generally on the west end of the island.
Theoretical and Empirical Goals of Research: Orr was apparently planning a large-scale excavation on the island, comparable to his work on Santa Rosa Island. This reconnaissance apparently had the purpose of locating prospective sites for future excavation.
Types of Data Collected: Apparently no collections were made. Orr recorded several sites on the western extreme of the island, but no map was found at the museum on which these are plotted.
Site Nos. from which Data Were Collected: No formal numbers were given to the sites. They appear to be in the vicinity of UCSB-SCRI-328.
Person-days and Crew Size: Orr was accompanied by two non-archaeologists, spending five days on the island.
Data Collection Procedures: A casual survey by jeep and on foot.
Significant Descriptive and Theoretical Conclusions of the Research: None.

Nature of the Archaeological Collections: Apparently none were collected.

Project Name: Santa Cruz Island Expedition (Helicopter Survey)
Principal Investigator: Phil C. Orr
Institutional Sponsor: Santa Barbara Museum of Natural History.
Dates of Fieldwork: May 24-25, 1963
Published and Unpublished Mss.: "Brief Report to the Trustees on a Helicopter Survey"--a one-page report.
Location of Fieldwork: Orr apparently ranged over much of the island.
Theoretical and Empirical Goals of Research: Orr was apparently looking for prospective sites for future large-scale excavation.
Types of Data Collected: Visual observations and photographs. He claims to have looked at about 200 sites. Landings were made on a few of the sites; apparently no collections were made.
Site Nos. from which Data Were Collected: Orr did not record any of the sites he looked at.
Person-days and Crew Size: Apparently only Orr and the pilot for a period of two days.
Data Collection Procedures: A casual survey from the air at low altitudes with occasional touch-downs so that a foot reconnaissance could be made.
Significant Descriptive and Theoretical Conclusions: Orr demonstrated
the effectiveness of doing certain kinds of site survey by helicopter, especially over the rugged parts of the island.

Nature of the Archaeological Collections: Apparently no collections were made.

**Project Name:** Hoover's Field Reconnaissance and Mapping of Olson's Sites

**Principal Investigator:** Robert Hoover

**Institutional Sponsor:** U.C. Berkeley Department of Anthropology

**Dates of Fieldwork:** July 1968

**Published and Unpublished Mss.:** Hoover 1971. Field records are on file at the U.C. Berkeley Lowie Museum.

**Location of Fieldwork:** Sites excavated by Olson in 1927-28.

**Theoretical and Empirical Goals of Research:** The objective of the fieldwork was to check the locations of Olson's excavations, map the sites, and in a few cases obtain samples of material from limited test excavations. Hoover's analysis had the objective of creating a more refined artifact typology and a more sensitive relative dating of the sites than was accomplished by Olson.

**Types of Data Collected:** Hoover made topographic maps of each site from which Olson obtained collections except those in the vicinity of Orizaba Cove on the north coast, and he obtained surface and test pit collections from some of the sites as
listed below:

<table>
<thead>
<tr>
<th>UCB Site No.</th>
<th>Number of Catalog Entries</th>
<th>Maximum Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Surface</td>
<td>Test Pit</td>
</tr>
<tr>
<td>3</td>
<td>--</td>
<td>pit alpha: 55</td>
</tr>
<tr>
<td>83</td>
<td>23</td>
<td>--</td>
</tr>
<tr>
<td>84</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>100</td>
<td>7</td>
<td>pit alpha: 5</td>
</tr>
<tr>
<td>104</td>
<td>7</td>
<td>--</td>
</tr>
<tr>
<td>147</td>
<td>22</td>
<td>pit alpha: 54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pit beta: 17</td>
</tr>
<tr>
<td>Chinese harbor</td>
<td>1</td>
<td>(not one of Olson's sites--location unknown)</td>
</tr>
</tbody>
</table>

Site Nos. or Locations from which Data Were Collected: Sites from which collections were made are listed above. The sites mapped are UCB-SCR-3, 39, 81, 82, 83, 100, 103, 104, 122, 131, 135, 138, 147, and 162.

Person-days and Crew Size: Hoover spent two weeks on the island working primarily by himself.

Data Collection Procedures: Hoover was apparently using conventional mapping and test-pitting techniques. His test pit excavations are not described in this dissertation. No maps showing locations of test pits are on file at the Lowie Museum.

Significant Descriptive and Theoretical Conclusions of Research: Hoover presents Olson's data in considerably more detail than Olson did in his 1930 preliminary report. Hoover's relative chronology for the island has more divisions than Olson's, and Hoover was able to correlate his relative chronology with
Orr's chronology for Santa Rosa Island and the chronology for the adjacent mainland.

Nature of the Archaeological Collections: Misc. stone, bone, and shell artifacts and faunal remains. The collections are housed by the Lowie Museum.

**Project Name:** Pilot Study to Evaluate the Potential of Palynology on Santa Cruz Island

**Principal Investigator:** James N. Hill

**Dates of Fieldwork:** Spring 1967

**Published and Unpublished Mss.:** Hevly and Hill 1970. Field notes are on file with Hill at the UCLA Department of Anthropology.

**Geographic Location of Fieldwork:** Posa Canyon, Willows Anchorage, Valley Anchorage, and El Camino Viejo--near the U.C. Field Station.

**Theoretical and Empirical Goals of Research:** Hill casually collected soil samples in order to determine whether fossil pollen was preserved adequately for palynological studies of the paleoclimate and paleobotany of the island.

**Types of Data Collected:** Plastic bags-full of soil from four archaeological sites.

**Site Nos. or Locations from which Data Were Collected:**

- Unnumbered Posa Canyon site: 4 samples, 2 from midden strata, 2 from sterile strata
- UCB-SCrI-122 (Willows): 1 sample
UCB-SCRi-132? (Valley Anchorage): 1 sample
UCB-SCRi-126? (El Camino Viejo): 1 sample
( None of the four sites has been numbered by UCSB.)

Person-days and Crew Size: Hill and assistant. (I was Hill's field assistant.) Two days were spent obtaining the samples, but very little time was spent at any one site.

Data Collection Procedures: The samples were obtained from erosion banks that cut through the site deposits, the surface of the banks being cut back to obtain fresh surfaces. The loci where the samples were extracted were not mapped. The samples were processed by R. Hevly, a palynologist who has done extensive work with Southwestern archaeologists.

Significant Descriptive and Theoretical Conclusions: Hevly and Hill demonstrated that fossil pollen is well preserved in Santa Cruz Island middens and may be used for environmental and subsistence reconstructions. They suspect that fossil pollen may also be preserved in southern California middens in general.

Nature of the Archaeological Collections: Besides the soil samples, which were destroyed in the course of analysis, no other collections were made.

Project Name: Pilot Survey of the Coches Prietos Drainage.

Principal Investigator: James N. Hill (Hill did not participate in the fieldwork, however.)
Dates of Fieldwork: Intermittently during the summer of 1967.

Published and Unpublished Mss.: No report was written based on this fieldwork. Records are on file with Hill at the UCLA Department of Anthropology.

Location of Fieldwork: The complete Coches Prietos Drainage.

Theoretical and Empirical Goals of Research: A complete survey of the Coches Prietos drainage was undertaken with the intent of locating every site in order to gain a preliminary idea of the density of sites on the island, the number of labor days needed to survey a given area, and the amount of time needed to collect and process midden samples from surface deposits. A special form for recording site information was also tried out to determine its effectiveness.

Types of Data Collected: Site records on special "long" forms, site locations plotted on aerial photos and USGS maps, casual and limited surface collections of artifacts, screenings from a 1 x 1-meter by 10 cm test square in each site and a midden soil sample from each site were collected.

Site Nos. from which Data Were Collected: UCSB-SCrI-1 through 23. The UCSB survey team relocated in 1973 all of these sites and retained the numbers assigned in 1967.

Person-days and Crew Size: A crew of two graduate students for approximately 20 working days.

Data Collection Procedures: A foot survey. All land with slopes less than about 15° plus rock shelters were walked over. The
survey failed to locate several sites that were subsequently located by the UCSB team in the 1973 resurvey.

**Significant Descriptive and Theoretical Conclusions:** This project was undertaken to produce information relevant to planning a large-scale project for which J. N. Hill was seeking grant funding. (He was ultimately unsuccessful.) The project demonstrated the presence of a relatively high density of sites—many more than reported by Olson or Rogers for this portion of the island. Moreover, the project revealed that 1 x 1-meter sample squares consumed a large proportion of the survey time and generated more data than could be economically processed. As a result, this data collection technique was abandoned when the UCSB team began survey under my direction in 1973.

**Nature of the Archaeological Collections:** The surface collection of artifacts was retained and is presently housed by the UCSB Department of Anthropology. It consists of only a couple dozen objects.

**Project Name:** Santa Cruz Island Project--Site Survey

**Principal Investigator:** Albert C. Spaulding and Michael A. Glassow

**Institutional Sponsor:** UCSB Department of Anthropology (funded by the National Science Foundation).

**Dates of the Fieldwork:** July 10 to September 10, 1973; June 28 to August 23, 1974.
Published and Unpublished Mss.: Spaulding and Glassow 1972.

Journals and field records are on file at the UCSB Department of Anthropology. (Reports in progress.)

Location of Fieldwork: A stratified random sample of 14 out of 153 drainage areas from 9 strata consists of the following localities:

<table>
<thead>
<tr>
<th>Arbitrary Drainage No.</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>West Point, northwest corner of Island</td>
</tr>
<tr>
<td>2</td>
<td>Directly east of above</td>
</tr>
<tr>
<td>26</td>
<td>East Twin Harbor</td>
</tr>
<tr>
<td>34</td>
<td>Rancho del Norte, east of Prisoners Harbor</td>
</tr>
<tr>
<td>64</td>
<td>South coast of the isthmus</td>
</tr>
<tr>
<td>78</td>
<td>Between Willows and Coches</td>
</tr>
<tr>
<td>85</td>
<td>Southeast of Sierra Blanca on south coast</td>
</tr>
<tr>
<td>90</td>
<td>Morse Point</td>
</tr>
<tr>
<td>96</td>
<td>First drainage south of Canada de los Sauces</td>
</tr>
<tr>
<td>97</td>
<td>Canada de los Sauces</td>
</tr>
<tr>
<td>112</td>
<td>Canada Cervada at the airstrip</td>
</tr>
<tr>
<td>117</td>
<td>North side of upper Canada Cervada</td>
</tr>
<tr>
<td>136</td>
<td>Southeast of Mount Diablo</td>
</tr>
<tr>
<td>140</td>
<td>South of Mount Diablo</td>
</tr>
<tr>
<td>151</td>
<td>Southeast of winery near Stanton Ranch headquarters.</td>
</tr>
</tbody>
</table>

In addition, the following areas were surveyed outside the stratified
random sample: vicinity of Arch Rock, vicinity of Christis Beach, vicinity of Forneys Cove, Coches Prietos drainage, vicinity of Punta Arena, vicinity of Stanton Ranch, vicinity of Prisoners Harbor, vicinity of western end of Chinese Harbor, vicinity of chert outcrops in eastern highlands near property boundary.

**Theoretical and Empirical Goals of Research:** A complete sample of sites was sought from each of the drainages surveyed. The survey's objective was to determine the relationship between spatial variations in subsistence-settlement patterns and variations in the locations of terrestrial and marine resources. In a broader perspective, it was anticipated that the project would provide data relevant to understanding the evolution of marine-adapted cultural systems on the Santa Barbara Channel.

**Types of Data Collected:** Description of the surface characteristics and environmental context of each site on special site record forms, 35mm B & W photographs of each site, one or more cloth bags full of midden soil from directly beneath the surface of each midden-bearing site.

**Site Nos. from which Data Were Collected:** Since many of the sites recorded on maps at the U.C. Berkeley Archaeological Research Facility could not be precisely correlated with site locations in the field, and since the UCSB team intended to make finer distinctions in defining individual sites, a new numbering
system was established. Numbers assigned to sites were SCrI-1 through SCrI-380.

**Person-days and Crew Size:** Four two-person teams plus myself carried out the survey in the 1973 season for a total of about 410 person-days. I worked with my wife during portions of the 1974 season for a total of 28 person-days in finishing the survey.

**Data Collection Procedures:** **Sampling design:** The island was divided into 153 interior and coastal drainages. These were grouped into nine sampling strata based on vegetation community type, coastline characteristics (including presence or absence of coastline), and drainage size. One to three drainages were selected for complete survey using a random numbers table. **Sample Size:** The sample included approximately 10 percent of the island's area. **Reconnaissance Procedures:** All ground that was less than about 15° slope was surveyed by two-person teams walking parallel transects or zig-zag patterns over the ground so as to cover the land at no more than approximately 10-meter intervals. All rocky slopes and cliff faces, except where completely inaccessible, were checked for rock shelters. In areas with thick grass or duff cover, the sod was removed at approximately 10-meter intervals with a hand mattock or geology hammer to search for obscured midden deposits. Once a site had been located, an aluminum stake with the site number stamped on it was driven into the site.
area's approximate center. Site dimensions from the stake were determined with a sighting compass and by pacing.

**Intensity of Coverage:** It is assumed that over 90 percent of the sites in each drainage surveyed were located.

**Significant Theoretical and Descriptive Conclusions:** While analysis of the data is still in progress, the survey has demonstrated the inadequacy of all previous surveys. Based on the number of sites found and the area of the island covered, the total number of sites on the island is somewhere in the neighborhood of 3000. The diversity of site locations appears to indicate that many kinds of terrestrial resources were exploited in addition to the marine resources.

**Nature of the Archaeological Collection:** Beyond the midden samples, surface collections consist of artifacts that might serve as time markers or that stood the danger of being picked up by trespassers. The site records now comprise a SELGEM file. The collections are housed by the UCSB Department of Anthropology.

**Project Name:** Santa Cruz Island Project--Prisoners Harbor Mound Excavations

**Principal Investigator:** Albert C. Spaulding and Michael A. Glassow

**Institutional Sponsor:** UCSB Department of Anthropology (funded by the National Science Foundation).

**Dates of Fieldwork:** June 24 to August 23, 1973

**Published and Unpublished Mss.:** Spaulding and Glassow 1972. Field records are on file at the UCSB Department of Anthropology.
Location of Fieldwork: Prisoners Harbor Shellmound

Theoretical and Empirical Goals of Research: The excavation's objective was to obtain a large collection using modern volumetric controls from a stratified site representing a relatively long period of prehistoric occupation so that cultural change—particularly change in subsistence and economy—could be determined.

Types of Data Collected: Artifacts, unmodified bone, chert flakes and cores, soil samples, topographic map of the site, stratigraphic cross-sectional drawings, color and black-and-white photographs.

Site Nos. or Locations from which Data Were Collected: UCSB-ScrI-240 (UCB-ScrI-147)

Person-days and Crew Size: Spaulding, two graduate student crew chiefs, and seven crew. Forty working days were spent in the excavation making a total of 400 person-days.

Data Collection Procedures: Two strata trenches were excavated, one on the north (seaward) and one on the south (landward) side of the mound. The trenches were 2.5 meters wide, and each was excavated by first taking down in relatively gross stratigraphic units two parallel 0.75 meter-wide trenches separated by a one-meter-wide balk, which was taken down in stratigraphic levels after the strata observed on both sidewalls were mapped. Screening through half-inch and eight-inch meshes was done selectively, more frequently of the balk deposits.
The seaward trench was excavated to a maximum depth of 3 meters below surface at the end nearest the center of the mound, with the depth tapering off to surface at a distance of 8 meters from the deep end. The landward trench was excavated to a depth of 5 meters below surface at the end towards the mound's center and was stepped up to the surface at 14 meters from the deep end. The bottom of the mound was not reached in either trench. (The bottom of the site extends below the water table.)

**Significant Descriptive and Theoretical Conclusions:** Although analysis is not complete, the excavation revealed that a considerable time depth is represented in the mound and that much of the deposit is still undisturbed in spite of several previous excavations.

**Nature of the Archaeological Collections:** The collection contains chipped and ground stone, bone and shell artifacts, faunal remains, and midden samples. The majority of the items in the collection are chert flakes and cores and faunal remains. The collection, containing an estimated 5000 catalog entries, is presently being processed and analyzed at the UCSB Department of Anthropology.

**Project Name:** Santa Cruz Island Project--Column Sampling and Radio-carbon Dating of Coastal Sites
Principal Investigator: Albert C. Spaulding and Michael A. Glassow

Institutional Sponsor: UCSB Department of Anthropology (funded by the National Science Foundation)


Published and Unpublished Mss.: Spaulding and Glassow 1972. (Reports in progress.) The radiocarbon dates will be published by R. E. Taylor of U. C. Riverside. All field records are on file at the UCSB Department of Anthropology.

Location of Fieldwork: Fourteen coastal or near-coastal sites on the northern, western, and southern coasts of the island.

Theoretical and Empirical Goals of Research: Column and radiocarbon samples were obtained in order to derive a dated sequence of change in the proportions of different fish species exploited throughout the prehistory of the island. These data are deemed relevant to testing a series of hypotheses having to do with the relationship between population growth and change in subsistence.

Types of Data Collected: Vertical 25 x 25 cm. or 30 x 30 cm. column samples were obtained from cuts made into eroded cross-sections of site deposits or in a few cases into the sides of excavated test pits.

