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## ***Overview of the Archaeology of San Clemente Island, California***

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The present report reviews the findings and interpretations resulting from five seasons of investigation on San Clemente Island, California, conducted between 1983-87 under a Federal Antiquities Act permit to UCLA, and in a cooperative research agreement between UCLA and the Natural Resources Office, Naval Air Station, North Island (San Diego). I present the “conclusions” in the first part of this discussion, and the background, list of sites studied, etc. in the second part. The evidence for the general conclusions is found in the accompanying papers, written by participants in the UCLA field program; however, a general review is needed to relate the individual studies—not all of the many sites excavated are reported here.

These papers provide three basic kinds of information:

1. Background data needed to understand the island, its environmental features, and its aboriginal inhabitants at the time of the Spanish missions in Southern California. Also, Andrew Yatsko summarizes all previous archaeological work on San Clemente.
2. General and comparative studies which range from discussions of specific classes of artifacts to ecological studies on island resources and their uses.
3. Data specific to particular sites. For some of the sites sampled, these discussions amount to traditional descriptive site reports. For the larger excavations, however, the articles can be defined as selected parts of site reports rather than a comprehensive presentation of the total excavation and everything recovered. This approach is necessitated by the continuing research and the fact that major sites were excavated in more than one season, so that aspects of the excavation are the responsibility of different crew chiefs. Not all

of the descriptive work has been completed for this report.

Most of the manuscripts resulting from the research were largely edited by David Horner in 1991, who spent many hours in applying his editorial skills and experience to a very diverse lot of manuscript material. Editorial work with the bibliography was very much helped by Michelle Titus, who not only prepared the initial computerized bibliography but used some of her own advanced students to check references and remove errors and omissions in bibliographic citations. Even with our best efforts, however, I cannot guarantee that a bibliography of this size is free of error.

There is some repetition of factual data in the individual articles; however, we have not eliminated all duplications. The various authors are utilizing the same data base for their own purposes and do not always agree in their conclusions and perspective. It seems desirable that their interpretations be adjacent to

the data they are using and for this reason we have allowed some repetition of data (such as radiocarbon dates) in more than one place. This also allows the individual papers to stand alone and be usable without continual cross-referencing to other parts of the volume. Readers may tire of seeing "San Clemente Island" spelled out so many times rather than using just "San Clemente." We felt it important to be specific because there is a city of San Clemente on the mainland and confusion might arise for readers who had access only to a specific paper in our compilation.

The problem of duplication also comes up with respect to the bibliographies. In this case, we have combined all the references into a single bibliography rather than repeat the same basic references in each individual paper. The relevant bibliography is printed in each issue for the convenience of the reader.

The combination of these three kinds of discussions (background, topical studies, and data on specific sites excavated) does provide the groundwork for future studies and makes it possible for fairly detailed comparisons with other islands and the mainland. San Clemente, previously one of the least-known islands so far as its archaeology is concerned, is now about equal to the other islands in its publication of the archaeological record, making it possible to develop specific research designs and proceed to answering some of the key questions raised in this report.

The bulk of our reporting in these papers is based on the 1983 field work. Although there has been some up-dating to take into account later field seasons (particularly for those sites first excavated in 1983), and a few sites are included from later seasons (such as Old Air Field, dug in 1986), this volume is not a final report of the UCLA work and many additional studies are under way. Some of the papers included here were revised as recently as 1993 and have incorporated or synthesized material from several field seasons, and we have tried to update the bibliography

to include recent work. Updating the bibliography has added some publications but a much larger number of unpublished manuscripts, nearly all of which are on file with the Cultural Resources Office, NAS North Island, San Diego, where the most comprehensive archive on San Clemente research is housed.

As supervisor of the UCLA field program, it is my responsibility to put forward the general conclusions arising from the total work. These conclusions are my own perceptions of the situation and they are not necessarily agreed to in detail by the contributors to this volume. Furthermore, as with all general statements based on preliminary findings, additional work will no doubt modify and amplify the picture. Much of that work is now being carried forward by Mark Raab and his students at California State University, Northridge, as well as other institutions which have signed on to develop further studies on San Clemente. It was our decision, after five seasons of field work, that we at UCLA would not continue adding to excavations and collections until we had organized and published our extensive work. This was a good idea, but perhaps we dug too long before tackling the report writing, as shown by the years it has taken us to get as far as this report. It is a common failing of archaeologists to keep on with the field excavation, particularly when new and exciting information is being found and it is difficult to walk away from rich and informative sites. Few of us have the self-discipline to leave behind a known site, full of new and unsuspected information, to be dug by someone else; however, we did make this decision. Except for significant papers by Roy Salls and Alice Hale, we have not incorporated the new information of later diggers, partly because most of that is not yet published, and partly because it would require re-writing most of the papers here. Revisions can go on forever and we cut off our field work at 1986 so that reporting could be completed and published. We have generously been provided copies of the reports of other workers, but do not find them to diverge mark-

edly from the conclusions reached here. Indeed, some of the basic structure of archaeological study, in particular the chronology provided by radiocarbon and obsidian dates, is heavily derived from the UCLA laboratories.

The overall contribution of the UCLA program is a large step forward in California archaeology. San Clemente, as the southernmost of the channel islands (Fig. 1.1), was among the least investigated prior to our work. The commitment of thousands of man-days to careful controlled excavations has allowed the first definition of the culture history of the island. The work has profited from modern methodology and has yielded multiple dates from several dating methods, extensive faunal and floral samples reflecting ancient subsistence and environmental adaptation, and numerous topical studies which significantly advance our knowledge of such things as physical anthropology and genetic relationships, prehistoric dogs, historic archaeology, midden analyses, and a number of artifact classes previously unstudied in detail. The political impediments to doing any excavation archaeology in California, and the tendency to do minimal investigations composed of only a test pit or two, may make our San Clemente work the last large excavation program in the state; no one has examined anywhere near so large a sample since we began in 1983.

