REPORTS

The Antiquity of CA-SMI-1: A Multicomponent Site on San Miguel Island

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LOCATED 42 km. off the Santa Barbara coast, San Miguel Island contains a long record of intensive maritime adaptation. Thoroughly surveyed during the 1960s and 1970s by teams led by Rozaire (1965) and Greenwood (1978), the 37 km.^{2} island contains almost 600 recorded archaeological sites, a density of over 15 sites per square kilometer. Many of these are large shell middens, often containing multiple components. The rich archaeological record of San Miguel Island has attracted the attention of antiquarians, archaeologists, and relic collectors for over 100 years (Schumacher 1875; Glassow 1977), partly because severe erosion caused by overgrazing and sea cliff retreat has exposed the contents of many sites.

We know humans have occupied San Miguel Island for at least 9,000 years (Erlandson 1988:313-315) and possibly for another millennium or more (Johnson 1972:268, 1981:106; Snethkamp and Guthrie 1988). Unfortunately, few sites on the island have been excavated systematically (see Rozaire 1965, 1978; Walker and Snethkamp 1984) and even fewer have been radiocarbon dated. As a result, major gaps remain in our knowledge about the course of human prehistory on this remote and windswept island. This is tragic because erosion continues to threaten the very existence of many sites located there.

PREVIOUS RESEARCH AT CA-SMI-1

One of the few archaeological sites on San Miguel Island for which a substantial amount of excavation data exist is CA-SMI-1, a village site located on an elongated knoll about 145 m. above Cuyler Harbor on the north coast (Fig. 1). CA-SMI-1 was excavated in 1964 by a team led by Charles Rozaire of the Los Angeles County Museum of Natural History. Sixty-nine randomly selected test pits (each 5 ft. or 1.52 m.^{2}) were excavated (Rozaire 1965:13), equal to about 4.6% of the 1,500 grid squares within the site area. Most of the test pits were excavated in 15-cm. (6-in.) arbitrary levels with the contents screened through 1/4-in. mesh. Three "control pits" were excavated for microanalysis, however, and these were dug in 3-in. levels with their contents screened through 1/8-in. mesh (Curtis 1965). The depth of the midden in the excavated pits appears to have varied from about 15 cm. (6 in.) on the site margins to nearly 122 cm. (48 in.) in the central site area (Rozaire 1965:14).

Rozaire (1965:14, 31) noted little evidence for stratigraphic variation within the vertical extent of the midden, though a stratigraphic profile from one of the deeper control pits (Pit 620) depicts four discrete strata (Fig. 2). No features were encountered in the test pits, but 617 tools and ornaments were recovered, including a wide range of ground stone, chipped stone, shell, and bone tools. Except for the shell, the faunal remains recovered were not analyzed in detail. The assemblage is dominated by rocky-shore shellfish, but significant amounts of sea mammal bone and small amounts of fish