Site Nos. or Locations from which Data Were Collected:
<table>
<thead>
<tr>
<th>UCSB Site No.</th>
<th>Location</th>
<th>No. Columns</th>
</tr>
</thead>
<tbody>
<tr>
<td>277</td>
<td>North coast near west end</td>
<td>1</td>
</tr>
<tr>
<td>195</td>
<td>Near Forneys Cove</td>
<td>2</td>
</tr>
<tr>
<td>236</td>
<td>Christis Beach</td>
<td>2</td>
</tr>
<tr>
<td>191</td>
<td>Christis Beach at mouth of Canada Cervada</td>
<td>4</td>
</tr>
<tr>
<td>145</td>
<td>Mouth of canyon just south of Canada de los Sauces</td>
<td>2</td>
</tr>
<tr>
<td>146</td>
<td>Same as above, next terrace up</td>
<td>2</td>
</tr>
<tr>
<td>292</td>
<td>Morse Point</td>
<td>2</td>
</tr>
<tr>
<td>192</td>
<td>Morse(Johnson's) Landing</td>
<td>2</td>
</tr>
<tr>
<td>109</td>
<td>Punta Arena</td>
<td>2</td>
</tr>
<tr>
<td>127</td>
<td>Just east of Punta Arena</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Coches Prietos Anchorage</td>
<td>1</td>
</tr>
<tr>
<td>240</td>
<td>Prisoners Harbor Mound (50 x 50 cm. column)</td>
<td>1</td>
</tr>
<tr>
<td>369</td>
<td>Ridge between the two Twin Harbors Drainages</td>
<td>1</td>
</tr>
<tr>
<td>363</td>
<td>Same as above, farther from coast</td>
<td>1</td>
</tr>
</tbody>
</table>

Person-days and Crew Size: 50 person-days spent altogether.

Data Collection Procedures: The sites selected for column and radiocarbon sampling were coastal sites occurring in nearly all of the drainages selected for survey that occur on the coast. Usually but no always the sites selected had exposed faces of site deposits resulting from some form of erosion. An attempt was made to select a series of sites representing differing
coastal environmental situations and appearing to represent relatively long prehistories. The column samples were divided into stratigraphic units which were in turn divided into arbitrary units if over about 25 cm thick. Charcoal or shell samples were collected for radiocarbon dating from distinct, comparatively narrow strata. Each stratigraphic unit of the columns was screened one-eighth mesh in the field, and all screenings were bagged. Each column was drawn to scale in order to record stratigraphic divisions and photographed with 35 mm. color slide film.

Significant Descriptive and Theoretical Conclusions: Analysis is still underway. The radiocarbon dating, being undertaken at the laboratory at U.C. Riverside, is partially complete and indicates a prehistoric sequence starting at least by 4700 B.C.

Nature of the Archaeological Collections: The column samples are being separated into constituents, all of which are being retained for the time being at the UCSB Department of Anthropology. The bone will be permanently curated.

Project Name: Santa Cruz Island Project-- Test Excavations in the Late Components of UCSB-SCrI-328

Principal Investigator: Albert C. Spaulding and Michael A. Glassow (This aspect of the project was directed in the field by Stephen H. Horn.)
Institutional Sponsor: UCSB Department of Anthropology (funded by the National Science Foundation).

Dates of Fieldwork: June 24 to August 23, 1974

Published and Unpublished Mss.: Spaulding and Glassow 1972.

Horne is basing his doctoral dissertation on this aspect of the research. Field records are on file at the UCSB Department of Anthropology.

Location of Fieldwork: Site near Forney’s Cove. That portion of the site in which glass trade beads were found was the focus of the excavation.

Theoretical and Empirical Goals of Research: Horne is studying the adaptive changes that occurred among the Chumash in the protohistoric-historic period (ca. 1542-1815) as a result of depopulation. His objective was to obtain from the historic components of the site samples of faunal remains that would reflect, among other things, changes in fishing strategies.

Types of Data Collected: Column and control pit samples from which artifacts and faunal remains may be extracted.

Site Nos. from which Data Were Collected: UCSB-SCR-328 (this may be UCB-SCR-13).

Person-days and Crew Size: The crew ranged from two to four (including Horne) for approximately 30 working days. The total labor days is approximately 75.

Data Collection Procedures: 50-cm-wide trenches were excavated to an approximate depth of 50 cm. through the margins of house
depressions previously determined to be post-contact by the presence of glass beads. Trench locations were selected using a probability sampling design. The trench allowed strata to be defined and undisturbed areas to be located. The column samples and control pits were excavated out from the sides of the trenches in relatively thin levels--5 to 15 cm. thick. Deposits of the column and control samples were screened one-eight mesh, and screenings from the column samples were retained for later sorting in the laboratory. Maps were made to the portions of the site excavated and of the excavations themselves.

**Significant Descriptive and Theoretical Conclusions:** The collections are still being processed, and the analysis is underway. Horne located one of the historic villages on the island, which is probably one of the named villages on Henshaw's list, although which one is open to question.

**Nature of the Collections:** All artifacts, flakes, and animal bone are being sorted out from the samples. These will be retained after analysis. However, the large quantities of shell will eventually be discarded. The rest of the collection will be housed by the UCSB Department of Anthropology.

**Condition of the Archaeological Resources**

The condition of archaeological resources on Santa Cruz Island
is quite variable from one region to another. The overall condition is considerably better than the resources of the coastal mainland, and they are certainly in better condition than those on San Miguel and Anacapa Islands. However, Santa Rosa's are at least as well preserved, if not better.

Archaeological sites on Santa Cruz share with those of the other channel islands the unique characteristic of not having been disturbed by rodent burrowing. Since all the coastal mainland sites have undergone extensive disturbance by rodent burrowing, this characteristic is very significant. It means that even comparatively thin and less obvious stratigraphic units may be defined and that strata are usually not contaminated by deposits from above or below.

Early excavations on the island, which were crude by modern standards, have destroyed substantial portions of many of the large coastal sites. It may be that close to 50 percent of the large cemeteries found in these sites have been totally excavated. Nevertheless, nearly every one of these sites that have been subjected to intensive excavation (or clandestine looting) has substantial untouched deposits left that would yield a wealth of information in terms of modern archaeological research problems.

Erosional damage to sites is found in all parts of the island. Overgrazing by sheep not only has caused extensive sheet-wash in many areas but also has apparently resulted in arroyo-cutting or entrenchment in nearly all of the larger drainages on the island. On the other hand, the increased erosion has caused in certain areas
comparatively rapid accumulation of soil on alluvial fans, as evidenced by fences or rows of fence posts that are almost completely buried. So far as the damage to sites caused by these types of erosion is concerned, many smaller sites on ridge tops and gentle slopes have been literally washed away by sheet wash, leaving behind stained subsoil and a scatter of heavier stone tools. Other sites have been sliced away by the expanding sides of entrenched arroyos, although this type of erosion has very likely exposed more sites that were formerly deeply buried under alluvium to the scrutiny of archaeologists than it has washed away. Cliff recession caused by wave erosion has obviously caused substantial damage to certain sites scattered around the periphery of the island. Finally, wind erosional damage to sites appears to be comparatively minimal and is easily confused with damage caused by water erosion with which the former is usually associated. Several sites on the southern and western coasts appear to have undergone some wind erosion. Taking all types of erosional damage together, the overall extent on the island is not serious. Many sites appear not to have been affected by any type of erosion, and even those that have undergone extensive erosion usually have some remaining intact deposits.

Somewhere around 100 sites have been affected to a greater or lesser extent by various construction activities on the island. Several sites in the vicinity of Stanton Ranch have been affected by building construction, a large number of sites have been cut through by roads, several outlying buildings are on sites, and stream rechanneling has caused removal of about one-third of the Prisoners
Harbor Mound.

In spite of these diverse disturbances to the archaeological resources on Santa Cruz Island, the extent of preservation is quite remarkable to anyone who has worked on the mainland in areas of urban and agricultural activity. It can truly be said that Santa Cruz Island, along with Santa Rosa Island, represent one of the few remaining regions left in California where the archaeological resources are relatively undisturbed.

Evaluation of Past Work

Evaluation of Surveys: The first serious reconnaissance on Santa Cruz Island with the intent of locating and recording archaeological sites is Outhwaite's 1916 survey. His original blueprint map of the island, nearly to the scale of the USGS 7.5' series, is on file at the U.C. Berkeley Archaeological Research Facility. In 1927 and 1928 Olson used this map to plot the locations of additional sites, and for his 1930 publication both Olson's field numbered sites and Outhwaite's sites were renumbered as one continuous series. At some later date these locations were transferred to the four 1:25,000 Corps of Engineers maps that cover the island, and it is this set that today comprises the Berkeley Archaeological Research Facility's master set. (The Corps of Engineers maps are virtually identical to the contemporary USGS maps of the island, except for a slight difference in scale.)
The UCSB survey team encountered considerable difficulty in correlating sites on Berkeley's maps with locations in the field. There appear to be three major reasons for this: The Outhwaite map shows only the outline of the island and the major drainages; there are no contour lines. Consequently, sites could not be mapped as precisely as is possible on the modern 7.5' series, and in transferring Outhwaite's and Olson's site locations from Outhwaite's map to the Corps of Engineers maps inevitable errors were either made or perpetuated. Secondly, both Outhwaite and Olson were "lumpers" in comparison to modern workers. What would be defined as two or three sites today were designated one by Outhwaite or Olson. Thirdly, Outhwaite and Olson appear to have neglected smaller or inconspicuous sites. Consequently, where Olson and Outhwaite defined a series of, say, four sites along a drainage starting at the coast, there might actually be six, and it may be unclear which four of the six they included. As a result of these confusions, the UCSB survey team, under my direction, decided to initiate a completely new numbering system and to worry about possible concordances with the Berkeley sites once the area of a drainage had been thoroughly surveyed. There are justifiable objections to this decision--particularly with respect to site numbers that do refer to discrete sites and appear in the published literature--but the convenience of a new numbering system was deemed an overriding factor. It should also be mentioned that Outhwaite and Olson did not make comprehensive written descriptions of each site's characteristics and location, as became the practice
with the founding of the Berkeley Archaeological Survey in 1948. (There are, however, very brief descriptions of some of the sites recorded by Olson in his fieldnotes.)

Inferring from the small-scale map published in his book, Rogers also recorded the locations of sites on Santa Cruz Island, and brief mention of the characteristics and location of some of them appear both in his fieldnotes and in his book. But no map of the island showing site locations could be located at the Santa Barbara Museum of Natural History (although it may in fact exist there in files unknown to me or the new curator of anthropology). Moreover, Phil Orr, while he was a curator at the museum, also recorded sites on the island for which he filled out site record forms of his own format. However, not all of his sites were integrated into the numbering system he started for the island, and no map showing site locations could be located in the museum files. Nevertheless, Orr had numbered in his system all of the sites excavated by Rogers in 1927 for which collections exist at the museum. For all intents and purposes, therefore, the SBMNH site records for Santa Cruz Island are valuable only with reference to Rogers' and Orr's work on the island.

UCLA's survey of the Coches Prietos drainage was relatively thorough, although the resurvey by the UCSB team in 1973 revealed that the UCLA team missed several sites, all of which are rather inconspicuous. The UCLA team numbered the sites from 1 to 23, and the UCSB team retained these numbers for the respective sites and began using numbers after 23 for additional sites found in this and
other drainages.

The UCSB survey demonstrated that the earlier surveys by Outhwaite, Olson, and Rogers failed to locate even one-tenth of the discrete archaeological deposits that exist on the island. It is quite obvious that the earlier surveys concentrated on recording sites near the coast. In fact, it is doubtful whether any attempt was made to cover much of the interior beyond seemingly casual forays up a canyon or over relatively flat land. Assuming for the moment that the roughly ten percent of the island's area covered by the UCSB team is close to being a representative sample of the total area, the fact that 380 sites were recorded by the UCSB team would mean that the total sites on the island is somewhere over 3000. Incidentally, this estimate is consistent with the results of Rozaire and Kritzman's survey of San Miguel Island.

To conclude, the mapping and/or description of site locations by Outhwaite, Olson, and Rogers is usually adequate only for purposes of relocation of the larger coastal shell middens that they recorded. However, their surveys failed to locate most of the other estimated 3000 sites on the island. Finally, site records accompanying these earlier surveys are largely absent. The UCSB survey remedies these shortcomings only for those discrete areas on the island that have so far been surveyed.

**Evaluation of Excavations:** The excavations by Schumacher 100 years ago were very casual, and since little in the way of records are associated with his work, the collections he obtained are of
comparatively little value. Added to this, portions of his collections are no longer at the Smithsonian Institution. Nevertheless, his collections do contain wooden objects in a very good state of preservation, and these have not and could not be duplicated by later excavations.

Of much more value are Rogers' collections. The locations of most of his excavated sites can be ascertained with little difficulty, and the collections are segregated by site. His field records leave a lot to be desired, however. Not only did he fail for the most part to make maps of his excavation units and the locations of burials and other features within these, but he also did not include burial-by-burial descriptions. There are, however, records that appear to relate catalogued artifacts with excavation units and individual burials. (These records are not the catalog cards at the Santa Barbara Museum of Natural History, but rather the typed and bound catalog lists pertaining to Rogers' collections.) Consequently, with some difficulty, artifact-burial associations may be reconstructed, although there is still the question of how accurate and complete these catalog lists are. Another difficulty with Rogers' work is the lack of information on which portions of the collection were obtained from screened deposits and which were not. Exceptions to the usual nature of Rogers' excavation records are those pertaining to two cemeteries excavated in the Arch Rock vicinity. Rogers' assistant, Philip Owen, kept notes in which each burial is described, and he even includes a rough sketch of burial locations within the plot of ground that was excavated. If the collections pertaining
to these sites are relatively complete, then they would be relevant to a much wider range of archaeological problems than is otherwise the case with Rogers' collections.

By modern standards, Olson's excavations were much more completely carried out. He excavated in distinct aerial units, undertook screening of deposits, and drew at least sketch maps showing the locations of his excavation units, although the maps usually do not show the locations of burials within the excavation units (assuming that Hoover's reproductions of the maps are as complete as possible). (The original maps were not seen by me at Berkeley, but Hoover (personal communication) assures me that they are there.) Nevertheless, Olson's excavations left something to be desired. Most of his excavation where burials were not being exposed appears to have been done relatively rapidly with pick and shovel, and although it is evident that he did more screening than Rogers, there is little indication when it was done and when it was not.

 Olson's field notes contain descriptions of each burial excavated, indicating position, the excavation unit in which it was found, and associations. Moreover, the collections are catalogued with the excavation unit and/or burial provenience. Consequently, it is possible and relatively easy to use Olson's collections and records to make modern studies of mortuary practices as well as to seriate chronologically the artifact types.

Looking at both Rogers' and Olson's work from a broader
perspective, their excavations of sites on Santa Cruz Island represent highly skewed samples. Not only did they emphasize larger sites that occurred on or very near the coast, to the exclusion of smaller sites and interior sites of varying sizes, they also concentrated on cemetery excavations. Olson would often test other areas of the sites, but the bulk of the excavations would inevitably be where cemeteries were discovered. In addition, both excavators were not in the habit of collecting reasonably large samples of faunal debris, waste flakes and other items that normally are collected in some controlled way today. What faunal collections were made by Olson were apparently discarded some years ago by the Lowie Museum as a space-saving measure. Finally, neither of the two as a matter of course retained all postcranial bones as well as crania (although McKern apparently found enough relatively complete skeletons for his skeletal analysis).

Much of Olson's 1927 and 1928 collections were further analyzed by Robert Hoover. However, there is some problem in using the data as presented by Hoover as well as accepting some of Hoover's conclusions. The problems appear to revolve largely around the difficulties always inherent in working with museum collections obtained by another investigator at some distant time in the past. First, Hoover had access only to those portions of the collections from the Coches Prietos, Willows, and Christis sites (UCB-SCr-I-131, 122, and 81, 82 and 83, respectively) that were stored at the Lowie Museum. However, significant portions of these collections are also
stored at the Santa Barbara Museum of Natural History since they were obtained in 1927 during that portion of the season when U.C. Berkeley and the Santa Barbara Museum of Natural History were still carrying out a joint expedition. Second, according to C. King (personal communication), who has recently been working with Olson's collections, Hoover's tabulations of shell artifacts from UCB-SCrI-3 at Forneys Cove are mixed. At least, they are inconsistent with tabulations given in Gifford (1947). UCB-SCrI-3 should actually be placed in time earlier than UCB-SCrI-83 instead of later, as indicated by Hoover. Finally, a number of unexplained inconsistencies in tabulations make use of the data presented in Hoover's dissertation difficult. In a recent computer analysis carried out by one of my students of the data presented by Hoover from UCB-SCrI-100, the Posa Landing site, it was found that the initial list of burials having associated artifacts does not correlate with the tabulations per artifact type that follow. As a result of these difficulties, further attempts to work with Olson's data will probably have to be made on the collections themselves.

A cemetery at UCB-SCrI-3 was also excavated by Richard Van Valkenburgh in 1932. His work and the quality of information associated with the collections are in many respects comparable to that of Rogers in that artifact associations were not recorded for each burial. However, a small map was drawn that shows the location of the excavations, a list of associations with 13 of the burials was made, and a large number of photographs of the excavations exist. In these
In these respects, VanValkenburgh's excavations were of a higher quality than Rogers'.

Orr's work, consisting of a small excavation at the Prisoners Harbor Mound and some casual reconnaissances, is poorly documented, and comparatively little research value is associated with what little information is available. Orr's work was really only preliminary.