Our cooperative research agreement had a number of objectives which meet both NAS North Island and University interests. On the Navy side, there is the need for investigation and data gathering on the cultural resources of the island so that appropriate management decisions can be made. Where archaeological remains are particularly threatened by natural causes or plans for future land use, there is a particular need to retrieve as much information as possible. Where archaeological sites have been damaged by earlier construction or road-building, there is a need to



Fig. 1.1. Southern channel islands of California.

ameliorate the damage by salvaging data and compiling the best scientific data base obtainable.

The University's interests are concentrated on student training and scholarly research; objectives which have been entirely compatible with NAS North Island's needs as well as the overall research plan developed in 1983. At the time of beginning our work, there had been minimal archaeological excavation on the island and the description of the archaeological cultures was barely begun. The task of defining the culture history of the island involved selection of sites which promised to yield information on different time periods in the aboriginal occupation of the island; initially, this was made possible by a set of radiocarbon dates obtained in the earlier survey of the island's archaeological sites by Michael Axford—these dates, and other dating evidence of historical artifacts, allowed the program to begin with a study of sites spread through a time span of almost 9000 years. Many additional radiocarbon dates (as well as some obsidian dates) were obtained in the course of our excavations (see Goldberg et al., Chapter 4) and have allowed more precise focus of the studies aimed at defining the culture history. Meanwhile, since contemporary archaeology is heavily concerned with resource management studies, the relationship of the teaching program to NAS North Island needs is obvious—not

only do our sites contribute to research knowledge, but also to the management concerns with which trainee archaeologists must become familiar.

At the time of our work, it was easy to combine management and research concerns, since there were virtually no excavation reports for the island and anything we did was a significant contribution to the meager data available. We deliberately began our work in threatened sites as well as some that gave every appearance of having been already largely destroyed, on the assumption that we could learn what we needed to know to broaden our excavation program to more intact locations. This was a good decision, since some of the sites which initially appeared to have little research value turned out to be unique situations and among the most informative sites ever dug in California.

Digging archaeological sites with students has advantages and disadvantages. The advantages are that the crew is genuinely interested in archaeology and all are volunteers. The disadvantages are lack of experience which may lead to beginners' mistakes and the loss of data that should be recorded. Our field training program adhered closely to the standards adopted by the Society of Professional Archaeologists (SOPA), which publishes guidelines for acceptable field schools in archaeology. These guidelines emphasize the teaching and explanation offered to trainee archaeologists so that they are given intellectual guidance as well as instruction in digging procedures. They also emphasize the need for sufficient supervisory staff and the avoidance of large crews which do not have experienced overseers at hand. By the 1986 season, in addition to three regular staff we made use of four student crew chiefs, all of whom had previous experience in archaeology on the channel islands. This provided a ratio of only three students per supervisor; well above the SOPA instructional standards. Our prior field seasons also used graduate student supervisors, all of whom had excavation experience at California

sites, but our initial work had nobody with prior experience on San Clemente, so we had much to learn in the 1983 season. Somewhat makeshift in the first season, by 1984, our field laboratory had adequate space and facilities including computer cataloging and reference collections of specimens and raw materials. All students spent substantial time in cataloging and processing the field material and it was expected that everything would be washed, cataloged, tabulated, sorted, and packed for shipment by the end of each season. This was not easy since the quantity of material recovered was very large and required many man-hours to process (Fig. 1.2). In my view, this is an area of field training that is often neglected. It is very important in instruction since it teaches the essential steps of what to do with the collections after they are dug out of the ground. In addition, students are exposed not only to the limited amount of material which they themselves encounter in excavation, but have ample opportunity to observe the overall collection that is being made.

Those who teach field classes are aware that they are not able to produce professional archaeologists in a mere field school session. Some students do not have career goals in archaeology and are seeking an interesting summer experience. Some of those who are interested in archaeological careers find, in their field experience, that archaeology is not what they thought



Fig. 1.2. Artifacts and faunal remains from one level of one unit.

it was and change their career goals. The best the teacher can hope for is participation by an ethical and knowledgeable, careful, labor force. It is a bonus when some of the class continue toward professional goals and higher degrees. In the case of the San Clemente crews, we were certainly successful in our first goal and the bonus success is shown by the papers in these issues as well as the numerous theses and independent studies carried forward by those who got some of their training in the field classes on the island.

The bulk of the writing in these issues represents contributions of student participants in the field program. Assembly of the reports, cross-referencing, and introductory materials have been done by the editors. Special acknowledgment is made of the contributions of Michelle Titus, who prepared the initial computerized bibliography of all references cited, and Roy Salls, who managed the field laboratories from 1984-87 and put the collections in excellent order for study at UCLA.

Student training was also made more effective by some teaching changes which have grown out of previous seasons of work. Two nights a week were devoted to formal lectures on the work, field methodology, and implications of the finds. The laboratory procedures were improved and the field laboratory was managed full time by Roy Salls who provided training and supervision of the processing of the collections.

### **Principal Conclusions: Chronology**

Our initial work was a continuation of the extensive survey of archaeological and historical sites on the island, done under the direction of Prof. L. Michael Axford (1975-1978, 1984) of Mesa College over a period of several years. This study had identified and recorded almost 2000 locations on San Clemente by the time of our initial work and, in addition, had resulted in the acquisition of over 20 radiocarbon dates ranging from proto-historic to as far back as 36,000

years for various locations on the island. The dating information acquired by Axford allowed us to determine the cultural evidence which went with the dates. Ordinarily the archaeologist digs first and then seeks dates for the materials he has excavated. In this case, we were able to dig in contexts of known age and fit the cultural and stratigraphic information to the radiocarbon dates, for locations of known age with no defined archaeological context. Aided by Axford, our excavations could be located exactly where the radiocarbon samples had come from—one particularly vital series of early dates was originally obtained on stratigraphic samples taken in the side of a foxhole dug in a military exercise. Excavation immediately adjacent to the column dated by radiocarbon was able to provide data on the cultural associations (Eel Point B Site), and another suite of radiocarbon dates to verify the dates obtained by Axford.

