

REPORT

A Radiocarbon Series for CA-SBA-1 (Rincon Point), Santa Barbara County, California

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MANY of the most important prehistoric sites in California have never been dated adequately, a problem that limits our knowledge of regional chronologies and hampers our understanding of cultural evolution in the region. In hopes of resolving some of these problems within the Chumash area, the cooperative Santa Barbara Channel Carbon Dating Fund was established in 1989 at the Anthropology Departments of the University of California, Santa Barbara (UCSB) and the Santa Barbara Museum of Natural History (Erlandson 1989). Funds were raised for dating important sites in the Santa Barbara Channel region, especially undated sites for which significant collections exist, or sites threatened with destruction by severe erosion, vandalism, or other processes.

One of the more important sites of the Santa Barbara coast is CA-SBA-1, located at the mouth of perennial Rincon Creek where the border between Santa Barbara and Ventura counties meets the sea (Fig. 1). This site has been investigated on numerous occasions (see below). Data recovered from these excavations have been used to construct local and regional chronological sequences (Rogers 1929; Olson 1930; King 1990), and to reconstruct changes in prehistoric technology, settlement, and subsistence among the Chumash and their predecessors (King 1980; Kornfeld 1980; Peterson 1984). Chester King (1980) studied the notes and collections from various excavations at CA-SBA-1 and proposed a tentative chronology for site occupation based on correlations with dated assemblages from

elsewhere in the southern California area. Given the extent of research at the site and the important implications of the recovered data, it is somewhat remarkable that samples from the site had never been radiocarbon dated. In this paper, I present the results of a recent radiocarbon study designed to test and refine King's proposed chronology for CA-SBA-1.

PREVIOUS RESEARCH AT CA-SBA-1

At one time, a number of sites located west of Rincon Creek were listed as discrete loci of CA-SBA-1, reflecting D. B. Rogers' (1929) inclusion of them within a single locality. Subsequent research has shown that these loci represent spatially and temporally discrete occupations (e.g., Harrison 1964; King 1980), and most have been assigned separate site numbers. Today, the designation CA-SBA-1 refers only to a deep midden located on the top and slopes of a raised marine terrace on the bluff west of the creek, and to a cemetery once located on higher ground north of the midden. This cemetery and the northern part of the midden were destroyed by highway construction in the 1960s.

CA-SBA-1 has attracted pot-hunters, antiquarians, and archaeologists since before 1878, when Stephen Bowers (1884:374) excavated the site and noted that several excavators had preceded him. According to King (1980:18) "probably no cemetery in the Santa Barbara Channel area has been excavated by as many people as the cemetery on the crest of the ridge north of the residential area of SBA-1." After Bowers, excavators included amateurs in 1922 (King 1980:18), Rogers in 1925 (1929:43) who also described a Millingstone midden below the cemetery, and members of University of California, Berkeley, expeditions in 1928 (Olson 1930) and 1958 (Nichols and Price MS). Patrick