Hevly and Hill's analysis of pollen samples from several sites on the island is very significant in that it reveals the potential that palynology may have in the study of culture-environmental relationships. The exact location of where the samples were extracted were not mapped, however. While three of the sites may be relocated, the exact spots in the sites from which the samples were extracted may not. The fourth site in Posa Canyon may be virtually impossible to relocate because of continued recession of the arroyo walls. In all fairness, though, Hill's original intent in collecting the samples was to determine whether or not palynology could be undertaken on the island.

The UCSB excavations at the Prisoners Harbor Mound (UCSB-SCrI-240) represent the most rigorously controlled large-scale excavations that have so far been undertaken on the island. The collections are associated with detailed records on three-dimensional provenience, and volumetric controls were relatively rigorous. Moreover, effort was made to collect representative samples of faunal remains, waste flakes, and cores, and in general relatively small artifacts. These factors make the collection rather unique in comparison to all others obtained from the island. The column sample excavations and the small-
scale test excavations done by the UCSB team at UCSB-SCrI-328 are also associated with good provenience and volumetric controls, although these excavations were highly specialized with respect to problem orientation and type of data collected.

In summary, the archaeological work on Santa Cruz Island reflects in a general way the evolution of archaeological method and technique over the past 100 years. Schumacher's 1875 excavations were little better than present-day relic hunting and were oriented toward obtaining museum collections from archaeologically unknown regions. Rogers' and particularly Olson's excavations of the 1920's represent a greater concern for recording provenience and collecting information that could be used to establish chronologies. The most recent research by UCLA and UCSB represents the modern era of problem orientations concerned with ecological and evolutionary theory and more specialized forms of data collection that depart from the earlier focus on cemetery excavation. It is worth pointing out, however, that the collections and field records associated with earlier work represent a tremendously valuable data base that may be exploited to investigate a number of modern research problems. Among the more obvious is the evolution of sociopolitical organization, craft specialization, and regional economic systems.

Research Potential of the Archaeological Resources

The archaeological research potential of Santa Cruz Island has
barely been tapped by all the investigations that have transpired up to now. The estimated 3000 sites of varying sizes and contents have relevance to a variety of current archaeological research topics, and considering that the prehistory extends back to at least ca. 4500 B.C. the archaeological resources should be relevant to the typically archaeological concern with discovering the nature of cultural evolution.

Archaeological evidence accumulated so far indicates that fishing was a major subsistence pursuit through much of the island's prehistory, yet the nature of the development of fishing subsistence and technology still has not been blocked out. Studies of other aspects of subsistence would also be important. It is known that shellfish collection was always an important subsistence activity, and its degree of importance at different periods of the island's prehistory, particularly as fishing became increasingly important, would be an interesting research problem. In addition, various terrestrial products probably varied in importance through prehistory. The island contains abundant oak and island cherry (the pits of which were sought, not just the fruit, which is minimal) that were undoubtedly exploited as they were on the mainland during at least some periods of prehistory. The presence of stone mortars and pestles in many of the sites on the island appears to reflect this. Moreover, the abundance of "doughnut stones"—really digging stick weights—in artifact collections from the island indicates that roots, bulbs, or tubers were exploited. Compared to the other northern Channel Island, terrestrial plant resources are much more abundant, and they were probably much more important in aboriginal
subsistence on Santa Cruz Island than on the other islands.

The prehistoric settlement patterns on Santa Cruz Island appear to have been very complex and to have been characterized by a relatively high degree of mobility. Sites occur literally everywhere on the island; there is probably no site that has its nearest neighbor more than a quarter mile away. This appears to be in marked contrast to the mainland, where even on the coast there are stretches of nearly a mile in length with no archaeological sites (although this is certainly a maximum). Thus the archaeological data base on the island is relevant to research that used settlement pattern data as a basis for inferences about the nature of cultural adaptations.

The archaeological resources of the island would also be ideally relevant to studies of the evolution of sociopolitical organization. One of the data bases for studying this realm of culture is cemeteries, where status differences between individuals is reflected in mortuary practices. In spite of the fact that many of the large coastal cemeteries have already been excavated (or looted), my observations during the UCSB survey indicate that many cemeteries are left. Moreover, quite a number of sites contain house depressions, and extrapolating from Orr's work of Santa Rosa Island, house floors and presumably also house contents can be identified. Therefore, if the local statuses of residents varied from house to house, as is documented to some extend for the Chumash of the historic period, then these statuses may be reflected in the variations in house contents (and possibly also architecture).
The study of economic organization and its evolution through prehistory is another research topic for which the island's data base is demonstrably relevant. There are a number of sites in the isthmus area where chert was quarried and manufactured into small tapering bladelets. It appears that this activity was carried out by people permanently residing in some of these sites. In sites on other portions of the island the bladelets are found without the chert cores from which they were knapped. These bladelets usually have small flaked tips and are invariably associated with an abundance of olivella shell fragments, the principal byproduct of shell bead manufacture. These sites are also associated with evidence of residential activities. Thus, at least in so far as the production of shell beads is concerned, there is evidence of economic specialization. Moreover, bladelets were found to be frequent in relatively deep deposits at the Prisoners Harbor Mound, indicating that this industry has substantial time depth. Expectably, other types of crafts or industries were probably also associated with economic specialization, and there may have been specialization in subsistence as well. It should also be kept in mind that ethnohistoric and ethnographic evidence indicates that shell beads were used as a medium of exchange by the Chumash and that the islands were the source of much of the shell bead money. (See section on Ethnographic Background.) Economic specialization may therefore be perceived in the context of regional economics of the Santa Barbara Channel and beyond.

The evidence cited above for economic specialization should be
viewed as only hints of the tremendous potential the archaeological record of Santa Cruz Island has for research on this topic. The origin and development of shell bead manufacture and use have not been worked out, nor have other types of specializations been adequately demonstrated.

Recommendations

Considering that Santa Cruz Island is not government owned, it would be inappropriate to make recommendation concerning management. It is worth noting, however, that protection of archaeological resources on this island is generally better in comparison to the government-owned Anacapa and San Miguel Islands, especially if the relative sizes of the islands and the greater attractiveness of Santa Cruz Island sites to relic-hunters is taken into consideration.
Environmental Description

Santa Rosa Island is the second largest of the northern Channel Islands, being 84 square statute miles in area. In fact, none of the southern Channel Islands is larger than Santa Rosa. The closest point to the mainland, Coal Oil Point near Goleta, is 27 statute miles distant, and it is three miles from San Miguel Island to the west and six miles from Santa Cruz Island to the east. The island's length is about 14.5 miles, and its breadth, much greater than that of Santa Cruz Island, is about ten miles.

The highest elevation on Santa Rosa Island is 1561 feet, on the mountainous ridge running along an east-west axis through the southern third of the island. Thus, the land along most of the southern side of the island is much steeper and more rugged than that on the northern side. The northern side, in fact, is dominated by broad, flat terraces that are dissected at intervals by steep-sided canyons. The coastline is quite variable in physiographic characteristics. Along the northwest, northeast, and southwest coasts broad sandy beaches are prevalent, and these are often flanked by extensive sand dune formations. Cliffs, or at least very steep slopes, meet the sea along the northern extreme of the island and at intervals along the
southern coast. There are a number of spots along the coast where small boats may land, although there are no well-sheltered coves of the type that are so prevalent on Santa Cruz Island.

The geology of Santa Rosa Island, described by Weaver, et al. (1969), consists of Tertiary sandstones, shales, siltstones, and volcanics which are covered on the northern half of the island by thick quaternary deposits. The Monterey Formation, consisting primarily of easily eroded shales, is prevalent along much of the northern coast. Eocene, Oligocene, and Early Miocene shale and sandstone formations are found in a complex order in a series of exposures on the south flank of the island. These are interbedded with early Miocene volcanics consisting of basalts, breccias, and conglomerates.

The quaternary (Pleistocene) deposits of the southwest coast have been described by Orr (1967, 1968:14-48). The Malibu terrestrial beds comprise the very extensive upper terrace deposits prevalent on the northwestern portion of the island. Orr dates these within the Illinoian glacial period (1968:17). Forming a lower terrace around much of the periphery of the island is the upper surface of the Santa Rosa Island Formation, which has been studied in great detail by Orr (1968:19-27). These deposits, divided into three principal "members," date within the Third interglacial and the Wisconsin glacial periods. Bones of the extinct dwarf mammoth have been found in both the Malibu beds and the Santa Rosa Island formation, and Orr believes that the mammoth remains are associated with evidence of human occupation in
the upper (Tecolote) member of the Santa Rosa Island formation
(dating within the Wisconsin glacial between 37,000 and 10,400 B.P.)

The flora of Santa Rosa Island does not appear to have been as
intensively studied as that on some of the the other Channel Islands,
and the following description of the island's vegetation is therefore
necessarily sketchy. Three hundred forty-seven species have been
found on Santa Rosa. Of these, seven species, subspecies, or varieties
are endemic to only Santa Rosa (Raven 1967:58). In comparison to
Santa Cruz Island, Santa Rosa does not have heavily wooded areas, which
may partly be accounted for by the strong, nearly incessant winds
from the northwest. The western half of the island is almost
exclusively open grassland with frequent patches of cactus (Opuntia sp.),
especially on slopes, and the canyons do not contain extensive stands of
shrubs or trees. Oaks are represented by comparatively few species
(only three are described by Muller 1967:73-74), and these usually occur
as small stands in sheltered portions in some of the northern canyons
and on the sides of Sierra Negra, the highest land on the island
(Orr 1968:2). Usually scattered shrubs of several species occur on
sheltered slopes. Toyon (Heteromeles sp.), manzanita (Arctostaphylos sp.),
and chamise (Adenostema fasciculatum) are among the most prominent
shrubs on slopes, and in the bottoms of sheltered canyons are occassion-
ally found willows (Salix lasiopleus) and Catalina cherry (Prunus
Lyonii).

Santa Rosa Island also has small stands of two species of pines.
The closed-cone or island pine (*Pinus muricata*) occurs almost exclusively in one stand at an altitude between 600 and 1000 feet above sea level on the north to west facing slopes in the northeast sector of the island (Linhart and Conkle 1967:164). (In contrast, the island pine is widespread on Santa Cruz Island.) Torrey pines (*Pinus torreyana*) are found only on the slope facing Beechers Bay in the northeast sector of the island at altitudes between 200 and 500 feet. Interestingly, Torrey pines are not found on any of the other Channel Islands and occur naturally at only one other locality: on the coast just south of Del Mar, San Diego County, California.

Orr (1968:12) reports that the "deserts" of drifting sand of the eastern and western ends of the island have distinctive plant communities that are particularly noticeable during wet years when lupine (*Lupinus albifrons* and *L. arboreus*), California poppy (*Eschscholzia californica*) and thistles (*Cirsium occidentale*) come into bloom.

Rocky shores around the island provide bountiful numbers of mussel (*Mytilus californianus*) and black abalone (*Haliotis cracherodi*). Other species of abalone, as well as other edible shellfish, are found in deeper water just beyond the intertidal zone. Seals (*Phoca vitulina*) and sea lions (*Zalophus californianus*), as well as a few other species of sea mammals, are again becoming numerous in the waters around the island, and according to Bartholomew (1967) these two species haul out on the island's shores. Three species of terrestrial mammals are endemic to the island (Orr 1968:13): the island fox
(Urocyon littoralis), the island skunk (Spilogale gracilis), and the deer mouse (Peromyscus maniculatus). Significantly, there have apparently never been burrowing rodents such as gophers and ground squirrels on the island to churn up archaeological deposits.

The climate of Santa Rosa Island is in many ways similar to that of the other Channel Islands: cool, foggy summers and rainy winters. Rainfall averages around twelve inches annually. Strong prevailing winds from the northwest have an obvious influence on the island's vegetation, as is evident from the wind-sculptured stands of low brush that are able to survive its onslaught.

History of Land Use

The following comments on the history of land use of Santa Rosa Island are based on Holland's (1962) history of the island. The island was awarded as a landgrant to Jose Antonio and Carlos Carrillo in 1843. John C. Jones and Alpheus B. Thompson married into the Carrillo family shortly thereafter, and Thompson took an active role in developing a ranch on the island. He built a house and corrals in the eastern sector of the island and introduced cattle, sheep, and horses. By 1852 the ranch was reported to be prospering, and hogs and rabbits had been added to the repertoire of livestock. In 1858 T. W. More bought out the Thompson interest, and the More family bought Jone's interest in 1865. In the 1860's and 70's the island was known as the best sheep ranch in the county, there being 60,000
head on the island in 1874. The sheep population apparently under­
went considerable fluctuation through the years, being as high as
125,000 just prior to 1890 and only 10,000 in 1900.

The island was bought by Walter L. Vail and J. V. Vickers in
1902, and they converted it to a cattle ranch, eventually eliminating
all other livestock except horses (and wild pigs?). They did, however,
introduce several species of elk and deer, which are still on the
island. The Vail and Vickers Company still own the island and
operate a cattle ranch. There is now a limited road system over
portions of the island and an airstrip, and, of course, there is a
pier at Beechers Bay associated with the ranch.

For ten years beginning in 1950 the Air Force maintained a
small base at Johnson's Lee on the south side of the island. Their
construction activities affected several archaeological sites at this
locality, although Phil Orr was able to undertake a small amount
of salvage excavation prior to the damage (Orr 1968:226-229).

Description of Projects

Project Name: Bowers' Excavations on Santa Rosa Island
Principal Investigator: Stephen Bowers
Institutional Sponsor: Smithsonian Institution
Dates of Fieldwork: 1877
Published and Unpublished Mss.: Bowers 1878. There may be other
records of Bowers' work at the Smithsonian Institution, but
this was not verified.

Location of Fieldwork: Locations of excavations on the island are unknown.

Theoretical and Empirical Goals of Research: Bowers was apparently interested in determining what kinds of artifacts sites on the island might yield. Although he had peripheral associations with scientific institutions such as the Smithsonian Institution, Bowers is notorious in the history of archaeology of the Santa Barbara Channel as a pothunter who often sold artifacts from the region to collectors.

Types of Data Collected: Artifacts from cemeteries and houses

Site Nos. or Locations from which Data Were Collected: Unknown

Person-days and Crew Size: Unknown; assisted by L. Yates

Data Collection Procedures: Unknown

Significant Descriptive and Theoretical Conclusions: None

Nature of the Archaeological Collection: Unknown. It may still exist, at least in part, at the Smithsonian Institution.

Project Name: Eisen's Excavations on Santa Rosa Island

Principal Investigator: Gustav Eisen

Institutional Sponsor: Koeniglich-Boehmischen Gesellschaft der Wissenschaften (Royal Bohemian Society of Sciences in Prague)

Dates of Excavation: 1873 and/or 1897

Published and Unpublished Mss.: Eisen 1904. The location of any field
records associated with this project is unknown.

**Location of Fieldwork:** At a coastal site on the northwestern shore of the island.

**Theoretical and Empirical Goals of Research:** Eisen appears to have been interested in obtaining a sample of prehistoric human skeletons from the island.

**Types of Data Collected:** An unknown number of skeletons from burials located "within a space of not over twenty feet square." The total number of skeletons probably did not exceed 50. Eisen kept the individual skeletons separated whenever possible. He claims to have found no artifacts associated with the burials.

**Site Nos. or Locations from which Data Were Collected:** The location of the site is unknown. Eisen mentions that the site is "about four miles from the harbor facing Santa Cruz. The heap from which the bones were taken was situated about 200 feet from the water or shoreline, and so high on a rocky ledge that the waves at no time could reach the place."

**Person-days and Crew Size:** Unknown

**Data Collection Procedures:** Unknown

**Significant Descriptive and Theoretical Conclusions:** None

**Nature of the Archaeological Collection:** The collection presumably consisted exclusively of human bones. Its present deposition is unknown.
Project Name: Jones' Excavations on Santa Rosa Island

Principal Investigator: Philip Mills Jones

Institutional Sponsor: U. C. Berkeley Department of Anthropology.

The project was financed by Mrs. Phoebe A. Hearst.

Dates of Fieldwork: February 18-May 1, 1901 (the ending date is questionable).

Published and Unpublished Mss.: Heizer and Elsasser 1956. All field records and photographs associated with the collection are housed in the U.C. Berkeley Lowie Museum.

Location of Fieldwork: Sites scattered over most sectors of the island.

Theoretical and Empirical Goals of Research: The objective of the excavations appears simply to have been the acquisition of an artifact collection from the island.

Types of Data Collected: Human crania, artifacts from excavations and surface collections, and a few animal bones. The human bones and artifacts are not provenienced to individual burials in the field records or catalog.

Site Nos. from which Data Were Collected: UCB-SRI-6, 20, 22, 24, 31, 34, 40, 50, 60, 76, 78, 114, 147, 154, and 156. These are the same numbers assigned by Orr to the sites.

Person-days and Crew Size: Site reconnaissances: about 15 days with one to three people for a total of about 30 person-days; excavation: 38 days with two to three people for a total of about 95 person-days.
Data Collection Procedures: Jones concentrated his efforts in cemetery excavations; he would apparently excavate at a site so long as burials with association continued to be found. Excavation was carried out with shovel and garden trowel. Care was taken in exposing intact burials. The reconnaissance over much of the island's area was done on horseback and on foot. His coverage was not systematic.

Significant Descriptive and Theoretical Conclusions: Jones demonstrated that there are abundant archaeological resources on the island.