Subsequently, numerous additional radiocarbon and obsidian dates were obtained by our own field crews (see Goldberg et al, Chapter 4 for a complete summary). One important result was dating the basal portions of the Eel Point B Site close to 10,000 years ago. This date indicates extremely early settlement on this island located 55 miles from the mainland. A similar age has been determined for Daisy Cave on San Miguel Island, the northernmost island on the other chain of Channel Islands off the coast of Santa Barbara. It is surprising and significant that these offshore islands have yielded the oldest radiocarbon dates for midden sites along the west coast. Not only does this show that man had settled the islands at a much earlier date than previously suspected, but the remote location of these sites at the western margin of North America forces some re-examination of the whole question of early man in the west (Meighan, 1990). Certainly if people had populated San Clemente Island by 10,000 years ago, we would expect earlier antecedent sites to be encountered on the mainland from which the islanders had to migrate. Of course, our dated island sites are not the oldest ones in

California, but they are the oldest radiocarbon-dated sites, confirming that greater antiquity is to be expected in the older mainland sites.

Aside from our early radiocarbon-dated middens, two surface sites were investigated which, because of their crude and simple lithic materials, may represent even older cultural remains. These sites remain somewhat enigmatic and subject to alternative explanations; they are discussed below.

At the other end of the time scale, highly significant historical sites were also identified and dated, ranging from settlements of the Spanish mission period, to the finding of more recent Chinese fishing camps (Axford 1987) (Fig. 1.3), to the identification of sites of the American ranching period (Yatsko, Chapter 2). There was greater occupation and use of San Clemente in the early historic period (California Mission period, 1769-1834) than is revealed in any historical documents. Previous study located an extremely important historic site (Ledge) and an equally important and complementary site was excavated in 1986 (Old Air Field Site). A third site of this kind (Lemon Tank) has been studied by Mark Raab and his students; we are fortunate to include two papers on this work, prepared under the direction of Roy Salls who was a key participant in the field programs of both UCLA and California State University, Northridge. Our late sites together provide an unprecedented record of life at the very end of the aboriginal period in California history; they define the extinction of native culture in southern California. This record is a unique and invaluable supplement to the historical archaeology done on the mainland.



Fig. 1.3. Michael Axford points to rocks arranged in a U-shape by Chinese abalone fishermen. Their camps were destroyed by winter storms in the mid-1980s.

Overall, we have a 10,000-year sequence of cultural changes from one small island of only 55 square miles. This is one of the longest and best-dated sequences from a confined area anywhere in North America. There are gaps, however, in the chronological record; we do not have a continuous and evenly-spread sequence of dates and our cultural evidence for some periods is much more comprehensive than for others. Some of the apparent chronological gaps will no doubt prove non-existent when further studies are done. Yet it appears on present evidence that there were times when the island was essentially uninhabited, perhaps for centuries at a time. It also appears that there were periods when conditions were particularly favorable and the island experienced surges of population with sizeable villages developing at some locations.

What is most needed is a comprehensive description of the cultural remains which can be linked to the very early radiocarbon dates. Our information is limited because these remains occur at the bottom of deep middens such as Eel Point (or perhaps in weathered

surface sites), but what collections we have do not show a significant difference from the artifacts of slightly later (8000 B.P.) assemblages.

### Maritime Orientation

From earliest occupation, the people of San Clemente were heavily adapted to marine resources and their sites are dominated by fish, shellfish, and sea mammal remains. This is an environmental imperative for hunters and gatherers living on an island, since land resources are scarce to non-existent. However, it was one of the surprises of the field work, since we began with a logical assumption that settlement of the island had to come from the adjacent mainland and therefore the mainland archaeological sequence would also be present on the island. A major finding is that *there is no Early Milling Stone occupation on San Clemente*, and that the characteristic mainland cultures from the time period 3000-8500 years ago are not present on the Island. We must conclude that the earliest settlers of San Clemente either a) were land-oriented seed-grinding populations from the mainland who immediately adapted to a fishing-shellfish collecting economy, or b) came to the island already adapted to a shell-midden way of life. The latter seems more probable and, if so, might argue for original settlement from the islands to the north rather than the adjacent California mainland to the east. It is possible that there is a yet undiscovered very early shell midden culture on the mainland, in which case the earliest island inhabitants could have come to the island having already developed a simple maritime adaptation on the mainland. While this is speculative in the absence of direct evidence, I anticipate that shell middens dating back to 10,000 or more years ago will be found along the west coast.

Details of midden analysis of food resources are presented in later issues by Burnat for shellfish and Colby for marine mammals. The most detailed study of fishing is in the thesis of Salls (1988), as well as his

article in this issue, which includes a massive database on fish bones and provides a detailed view of the cultural/environmental conditions involved in fishing activities on the island. In documenting local variability, and local over-exploitation of marine resources, Salls provides a new and improved view of shell-midden adaptations which is relevant not only to San Clemente but to this world-wide kind of adaptation. Also, Young and McNulty provide some information on plant food resources discovered in the middens. It seems clear that throughout its ten-millennia history of human settlement, San Clemente was always part of the island world and was culturally more similar to the northern islands than to the archaeology of the southern California mainland. This is also somewhat surprising, particularly for the historic period, when Shoshonean speakers held the island. We would expect these people, who were relatively recent settlers, would be more like the Gabrielino, Luiseño, and other mainland Shoshoneans, but this similarity is little evidenced in the archaeological record. For example, characteristic artifacts such as potsherds are virtually absent on San Clemente, only a couple of sherds were found in all the work done to date. Also virtually absent are such southern California Shoshonean features as cremation. Traded raw materials from the north heavily predominate on San Clemente, including steatite from Catalina and Coso obsidian from the California desert.