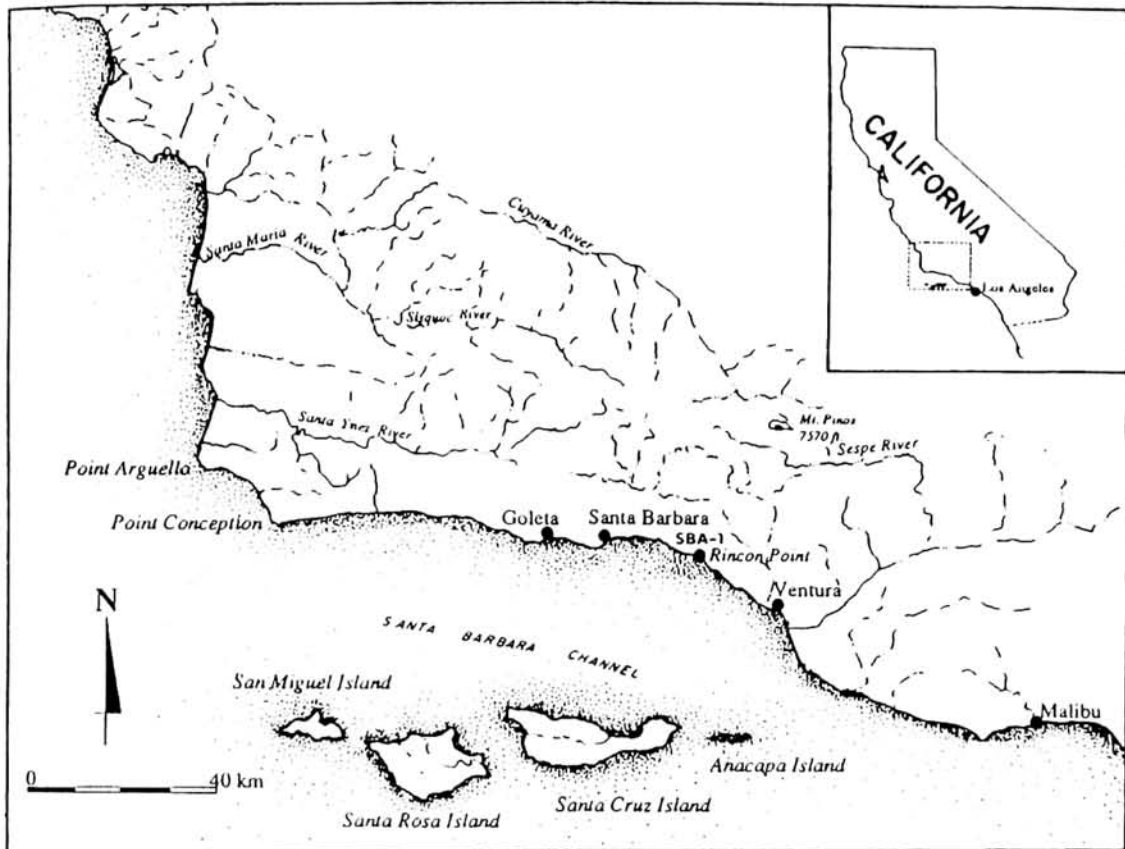


Fig. 1. Rincon Point and the Santa Barbara Channel region.

Finnerty also excavated in the cemetery in 1962 and 1963 and with a University of California, Los Angeles team in 1966. King (1980:19) studied the artifacts excavated from this cemetery and suggested that it was used during Phase 2 of the Middle Period, between about 2,150 and 2,750 radiocarbon years B.P.

The residential midden to the south played an important role in Olson's (1930) definition of a chronological sequence for the Santa Barbara Channel. Olson referred to CA-SBA-1 as "Mainland Site 6" and placed it in the early part of his Early Mainland Period. According to King (1980:7), Olson excavated two pits in the midden area, digging in stratigraphic levels and screening the excavated sediments. He found the midden to be up to 2.6 m. (8.5 ft.) deep and noted a gradual decrease in the abundance of shells, bones, and artifacts with depth. Olson (1930:10-11) documented a vertical shift in the

distribution of ground stone tool types, with manos and metates dominant in the lower levels, and mortars and pestles in the upper levels. Olson also recorded several features found in the midden, including concentrations of burned rock, clusters of ground stone tools, and several isolated burials (King 1980).

Bowers (1884:373) also encountered several burials along the bluff in the southern midden area in 1878:

In one spot I found human bones . . . in a semi-fossil state. They had been buried on the brow of a high bluff overlooking the sea and were about four feet below the surface. One skull, that of an aged person, was perforated at the apex.

Burials were noted at a similar depth in this same area during construction monitoring in the 1980s (Peterson and Erlandson 1982). King (1980:17) noted that metates and manos were

buried with skeletons excavated by Olson, suggesting that the deep burials in the residential midden may have been associated with an Early Period occupation of the site.

The most recent substantial investigation of the residential midden at CA-SBA-1 took place in 1980, when archaeologists from the Office of Public Archaeology (UCSB) conducted test excavations to define the boundaries and significance of the southern site area located within a proposed housing development (Kornfeld 1980). During this project, King (1980) reviewed previous research at the site. His analysis of the artifacts recovered by Olson in the residential midden suggested that the majority of the site occupation occurred during two time periods. These were during the Early Period between about 5,000 and 6,000 B.P., and during the early Middle Period (ca. 2,150-2,750 B.P.) when the northern cemetery was in use. Along with vertical shifts in ground stone tool types, King's figures suggest a shift from side-notched projectile points in the early levels (below four feet) to contracting-stem points in the upper two to three feet of Olson's trenches (Fig. 2).