Nature of the Archaeological Collections: Jones' collections consist primarily of obvious artifacts of which a substantial number are shell and bone beads and ornaments. The collections are described and illustrated by Heizer and Elsasser. Crania and a few postcranial bones appear to have come from somewhat over 100 individuals. All of the collections are housed by the U.C. Berkeley Lowie Museum.

Project Name: Rogers' First Reconnaissance of Santa Rosa Island
Principal Investigator: David Banks Rogers
Institutional Sponsor: Santa Barbara Museum of Natural History
Dates of Fieldwork: March 25-26, 1927
Published and Unpublished Mss.: Rogers 1929, fieldnotes on file at the Santa Barbara Museum of Natural History.
Location of Fieldwork: A limited area of the island.

Theoretical and Empirical Goals of Research: Rogers was apparently prospecting for sites to excavate during the forthcoming summer.

Types of Data Collected: Commentary on the surface characteristics of sites. He mentions that he encountered a stone grave marker at one site, which he removed and then exposed a burial through a limited excavation. He did not remove it, and instead refilled his pit and replaced the marker.

Site Nos. or Locations from which Data Were Collected: Unknown

Person-days and Crew Size: One full day. He was accompanied by two other people.

Data Collection Procedures: Casual reconnaissance on foot.

Nature of the Archaeological Collections: Rogers apparently made no collections.

Project Name: Rogers' Second Reconnaissance of Santa Rosa Island

Principal Investigator: David Banks Rogers

Institutional Sponsor: Santa Barbara Museum of Natural History

Dates of Fieldwork: April 12, 1927

Published and Unpublished Mss.: Rogers 1929, fieldnotes are on file at the Santa Barbara Museum of Natural History.

Location of Fieldwork: Skunk Point and East Point area of the island.

Theoretical and Empirical Goals of Research: Rogers apparently was prospecting for sites to excavate during the forthcoming summer.
Types of Data Collected: Brief commentary on the surface characteristics and locations of sites. However, he did not plot sites on any map on file at the museum, the only record being a small-scale map published in this book. He may also have made surface collections.

Site Nos. from which Data Were Collected: Unknown

Person-days and Crew Size: Less than one day was spent in reconnaissance.

Data Collection Procedures: Casual survey on foot.

Significant Descriptive and Theoretical Conclusions: None

Nature of the Archaeological Collection: No collections from the island housed by the Santa Barbara Museum of Natural History can definitely be associated with this survey.

Project Name: Rogers' Excavations on Santa Rosa Island (see also Table 5)

Principal Investigator: David Banks Rogers

Institutional Sponsor: Santa Barbara Museum of Natural History

Dates of Fieldwork: August 3-28, 1927

Published and Unpublished Mss.: Rogers 1929, fieldnotes on file at the Santa Barbara Museum of Natural History. Reference to Rogers' excavations is also made in Orr 1968.

Location of Fieldwork: Five sites, three of which are on the coast at Beechers Bay and two on the southeast coast (see Table 5).
Theoretical and Empirical Goals of Research: These excavations were part of Rogers' overall investigations on the northern Channel Islands (primarily Santa Cruz and Santa Rosa Islands). Since he made only minimal attempts to establish a chronology for the island, it appears that his objectives in carrying out the excavations were to determine the nature of the archaeological record on the island.

Types of Data Collected: Rogers was primarily interested in cemetery excavations, and he collected the artifacts associated with burials along with human crania and a few postcranial bones. There are no maps of the sites excavated nor of his excavation units. There are a few photographs associated with the collections at the museum.

Site Nos. from which Data Were Collected: See Table 5. These numbers were assigned by Orr and were also adopted by U.C. Berkeley Archaeological Research Facility.

Data Collection Procedures: The excavations did not significantly differ from others undertaken by Rogers. Shovels and smaller hand tools were apparently used, and a small amount of screening was probably done. The excavations were restricted primarily to areas of sites where cemeteries were located.

Significant Descriptive and Theoretical Conclusions: Rogers demonstrated that the island was occupied at least as intensively as Santa Cruz Island. He also found that the island occupants' culture did not differ significantly from that of the mainland,
Table 5: ROGERS' EXCAVATIONS ON SANTA ROSA ISLAND IN 1927

<table>
<thead>
<tr>
<th>Site Location</th>
<th>SBMNH No.</th>
<th>Pages in Rogers 1929</th>
<th>Dates of Excavation</th>
<th>Ext. Person Days</th>
<th>No. Catalog Cards at SBMNH</th>
<th>Extent of Excavation</th>
</tr>
</thead>
<tbody>
<tr>
<td>South side of mouth of Ranch House Creek</td>
<td>131.60</td>
<td>326</td>
<td>Aug. 3-9 and 11-24. Rogers absent Aug. 11-24.</td>
<td>60</td>
<td></td>
<td>Apparently small-scale excavation; several burials encountered.</td>
</tr>
<tr>
<td>North side of mouth of Ranch House Creek</td>
<td>131.60</td>
<td>326 - 328</td>
<td></td>
<td>40</td>
<td></td>
<td>Extensive excavations at 3 cemeteries; bulk of time spent at this site.</td>
</tr>
<tr>
<td>1/4 mi. east of mouth of Water Canyon</td>
<td>131.61</td>
<td>329</td>
<td>Aug. 9-11</td>
<td>12</td>
<td></td>
<td>Excavations in cemetery; &quot;numerous skeletons&quot; encountered.</td>
</tr>
<tr>
<td>North margin of Johnson's Lee</td>
<td>131.62</td>
<td>331 - 332</td>
<td>Aug. 24-26</td>
<td>9</td>
<td>14</td>
<td>Extensive excavations in cemetery; also encountered house remains in other areas of site.</td>
</tr>
<tr>
<td>3/4 mi. east of Johnson's Lee</td>
<td>131.63</td>
<td>332</td>
<td>Aug. 27-28</td>
<td>6</td>
<td>None</td>
<td>Cemetery excavation.</td>
</tr>
</tbody>
</table>
although he asserts that "village life of the islanders was much less highly organized than was that of the mainland Canalino." He also asserts that there is no significant cultural change represented in what he excavated on the Channel Islands.

**Nature of the Archaeological Collections:** The collections consist of shell beads and ornaments, bone artifacts, ground and chipped stone artifacts, seagrass matting, human crania, and a few human postcranial bones. The collection is catalogued by site, and with some difficulty it may be possible to determine from catalog information which artifacts pertain to at least some of the burials. The collections are housed by the museum.

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**Project Name:** Edwards' Expedition to Santa Rosa Island

**Principal Investigator:** H. Arden Edwards

**Institutional Sponsor:** Southwest Museum?

**Dates of Fieldwork:** Latter part of July, 1933

**Published and Unpublished Mss.:** Edwards 1956 (this is a transcription of Edwards' short journal found in a small notebook in the Southwest Museum).

**Geographic Location:** A site at "Green Harbor" (Canada Verde?) and another at "Beechers Harbor" (Beechers Bay).

**Theoretical and Empirical Goals of Research:** Presumably to collect artifacts for museum collections.
Types of Data Collected: A couple dozen artifacts apparently collected from the surface of the site at Beechers Bay and possibly a large artifact collection from a cemetery excavation at the "Green Harbor" site.

Site Nos. from which Data Were Collected: The UCLA Archaeological Survey identifies the "Beechers Harbor" site as Orr's site 131.155, which is more specifically located at Skunk Point. The "Green Harbor" site is possibly Orr's site 131.40, at the mouth of Canada Verde.

Person-days and Crew Size: Edwards mentions working with three other people. The number of days of excavation is unknown—perhaps several.

Data Collection Procedures: Unknown. There appear to be no other records beyond the short journal pertaining to Edwards' work.

Nature of the Collection: Unknown. It may no longer exist.

Project Name: Woodward's Excavations in the Skunk Point Area
Principal Investigator: Arthus Woodward
Institutional Sponsor: Los Angeles County Museum
Dates of Fieldwork: November 25- December 14, 1941.

Published and Unpublished Mss.: Reference is made to Woodward's excavations in a manuscript by Phil Orr on file at the Santa Barbara Museum of Natural History. A short summary of the expedition is presented by Comstock, 1946.

Location of Fieldwork: Excavation on bluff above sea about three miles east of ranch house at Beechers Bay. Other sites on north side of island were surface collected.

Theoretical and Empirical Goals of Research: The stated objective was "to excavate an Indian site and make further exploratory samplings"
in the context of the museum's Channel Island Biological Survey.

**Types of Data Collected:** Artifacts and perhaps faunal remains from a midden excavation.

**Site Nos. from which Data Were Collected:** Designated site 5E.

**Person-days and Crew Size:** Crew of two to five (?) for about 17 days.

**Data Collection Procedures:** No details given.

**Significant Descriptive and Theoretical Conclusions:** The summary mentions finding a site with abundant byproducts of bead manufacture.

**Nature of the Archaeological Collection:** Unknown. Rozaire did not mention the existence of a collection pertaining to this project at the Los Angeles County Museum in our conversations.

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**Project Name:** Orr's Excavations on Santa Rosa Island

**Principal Investigator:** Phil C. Orr

**Institutional Sponsor:** Santa Barbara Museum of Natural History

**Dates of Fieldwork:** Intermittently during 21 years beginning in 1947 (about 20 expeditions altogether).

**Published and Unpublished Mss.:** Orr 1968, 1951, 1962a, 1962b, 1964, Orr and Berger 1966, Berger and Orr 1966. In addition, a large number of manuscripts that are either field reports or earlier versions of his publication are on file at the museum, and brief summaries of most of his expeditions are published in the Museum's Museum Talk. His fieldnotes are also on file at the museum.

**Location of Fieldwork:** Most of Orr's Excavations were centered in the northwestern sector of the island, although limited excavations were undertaken at many other spots on the island. Through the years he also undertook surveys which eventually ranged over most
of the island's area.

Theoretical and Empirical Goals of Research: Orr was attempting to establish a complete chronology for the prehistory of the island as well as to discover the nature of cultural changes through the island's prehistory. One of his particular objectives was to demonstrate that human occupation extended back to ca. 30,000 B.P. and was associated with "fire areas" and the exploitation of dwarf mammoths.

Types of Data Collected: See following list of projects for details. Generally speaking, most of Orr's excavations were in cemetery areas, and the bulk of the artifact collections are burial associations. Orr tended to collect only the crania from the human skeletons in the cemeteries. A large photographic collection is associated with Orr's island work, numbering close to 1000 photographs.

Person-days and Crew Size: There is generally little information available on the duration of each of Orr's projects on the island, although this could be reconstructed for a few of the projects for which journals exist. Orr apparently worked with a comparatively small crew at all times--no more than several individuals.

Data Collection Procedures: See following list of projects for details. Cemeteries were excavated with hand tools, although occasionally overburden would be removed using a jeep with a blade attached to its front. Orr normally numbered each discrete burial in a cemetery and recorded which artifacts were associated with each
burial in his artifact cataloging. Moreover, he usually mapped the locations of burials to scale on graph paper. Individual descriptions of each burial from the larger cemeteries exist in his fieldnotes. However, Orr did not always produce a site map showing the location of his excavations within the area of the site.

**Significant Descriptive and Theoretical Conclusions:** Orr argues that the island was occupied by human populations as early as 30,000 years ago based on alleged associations between "fire areas," burned and broken dwarf mammal bones, and stone and bone artifacts. Orr also documented a prehistory less controversial in nature starting ca. 7000 years ago and extending up into the historic period. He divides this prehistory into four periods. Orr's radiocarbon dated sequence is the first for the Channel Islands.

**Individual Descriptions of Orr's Projects:**

**SBMNH Site No.: 131.1**

**Geographic Location:** "Garanon Point," on the west side of the mouth of Canada Garanon

**Pages in Orr 1968:** 143-144

**Dates of Fieldwork:** 1947, 50, and 51.

**Types of Data Collected:** 224 artifacts associated with one burial.

**Data Collection Procedures:** Very limited excavation of one burial exposed by wind erosion

**Orr's Chronological Placement:** Early Dune
SBMNH Site No.: 131.2

Geographic Location: "Skull Gulch," on both sides of an arroyo mouth midway between Canadas Tecolote and Garanon

Locality within Site: Cemetery "A"

Pages in Orr 1968: 191-196

Dates of Fieldwork: 1948, 1950

Types of Data Collected: 65,646 total artifacts, most of which are shell beads. 40,000 olivella disc beads were recovered from a 8 x 8-foot plot screened to 1/16 inch. Artifacts associated with 26 burials. A map showing burial locations was found in the fieldnotes.

Data Collection Procedures: Broad area exposure; overburden removed with shovel; cemetery excavated with trowel and broom; all deposit screened to 1/16 inch, however only the screenings from a 8 x 8-foot plot (130 cu. ft.) were sorted through for artifacts.

Orr's Chronological Placement: Canalino

SBMNH Site No.: 131.2

Locality within Site: Cemetery "B" (Site II)

Pages in Orr 1968: 196-210

Dates of Fieldwork: 1951 and 1952

Types of Data Collected: Two closely adjoining cemeteries: the older cemetery contained 26 burials and one radiocarbon date was
obtained. The newer cemetery contained 83 burials and reburials and 17,000 total artifacts, most of which were beads. There is a topographic plan of the whole cemetery published in Orr 1968.

**Data Collection Procedures:** 8 x 150-foot trench excavated in part with a blade attached to a jeep to a maximum depth of 8 feet. This excavation was expanded by hand to expose both areas of the cemetery.

**Orr's Chronological Placement:** Canalino

**SBMNH Site No.:** 131.2

**Locality within Site:** Area of house depressions (Site II)

**Pages in Orr 1968:** 210-218

**Dates of Fieldwork:** 1949, 50, and 51

**Types of Data Collected:** Floor plans of two house floors that were completely excavated (nos. 1 and 3). No. 1 yielded 330 artifacts and one radiocarbon date; no. 3 yielded 883 artifacts and another radiocarbon date. Collections are also obtained from several other houses that were tested only. There is a site map of the excavations in the fieldnotes showing most of the excavation units mentioned in Orr 1968.

**Data Collection Procedures:** Area excavations to expose two completely excavated house floors. Otherwise test trenches were cut through house depressions.
Orr's Chronological Placement: Canalino

SBMNH Site No.: 131.3

Geographic Location: "Tecolote Point, a small promontory covered with dune deposits

Locality within Site: Cemetery "A"

Pages in Orr 1968: 115-129

Dates of Fieldwork: 1949, 50, and 51

Types of Data Collected: 79 burials, 374 artifacts, and 7 radiocarbon dates. A map showing burial locations was encountered in the fieldnotes.

Data Collection Procedures: Area exposure of cemetery.

Orr's Chronological Placement: Early Dune

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SBMNH Site No.: 131.3

Locality within Site: Midden above Cemetery "A"

Pages in Orr 1968: 131

Dates of Fieldwork: ca. 1950

Types of Data Collected: 23 artifacts

Data Collection Procedures: Midden removed in levels with the blade attached to a jeep. Several test pits also excavated by hand.

Orr's Chronological Placement: Early Dune
SBMNH Site No.: 131.3
Locality within Site: Cemetery B
Pages in Orr 1968: 130
Dates of Fieldwork: ca. 1950
Type of Data Collected: Small number of burials disturbed by the elements, 323 shell artifacts and some bone artifacts.
Data Collection Procedures: 2 x 20-foot trench presumably excavated with hand tools.
Orr's Chronological Placement: Early Dune

SBMNH Site No.: 131.4
Geographic Location: "Arlington Dunes," 350 yards up Arlington Canyon from mouth
Locality within Site: Cemetery A
Pages in Orr 1968: 147
Dates of Fieldwork: 1947 and 1960
Type of Data Collected: Descriptions of two intact and one disturbed burial exposed by the elements.
Data Collection Procedures: No formal excavation, only salvage of exposed burials.
Orr's Chronological Placement: Early Dune

SBMNH Site No.: 131.4
Locality within Site: Cemetery B

Pages in Orr 1968: 146-149

Dates of Fieldwork: ca. 1950

Type of Data Collected: There is no indication of the number of burials observed, however, all were apparently disturbed. 1204 artifacts recovered, 1195 of which are shell. No map of the excavations or the cemetery found in fieldnotes, however an aerial photograph showing locations of cemeteries was located.

Data Collection Procedures: "Limited" excavation

Orr's Chronological Placement: Early Dune

SBMNH Site No.: 131.5

Geographic Location: "Survey Point," just east of Tecolote Point

Locality within Site: Cemeteries A, B, C, D, and E

Pages in Orr 1968: 135-143

Dates of Fieldwork: 1947, 48 and 49. Most of the work was done in 1949.

Type of Data Collected: Cemetery A: descriptions of 13 burials; fieldnotes contain a map showing burial locations; 4353 beads and ornaments, 13 bone and 8 stone artifacts associated with burials. Cemetery C: 4 burials. Cemetery D: disturbed burials with no artifacts. Cemetery E: 1 burial with no artifacts. 75 artifacts came from the surface of the site.
The fieldnotes contain a site map showing the locations of the cemeteries.

**Data Collection Procedures:** Area exposure of Cemetery A using hand tools. The other burials in the other cemeteries were apparently partly exposed by the elements.

**Orr's Chronological Placement:** Early Dune

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**SBMNH Site No.:** 131.6

**Geographic Location:** "Arlington Point," on the east side of the mouth of Arlington Canyon.

**Pages in Orr 1968:** 144-145

**Dates of Fieldwork:** 1947, 48, 51, and 52

**Type of Data Collected:** One burial, a few surface artifacts, and three radiocarbon dates collected from strata exposed on cliff face.