The ethnohistory relates San Clemente to Catalina Island to the north, but the latter was also a Shoshonean island in historic times, although again the archaeology of Catalina does not look much like that of mainland Shoshonean sites. Whoever the Shoshonean settlers were, they were immediately incorporated into the pre-existing shell-mound cultural pattern. It may be somewhat misleading that our bibliography includes many references to the Chumash, and most of the ethnographic parallels seen in our archaeology are drawn from Chumash ethnohistory. In part this is because the Chumash are

better studied and published than other coastal Indians. It is also because San Clemente was definitely part of what has been called the “Chumash interaction sphere” (cf. Hudson and Blackburn series 1979-1986), and there is no doubt that the archaeology of San Clemente is more like the archaeology of the other islands than it is of the mainland. It may be that at one time in the past San Clemente was indeed a Chumash island, but we need to remember that it was not part of Chumash territory in the protohistoric period (nor was Catalina Island). Aside from the tribal and linguistic differences, there are definite distinctions between the archaeology of the southern islands and the northern islands and it must be assumed that San Clemente had its own cultural pattern which did not necessarily parallel that of the Chumash in all respects.

A similar assumption about ethnographic parallels occurs at the other end of the time scale. Given the great antiquity of early settlement on San Clemente Island, an intriguing problem is the identification of the cultural group which may have made the original entry to the island. I have said elsewhere:

...we have neither linguistic nor physical anthropological evidence applicable to West Coast shell middens older than 8000 years.

Among the first settlers of the New World were people who were not comparable to the Upper Paleolithic hunters of the Old World, but were instead comparable to simple coastal “scroungers.” Their ancestors are probably to be seen in very early shell middens of Japan and northern Asia.

Recent tribal groups which may represent a life-way similar to that of the early entrants include such peoples as the Guaycurá of Baja California and the Yahgan of South America. The technology of these peoples is like that of early shell-mound dwellers. The cultural assemblage, particularly the stone tool

technology, is simple but there is no doubt of its man-made nature, and some finely finished tools of bone are to be expected (Meighan 1990).

The continuity of the shell-midden tradition, with its simple basic adaptations and unspecialized technology, make it natural for us to analogize the shell-midden dwellers of the ancient past with those of the California ethnographic record—hence the assumption that the early shell-midden dwellers must have been somewhat like the better-known Chumash of the northern islands. This is a false analogy. Most of the elaborations seen in Chumash material culture are absent from the beginning shell-middens. The time depth is such that we have no evidence for connections between the first settlers and those of more recent times, and there is no reason to believe that the recent Chumash were descended from, or related to, the earliest island settlers. Instead, if we are to reach for ethnographic analogies at all, we must consider analogies not with known California tribes of recent times, but rather with the world’s simplest shell-midden dwellers, comparable to the Yahgan or Guaycurá as mentioned above, or even to Australian aborigines. Exploration of this line of research may be significant not only to the settlement of California’s islands but to our understanding of the settlement of the New World.

### **Island Settlement Pattern**

Another surprise in the San Clemente investigations lies in the extremely dense distribution of sites on the island, over 100 sites to the square mile now recorded. This is a far greater site density than occurs on the mainland or on any of the other channel islands. It is a surprise because such a density of sites argues for a large population, but this was not present on San Clemente and all indications are that other islands were much more densely inhabited. This settlement



pattern is discussed by Yatsko (1989; Chapter 2), and I add only a few general comments here.

The situation of low population density accompanied by high site density is also found in parts of Baja California and Sonora. It represents use of a location by a small nomadic population which can camp more or less randomly over the geographic area. In other words, there are few features of the area, such as springs, concentrated plant or animal resources, or environmental shelter, which tend to concentrate populations at the same spots every year. While San Clemente has some large sites which are clearly nuclear settlements of intense hunter-gatherer use, it has a far larger number of small camping locations, some of them very small indeed, down to only a few meters in radius. Yet these locations are readily identifiable as discrete sites because of the universal use of maritime resources and the consequent obvious shellfish refuse which is characteristic of nearly all the sites on the island.

We would expect that the largest and deepest sites would be located immediately on the shore of the island. This is in part true, but some large and deep sites are also away from the coast, and many very small middens are scattered along the shore between the larger deposits. This can be explained in terms of the generally uniform environment and the fact that all locations are within a short distance of the coast, so that all settlements had access to the maritime resources of the island.

### **Physical Anthropology**

An important source of data is the examination of skeletal remains, seeking genetic/morphological features which can identify population groups to which the prehistoric people of San Clemente were related. A major historical question has to do with the influx of Shoshonean peoples in fairly recent times, and whether or not earlier people were physically

similar to them. The study by Titus and Walker provides a preliminary answer relating the earlier population more closely to the peoples of the northern islands and the later population to an influx of people from the adjacent mainland. This study is based on phenotypic parallels to the recent Indians of California and, because of our small sample, it cannot be definitive. This is an ideal problem area for the developing use of DNA studies of ancient human remains, which could provide verification of the genetic ancestry of the diverse island populations.

### **Rock Art**

Rock art is an important part of the archaeological record throughout southern California, but it is rare and contributes little on the offshore islands. For San Clemente, the report of Zahniser (1981) refers to scratched lines, cupules, and pits in the rocks at the Ledge Site. These marks are on a rock with a bedrock mortar (two pecked circles adjacent to the mortar hole) and two other small rocks (< 30 cm diameter) found on the surface. In my opinion, all of this “rock art” is recent and done by the previous diggers at the site. The two circles on the bedrock mortar appear to be pecked and grooved and may be aboriginal; they could also be “improvements” done by more recent visitors to create a “face” on the rock.