Much of the analysis of cultural materials recovered during the 1980 test excavations focused on faunal remains recovered from 15 column samples (6,250 cm.³ each) removed from the lower portions of a stepped profile trench excavated into the sea cliff. According to Peterson (1984:208):

The top of the midden at the location of the column was approximately 220 cm. below the ground surface at the top of the seacliff. It was overlain by a layer of clean sterile sand about 70 cm. thick. On top of this was a layer of dark brown sand about 100 cm. thick containing a low density of shell and chipped stone. This layer was capped by about 50 cm. of loose sand with historic debris and ice-plant.

Two discrete midden strata separated by sterile dune sand also were noted by Peterson and Erlandson (1982) ca. 20 m. northwest of the column sampling location (Fig. 3). Only the column samples removed from the lower midden

were reported by Kornfeld (1980) and Peterson (1984).

Analyses of the faunal remains recovered in these column samples were summarized by Serena (1980), Johnson (1980), Lawson (1980), and Peterson (1984). The size of the analyzed samples was very small, but potentially significant patterns were noted. Serena (1980:8), for instance, observed that the remains of California mussels (*Mytilus californianus*) dominated the shell throughout the lower midden, but that estuarine shellfish were more important near the base of the deposit. Johnson (1980:16) noted a substantial increase in the density of fish bone in the upper two-thirds of the midden, where the remains of clupeids (i.e., herring, sardines) made up a significantly higher percentage (58%) of the identified fish bones than in the lowest five levels (21%). In his synthesis of faunal data from the column samples, Peterson (1984:211-212) noted a general reversal in the importance of sea mammals and shellfish, with sea mammals providing much of the edible meat or protein in the lower levels and shellfish dominating in the upper levels. All these shifts were correlated with a distinct change in soil color and texture at a depth of about 103 cm. in the lower midden, a stratigraphic break interpreted as the boundary between the hypothesized Middle and Early period components (Johnson 1980:15; Peterson 1984:207).

THE CA-SBA-1 RADIOCARBON DATES

Previous analyses of the CA-SBA-1 assemblages have suggested that: (1) two primary occupations occurred at the site, one between 5,000 and 6,000 B.P. and one between ca. 2,150 and 2,750 B.P. (King 1980); and (2) that the stratigraphic break between the two components is found at a depth of ca. 103 cm. in the column samples. To test the merit of these propositions, three shell samples from columns 2 and 3 were selected for radiocarbon dating. To minimize problems associated with the mixing of materials