**Data Collection Procedures:** No excavation undertaken. The burial was exposed in a rutted trail.

**Orr's Chronological Placement:** Early Dune

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**SBMNH Site No.:** 131.7

**Geographic Location:** "Orr's Camp," 1000 yds. west of 131.2

**Pages in Orr 1968:** 219-220

**Dates of Fieldwork:** 1948
Type of Data Collected: Only three artifacts collected

Data Collection Procedures: "A Series of 6-inch post holes" and "a few 5-foot test pits"

Orr's Chronological Placement: Late

SBMNH Site No. 131.9A

Geographic Location: "Arlington Cave," in the upper reaches of Arlington Canyon.

Pages in Orr 1968: 220-223

Dates of Fieldwork: 1952

Type of Data Collected: 13 burials and 145 shell, bone and stone artifacts. One radiocarbon date was obtained.

Data Collection Procedures: Area exposure using hand tools and electric hammer where sediments were highly compacted. No map of the site or locations of burials was located in the fieldnotes.

Orr's Chronological Placement: Late

SBMNH Site No.: 131.18

Geographic Location: On terrace between Canada Tecolote and Arlington Canyon, near site 131.66.

Pages in Orr 1968: 181

Dates of Fieldwork: Unknown
Type of Data Collected: No collection; no fieldnotes located.

Data Collection Procedures: "Preliminary excavation of a minor sort"

Orr's Chronological Placement: Highland

SBMNH Site No.: 131.24

Geographic Location: On low knoll near Smith Highway between Soledad Canyon and Canada Verde at 500 feet altitude

Pages in Orr 1968: 180-181

Dates of Fieldwork: November 1948

Type of Data Collected: 9 surface artifacts, 2 burials, and 420 associated shell artifacts. No map of the site or excavations found in the fieldnotes.

Data Collection Procedures: The burials were salvaged from an eroded area where they were exposed by the elements.

Orr's Chronological Placement: Highland

SBMNH Site No.: 131.40 (P.M. Jones' Camp 4, according to Orr)

Geographic Location: "Canada Verde Flats," on a terrace on east side of the mouth of Canada Verde

Pages in Orr 1968: 177-178

Dates of Fieldwork: N/A

Type of Data Collected: Description of the site and commentary on excavations by previous workers.
Data Collection Procedures: Surface observation only; no excavation

Orr's Chronological Placement: Early Dune (?) and Late. Orr follows Kroeber in believing that this site is the named Chumash village of Siliwihi.

SBMNH Site No.: 131.41

Geographic Location: "Canada Verde Dunes," on the west side of the mouth of Canada Verde

Location within Site: Section I, or Cemetery A

Pages in Orr 1968: 149-171

Dates of Fieldwork: 1948-49 (9 burials removed), November 15-December 10, 1951 the rest removed.

Type of Data Collected: 152 burials; about 17,000 artifacts of which 16,165 are shell, and of these about 14,000 are Olivella beads. A map showing locations of burials is in Orr 1968.

Data Collection Procedures: Area exposure, hand tools used.

Orr's Chronological Placement: Early Dune

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SBMNH Site No.: 131.41

Location within Site: Cemetery "X"

Pages in Orr: 171-176

Dates of Fieldwork: 1961

Type of Data Collected: One burial weathering out of sand dune
associated with 340 artifacts and two radiocarbon dates.

Data Collection Procedure: Salvage of only one burial, hand tools used.

Orr's Chronological Placement: Early Dune

SBMNH Site No.: 131.41

Location within Site: Section II, Cemetery "C"

Pages in Orr: 151, 176, 177

Dates of Fieldwork: 1951

Type of Data Collected: One skull and mandible associated with other skeletal fragments, no artifacts.

Data Collection Procedure: Salvage of the skeletal parts eroding out of a bank.

Orr's Chronological Placement: Late

SBMNH Site No.: 131.43

Geographic Location: "Fox," on a flat-topped ridge between Canada Tecolote and Arlington Canyon

Location within Site: Midden area

Pages in Orr 1968: 181

Dates of Fieldwork: 1957

Type of Data Collected: "Relatively few artifacts," 4 small hearths

Data Collection Procedures: 8 three 5 x 5-foot pits screened to 1/8 inch; 8-foot transverse trench scraped down in 1-inch
increments with the blade attached to a jeep, with screening "at random"; two radiocarbon dates obtained.

Orr's Chronological Placement: Highland

SBMNH Site No.: 131.43
Locality within Site: Cemetery "A", on southeast border of midden area
Pages in Orr 1968: 182-187
Type of Data Collected: 8 burials and 164 associated artifacts.

No map of the site or the cemetery was found in the fieldnotes.

Data Collection Procedures: presumably excavation by hand tools.

Orr's Chronological Placement: Highland

SBMNH Site No.: 131.62
Geographic Location: "Johnson's Lee," on the south coast
Pages in Orr 1968: 224-229
Dates of Fieldwork: 1950
Type of Data Collected: 8 burials associated with about 116 artifacts

Data Collection Procedures: trench(es) excavated with hand tools

Orr's Chronological Placement: Late
SBMNH Site No.: 131.66

Geographic Location: between Canada Tecolette and Arlington Canyon on the 5-700-terrace

Pages in Orr 1968: 180, 181

Dates of Fieldwork: 1957

Type of Data Collected: One catalog card indicates small collection made.

Data Collection Procedures: Auger samples taken at 20-foot intervals along a baseline through the center of the site.

Orr's Chronological Placement: Highland

SBMNH Site No.: 131.70

Geographic Location: on 5-700-foot-terrace between Canada Tecolette and Arlington Canyon

Pages in Orr 1968: 181

Dates of Fieldwork: unknown

Type of Data Collected: Apparently no collection made

Data Collection Procedures: "preliminary excavations of a minor sort"

Orr's Chronological Placement: Highland

SBMNH Site No.: 131.85

Geographic Location: "Rancho Viejo," 400 yards east of China Point

Pages in Orr 1968: 236
Dates of Fieldwork: Some collection made in 1941, but radiocarbon samples were apparently collected at a later date.

Type of Data Collected: One radiocarbon date

Data Collection Procedures: No excavation undertaken; the radiocarbon sample was apparently taken from an erosion bank

Orr's Chronological Placement: Late

SBMNH Site No.: 131.97

Geographic Location: "China Point," on east side of creek at China Camp

Pages in Orr 1968: 236

Dates of Fieldwork: Unknown.

Type of Data Collected: 5 or 6 burials

Data Collection Procedures: "couple of test trenches" apparently excavated with hand tools

Orr's Chronological Placement: Late. Orr suspects that this is the named Chumash village of Nawani.

SBMNH Site No.: 131.98

Geographic Location: "China Annex," 400 yards east of China Point

Pages in Orr 1968: 236

Dates of Fieldwork: unknown.

Type of Data Collected: surface observations only
Data Collection Procedures: No excavation
Orr's Chronological Placement: Late. Orr believes this site was
occupied by populations expanding out from 131.97.

SBMNH Site No.: 131.147 (apparently refers to a cluster of sites)
Geographic Location: "Canada Jolla Vieja," two miles up the
Canada from the ocean.
Pages in Orr 1968: 229-324
Dates of Fieldwork: 1950, 51
Type of Data Collected: Surface observations and commentary on
Jones' work at sites in the locality. Two catalog cards
indicate collections were made.
Data Collection Procedures: No excavation
Orr's Chronological Placement: Late, with strong possibility of
very early components

SBMNH Site No.: 131.154 (apparently refers to a cluster of sites)
Geographic Location: "Wreck Canyon," one mile up Wreck Canyon from
mouth.
Pages in Orr 1968: 234-235
Dates of Fieldwork: Unknown
Type of Data Collected: Surface observations and commentary on
Jones' work at some of the sites in the locality.
Data Collection Procedures:  No excavation

Orr's Chronological Placement:  Late, with some possibility of earlier components.

SBMNH Site No.:  131.168

Geographic Location:  "Mess Cave," facing south coast on slopes of Sierra Lopez at 412 feet altitude.

Pages in Orr 1968:  223-224

Dates of Fieldwork:  Unknown

Type of Data Collected:  About 50 artifacts of wood, stone, bone, shell, and plant fiber.


Orr's Chronological Placement:  Late.  Orr estimates an antiquity of no more than 600 years.

SBMNH Site No.:  131.173

Geographic Location:  "Arlington Springs," about 1300 feet up from mouth of Arlington Canyon on west bank.

Pages in Orr 1968:  87-92

Dates of Fieldwork:  1946 and intermittently thereafter.

Type of Data Collected:  Uppermost stratum contained cemetery with 16 or 17 disturbed burials; apparently no artifact collection made from the cemetery.  One radiocarbon date was obtained
Four human bones were obtained from a stratum about 37 feet below that of the cemetery that have been dated to 7350-11,300 B.P. by means of 7 radiocarbon samples from the stratum in which the bones were reportedly found. No artifacts were found in association.

Data Collection Procedures: The cemetery was exposed in an 8-foot-wide trench, which was apparently excavated with hand tools. The stratigraphic context of the bones, which were exposed by weathering, was established by making cuts into the side of the arroyo wall. No map of the cemetery was found.

Orr's Chronological Placement: Shell midden dates ca. 2000 B.P. Orr does not place either the cemetery or the deeply buried human bones in any specific time period.

Project Name: Santa Rosa Island Conference
Principal Investigator: Phil C. Orr and Fay-Cooper Cole
Institutional Sponsor: Santa Barbara Museum of Natural History
Dates of Fieldwork: 1960
Published and Unpublished Mss.: Mentioned in Orr 1968:89. A notebook with all correspondence and field notes pertaining to the conference is on file at the Santa Barbara Museum of Natural History.
Location of Fieldwork: No actual fieldwork was done. The conference members viewed the exposure at Arlington Springs.
Theoretical and Empirical Goals of Research: Orr wished to obtain the opinions of various researchers regarding the association between the human bones referred to as "Arlington Man" and Pleistocene deposits.

Types of Data Collected: Each participant provided written opinions that are on file at the museum.

Site Nos. or Location from which Data Were Collected: The site is known as Arlington Springs. The museum's number for this site is 131.173.

Person-days and Crew Size: Twelve archaeologists, geologists, and geographers in addition to Orr.

Significant Descriptive and Theoretical Conclusions: The opinions of the scientists were mixed. Most were hesitant to accept the association but thought that further work should be done.

Nature of the Archeological Collection: No collection was made in the course of the conference, so far as is known.

Condition of the Archaeological Resources

Although little information is available in the literature that would allow the condition of the archaeological resources on Santa Rosa Island to be determined, aerial photographs and Orr's land photographs on file at the Santa Barbara Museum of Natural History give the impression that sites are generally well preserved. Moreover, comparatively few of Orr's site records mention any damage.
In terms of the total number of sites on the island, comparatively few have been subjected to excavation, and even these still appear to have substantial intact deposits. Even Orr's long work on the island did not make a significant impact on the total volume of archaeological deposits on the island.

The vegetative cover on Santa Rosa is the best on the northern Channel Islands since sheep were removed some time ago. This has undoubtedly had a very favorable effect on site preservation in preventing erosion. Moreover, it is now probably quite difficult to estimate how much erosional damage to sites the sheep grazing might actually have caused since many of the scars of erosion undoubtedly have completely healed. Nevertheless, some sites have undergone erosion from exclusively natural causes. Orr's site records and photographs indicate that some coastal sites, particularly on the northern and eastern shores, have undergone either wind erosion, wave erosion, or arroyo cutting.

Damage to sites by various construction activities appears to be minimal. Orr mentions that several sites in the vicinity of Johnsons Lee on the south coast were affected by military construction activities. In addition, there are the comparatively minor effects of construction of various ranch facilities primarily on the north-east sector of the island, and Orr mentions that some of his "Highland" sites were cut through by a road in the northwestern sector of the island. There is also some possibility that recent oil well exploration and drilling activities may have adversely affected some archaeological sites.
Evaluation of Past Work

Evaluation of Surveys: While P. M. Jones' field notes indicate that he ranged over much of Santa Rosa Island in the course of his investigations and noted the locations of sites, there is no indication that he was attempting a comprehensive survey of the island or any specific portion of it. On the other hand, D. B. Rogers was. He asserts that he made a complete circuit of the island's coastline and also forays into the interior during the reconnaissances preceding his excavations. In the course of these reconnaissances he located about 51 sites, all except five being on the coast. These are noted on a small-scale map published in his book but are not numbered. No other map showing the locations of his sites or site records pertaining to Rogers' Surveys could be located at the Santa Barbara Museum of Natural History. In comparing Rogers' published map with the map showing the sites that Orr recorded, it becomes obvious that Rogers was much more of a "lumper" than Orr. For instance, Orr recorded 15 coastal sites between the extreme western end of the island (Sandy Point) and Arlington Canyon, however Rogers recorded only three, some of which stretch for more than a mile along the coastline. Thus, Rogers' survey of Santa Rosa Island is comparable to those of the other islands: only coastal sites tend to have been recorded, and he lumped several sites together as one.

In the 21 years that Orr worked on the island he recorded sites in all sectors on his own version of a site record form. These are all on file at the Santa Barbara Museum of Natural History. The last
site in the series, 131.182, was recorded in June 1963. Sometime in
the 1950's the University of California Archaeological Survey at
Berkeley (now the Archaeological Research Facility) transcribed the
information on the first 155 site records that Orr had accumulated
onto the standard U. C. site record forms for the state-wide site
record file at Berkeley. Orr's 7.5' maps showing the site locations
were also copied at this time. There was no subsequent updating,
however. Sometime after, the UCLA Archaeological Survey copied
Berkeley's records, and their record file has not been updated as a
result of Orr's subsequent work either. UCLA does not presently
have copies of the USGS or Corps of Engineers 7.5' maps showing the
site locations. Copies of the Berkeley Archaeological Research
Facility records and 7.5' maps showing the site locations are now
also on file at the UCSB Department of Anthropology.

Orr's site records have good provenience information for each
site. All sites have verbal descriptions of site location and surface
characteristics, and nearly all have latitude and longitude coordin­
ates to the nearest minute. Orr compiled a separate record file
of what he calls quarry sites—that is, locations where dwarf
mammoth bones (and other Pleistocene fossils?) have been found.
These are numbered 1 through 15 and are located on a large-scale map
of the Garanon to Arlington Canyons area. These are also on file
at the Santa Barbara Museum of Natural History. Unfortunately, Orr
would sometimes use a site number for more than one discrete
archaeological deposit—in fact, his site numbers might best be
conceived as referring to localities where one or more sites occur. If the criteria for site definition used by Rozaire and Kritzman on San Miguel and by me on Santa Cruz were to have been used by Orr, the actual number of sites he recorded would perhaps be doubled. But even if Orr's site numbers were doubled or even tripled, the density for the island would still seem quite low in comparison to the densities on San Miguel and Santa Cruz. In fact, the number of sites should be approximately 2000 in order to be comparable. It appears that Orr never made a thorough, systematic survey of the island, even though he recorded sites in most parts, including much of the interior. In any regard, there is no record of Orr's surveying techniques, and so any generalizations on site distributions and densities based on Orr's records must be made with considerable caution.

**Evaluation of Excavations:** Relatively little is known of the small-scale projects of Bowers, Eisen, and Edwards that took place on Santa Rosa Island, and the value of the information resulting from these projects is consequently rather minimal. Much more information is available for the large projects of Jones, Rogers and Orr--in fact, all have substantial publications pertaining to them.

Heizer and Elsasser (1956) documented Jones' work to the extent that the field records housed at the Lowie Museum would allow. Unfortunately, however, while Heizer and Elsasser, as well as Orr, were able to locate the sites at which Jones worked, there are no records
as to where within the sites the collections came. Moreover, Jones did not record the artifact associations with particular burials. This severely limits the value of the collections to the study of mortuary practices and the social organization reflected in them. Nevertheless, the collection is large and would certainly be relevant to many other kinds of studies where provenience to site is sufficient and where the focus is on the artifacts in terms of themselves as in typological studies.

Rogers' excavations on Santa Rosa are generally similar to his on Santa Cruz Island. He focused his excavations on cemeteries and normally kept poor provenience records. With some difficulty, however, it may be possible to correlate at least some of the artifacts with the particular burials from which they came. But considering the crudeness of his excavation techniques and the inexperience of his workers, it is doubtful that even the majority of the artifacts in the collections that were in fact associated in the ground with specific burials were recognized as such. A significant shortcoming of Rogers' records is the lack of any kind of maps.

Orr's work is on a much higher caliber than Rogers'. Although Orr failed to present in his book the intrasite provenience data relevant to many current archaeological problems, this information does exist for his larger-scale cemetery excavations--specifically his excavations at sites 131.2, cemeteries A and B, and house excavations; 131.3, cemetery A; 131.5, cemetery A; 131.41, cemetery A; and 131.62. For these excavations maps were made showing locations and positions
of burials. Individual burial descriptions were found in Orr's field notes for sites 131.3, cemetery A and 131.5, cemetery A. For these and the others listed above the catalog lists at the museum give burial numbers for all associated human bones and artifacts. The records pertaining to Orr's excavations are a little difficult to use, primarily due to a comparatively complicated organization and a lack of adequate cross-referencing between different kinds of records, but considering the value of these collections for research into a number of current archaeological problems, the effort expended in using the records would not be wasted.