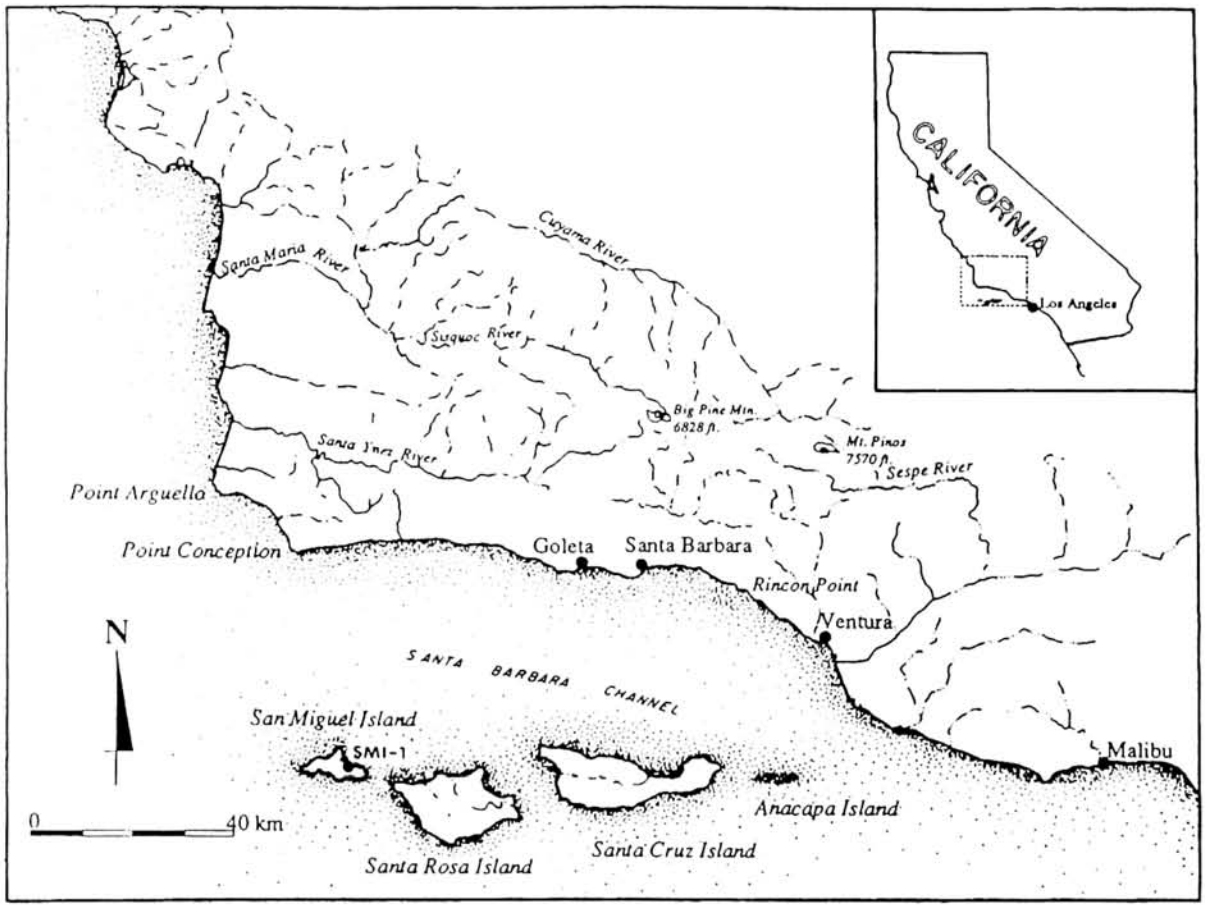

Fig. 1. CA-SMI-1 and the Santa Barbara Channel area.

and bird bone also were recovered (Curtis 1965; Rozaire 1965:30). Analysis of the artifacts and stratigraphy led Rozaire to propose that a single "predominantly late prehistoric" occupation spanning 1,500 to 2,000 years had taken place at the site, though it was thought that "the end of an intermediate horizon" also might be represented (Rozaire 1965:31).

During the late 1970s, the vertebrate remains and some of the artifacts from CA-SMI-1 were analyzed in greater detail during a study of faunal assemblages from four Channel Island sites (Walker et al. 1978). The bones of several sea mammals were identified, including harbor seal, California sea lion, fur seal, Guadalupe fur seal, and sea otter. The fish bones identified came from sharks and rays, rockfish, lingcod, sculpins, sea bass, wrasses, and croakers (Walker et al. 1978:126-128; see also Billman and Walker 1990). The remains of 10 species of bird were identified, including a number of bones of the extinct flightless scoter, *Chendytes lawi*. A few bones of the island fox (*Urocyon littoralis*) also were identified. At the same time, Steven Craig studied the beads and ornaments recovered by Rozaire, using a typology devised by Chester King, and proposed that the site was occupied primarily during King's (1981) Early Period, prior to about 3,400 B.P. and the first phases of the Middle Period prior to ca. 2,500 B.P. (Walker et al. 1978:39).