### **Field Methods**

Previous archaeological studies on San Clemente are summarized in some detail in Zahniser (1981) and updated in the review by Yatsko (Chapter 2). They are only briefly mentioned here. For present purposes, it is sufficient to note that the most recent reasonably “scientific” excavation work on the island was represented by the studies of McKusick and Warren (1959), almost 25 years before the UCLA program. Earlier significant studies were done by Woodward at Big Dog Cave (Fig. 1.4) and by the Southwest Museum at



Fig. 1.4. Arthur Woodward at Big Dog Cave, 1939.

Ledge Site. Both of the latter collections were made available to us and were used in preparing this report.

The sites on San Clemente are numbered in the site-numbering system for California, although each of the off-shore islands is treated as a geographic unit separate from the county designations most commonly used in the U.S. San Clemente is designated SCLI, the "I" indicating "island," and discriminating site designators from Santa Clara County site numbers [other island designation are similar: SCAL for Santa Catalina and SCRL for Santa Cruz Islands]. Politically, San Clemente Island is part of Los Angeles County although much south of the mainland county. It could therefore have its sites designated with Los Angeles County prefixes (LAN), but as mentioned it is more rational to designate the islands as separate geographic units with their own numbers. This is particularly appropriate when it is pointed out that little San Clemente Island has far more recorded archaeological sites than all the rest of Los Angeles County! Most of the San Clemente sites are also named and all of the excavated sites are referred to in

this report by their names. This avoids the confusion of trying to remember a long list of site numbers when reading the reports. Site names are primarily derived from USGS and Navy bench-marks and survey points which are thickly located on the island so that there is usually a named marker on or adjacent to the archaeological site. Where no such marker exists, a name was made up by the crew. Important named sites not linked to established map points include Big Dog Cave (early excavation by Woodward who named the site), Xantusia Cave at the north end of the island (named for the island night lizard, abundant remains of which were found in the site), and four sites in the middle of the island: Old Air Field Site (adjacent to former air field), Nursery (adjacent to a native plant nursery), Columbus (named from its site number: 1492), and Target (adjacent to a structure destroyed by a test-firing of a cruise missile. The archaeological site was not impacted by the resulting explosion). All other excavated sites are named from nearby bronze benchmarks (USGS or Navy mapping points).

The excavation work was done by laying out a grid over the site and excavating by pits. All digging was done by small levels, sometimes natural levels and sometimes arbitrary levels no more than 15 cm thick. Except for minor sites, it soon appeared that extensive areas needed to be exposed (as for example in the concentrated features at Ledge, the burials at Eel Point, or the pit-house at Nursery). We did not use a statistical random sampling method but relied on surface indications and experience to decide where excavations should be located. Some small sites were almost entirely dug and in the larger ones, care was taken to sample all sectors of the site.

All excavated soil was screened through a 1/8 inch screen. Aside from artifacts, all faunal remains were collected as well as all chipping waste. Column samples were taken from the sites with abundant faunal remains. The recovery from the excavated

Table 1.1. Sites studied on San Clemente Island by UCLA, 1983-1987.

Site	When excavated	Cubic meters excavated	Per cent excavated*	References
Ledge, SCLI-126	1983, 1984	ca. 50	80+	Cameron, Rechtman, Madden, McNulty, Scalise
Eel Point, SCLI-43	1983, 1984, 1986	200+	< 1	Aycock, Colby, Rigby
Horton, SCLI-1591	1983	2	<1	Buising
Seal Pt. Lithic Site, SCLI-717	1984	0.2	ca. 100**	Meighan
Target, SCLI-1446	1984	10	ca. 3	Rechtman
Nursery, SCLI-1215	1984, 1985, 1987	ca. 100	<2	Rigby, Young
Xantusia Cave, SCLI-1178	1984, 1985	40	ca. 50	Foley
Big Dog Cave, SCLI-119	1985	20	>50?	
Old Air Field, SCLI-1487	1985, 1986	55	50+	Meighan
Columbus, SCLI-1492	1986	25	50	Meighan
Gar 16S, SCLI-16S	1986	10	ca. 5	Meighan
Flasher, SCLI-16E	1986	10	ca. 20	Meighan
Flasher Lithic Site, SCLI-16E	1986	0	ca. 100**	Meighan

\* Estimates of site percentage excavated have considerable uncertainty since the exact extent of most sites is difficult to ascertain and in the case of Eel Point there are buried deposits. Some sites have been partially destroyed by erosion or construction work; their original volume is indeterminable. Estimates given here apply to whatever is left of the site. The extent of the study conducted is further discussed in the individual papers.

\*\* Test excavation showed these sites to be entirely surface deposits. Both apparently represent deflated sites where previously existing occupation deposits have been removed by wind, leaving only lithic material (and a small amount of bone and shell) remaining.

sample must be considered total, although obviously some extremely small bone fragments went through the screen and at Ledge we probably lost a few minute glass trade beads. The collections are at UCLA, kept under a curation agreement between the Fowler Museum and the U.S. Navy.

### The Excavation Program

Excavated sites are listed in Table 1.1, and located on Figure 1.5. Two sites had surface remains only, and the remainder were subject to excavation as listed. The work was carried out by field classes from UCLA, directed by me in the 1983, 1984, and 1986 seasons and by Douglas Armstrong in 1985. Limited field work in 1987 was directed by Andy Yatsko. The total

field work represents about 4000 man-days and a much greater time in post-excavation analyses. This represents one of the largest field programs in recent California archaeology. It is greater by a factor of at least 50 than all previous investigation of San Clemente archaeology.

### Minor Investigations of Possible Early Lithic Sites

This section includes discussion of some small site investigations which are not treated in detail in the following papers. These sites and collections deserve further analysis and some are undergoing further study at present, however, no detailed report is yet available. Discussion here is merely to place on record the work done, and to summarize our preliminary findings.