Regarding Orr's contention that human occupation occurred between ca. 35,000 (or more) and 10,000 years B.P. and that tools are associated with burned and modified dwarf mammoth bones and "fire areas," the evidence is too poorly reported to form opinions on way or the other. Moreover, while Orr did honor alternative hypotheses to account for the fire areas and their associations, one gains the impression that these could have been followed out more extensively and dispassionately (see section on chronological considerations). At the very least, Orr has demonstrated that some very ancient manifestations of human activity may exist on the island, and his research should certainly be built upon in future investigations.

Research Potential of the Archaeological Resources

Orr's studies, in particular, have revealed that Santa Rosa Island contains rich and varied archaeological resources that span
at least several thousand years. It is obvious, therefore, that a large number of research problems oriented around the study of cultural change may be attacked using the island's archaeological record. One of the areas of research most pertinent to the island's archaeological record is the study of the evolution of a fishing subsistence. Orr and his predecessors report the presence in sites of fishhooks and other items presumably associated with fishing, and although fish remains were generally not collected, they are reported to be present in many of the sites. In fact, Orr claims to have found and dated the earliest crescentic shell fishhook in southern California, although the association between the radiocarbon dates and the fishhook is open to question.

Orr's data also hint at marked changes in overall subsistence through time. In particular, the Canalino, dating after ca. 1400 B.C. appear to have been much more oriented around fishing than their predecessors. Moreover, the sites of the earliest period recognized by Orr, Early Dune, appear to have a complete absence of mortars and pestles, while later sites contain reasonably large numbers of these items. The meaning of this is not readily obvious. Mainland Chumash at the time of European contact are known to have used mortars and pestles for grinding acorns, yet the number of oaks growing on Santa Rosa Island appears always to have been limited. Were mortars and pestles used for grinding other kinds of seeds or plant products that are relatively abundant on the island? Or were they in fact used to grind acorns that were imported from the mainland or perhaps Santa Cruz Island? Whatever mortars and pestles were used for, their
advent sometime after ca. 4500 B.C. undoubtedly represents a significant change in subsistence or, at the very least, food preparation.

The development of economic relationships with populations living on the mainland and the other islands is also a significant area of future research. The Chumash on Santa Rosa, like those on Santa Cruz, are known to have been specializing in the manufacture of shell beads used as a medium of exchange in the Santa Barbara Channel. There is also indication that the island Chumash specialized in the manufacture of other non-money beads as well as shell ornaments and perhaps other craft items. In any regard, the origin and development of this economic system has yet to be worked out.

The archaeological resources of Santa Rosa Island are also quite appropriate to studies of the evolution of sociopolitical organization. Presumably cemeteries still remain in many of the sites in spite of the emphasis on cemetery excavations by all previous archaeological projects on the island and in spite of clandestine looting. The mortuary practices reflected in these cemeteries would provide some of the best clues to the nature of prehistoric sociopolitical organization. Aspects of social and political organization may also be studied through observing the differences in the contents and architectural characteristics of houses and similar types of structures. Orr indicates that many of the sites on the island, particularly the later ones, have well-defined house depressions, and his excavations of several of these house depressions reveal that floor levels and architectural features can often be easily
isolated and defined. Presumably various cultural debris may also be associated with individual houses.

Orr's excavations also revealed that significant climatic changes may have taken place during the prehistory of the island. He reports that red abalone shells predominate in the deposits dating to the Early Dune period while mussel and black abalone shells predominate in the later periods. He believes that this change in frequency through time indicates that ocean waters were cooler during the Early Dune period than subsequently. If this is so, then weather and terrestrial flora and fauna dependent on it were probably also different. On the other hand, there certainly are other possible and equally plausible reasons why this shift in shellfish exploitation took place that have no reference to climate or ocean temperature changes.

Orr argues that there were significant shifts in settlement patterns through the prehistory of the island. Dunes were the locations of sites of the earliest settlements, however, a shift to sites in the highlands was made sometime around 4000 B.C. The dunes were again the focus of settlement starting about 2000 B.C., and finally sea terrace promontories became popular locations starting around 1500 B.C. Yet, the place of the highland locations occupied between ca. 4000 and 2000 B.C. in a settlement system is open to serious question. The features that Orr believes were houses may really be roasting pits or some other kind of nondomiciliary structure, and the highland sites may only have been occupied
seasonally to carry out a limited range of activities. Moreover, considering that Orr's dated site components are almost exclusively from the northwest sector of the island, the possibility of sampling error creeping into Orr's reconstruction of changes in settlement patterns is rather high. In any regard, Orr at least demonstrated that shifts in settlement patterns did occur, and we may conclude that the island appears to have a productive data base for the study of changing settlement patterns and their causes.

Orr's controversial evidence for the occupation of the island by Pleistocene populations also is worth following up in future research. It is likely that more fire areas could be located and that a properly financed multidisciplinary project to study them would be able to go a long way toward solving the question of Pleistocene occupation to the satisfaction of most doubters and believers.

Recommendations

Since Santa Rosa Island is privately owned, recommendations are inappropriate. It is appropriate, however, to point out that the archaeological resources on Santa Rosa Island, because of their relatively high state of preservation, are extremely valuable to archaeology. Every effort to insure their preservation should therefore be made.
Environmental Description

A description of San Miguel Island's environment is complicated by the fact that the island's environment has undergone considerable deterioration starting in the 1860's as a result of overgrazing by sheep and other livestock. Since the island faces more of the onslaught of the northwesterly winds than other channel islands of the northern group, the rather active sand dunes and "sand rivers" have not allowed the vegetation a chance to rebound. In fact, there are no trees on the island, and what vegetation that is able to persist consists of grasses and wildflowers. Bremner (1933:9) asserts that the island was covered with dense brush (sumac and manzanita) when first visited by Europeans, although he gives no source for this information.

This small island is the westernmost of the northern Channel Islands, being only 14 square statute miles in area. The closest point on the mainland to the island is Point Conception, 26 miles distant. It is roughly four miles wide and eight miles long, the latter being an east-west dimension. The land rises to one rounded peak 821 feet above sea level. A promontory of land, Harris Point, protrudes toward the north, forming Cuyler Harbor on its eastern side. Just northeast of Cuyler Harbor is Prince Island, which rises to a height of 296 feet above sea level. Off the western
shore are a number of smaller rocks, many of which are permanently above high tide. Steep slopes rise abruptly from the northern and southwestern coastlines to a height of 300 feet. The slopes are dissected at intervals by ravines that drain the wind-channeled terrace land in the center of the island. The largest of these drains into Cuyler Harbor. The land slopes more gently to the water's edge on portions of the south coast, however deep ravines on this side of the island create a rather rugged terrain. Dune deposits on the eastern and western extremes of the island meet the water's edge to form broad beaches. Rozaire (1965:8) reports about a dozen fresh-water springs scattered over the island.

The geology of San Miguel Island has been described by Bremner (1933) and Weaver, et al. (1969). Bedrock is exposed almost exclusively along the steep slopes on the periphery of the island, on the highest elevation, and in the deeper canyons. Volcanics of Miocene (?) age--dacites and basalts--are found on the highest land on the island in exposures on the eastern end of the island. The rest of the bedrock exposures consists of a variety of shales, sandstones, siltstones, and conglomerates of middle and late Tertiary age. Rozaire (1965:8) notes that the more durable and finer-grained rocks were used for aboriginal tool manufacture.

The extensive sandy beaches on the west end of San Miguel Island comprise a well-known sea mammal rookery, presently the only one on the northern Channel Islands. Northern elephant seals (Mirounga
angustirostris), California sea lions (Zalophus californianus) and steller sea lions (Eumetopias jubata) all use this rookery. The only native terrestrial species of mammals on the island today are the deer mouse (Peromyscus maniculatus) and the island fox (Urocyon littoralis).

History of Land Use

Holland (1963) has written a well-researched history of San Miguel Island, upon which the following summary is largely based. Since San Miguel Island was never awarded as a Spanish or Mexican landgrant, it came directly into the hands of the U.S. government upon the Americanization of California, and to this day it has never been owned privately. Nonetheless, private persons have used the island for commercial purposes apparently from the Mexican period. In fact, the island was probably occupied for brief periods of time by Russian-sponsored Aleut sea mammal hunters starting shortly before 1800 and continuing up into the 1830's.

George Nidever was the first historically documented lessee of the island; in 1850 he introduced 45 sheep, 17 cattle, 2 hogs, and 7 horses. However, there is indication that sheep had been pastured on the island prior to this. Twelve years later Nidever's stock had multiplied to 6000 sheep (apparently the highest number ever on the island), 100 hogs, and 32 horses, but the drought of 1863-64 caused the loss of 5000 sheep and lesser numbers of other livestock. Holland suspects that this drought, in combination with
the heavy grazing, resulted in the environmental deterioration of the island from which it has never recovered. Nidever's lease was bought by the Mills brothers shortly thereafter, and over the years sheep continued to be pastured on the island. Other business enterprises also transpired on the island. There are several reports of expeditions sent to the island in the 1870's to obtain oil from sea mammals, an enterprise that helped to cause the near extinction of the seals and sea lions.

Robert L. Brooks became the last lessee of the island from the Navy in 1916, his lease lasting until 1942. In the late 1920's Herbert Lester became his ranch manager, and he lived with his family in a large house built on the eastern sector of the island around the turn of the century, apparently by the earlier lessees, Captain John Waters and John Russel. Lester built a small school-house nearby in which his wife taught their children. It is known that Lester collected archaeological "relics" that he kept in a "museum" in one room of the house. In 1942 Lester committed suicide, and his family moved to the mainland shortly thereafter. They were the last permanent residents on the island. Holland (1963:153) reports that the house and associated ranch buildings were in dilapidated condition in 1958. In the 1960's the buildings went into more or less complete ruin. The remains of a 1930 Model A Ford in the vicinity of the buildings appears to indicate that a vehicle was used as a means of transportation on the island. Today there is only a trail extending from Cuyler Harbor up past the ranch buildings to the
highest point of land on the island. This is apparently a former road of sorts.

During the Korean War the Navy used the island as a target for practicing aerial bombing, leaving the island littered with live ammunition until the 1960's, when it was removed. More recently the Navy has used the island for research and experimental purposes.

Rozaire (1965:8) reports that a few dozen sheep and several burros were still present on the island in 1965.

Description of Projects

Project Name: Dall's Visit to San Miguel Island
Principal Investigator: William H. Dall
Institutional Sponsor: U. S. Coast Survey
Dates of Fieldwork: 1873-1874
Published and Unpublished Mss.: The visit is referred to by Holland (1963:144-145), Schumacher (1877:38), and Heye (1921:35). Field records pertaining to this visit are unknown.
Location of Fieldwork: The areas of the island where collections were made are unknown.
Theoretical and Empirical Goals of Research: Unknown. Dall was apparently one of the early scientific explorers that made archaeological collections simply because nothing was known about the archaeology of the region.
Types of Data Collected: Dall apparently made only surface collections of artifacts. He also acquired a collection obtained by
W. G. W. Harford of the Coast Survey in 1872 and 1873.
This was also probably a surface collection. Schumacher
felt that Dall, among others, had already picked up the
"best" artifacts.

Site Nos. from which Data Were Collected: Unknown.
Person-days and Crew Size: Unknown
Data Collection Procedures: Casual surface collection.
Significant Descriptive and Theoretical Conclusions: None
Nature of the Archaeological Collections: The deposition of the
collections is unknown.

Project Name: Schumacher's Excavations on San Miguel Island
Principal Investigator: Paul Schumacher
Institutional Sponsor: Smithsonian Institution
Dates of Fieldwork: May 5-9, 1875.
Published and Unpublished Mss.: Schumacher 1877. No field records
(beyond a packing list) or journal was discovered at the
Smithsonian Institution.
Location of Fieldwork: At two or three sites half way between two
springs on the west side of Cuyler Harbor and at a third site
close by.
Theoretical and Empirical Goals of Research: Schumacher was undertak­ing research to determine the nature of the archaeology of
the Santa Barbara Channel region. (He also undertook
excavations on Santa Cruz Island and the mainland.) It also appears that a major objective was to obtain a museum collection of artifacts from this region.

Types of Data Collected: Artifact association with 250 burials from two cemeteries, each apparently occurring in a distinct site. Excavations were also undertaken at a third site that yielded few burials. Schumacher published a small-scale map of the island showing the locations of his excavations.

Site Nos. from which Data Were Collected: Since Rozaire and Kritzman recorded at least a dozen sites in the vicinity of Schumacher's excavations, no correlation with their numbers may be made without field checking. The U.C. Berkeley Archaeological Research Facility assigned the numbers SMI-27, 28, and 29 to Schumacher's sites. These are not mapped, however.

Person-days and Crew Size: Four days were spent on the island. Schumacher worked with a crew of three hired men, making a total of 12 person-days.

Data Collection Procedures: Schumacher does not describe his excavation procedures in any detail; he does mention, however, that care was taken when burials were encountered. It is presumed that his excavations were very casual and lacked any kind of provenience controls. Schumacher also undertook a casual survey of the island, but his published map does not indicate the location of sites other than those at which he excavated.

Significant Descriptive and Theoretical Conclusions: Schumacher was
the first person to report in publication the presence of archaeological resources on the island.

Nature of the Archaeological Collections: The collection contains primarily complete artifacts which are identified as pertaining to San Miguel Island with no indication of site or burial provenience. The collection includes chipped stone artifacts (presumably ground stone artifacts as well), shell and bone artifacts, and fragments of matting in which burials were wrapped. These collections are stored at the Smithsonian Institution and are accessible to research. Some of the items of the original collection may have been lost or exchanged, however.

Project Name: The French Scientific Expedition to California
Principal Investigator: Leon de Cessac
Institutional Sponsor: The French Ministère de l'Instruction publique
Dates of Fieldwork: 1878
Published and Unpublished Mss.: Heizer (ed) 1951, Reichlen and Heizer 1964
Location of Fieldwork: Unknown
Theoretical and Empirical Goals of Research: Apparently simply the acquisition of artifact collection, although de Cessac mentions making a geological map and a natural history collection.
Types of Data Collected: Artifacts and human skeletal remains, probably from cemeteries.
Site Nos. from which Data Were Collected: Unknown.
Person-days and Crew Size: Three weeks were spent on the island, although not all this time in archaeological investigations. The presence of any
crew is unknown.

Data Collection Procedures: Unknown. Probably very casual excavation and surface collection.

Significant Descriptive and Theoretical Conclusions: The collection from the Channel Islands is still largely uncataloged. De Cessac mentions in his short report finding "chipped flint jasper arrowpoints...skulls, some skeletons and isolated basins as well as very beautiful ornaments, numerous bone tools and an extremely interesting series of mortars ranging from the first rough draft to the perfect achievement." The collection, at least in part, is housed by the Musée de l'Homme in Paris, France.

Project Name: Misc. Excavations on San Miguel Island by Yates, Bowers, Dreyfus, and Doran

Principal Investigators: Lorenzo Yates, Stephen Bowers, Louis G. Dreyfus, and E. L. Doran

Institutional Sponsor: Unknown, if any.

Dates of Fieldwork: Various times between 1875 and 1919.

Published and Unpublished Mss.: None. The work of these people is referred to by Holland (1963) and Rozaire (1965). Yates' work is indicated by the presence of a small collection from the island attributed to him at the Santa Barbara Museum of Natural History.
Location of Fieldwork: Unknown locations on the island.
Theoretical and Empirical Goals of Research: Unknown. Some of this work may have been virtually looting.
Types of Data Collected: Unknown. Presumably artifacts and human bones.
Site Nos. or Locations from which Data Were Collected: Unknown.
Person-days and Crew Size: Unknown.
Data Collection Procedures: Excavations and presumably also surface collections.
Significant Descriptive and Theoretical Conclusions: None.
Nature of the Archaeological Collections: The deposition of the various collections obtained by these various investigators is unknown, other than Yates' collection which is at the Santa Barbara Museum of Natural History.

Project Name: Mrs. Thea Heye Expedition
Principal Investigator: Ralph Glidden
Institutional Sponsor: Museum of the American Indian, Heye Foundation
Dates of Fieldwork: March 16 - October 2, 1919.
Published and Unpublished Mss.: Heye 1921
Location of Fieldwork: 23 sites scattered over most of the island's area.
Theoretical and Empirical Goals of Research: The objective appears to have been to obtain a large museum collection from a
relatively unknown region.

**Site Nos. or Locations from which Data Were Collected:** Correlation with Rozaire and Kritzman's site numbers is impossible without field checking.

**Types of Data Collected:** Artifacts from cemeteries and possibly also human bones. 343 skeletons were unearthed altogether, ranging from 1 to 160 skeletons per site. A small map showing the locations of the sites on the island is published.

**Person-days and Crew Size:** Glidden plus two others—presumably about 450-500 person-days altogether.

**Data Collection Procedures:** The focus of the excavations was on cemeteries. No detail is given of excavation procedures; presumably they were relatively casual.

**Significant Descriptive and Theoretical Conclusions:** Glidden obtained the largest known collection of artifacts from the island. Their work demonstrates that prehistoric occupation on the island was extensive.