A RADIOCARBON SERIES FOR CA-SMI-1

The general chronological conclusions of Rozaire and Craig leave some uncertainty about

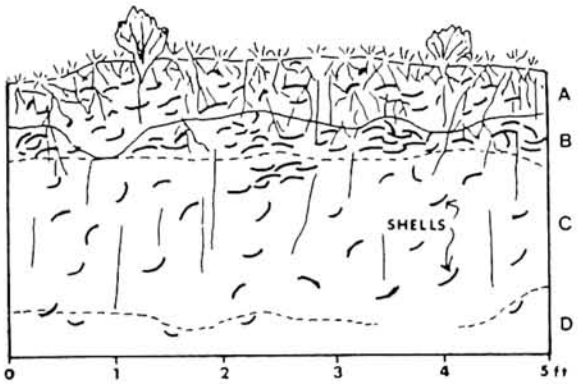

Fig. 2. Stratigraphy in Control Pit 620, CA-SMI-1 (redrawn from Rozaire 1965).

the antiquity of CA-SMI-1. The lack of a more precise site chronology limits the use of the data and the collections housed at the Los Angeles County Museum of Natural History. It should be emphasized that Rozaire's chronological conclusions were reached prior to a number of significant publications (e.g., Orr 1968; Hoover 1971; King 1981) that greatly improved our knowledge of Channel Island chronologies. Rozaire himself recently tried to date the initial occupation of CA-SMI-1 by submitting a charcoal sample from the 24 to 30-in. level of Pit 391 for radiocarbon dating. Unfortunately, the resulting date of >40,000 years (UCLA-2797) was anomalous. The sample may have been contaminated with asphaltum (Rozaire personal communication 1989).

To help refine the CA-SMI-1 chronology, and to avoid further problems with asphaltum contamination, two abalone shell samples from "Control Pit 620" were selected for radiocarbon dating. This test pit contained a relatively thick midden deposit with abundant faunal remains. Suitable samples from the uppermost and lowermost levels of the midden were not available in the curated collections (C. Rozaire, personal communication 1989). To avoid potential problems with stratigraphic mixing, single shell fragments were used for the analysis. Prior to submittal, each shell was cleaned of adhering sediment, soaked overnight in distilled water, and dried prior to packaging.

Both samples were sent to Beta Analytic where the outer layers of each shell were removed with an acid bath prior to analysis via the liquid scintillation method. Corrections for the effects of isotopic fractionation were measured by analyzing $^{13}C/^{12}C$ ratios for each sample. M. Tamers (personal communication 1989) reported all steps in the analysis proceeded normally. The results of the analysis follow.

Pit 620: 38-cm. (15-in.) level; 3,690 ± 80 RCYBP (Beta-31969)

This sample was a 22-g. fragment of red abalone (*H. rufescens*) shell. An uncorrected date of 3,240 ± 80 RCYBP was increased by a 450-year adjustment for the effects of isotopic fractionation ($^{13}C/^{12}C$ ratio = +2.56). Calibration, via a curve developed by Stuiver et al. (1986) for marine samples that included estimated corrections for both the global and regional reservoir effects, results in a calendar age of 3,350 ± 90 years B.P. This sample came from the lowest level containing single-piece shell fishhooks and falls near the end of the Early Period (King 1981). This suggests that the upper portions of this part of CA-SMI-1 date to the early part of the Middle Period.

Pit 620: 53-cm. (21-in.) level; 6,730 ± 70 RCYBP (Beta-31970)

This sample was a single 25-g. fragment of red abalone shell. An uncorrected date of 6,270 ± 70 RCYBP was increased by a 460-year adjustment for isotopic fractionation ($^{13}C/^{12}C$ ratio = +2.99). Calibration results in a calendar age of 6,990 ± 80 years B.P. (Stuiver et al. 1986). Dating of this sample, which appears to have come from the lower part of Rozaire's Stratum C, suggests that CA-SMI-1 also was occupied during the earliest phase of King's Early Period.

DISCUSSION

Interpreting a site chronology anchored by only two radiocarbon dates is risky business.