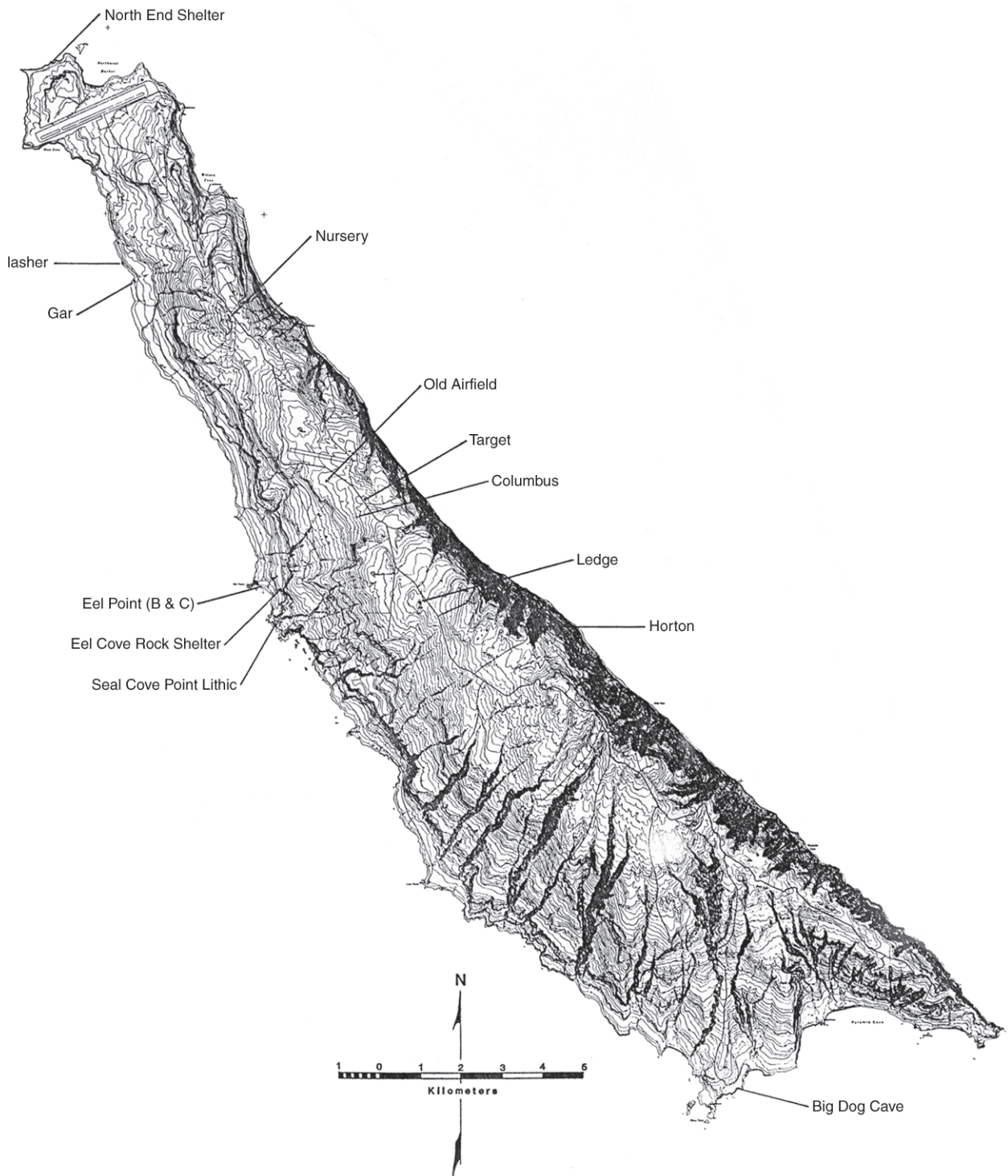


Fig. 1.5. Map of archaeological sites on San Clemente Island.

As mentioned above under chronology, two sites with minimal midden material yielded an assemblage of crude stone tools and tool-making debris, all of it exposed in small surface areas resting on the rocky clay substrate which is the basal material for most of our sites. One of these sites, the Seal Point Lithic Site, was carefully collected and analyzed by Vince Lambert. The other, the Flasher Lithic Site, was surveyed and studied in 1986 by me. These sites are at present not dated nor clearly understood, but they deserve brief mention as possible indicators of a very early occupation of San Clemente. Possible interpretations include:

1. They are very early sites dating to a time before extensive midden development.
2. They are blowout areas from which all midden and sand have been removed.
3. They are scatters of material which are marginal to established middens and result from peripheral activities associated with the middens, including possible workshop areas.

#### *Flasher Lithic Site (SCLI-16E)*

The Flasher Lithic Site is a blown-out surface of the marine terrace, around three small volcanic outcrops. It is a puzzling location but patterned like similar sites in other areas, particularly the Seal Point Lithic Site previously studied. These sites are characteristically on terraces of red clay (derived from the underlying volcanic material) and show a scatter of chipping waste mixed with very limited amounts of shell. A common shell is the owl limpet which dominates some of the site areas. Finished stone tools are rare but fairly large points or knives are found (of quartz, rhyolite, or basalt). The few finished bifacial implements include leaf-shaped and side-notched points. There are no grinding tools nor any artifacts of bone or shell. To the extent the small sample can be matched up with known California cultures, it appears more like the San Dieguito material from the mainland than anything else; however, the sample is too small to

be convincing about this comparison. Furthermore, the large and coarse lithic materials, including cobble flakes apparently used as tools without further shaping, also occur in the midden sites such as Eel Point. At present, we cannot discriminate the cultural material of the lithic sites from the basal levels of early shell middens on the island. Perhaps the latter also relate to San Dieguito, although the Harris (type) Site is not a shell midden and has a far higher frequency of bifacial points and knives.