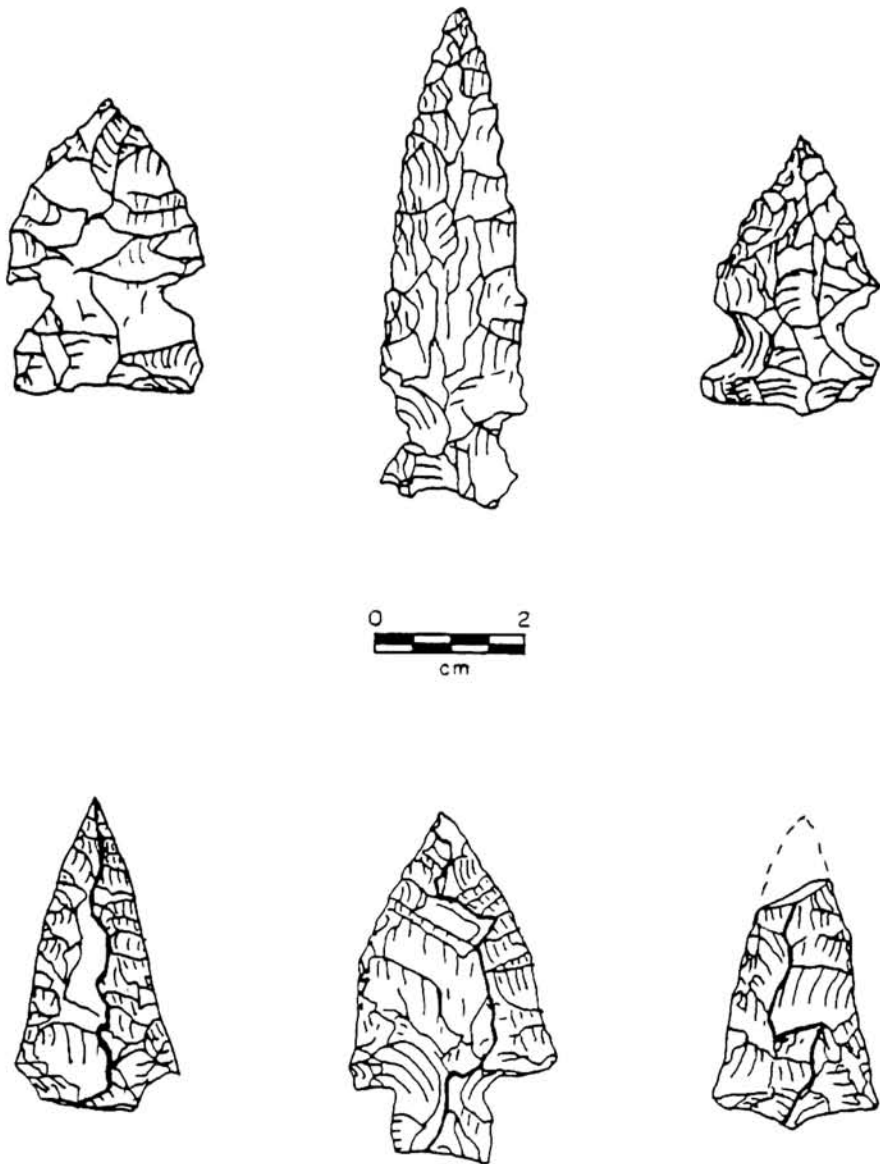


Fig. 2. Early Period (top row) and Middle Period (bottom row) points from Olson's Lowie Museum collections (adapted from King 1980).

between levels by rodent burrowing and other post-depositional processes, single shell fragments were selected where possible. In one case, however, two shell fragments from one level were needed to reach a shell weight that would produce a reliable date. Each sample was sent to Beta Analytic, Inc., where pretreatment included an acid bath to remove the outer shell layers

most susceptible to contamination. According to J. Stipp (personal communication 1989), all analytical steps proceeded normally. The results of the analyses are summarized below.

Column 3: 143-153 cm.; $5,830 \pm 80$ RCYBP (Beta-31846)

This sample from the lowest midden level

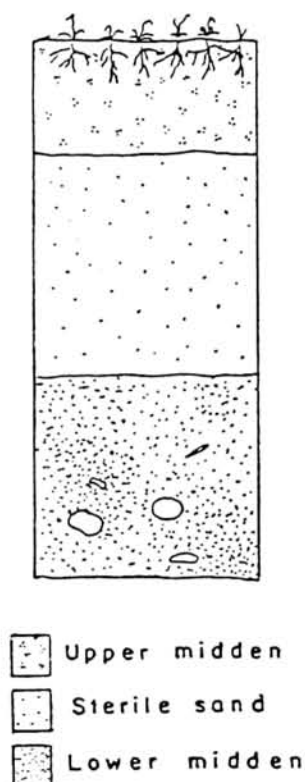


Fig. 3. Stratigraphic profile (approx. 60 cm. wide) from the sea cliff area of CA-SBA-1 (adapted from Peterson and Erlandson 1982).

was a 22 g. fragment of estuarine Venus clam (*Chione undatella*) shell. The date confirms King's (1980) conclusion, based on a study of Olson's (1930) collections, that the first substantial occupation of the site occurred during the Early Period between 5,000 and 6,000 years B.P. Calibration via the curve developed by Stuiver et al. (1986) for marine samples, including estimated corrections for isotopic fractionation and the local and regional reservoir effects, resulted in an estimated calendar age of $6,450 \pm 90$ years B.P.

Column 2: 43-53 cm.; $4,480 \pm 70$ RCYBP (Beta-31845)

This sample was a 14.5 g. fragment of *Chione undatella* shell recovered in an arbitrary

level 50 to 60 cm. above the soil change at -103 cm. This date falls within the latter phases of King's (1980) Early Period and appears to contradict earlier conclusions (Kornfeld 1980; Peterson 1984) about the position of the stratigraphic break between the Early and Middle period components. Calibration of this date provided an estimated calendar age of $4,870 \pm 80$ years B.P. (Stuiver et al. 1986:1006). This date may also extend the length of the Early Period occupation by about 500 years, suggesting that it spanned 1,500 years or more.