These dates suggest, however, that CA-SMI-1 contains the remnants of at least two temporally discrete components. The earliest occupation appears to have begun during the early Holocene, sometime around 7,000 years ago. The second occupation probably began about 3,400 years ago, near the start of the late Holocene. A gap of over 3,500 years between the two dates, even though the samples were recovered only about six inches apart, suggests that the two occupations were separated by a lengthy hiatus. With both dates coming from a single test pit, midden refuse from other temporally discrete occupations may also be present elsewhere at the site. Additional dates are needed for the upper and lower levels of the midden to refine the site chronology further.

What artifact types are associated with the two identified components? A number of problems make it difficult to answer that question precisely. Published data on the vertical distribution of tools (see Table 1) are difficult to interpret because of the lack of additional dates, the low frequencies of most individual tool types, the presence of some animal burrowing in the site deposits (Rozaire 1965), and the fact that the depth of the midden varies across the site. As a whole, the artifact assemblage from the upper levels is much more diverse (38 artifact types from 0 to 18-in.) than the assemblage found in the lower three levels (14 types from 24 to 42 in.). Much of this difference may be due to variation in sample size, however, since 447 artifacts were recovered from the upper three levels, but only 42 in the lower three levels.

Nonetheless, some patterns in the vertical distribution of artifact types at CA-SMI-1 now seem potentially significant. By lumping some related artifact classes, it is apparent that several tool or ornament types reasonably well represented in the sample are found only in the upper 18 inches (46 cm.) of the midden. These include shell fishhooks (n = 4) and fishhook blanks (n = 5), digging stick weights (n = 6), limpet (*Diadora aspera*) shell rings (n = 7), abalone shell ornaments (one button, two pendants, and one disc), and "micro-tools" (n = 50)—six prepared platform cores, 11 platform core "trimmings," 32 micro-drill blanks, and two micro-drills. The microtools are too poorly described to know if they resemble the specialized bead-making bladelet cores and drills that appear elsewhere on the Channel Islands near the end of the Middle Period (Arnold 1987:223).

If the artifact assemblage from the upper levels is representative of the larger site contents, then at CA-SMI-1 these tool types may not have been part of the early Holocene tool inventory. What artifacts are associated with the early occupation of the site? Below the 21-in. level in Pit 620, the only pit where the boundary between the two components has been roughly defined, Curtis (1965:71-72) reported only four scraping tools, two pitted hammerstones, one pestle, a bone tube bead, an ochre-stained abalone shell, and one utilized flake. Most of the other test pits were excavated in six-inch levels, so data on the vertical distribution of artifact types are less precise for the rest of the site. Many of the artifacts recovered in the lower levels are relatively innocuous types such as cobble hammers, retouched and utilized flakes, or "scraper planes." Also recovered from below the 24-in. level, however, were two projectile point fragments, a biface, four *Olivella* spire-lopped beads, three clam shell disc beads, a stone bead, a bone awl, a bone bipoint, and a spatulate bone tool.

Artifacts are notoriously sparse in early Channel Island middens and there are few early assemblages with which to compare. The artifact associations for both components at CA-SMI-1 seem consistent, however, with what we know about the temporal distribution of various artifact classes in the Santa Barbara Channel area. Consequently, there appears to be little reason to suspect the veracity of the radiocarbon dates.

Table 1
ARTIFACT TYPES BY DEPTH AT CA-SMI-1[a]