From the Flasher Lithic Site, a total count of all items (bone, shell, and stone) was made of a 36 square meter surface area in the middle of the site. An intensive surface collection of lithic material was made from the whole site and it is hoped that analysis of this assemblage will allow definition of similarities and differences between the lithic sites and the excavated sites on the island. We also hope to date the limited organic material recovered from the lithic sites, but unfortunately this consists entirely of marine shell fragments (often heavily altered), and such surface finds could be deposited by later visitors—there is no way to confirm the contemporaneity of surface shells and surface lithic material.

#### *Seal Point Lithic Site (SCLI-717)*

A marine terrace above Seal Point (west side of the island) showed a surface scatter of crude lithic material including scraper planes, choppers, very large flakes and cores, and two bi-faces which most closely resemble artifacts from the San Dieguito sites on the mainland. The material used is all volcanic: basalt and rhyolite. An extensive surface collection was made and one test pit dug; the test pit extended to only 10 cm depth, indicating no real midden deposit to be associated. The soil, however, has some limited remains of shellfish embedded in it, most notable being numbers of limpets.

All indications are that this site should be quite old, pre-dating Eel Point B; but, the same kinds of lithic materials and crude flake and core objects also occur at Eel Point, so additional study is needed to determine the age and significance of this site. It does not appear to be a mere quarry or workshop, however, since there is a variety of debitage present including classes of basalt and rhyolite materials not immediately available at this location.

After detailed study, Vince Lambert concludes that it is not possible to define a distinctive assemblage in our sample from the site. Like the Flasher Lithic Site, the sample is too small and amorphous to permit us to classify these sites and their cultural remains as parts of the known cultural sequence on the island.

#### **Sites Excavated in 1984**

Seven sites were studied by the 1984 field project. Of these, one (Ledge) is considered to be fully studied and no longer of concern. One (Target) is a minor site and worth further effort only if it is scheduled for destruction. The two locations at Eel Point are both important and may merit additional excavation after the present sample has been analyzed and published; the site area should be protected against impacts.

The other three sites (Nursery, North Beach Shelter, and Seal Point Lithic Site) are locations which have yielded valuable new information about the culture history of San Clemente and all are sites for which our present excavation samples should be considered only preliminary data. These sites are important not only to the prehistory of San Clemente, but also to our general understanding of California archaeology.

#### **Sites Excavated in 1986**

##### *Old Air Field Site (SCLI-1487)*

The first half of the 1986 field season was devoted to

the excavation of this site. This was the major excavation conducted that season.

##### *Columbus Site (SCLI-1492)*

This small site was originally excavated by Spencer Rogers in the 1950's; limited records and collections are at San Diego State University. During the current season, additional sampling was done by Anna Noah (1987). Limited artifacts were found here, but the site yielded a sherd of aboriginal Southern California pottery, a very rare find on the offshore islands.

##### *Eel Point (SCLI-43B, 43C)*

Eel Point is one of the major archaeological locations on San Clemente Island and extensive work has been done here in previous seasons. The specific objectives of the fieldwork done by UCLA included the following goals.

At Eel Point B, the earliest site for which we have extensive data, additional sampling was done in an effort to increase the artifact collection and cultural information from the site, as well as improve the stratigraphic recording. Although the early assemblage at Eel Point B is older than 8000 years, the artifacts are very few in number and simple in technology. There are very few points, beads, or other diagnostic artifacts. There are almost no grinding implements. The collection is dominated by a large number of coarse flakes and cores of basalt and other volcanic rock; many of these appear to be objects used in this form although the general appearance is of debitage or chipping waste rather than finished artifacts.

There are also difficult problems of stratigraphy at this site, which intergrades with the much later Eel Point C to the southwest and is overlain in part by Eel Point A (a large sand dune of relatively recent origin and occupation). A number of 1 by 2-meter test pits were excavated to help clarify these problems and provide a

clear discrimination of the early material from later occupations. Stratigraphic recording was detailed and column samples were taken to correlate use of marine resources with the different stratigraphic units of the site. One test pit was 2.4 meters in depth—the deepest midden deposit so far recorded on the island.

At Eel Point C, the principal effort was to obtain additional stratigraphic and dating information on a layer of sea-urchin shells which appears to be significant in defining a time of marked collapse of maritime resources at about 1500 years ago. This promises to clarify some aspects of human use of the island's resources and the interaction between hunting and gathering peoples and the natural environment in the ancient past. The excavation included about 16 square meters of surface area excavated to varying depths—the midden itself is no more than a meter or so in thickness but substantial overburden of dune sand (more than one meter) had to be removed to get to the cultural deposits.

#### *Sand Dune Area*

An extensive area of sand dunes in the northwest part of San Clemente is similar to dune areas on other channel islands, notably San Nicolas. The sand dunes on San Clemente were noted in Axford's original survey as comprising a very extensive area of human habitation in the past, with shell middens widely scattered (Fig. 1.7). Due to movement of the dunes, much cultural material is exposed and several human burials have eroded out. No systematic excavation has been done in this part of the island previously and the 1986 crew decided to test a number of the dune locations to ascertain the nature and depth of the sites in this area. In general, it was found that the dune areas are less informative archaeologically than they appear from surface indications. This is because surface material has been widely scattered by wind and dune movement, giving the appearance of much larger sites than are actually present as "diggable"

midden. In other words, a great deal of the material here is on the surface, and the midden accumulations that can be dug appear to be small in extent and shallow in depth. Sites are very numerous in the dunes, however, and almost every small sand hummock is capped by some midden deposit. In many cases, it appears that the shell in the middens has stabilized that portion of the dune to some extent so that it does not blow away as readily as the surrounding sand.

There is a considerable problem in surveying and locating sites in the dune area because there is a near-continuous scatter of shells and midden along the coast and very large areas of the dunes have similar scatters which merge into one another, with some areas of concentration but no clearly defined separa-



Fig. 1.7. Dr. Meighan surveying a shell midden in the sand dunes.

tions or boundaries. Axford's original survey dealt with this problem by defining a small number of numbered regions within the dune area, but each of these regions comprises a large number of individual "sites" which defy ordinary description on site record forms. Recent work by Andrew Yatsko has defined smaller areas within the broader zones identified by Axford, but these are still "regions" rather than individual site accumulations and survey work has not yet been able to give individual numbers to individual loci of midden concentration.