**Nature of the Archaeological Collection:** The number of artifacts in the collection probably is in the thousands. The collection includes ground and chipped stone tools, a wide variety of shell and bone artifacts, various perishable items, and apparently also human skeletons—at least crania. The amount of provenience information associated with the collection is unknown. Also, the present condition of the collection at the Museum of the American Indian is unknown.
Project Name: Rogers' First Reconnaissance of San Miguel Island
Principal Investigator: David Banks Rogers
Institutional Sponsor: Santa Barbara Museum of Natural History
Dates of Fieldwork: March 24, 1927
Published and Unpublished Mss.: Rogers 1929:262-268. Field notes are on file at the museum.
Location of Fieldwork: Rogers (1929:262) claims to have walked around the whole periphery of the island.
Theoretical and Empirical Goals of Research: Rogers was apparently prospecting for sites to excavate in the forthcoming summer.
Types of Data Collected: Commentary on the surface characteristics and locations of archaeological sites. There is no map of the island showing his site locations on file at the museum. Some surface collections were made.
Site Nos. from which Data Were Collected: Rogers lumped large groups of sites together, claiming that there were about nine large areas of continuous distributions of surface debris (see published map in his book).
Person-days and Crew Size: One full day.
Data Collection Procedures: Rogers apparently stayed relatively close to the coast. His survey seems to have been hurried and casual.
Significant Descriptive and Theoretical Conclusions: Rogers apparently found this island uninviting with regard to his excavation plans.
Nature of the Archaeological Collection: A surface collection attributed to Rogers exists at the museum. Ten catalog cards pertain to the collection.

Project Name: Rogers' Second Reconnaissance of San Miguel Island
Principal Investigator: David Banks Rogers
Institutional Sponsor: Santa Barbara Museum of Natural History
Dates of Fieldwork: June 16, 1927.
Published and Unpublished Mss.: Rogers 1929. Field notes are on file at the museum.
Location of Fieldwork: Along the north shore of the island from Cuyler Harbor east.
Theoretical and Empirical Goals of Research: Rogers was apparently completing the survey he started the previous March.
Types of Data Collected: Commentary on the surface characteristics and locations of sites. Some surface collections were apparently also made.
Site Nos. or Locations from which Data Were Collected: Unknown.
   See comment on this subject in description of first reconnaissance.
Person-days and Crew Size: Rogers spent less than one day in the reconnaissance.
Data Collection Procedures: A casual and hurried foot survey.
Significant Descriptive and Theoretical Conclusions of Research: Rogers
was apparently not too enthused over the archaeological resources of the island.

**Nature of the Archaeological Collection:** A small surface collection exists at the museum.

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**Project Name:** Orr's Survey of San Miguel Island  
**Principal Investigator:** Phil C. Orr  
**Institutional Sponsor:** Santa Barbara Museum of Natural History  
**Dates of Fieldwork:** July 1 and 2, 1950. (Perhaps a few more days were spent on the island in addition to these two.)  
**Published and Unpublished Mss.:** Orr's survey was identified by reference to the site records on file at the museum, copies of which (on U. C. forms) are on file at the U.C. Berkeley Archaeological Research Facility. No other field records of his survey could be located.  
**Locations of Fieldwork:** Orr apparently ranged over most of the island's area.  
**Theoretical and Empirical Goals of Research:** Orr apparently wished to inventory the sites on the island and compare them to those on Santa Rosa Island, where most of his research was being undertaken.  
**Types of Data Collected:** Orr's site record forms contains descriptions of site locations and surface characteristics. Grid locations of the sites are given in terms of the old military grid
system (not the UTM system). Surface collections were made. The presence and in some cases the positions of exposed burials are also noted.

**Site Nos. or Locations from which Data Were Collected:** Orr assigned the numbers 132.1 to 132.26 to the sites he located. The U.C. Berkeley Archaeological Research Facility adopted Orr's numbers (i.e., SMI-1 to 26). Correlation with Rozaire and Kritzman's numbers assigned starting in 1964 is largely impossible without field checking. Correlation with Rozaire's and Rozaire and Schumacher's numbers assigned prior to 1964 is also nearly impossible. The U.C. Berkeley Archaeological Research Facility correlates only the following numbers:

<table>
<thead>
<tr>
<th>ARF and SBMNH</th>
<th>Rozaire, pre-1964</th>
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<tbody>
<tr>
<td>1</td>
<td>30</td>
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<tr>
<td>4</td>
<td>10</td>
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<tr>
<td>16</td>
<td>27</td>
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<tr>
<td>23</td>
<td>16 to 20</td>
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**Person-days and Crew Size:** Orr was accompanied by at least two other individuals; they spent at least two days on the island.

**Data Collection Procedures:** Unknown. Apparently the crew was not on the island long enough to make a thorough survey. The intensity of coverage appears to be very light.

**Significant Descriptive and Theoretical Conclusions:** Orr demonstrated that more discrete sites existed on the island than the number
mapped by Rogers.

Nature of the Archaeological Collection: Orr collected about 60 objects (20 catalog cards) from the following sites: 132.3, 4, 13, 15, 16, 19, 20, and 24. Objects include stone bowl fragments and shell and bone tools and ornaments. The collection is housed by the museum.

Project Name: Rozaire's Initial Survey of San Miguel Island
Principal Investigator: Charles Rozaire
Institutional Sponsor: Unknown
Dates of Fieldwork: April 17, 1962

Published and Unpublished Mss.: This survey is indicated by the presence of site records filled out by Rozaire on file at the U.C. Berkeley Archaeological Research Facility. (Rozaire did not bring up this survey in my interviews with him.)

Location of Fieldwork: Primarily on the northern promontory of the island.

Theoretical and Empirical Goals of Research: Rozaire apparently wished to inventory the sites on at least a portion of the island in terms of modern criteria for differentiating between sites.

Types of Data Collected: Rozaire filled out standard U.C. site record forms for ten sites. He also mapped their locations, apparently on 7.5' maps.

Site Nos. or Locations from which Data Were Collected: Rozaire numbered his sites SMI-1 through 10. These are not the same numbers used either by the U.C. Berkeley Archaeological Research
Facility or by Rozaire and Kritzman beginning in 1964.
Rozaire's SMI-10 is UCB's SMI-10.

Person-days and Crew Size: Apparently Rozaire worked by himself for one day.

Data Collection Procedures: His survey was undoubtedly on foot. The intensity of coverage is unknown.

Significant Descriptive and Theoretical Conclusions: This was apparently only a preliminary survey.

Nature of the Archaeological Collection: None made.

Project Name: Investigation of San Miguel Island
Principal Investigator: Paul Schumacher and Charles Rozaire
Institutional Sponsor: National Park Service
Dates of Fieldwork: August 21-27, 1963

Published and Unpublished Mss.: This survey is indicated by the presence of site record forms filled out by Schumacher and Rozaire on file at the U.C. Berkeley Archaeological Research Facility. It is also referenced in the summary of Channel Islands National Monument correspondence compiled by the National Park Service. (Rozaire did not mention this survey in my interviews with him.)

Location of Fieldwork: On the eastern half of the island.

Theoretical and Empirical Goals of Research: Schumacher and Rozaire were continuing the survey started by Rozaire in 1962. Their objective appears to have been a relatively thorough survey of the island.
Types of Data Collected: Rozaire and Schumacher filled out standard U.C. site record forms for each site and plotted their locations on a map—apparently a 7.5' map.

Site Nos. or Locations from which Data Were Collected: Rozaire and Schumacher numbered their sites SMI-11 through 30. These were not the same numbers used by the U.C. Berkeley Archaeological Research Facility or by Rozaire and Kritzman beginning in 1964. The Berkeley and Rozaire-Schumacher site number concordance is as follows:

<table>
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<tr>
<th>Berkeley</th>
<th>Rozaire-Schumacher</th>
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<tr>
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<td>16</td>
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<td>51</td>
<td>12</td>
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Person-days and Crew Size: Apparently only Rozaire and Schumacher
for six days for a total of 12 person-days.

**Data Collection Procedures:** The survey was presumably on foot.

The intensity of coverage is unknown.

**Significant Descriptive and Theoretical Conclusions:** This was apparently a preliminary survey.

**Nature of the Archaeological Collection:** None made.

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**Project Name:** Excavations at SMI-1

**Principal Investigator:** Charles E. Rozaire

**Institutional Sponsor:** Los Angeles County Museum of Natural History

**Dates of Fieldwork:** Summer 1964

**Published and Unpublished Mss.:** Rozaire 1965. All field records are on file with Rozaire at the Los Angeles County Museum of Natural History.

**Location of Fieldwork:** A site located near the abandoned ranch house in the eastern sector of the island.

**Theoretical and Empirical Goals of Research:** Rozaire selected this site to excavate since its undisturbed condition and relative depth appeared to enhance the potential that the site would yield information for constructing a chronology for the island. He also mentioned that logistical convenience was a factor.

**Types of Data Collected:** All artifacts, flakes and faunal remains excluding shell (which was collected in three microanalysis pits).

**Site No. from which Data Were Collected:** SMI-1. This site is the same SMI-1 in the U.C. Berkeley Archaeological Research
Facility records and the SMI-30 of Schumacher and Rozaire's 1963 survey. In other words, Rozaire abandoned his original designation for the site.

**Person-days and Crew Size:** The project lasted four weeks. The crew averaged about 12 in number, making a total of approximately 290 person-days of excavation and related fieldwork.

**Data Collection Procedures:** A simple random sample of 69 5 x 5-ft. grids out of a total of 1500 in the sampling frame (6.9 percent) were excavated. Three of the grids in the sample were non-randomly selected for microanalysis; the three pits represented a range in surface densities of midden debris. The grids were excavated in arbitrary six-inch levels, although the microanalysis grids were excavated in three-inch levels. All material collected was provenienced to pit and level. Shovel and trowel were used; all soil passed through quarter-inch screens except that from the three microanalysis pits which was screened through eighth-inch screens.

**Significant Descriptive and Theoretical Conclusions:** Rozaire states: "The impression is that the site represents a single, but long term, cultural horizon." The site may represent a terminal Middle Horizon occupation with a time span estimated to be 1500 to 2000 years.

**Nature of the Archaeological Collections:** Artifacts include ground stone, flaked stone, and bone and shell artifacts. The number of artifacts in the collection is 617. Unmodified flakes and
unmodified bone were also retained and are abundant. The collection is housed by the Los Angeles County Museum of Natural History and is accessible for research. It is described in Rozaire 1965.

**Project Name:** San Miguel Island Survey (see attached map)

**Principal Investigator:** Charles E. Rozaire

**Institutional Sponsor:** Los Angeles County Museum (the project was funded by the National Park Service.)

**Dates of Fieldwork:** Intermittently between June 1964 and July 1966.

**Published and Unpublished Mss.:** Rozaire 1965 includes a section covering the survey of the first 125 sites, Curtis 1965, Kritzman 1964. Daily journal, and site record forms are on file with Rozaire at the Los Angeles County Museum.

**Location of Fieldwork:** The portion of the survey reported in 1965 was in the vicinity of Cuyler Harbor only; the survey eventually covered the whole island.

**Theoretical and Empirical Goals of Research:** Rozaire was contracted by the NPS to produce an inventory of sites on the island. Beyond this, Rozaire appears to have been interested in finding sites that would yield chronological information.

**Types of Data Collected:** Descriptions of the surface characteristics and locations of sites were placed on conventional U.C. site record forms, and locations were plotted on 7.5' USGS maps.
Pages missing.
There is a collection of photographs associated with the survey. Surface collections were made from most sites.

Site Nos. or Locations from which Data Were Collected: SMI-1 through 542. Rozaire and Kritzman abandoned all previous numbering systems, including that started by Rozaire in 1962.

Person-days and Crew Size: The survey was done primarily by George Kritzman who worked alone about 25 percent of the time (often working 10-12 hour days) and usually with one other person the rest of the time. Eighty days were spent in the survey for a total of approximately 140 person-days altogether.

Data Collection Procedures: The survey was done on foot, and an attempt was made to cover all habitable land on the island. Details on how the ground was covered are not presently available. Toward the end of the survey when those portions of the island most distant from the ranch house were being covered, a Honda motor bike was used to go to and from the survey areas.

Significant Descriptive and Theoretical Conclusions: The survey demonstrates the relatively high density of sites on the island in terms of modern criteria for site differentiation. It also demonstrates the inadequacies of all previous surveys of this island and also the other islands.

Nature of the Archaeological Collection: The surface collection of artifacts includes usually one to several artifacts per site. Most of the collection consists of ground and chipped stone
artifacts. It is housed at the Los Angeles County Museum of Natural History and is accessible for study.

**Project Name:** Test Excavations at SMI-525

**Principal Investigator:** Charles E. Rozaire

**Institutional Sponsor:** Los Angeles County Museum of Natural History.

**Dates of Fieldwork:** April 17-21, 1967.

**Published and Unpublished Mss.:** No publications or reports have been prepared as yet. Field records and photographs are on file with Rozaire at the Los Angeles County Museum.

**Location of Fieldwork:** On the north coast at the extreme western end of the island.

**Theoretical and Empirical Goals of Research:** Being a deep, stratified site (ca. 10 ft. thick deposits) and having a convenient exposure on a cliff edge, it was hoped that a reasonably long sequence could be established from the analysis of the sample obtained.

**Types of Data Collected:** All artifacts, faunal remains, and flakes, as well as stratigraphic information.

**Site Nos. from which Data Were Collected:** SMI-525, in the Rozaire and Kritzman numbering system.

**Person-days and Crew Size:** Rozaire and two crew for a total of about 12 person-days.

**Data Collection Procedures:** The selection of the site depended on its relative depth and convenience of its exposure. Two adjacent
5 x 5-ft. pits placed along the cliff edge were excavated to the maximum depth of the deposit. The levels varied in volume because of the irregular side of the cliff. Material was segregated according to pit and arbitrary six-inch levels. The deposit was excavated with shovel and trowel and all deposit was screened through quarter-inch screen.

**Significant Descriptive and Theoretical Conclusions:** The excavation demonstrated that intact and deep deposits still exist on the island despite extensive erosion and looting. Results of the analysis are not yet available.

**Nature of the Archaeological Collections:** Over 100 artifacts and abundant faunal remains. The collection is housed at the Los Angeles County Museum of Natural History and is accessible for study.

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**Project Name:** Excavations at SMI-261  
**Principal Investigator:** Charles E. Rozaire  
**Institutional Sponsor:** Los Angeles County Museum of Natural History  
**Dates of Fieldwork:** August 17-30, 1967, and June 21-July 1, 1968.  
**Published and Unpublished Mss.:** No publications or reports are available yet. Field records and photographs are on file with Rozaire at the Los Angeles County Museum.  
**Location of Fieldwork:** A rock shelter site overlooking the northeast coast just south of Bay Point.
Theoretical and Empirical Goals of Research: Rozaire wished to obtain a large collection from a shelter site, partly in hopes of finding perishable items such as woven seagrass.

Types of Data Collected: All artifacts, flakes, and faunal remains, as well as provenience information by pit and level. A map of the site was made.

Site Nos. from which Data Were Collected: SMI-261, using Rozaire and Kritzman's numbering system.

Person-days and Crew Size: Rozaire and three crew during both episodes of fieldwork.

Data Collection Procedures: A trench was dug through the apron of midden in front of the shelter and nearly all of the shelter interior was excavated. Perhaps 30 percent of the total deposit was excavated, which equals about 125 x 5-ft. squares, including the trench. Each grid was excavated in six-inch levels with shovel and trowel. All deposit was quarter-inch screened.

Significant Descriptive and Theoretical Conclusions: The analysis of the collection is not yet completed. Apparently Rozaire did not find the amount of perishable materials that he had hoped.

Nature of the Archaeological Collections: Several hundred artifacts and abundant faunal remains. The collection is housed at the Los Angeles County Museum of Natural History and is accessible for research.
Project Name: San Miguel Island Field Conference
Principal Investigator: Donald Lee Johnson and Charles E. Rozaire
Institutional Sponsor: Los Angeles County Museum of Natural History
(the project was funded by the National Science Foundation).
Published and Unpublished Mss.: A trip report and a final report to NSF, both written by D. L. Johnson, are on file at NPS and with Rozaire and Johnson.
Location of Fieldwork: Various sites on the island.
Theoretical and Empirical Goals of Research: The purpose of the conference was to obtain the opinions of scientists from various relevant disciplines on the observable evidence in the field concerning the relationship between supposedly burned dwarf mammoth bones and human intervention—in particular areas of burned earth and possible stone tools.
Types of Data Collected: The opinions of the scientists.
Site Nos. from which Data Were Collected: Various sites. Numbers not available.
Person-days and Crew Size: A 15-member party of archaeologists, physical geographers, and geologists (including Fred Bohannon of NPS).
Data Collection Procedures: N/A
Significant Descriptive and Theoretical Conclusions of Research: The collective opinion of the invited scientists was that the evidence was not sufficient to be confident of an association
between dwarf mammoths and human occupation.

**Nature of the Archaeological Collection:** N/A

**Condition of the Archaeological Resources**

The archaeological sites on the island have been extensively damaged by a combination of sheep overgrazing and the relentless winds from the northwest. The sites on exposed lands on the north coast have been most seriously damaged. Nearly all investigators from 1875 on were very impressed with the extensive wind erosion which has caused both area deflation of sites and channeling. Many of the deflated sites were apparently deep deposits at one time, but the wind has removed all of the soil, and the artifacts, bones, etc., that were apparently once differentiated stratigraphically have dropped to the present surface to form amazing concentrations of cultural debris. These sites have been the focus of clandestine relic hunters for many years, and since the island is uninhabited the extent of this activity is very likely still high today.