Column 2: 0-13 cm.; $2,820 \pm 100$ RCYBP (Beta-33993)

From the uppermost level of the column, this sample consisted of two fragments (16 g.) of Pismo clam (*Tivela stultorum*) shell. The date confirms King's (1980) conclusion that the upper portions of the midden were deposited during Phase 2a of the Middle Period (King 1990). The calendar age was calibrated at about $2,770 \pm 110$ years B.P. (Stuiver et al. 1986: 1001).

DISCUSSION

These dates strongly support the chronology proposed by King (1980) for CA-SBA-1, but they raise questions about the accuracy of previous assertions (Serena 1980; Peterson 1984) about where the boundary between the Early and Middle period components occurs. It might seem simplest to attribute the disparity between the stratigraphic evidence and the radiocarbon dates to the displacement of the shell sample (Beta-31845) from the middle of the column by rodent burrowing or other post-depositional processes.

Three observations suggest, however, that the radiocarbon dates may accurately reflect the age and stratigraphic position of the two components. First, the only diagnostic early Middle Period artifacts (three *Olivella* shell beads) recovered in the columns came from the upper 30 cm. of the lower midden (Serena 1980: 13). Artifact distributions in Olson's nearby

trench also suggest that the more recent midden deposits are relatively shallow: Middle Period artifacts were most common in the upper 60 cm. (2 ft.) of the 2.5 m. deep midden (King 1980:8). Second, Kornfeld's (1980:6-7) description of vertical differentiation in the sea cliff profile sounds similar to natural A and Bt horizons widespread on terraces of the Santa Barbara coast. Such clay-rich B horizons, often with caliche formations in shell-bearing soils, can form in 3,000 years or less (Rockwell 1984:124), causing the formation of soil horizons unrelated to cultural processes. Third, many vertical changes in the distribution of faunal elements are less than abrupt. The estimated dietary contribution of fish bone, for instance, shows little significant vertical variation (Peterson 1984:212). While the remains of estuarine shellfish make up an average of 16.5% of the shell in the three analyzed levels from the lower one-third of the midden and 6.3% from the upper two-thirds, the contribution of estuarine shellfish varies considerably on either side of the stratigraphic boundary. There may be significant differences, however, between the estimated meat and protein yields of shellfish vs. sea mammal remains in the two "components" (Peterson 1984:211-212).

These patterns should be interpreted cautiously, however, because variation in the distribution of faunal remains (e.g., identifiable sea mammal bone) may be affected by the small size of the column samples (Peterson 1984:210). Furthermore, faunal remains were analyzed only from alternating levels in the columns. Finally, bioturbation undoubtedly has mixed the materials from the two components to some extent, obscuring more detailed patterning that might allow a more accurate identification of the break between components.

CONCLUSIONS

The dates for CA-SBA-1 support King's (1980, 1990) chronology for the site, the larger

Santa Barbara Channel area, and the southern and central California coastal region. The earliest date falls in the center of a "low point" in the temporal distribution of radiocarbon-dated components on the southern and central California coast (Glassow et al. 1988), a period attributed to lower population densities. Thus, the basal levels of the midden date to a poorly understood period in the prehistory of the California coast. If the dates accurately identify the age of the layers in which the samples were found, they have important implications. They raise the possibility that faunal shifts noted in the UCSB column samples, attributed previously to subsistence changes between the Early and Middle periods (Kornfeld 1980; Peterson 1984), may have occurred largely during the Early Period. This also may be true of technological shifts noted by previous researchers, like the replacement of manos and metates by mortars and pestles noted by Olsen (1930). This should not be surprising since the period between about 6,500 and 4,500 years ago was one of considerable subsistence and technological change on the California coast (Glassow et al. 1988; Erlandson 1990; King 1990).

As is often the case in archaeology, the radiocarbon dates from CA-SBA-1 answer some questions about the site chronology, leave others unanswered, and raise several new ones. What is the relationship of the stratigraphy in Olson's deep trenches to the shallower midden found in the sea cliff profile? What is the nature and age of the low-density midden found above the sterile sand layer that overlies the column samples analyzed by UCSB archaeologists? How long did the Middle Period occupation last? Are there other major occupations of the site that have yet to be identified? How does the antiquity of CA-SBA-1 articulate with the many sites located in the Rincon Point area that have not been radiocarbon dated? The answers to such questions await further collections research, radiocarbon dating, and fieldwork.

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