All of our studies in 1986 were done within a dune area identified by Axford as SCLI-64. The earlier survey of McKusick and Warren had numbered the study area as SCLI-16 and 17. These were further subdivided into sub-areas identified by Yatsko as SCLI-16S and SCLI-16E. Within the sub-areas so identified, we excavated two locations which are designated by the names of the concrete camera pads associated with each: Gar (SCLI-16S) and Flasher (SCLI-16E). Our two locations, however, can themselves be subdivided and our excavation of six test pits actually represents six different sites, all of them small locations which represent occupation by a very small group of people at different times in the past. What is shown is the occupation by household units or extended families, which camped at varying locations in the coastal dunes. Some of these sites were no doubt revisited and occupied seasonally, although none of the investigated locations show any long period of use. The occupation pattern appears to be similar to that on top of the island, such as at the Old Air Field Site. It may be that there are also larger and deeper sites in the sand dune zone--we did not conduct an extensive search of the entire area.

#### **GAR (SCLI-16S)**

Two test pits were dug adjacent to the Navy's concrete camera pad. Both were unproductive and showed no more than a sprinkling of shell midden in this area.

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About 50 meters east of the camera pad, two additional test pits were excavated on the terrace immediately adjacent to the beach. This wave-cut sandy area revealed buried dark layers of midden along the beach. One pit provided limited information and appears to be at the edge of the midden location. The other was most interesting in providing a number of close parallels to the site at Eel Point C: midden buried under about a meter of dune sand, very black midden with intense concentration of shell and fish bone, and similar artifacts (shell fish-hooks, one effigy form). The location is certainly contemporaneous to Eel Point C (ca. 1000-1500 years ago) and part of the same cultural and environmental conditions even though it is several miles up the coast from Eel Point. This suggests that there was a fairly extensive population utilizing the west coast of the island at 1500-2500 years ago, a time when conditions were apparently very favorable and the human population of the island was greater than in earlier or later times. The use of ocean resources was intensive, particularly fish—the quantity of fish bones recovered from these layers is far larger than in other sites and time periods (up to 1 kg of fish bone to 0.5 cubic meter of sandy midden).

#### **Flasher (SCLI-16E)**

Four discrete site locations were studied within 100 meters of the Flasher camera pad:

One very small dune could be almost totally covered by a four square meter test pit, so the entire site area was excavated. The small midden accumulation was picked because it showed a heavy concentration of *Astraea undosa* shells, representing a period when this large marine snail was intensively harvested. The accumulation of these shells, in fact, resulted in the small dune (about 2.5 by 0.5 meters) being stabilized in this area while surrounding sand blew away and left the site area as an isolated patch of sandy midden. The small size of this site resulted in very little in the way of identifiable artifacts or other cultural material, but



faunal evidence will be useful and can be dated to ascertain when this activity took place. (There are no large *Astraea* shells on the adjacent rocky beaches today, and few shells of the size found here occur in the later archaeological sites).

Another small remnant dune is on the terrace immediately above the beach; this dune is disappearing due to wind and water; it contained a small amount of buried dark midden material and it was decided to test this location since the site will certainly be gone within a few years. The aboriginal material proved to be sparse and not very informative in the test excavations, which total eight square meters of the dune surface; however, very interesting historical material was recovered, as well as data on the recent formation of dunes in the area. The sterile layer of sand above the aboriginal midden (ca. 30 cm in depth) contained the skeleton of a lamb, dating from the ranching period, and also a Chinese opium box (brass) of a kind found at other historic sites on the island. This shows that about 30 cm of sand has been added to this dune location in the past century or so. Since the offshore area here is entirely rocky, the sand must be moving eastward along the coast from the larger dunes to the west.

A third test pit was dug in a large dune characteristic of the whole zone—a white sand dune with a layer of black shell midden on top. This pit also yielded little cultural material but confirmed the general pattern of relatively late occupation on top of all the dunes in the area. Nature and condition of the midden suggests it to be in the time range of 1000 to 1500 years ago.

Finally, near the Flasher camera pad is a blown-out surface of the terrace area, around three small volcanic outcrops, which appears to constitute a different kind of archaeological site. This location was recorded as the Flasher Lithic Site. It is a puzzling location but patterned like similar sites in other areas, particularly the Seal Point Lithic Site previously studied. These sites are characteristically on terraces of red clay

(derived from the underlying volcanic material) and show a scatter of chipping waste mixed with very limited amounts of shell. A common shell is the owl limpet, which dominates some of the site areas. Finished stone tools are rare but fairly large points or knives are found (of quartz, rhyolite, or basalt). There are no grinding tools.

Sites of this kind merit detailed study, although they are hard to deal with since everything is on the surface and there is nothing to be excavated. These sites represent either (a) dune sites from which all the sand has blown away, leaving behind the stone material and some scattered shells, or (b) very early sites which are older than the other remains on the island. At the moment, evidence to resolve this problem is inconclusive, but further analysis will be conducted to answer the questions. In the generally crude and amorphous stone assemblage, the sites are fairly similar to recent sites, since this pattern of stone tool use occurs throughout the history of the island's occupation. The absence, however, of grinding tools and shells characteristic of the later sites suggests that these lithic sites may fall into a different and earlier time period (over 8000 years ago).

From the Flasher Lithic Site, a total count of all items (bone, shell, and stone) was made of a 36 square meter surface area in the middle of the site. An intensive surface collection of lithic material was made from the whole site, and it is hoped that analysis of this assemblage will allow definition of similarities and differences between the lithic sites and the excavated sites on the island. We also hope to date the limited organic material recovered from the lithic sites.