Artifact Type	Depth (in inches) 0-6	6-12	12-18	18-24	24-30	30-36	36-42
Mano	2	7	5	4	--	--	--
Metate	--	1	--	--	--	--	--
Mortar	3	2	7	2	--	--	--
Pestle	3	4	2	1	1	--	--
Digging Stick Weight	2	3	1	--	--	--	--
Perforated Stone	2	2	2	1	--	--	--
Tarring Pebble	--	6	4	4	--	--	--
Projectile Point	9	17	8	4	1	1	--
Bifacial Blade	5	4	4	2	4	--	--
Drill	5	20	3	1	--	--	--
Scraper Plane	8	20	18	4	7	--	--
Chopper or Gouge	6	12	9	3	--	--	--
Cobble Hammer	2	10	10	2	2	--	--
Core Hammer	--	7	3	1	--	--	--
Pitted Hammer	2	3	1	2	1	1	--
Scraper/Utilized Flake	19	34	34	22	12	3	--
Microcore	1	4	1	--	--	--	--
Microcore Trimming Flake	5	4	1	--	--	--	--
Microdrill Blank	13	16	3	--	--	--	--
Microdrill	2	--	--	--	--	--	--
Olivella Disc Bead	1	1	2	1	--	--	--
Olivella Spire-lopped Bead	5	7	10	4	--	--	4
Olivella Barrel Bead	2	--	--	--	--	--	--
Clam Shell Disc Bead	1	5	11	2	2	--	1
Diadora (limpet) Ring	--	4	3	--	--	--	--
Dentalium Shell	--	--	--	1	--	--	--
Abalone Ornament	--	2	2	--	--	--	--
Clam Shell Pendant	--	--	1	--	--	--	--
Shell Fishhook	1	2	1	--	--	--	--
Shell Fishhook Blank	--	2	3	--	--	--	--
Abalone with Red Ochre	--	--	--	--	1	--	--
Bone Awl	2	3	13	3	1	--	--
Bone Projectile Tip	--	--	2	1	--	--	--
Bone Hairpin	--	--	1	--	--	--	--
Bone Harpoon Barb	--	--	--	1	--	--	--
Bone Bipoint	--	3	4	1	1	--	--
Bone Spatulate Tool	--	3	7	--	--	--	--
Bone Punch/Wedge	--	3	7	--	--	--	--
Bone Bead	2	1	2	1	--	--	--
Bone Pendant	--	--	1	--	--	--	--

[a] Data adapted from Rozaire (1965); number of artifacts per level (in inches); available data suggest that the boundary between Early and Late Holocene components lies between about 18 and 24-in.

CONCLUSIONS

If we are to more completely understand the development of the native cultures of the California coast, we must have more and better chronological data on which to base our interpretations. The most powerful chronological tool we have continues to be radiocarbon dating. Carefully selected, analyzed, and interpreted radiocarbon dates help us refine our chronologies by placing cultural developments in a more precise temporal framework. They also provide valuable data on shifts in settlement and demography through time (see Glassow et al. 1988). Despite these obvious facts, there are many important archaeological collections or sites that have never been radiocarbon dated, or that remain inadequately dated. So many sites in California are threatened by erosion, vandalism, or development that collecting more and better chronological data should be an urgent priority.

Fortunately, CA-SMI-1 is not threatened by erosion or development. It is, however, one of the few archaeological sites on San Miguel Island for which significant excavation data are available. Two radiocarbon dates from the middle levels of the midden suggest that at least two separate occupations of the site took place, one about 7,000 years ago and another beginning about 3,350 years ago. As is often the case, further dating and detailed research are needed to place the archaeological assemblage from CA-SMI-1 in a more refined cultural and ecological framework. I hope, however, that these new data on the antiquity of the site will stimulate and aid further research on the valuable collection now housed at the Los Angeles County Museum of Natural History.

ACKNOWLEDGMENTS

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"Invisible" Archaeological Deposits at Small Milling Sites

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ARCHAEOLOGICAL sites always are initially characterized and evaluated (even if only on the site record) by surface indications; architecture, bedrock milling features, soil color differences, visible artifacts, etc. At the survey (inventory) level of investigation, there is no other option. Based on these data, archaeologists speculate on the presence or absence, extent, content, and age of subsurface deposits and make decisions regarding the significance of sites. This often is done without the benefit of excavation data either to confirm or modify the initial evaluation. The presence or absence of a subsurface deposit is postulated based on the presence and nature of surface materials. In the case of some sites (e.g., small lithic scatters or bedrock milling stations), it appears that in the absence of positive information to the contrary, many archaeologists will assume that no subsurface deposit is present.