Added to the ravaging by the natural elements and relic hunters, it appears that a considerable amount of cultural material has been excavated and removed from the island by earlier excavators. In particular, Glidden's excavations for the Heye Foundation were very extensive, and he may have destroyed a large proportion of the cemeteries that once existed on the island. Yet, as Rozaire's work
demonstrates, there are still intact sites with substantial deposits on the island—in fact, there may still be cemeteries in many of these.

On the first 125 site records filled out by Kritzman, he reports other kinds of disturbances to archaeological sites. Several in the general vicinity of the ruined ranch buildings have been affected by a bulldozed former road that ran up from Cuyler Harbor. An airstrip in this same area also affected at least one site. Man-made disturbance of this type appears to be limited to only this sector of the island. Damage by exploding bombs when the island was used as a practice target in the 1950's has not been reported, although upon closer scrutiny this may be found to have occurred.

It should be emphasized that in spite of extensive damage to sites by wind erosion and early excavations, the island still has extremely valuable archaeological resources. Many sites remain in a state of preservation comparable to the best on the other Channel Islands.

Evaluation of Past Work

Excavations: The archaeological research on San Miguel Island exhibits roughly the same evolution of refinement as that on Santa Cruz Island. Very little is known of the work of early investigators, including Dall, Yates, Bowers, Dreyfus, and Doran. Most likely these people made at least surface collections over the wind-deflated sites and it is likely that some excavation was done, too. But their collections are now largely lost, and apparently no field records
exist. Their objectives in making collections are not far beyond simply the satisfaction of curiosity.

Schumacher's 1875 researches are better documented, and his collections do exist. Unfortunately, provenience information associated with the collection is no more specific than to the island as a whole. Glidden's collections for the Heye Foundation are apparently better provenioned. The total collection is unusually large, and although associated records at the Museum of the American Indian were not checked, there is good reason to suspect that the sites from which the collections came were recorded. Moreover, the map of the island showing the locations of the sites is of a large enough scale that the locations may possibly be correlated with Rozaire's locations, although not without some field checking. It appears likely that the collection has some research potential in terms of current problem orientations.

Rozaire undertook excavations at three sites on San Miguel Island. The first of these excavations, at SMI-1, is described in his 1965 report. There are not as yet reports for the latter two, however it appears that Rozaire is actively involved in the analysis of the collections from these sites, and reports may be forthcoming. Rozaire's excavations, like his survey, are on a par with the highest current standards for midden excavations, even to the point of using a form of probability sampling in his larger-scale excavations at SMI-1. Provenience information to pit and six-inch level was recorded, and all deposits were screened. He also undertook a certain amount of
"microanalysis" in his SMI-1 excavation. As samples of artifacts and other cultural debris from midden deposits, his collections are unique. Earlier investigators concentrated on cemetery excavations and did not, therefore, obtain sample of materials from midden deposits.

Neither the earlier investigators nor Rozaire were able to establish a chronology for the island. Portions of Rozaire's research were oriented toward this objective, but as yet none of his radiocarbon samples has been dated.

**Surveys:** Several individuals have made surveys of the island for the purpose of recording site locations. The first of these was D. B. Rogers in 1927 who recognized nine sites on the island. However, Rogers was a "lumper" of the highest order, and by modern standards his "sites" would be areas where sites are in relatively high density. (Compare Rogers' map (1929:293) to Rozaire's map of site locations.)

In 1950 Orr also surveyed the island, recording 26 sites for which records exist at the Santa Barbara Museum of Natural History. There are no other field records (i.e., a map showing site locations) associated with this survey that could be located at the museum. There is also a record for a 27th site (132.27) that was recorded sometime after 1950. Sometime in the 1950's Orr's records for sites 132.1 through 26 were transcribed by the U. C. Archaeological Survey at Berkeley onto conventional U. C. site record forms. These records are still housed by the U.C. Berkeley Archaeological Research Facility along with a set of 7.5' maps of this island showing the site locations.
This implies that such maps once existed at the Santa Barbara Museum of Natural History (and may still be there in some obscure file). Copies of the Berkeley records and maps are now on file at the UCSB Department of Anthropology.

Orr's survey was obviously more discriminating than that of Rogers, however it does not appear that he was on the island long enough to have accomplished a comprehensive survey. Moreover, he still tended to "lump" to a greater extent than what is now the practice in archaeology. For instance, where Schumacher and Rozaire recorded five different sites at Crook Point on the south shore of the island, Orr recorded one. This contrast is even more obvious when comparing Orr's sites to Rozaire and Kritzman's sites.

Rozaire made an initial one-day survey of a portion of the island in 1962, recording 10 sites. In 1963 Rozaire returned with Schumacher and recorded another 20 sites. Copies of the site records for both surveys were turned over to the U.C. Archaeological Survey at Berkeley, and these records were integrated into their records that were derived from Orr's original 26 site records. When Kritzman, under Rozaire's direction, initiated a new survey in 1964 which ultimately covered the whole island, all previous numbers and locations were ignored. The reason for this appears to be the vagueness in many of the site locations recorded in earlier surveys and a rigorous policy of assigning separate numbers to each isolatable deposit. The first 125 site records filled out by Kritzman are included in Rozaire's 1965 report to the National Park Service. The remaining site
records, ending with SMI-542, are still with Rozaire at the Los Angeles County Museum, and copies apparently do not exist anywhere else. Rozaire's map of San Miguel Island showing the locations of all 542 sites is on file at the Los Angeles County Museum with blueprint copies at the UCLA Archaeological Survey and the UCSB Department of Anthropology. (The latter institution also has a copy of Rozaire's 1965 report, however the UCLA Archaeological Survey does not.)

Characteristic of Rozaire's and his colleagues' work, their site record information for the island is of very high quality. Detailed information on site location and surface characteristics are included on the site record forms, and the mapping of site locations appears to be as accurate as possible. Not only is Rozaire and Kritzman's survey by far the most thorough of the various surveys of the island, it is also the most thorough of any that have been undertaken on the other northern Channel Islands (although I believe that my survey of limited portions of Santa Cruz Island is comparable).

Research Potential of the Archaeological Resources

Rozaire's work demonstrated that there is a rather large number of archaeological sites on the island, some of which have substantial deposits and are relatively undisturbed. These sites have high research potential for a variety of archaeological problems. However, the badly disturbed sites on the island should not be completely written off as worthless. Many still have some intact deposits, and even those that appear to be completely deflated still contain items
that would consistently not have been picked up by relic hunters and would yield at least minimal information about prehistoric industrial and subsistence activities.

In comparison to the other northern Channel Islands, particularly Santa Rosa and Santa Cruz, research problems that require knowledge of the contents of sites over the island or comparatively large segments of it cannot be effectively studied because of the very poor preservation of many sites and the jumbling of cultural debris that were deposited at different times in prehistory. Settlement pattern studies, in particular, cannot be as effectively studied on San Miguel. On the other hand, the undisturbed portions of the archaeological resources would be as pertinent as that of the other northern Channel Islands to the fine-scale studies of changes in subsistence and technology that characterize modern archaeology--in particular, the evolution of fishing subsistence and technology. Moreover, assuming that there are still intact cemeteries left on the island, there would be some potential for studies dealing with the evolution of social organization as exhibited in mortuary practices.

There are other research problems to which the archaeological resources of the island are relevant as a result of the environmental position of the island. In the first place, it is a small island in comparison to Santa Rosa and Santa Cruz. Moreover, the diversity and abundance of terrestrial subsistence resources is much more limited on San Miguel. Consequently, the prehistoric populations living
on the island would likely have experienced subsistence stress during times of adverse climatic conditions before the populations on the larger islands. Conversely, there are certain resources that are much more abundant on or around San Miguel in comparison to these resources on the larger islands. The sea mammal rookeries on the west end of San Miguel certainly must extend far back into prehistory, and even if the other islands once had some rookeries, their absence today would seem to indicate that San Miguel at least had larger and more consistently used rookeries. Thus, the prehistoric populations may have had more access to sea mammals, and they may have specialized to a greater extent in their exploitation. The major attractant for the sea mammals, besides the broad sandy beaches, appears to be the extensive and dense kelp beds off the western end of San Miguel. This area is relatively shallow and rocky and appears to be an ideal habitat for rock and kelp fish. Thus, prehistoric San Miguel Islanders would also have had another particularly abundant resource in which to specialize. It may be hypothesized, then, that the prehistoric San Miguel Island populations subsisted on a few but abundant resources in comparison to the more diverse subsistences of their neighbors on the other islands.

It should be kept in mind, though, that the San Miguel populations experienced generally harsher climatic conditions than those living on the other islands. There are few anchorages or landings with any protection, and, with more exposure to winds from the northwest, offshore fishing would have been more difficult much of the time,
let alone the various activities of everyday living. Given these conditions, the San Miguel Islanders may have more freely entered into trading arrangements for various foodstuffs. Considering that the island is the westernmost of the northern group, they may have looked to the mainland populations east of Goleta as trading partners.

These ideas just presented are only meant to give some idea of the directions that research using San Miguel Island's archaeological resources might be directed, as well as some of the unique regional research problems that are dependent upon the island's environmental position. The most important point to bring home is that there are undoubtedly characteristics of the island's archaeological resources that cannot be duplicated on the other islands, and in attempting to discover the full range of prehistoric cultural adaptations that existed in the Santa Barbara Channel region, the archaeological resources on San Miguel Island would necessarily be very important.

**Recommendations**

1. The NPS should obtain file copies of Charles Rozaire's site records and map showing site locations. Once obtained, Rozaire's site numbers and locations should be used for any future references to the island's archaeological resources. Assuming that Rozaire will cooperate, he should be provided with the funds necessary for typing and reproducing the records.

2. For purposes of evaluating the significance of the island's
resources, information from Rozaire's two excavations that have not yet been the subject of reports would be very useful. Again, NPS might be able to contract Rozaire to produce at least descriptive reports. (Much of the typological analysis appears to have already been accomplished by Rozaire.)

3. Along with recommendation 2. above, funds should be provided Rozaire so that he may obtain dates for several of the radiocarbon samples that he collected from his excavations. Having at least some preliminary information on the length of occupation on the island would be helpful in evaluating the significance of the archaeological resources.

4. Considering the comparatively rapid rate of destruction of some of the archaeological sites by wind erosion and the relic hunting that takes advantage of this, a special survey should be made by a team of archaeologists to determine which of these sites undergoing destruction are important enough to justify salvage. This team would then make recommendations to NPS.

5. Based on the results of recommendation 4., should it be carried out, salvage operations should then be undertaken.

6. Along with recommendation 4. and perhaps also 5., any sites on the island with National Register potential should be ascertained and then recommended for inclusion.

7. Any remaining livestock on the island should probably be removed. Considering the extensive destruction of vegetative cover resulting from overgrazing in the past, these animals undoubtedly
continue to have some adverse effect on what is left of the island's vegetation. Therefore, their removal would presumably help at least a little the island's vegetation to rebound.

8. Considering the vulnerability of the archaeological sites to looters and casual surface collectors of artifacts and human bones, there should ideally be a caretaker residing on the island during the summer months when presumably visits to the island are most frequent.
BIBLIOGRAPHY

Note: This bibliography includes several items that are not referenced in the overview. A few of these items are bibliographies of Channel Islands scientific research. The others are either syntheses, specialized analyses, or minor notes on Channel Islands archaeology.

Banks, R. L.

Banta, Benjamin H.
1972 A Preliminary Check List of Published Works Dealing with Aspects of the Natural Sciences of the California Channel Islands. Mimeographed. Los Angeles County Museum, Los Angeles, Ca.

Bartholomew, George A.

Bean, Lowell J.

Berger, Rainer and Phil C. Orr
1966 The Fire Areas on Santa Rosa Island, California, II. Proceedings of the National Academy of Sciences, Vol. 56, No. 6, pp. 1678-1682.

Blackburn, Thomas

Bolton, Herbert E.
Bowers, Stephen

Bremner, Carl St. J.
1932 Geology of Santa Cruz Island, Santa Barbara County, California. Santa Barbara Museum of Natural History, Occasional Papers, No. 1. Santa Barbara.

1933 Geology of San Miguel Island, Santa Barbara County, California. Santa Barbara Museum of Natural History, Occasional Papers, No. 2. Santa Barbara.

Bright, Marcia
1966 Archaeological Survey of Santa Barbara Island, May 21-22, 1966. ms. w/ 8-1/2x 11" map of island on file at the UCLA Archaeological Survey.

Brown, Alan K.

Comstock, John A.


Curtis, F.


Dunkle, Meryl B.
<table>
<thead>
<tr>
<th>Year</th>
<th>Title</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>Channel Islands, California: Reference List of Possible Sources of Information for Use in Research Study Projects.</td>
<td>Mimeographed ms. in U.C. Santa Barbara Library.</td>
</tr>
<tr>
<td>1972</td>
<td>9000 Years of Prehistory at Diablo Canyon, San Luis Obispo County, California.</td>
<td>San Luis Obispo County Archaeological Society Occasional Paper, No. 7. San Luis Obispo, California.</td>
</tr>
</tbody>
</table>
Harrington, John P.


Harrison, William M.

1964 Prehistory of the Santa Barbara Coast, California. Doctoral Dissertation, University Microfilms, Ann Arbor, Michigan.


Harrison, William M. and Edith S. Harrison


Heizer, Robert F.


Heizer, Robert F. (ed.)


Heizer, Robert F. and A.B. Elasser (eds.)


Heizer, Robert F. and Harper Kelley


Helvy, Richard H., and James N. Hill

Heye, George C.

Hillinger, Charles

Holder, Charles F.
1910 The Channel Islands of California. A. C. Mc Clurg, Chicago.

Holland, Francis R., Jr.

Hoover, Robert L.

Hubbs, Carl L.

Hudson, D. Travis
n.d. Personal communication regarding his research into the construction and use of the Chumash plank canoe.

Irwin, Charles
King, Chester


King, Linda

Kritzman, George

Kroeber, Alfred L.

Landberg, Lief C. W.


Linhart, Y. B., B. Burr, and M. T. Conkle

Lipps, J. H.
MacArthur, Robert H., and Edward O. Wilson
1967  The Theory of Island Biogeography.

McKern, Thomas W.
1960  An Anthropometric and Morphological Analysis of
a Prehistoric Skeletal Population from Santa Cruz
Island, California. Archives of Archaeology, No. 10

McKusick, Marshall B.
1958  Anacapa Expedition Field Notes, December 19-22.
Dittoed ms. on file at the Santa Barbara Museum
of Natural History.

1959  Introduction to Anacapa Island Archaeology.
pp. 71-104. Los Angeles.

Mc Kusick, Marshall B., and F. J. Clune, Jr.
1958  Archaeological Reconnaissance on Anacapa Island,
California, July 29-August 1, 1958. Dittoed ms.
on file at the UCLA Archaeological Survey.

Miller, Max
1959  And Bring All Your Folks. Doubleday, Garden City, N.Y.

Muller, Cornelius H.
In Proceedings of the Symposium on the Biology of
the California Islands, edited by R. N. Philbrick,
pp. 72-77. Santa Barbara Botanic Garden, Santa Barbara.

Nelson, N. C.
1936  Notes on the Santa Barbara Culture, In Essays in
Anthropology in Honor of Alfred Louis Kroeber.
University of California Press, Berkeley.

Olson, Ronald L.
1930  Chumash Prehistory. University of California Publications
in American Archaeology and Ethnology, Vol. 23, No. 1,

Orr, Phil C.
1943  Archaeology of Mescalitan Island and the Customs of
the Canalino. Santa Barbara Museum of Natural History
Occasional Papers, No. 5.
<table>
<thead>
<tr>
<th>Year</th>
<th>Title</th>
<th>Journal/Book</th>
</tr>
</thead>
<tbody>
<tr>
<td>1968</td>
<td>Prehistory of Santa Rosa Island.</td>
<td>Santa Barbara Museum of Natural History, Santa Barbara.</td>
</tr>
<tr>
<td>Remington, Charles</td>
<td>Natural History and Evolutionary Genetics on the California Channel Islands.</td>
<td>Discovery, Vol. 7</td>
</tr>
</tbody>
</table>
Rogers, David B.
1929 Prehistoric Man of the Santa Barbara Coast. Santa Barbara Museum of Natural History, Santa Barbara, Ca.

Rozaire, Charles E.

1961 Cursory Archaeological Site Survey of Middle and West Anacapa Islands, June 24-25, 1961. Ms. on file with Rozaire at the Los Angeles County Museum of Natural History.


1965 Archaeological Investigations on San Miguel Island. Unpub. report submitted to NPS. (incl. approx. by Freddie Curtis.)


Rozaire, Charles E. and Donald L. Johnson
n.d. Application to the National Science Foundation for a Research Grant in Support of the Archaeology and Paleoecology of San Miguel Island, California. Ms. on file with Rozaire at the Los Angeles County Museum of Natural History.

Rust, H. N.
1907 Archaeological Collections from San Miguel Island, California, American Anthropologist, Vol. 9, pp. 656-657.

Schumacher, Paul

Spaulding, Albert C. and Michael A. Glassow
1972 Archaeological Research on Santa Cruz Island, California. Research Proposal submitted to the National Science Foundation.
Swartz, B. K.

Tartaglia, Louis J.

Van Valkenberg, Richard

Von Bloeker, Jack C. Jr.

Wallace, William J.

Wardle, H. W.

Warren, Claude N.

Weaver, Donald W., and others

Whitehead, Richard S., and Robert L. Hoover
Woodward, Arthur

Yates, G. L.