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A PALEOCOASTAL SHELL MIDDEN AT SEAL CAVE (CA-SMI-604), SAN MIGUEL ISLAND, CALIFORNIA

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Abstract—Archaeological test excavations at Seal Cave, a multi-component shell midden located on Harris Point on San Miguel Island, produced evidence for occupation by Paleocoastal peoples between about 10,200 and 9100 calendar years ago. In this paper, we describe the context and chronology of the early archaeological strata at Seal Cave, including faunal remains and artifacts from the Paleocoastal levels. The well-preserved faunal assemblage is dominated by mussels and other rocky shore shellfish, with lesser quantities of marine fish, sea bird, and sea mammal bone. Artifacts recovered include several spire-removed *Olivella* shell beads, a small assemblage of bone tools and tool-making debris, and chipped stone tools made from local Tuqan and Cico cherts. Our results provide valuable information on the nature of maritime Paleocoastal peoples and San Miguel Island ecosystems during the Early Holocene.

INTRODUCTION

The past decade has seen growing interest in the possibility that the peopling of the Americas may have included one or more coastal migrations from northeast Asia (see Erlandson 2002; Erlandson et al. 2007; Fedje et al. 2004; Kemp et al. 2007). Testing this idea is difficult, however, because global sea levels have risen more than 120 m since the end of the last glacial, drowning the late Pleistocene coastlines that early maritime peoples would have followed on such a journey. Despite such problems, California's northern Channel Islands have produced the earliest evidence for seafaring, island colonization, and maritime subsistence in the Americas (see Erlandson 2007; Johnson et al. 2002; Kennett 2005; Rick et al. 2005). More than 40 archaeological sites occupied between about 13,000 and 8000 years ago (cal BP) have been identified on the islands, including four terminal Pleistocene sites dated between about 13,000 and 11,400 years ago and at least three Early Holocene sites occupied roughly 10,000 years ago (Erlandson et al. 2008b). Among the oldest shell middens in North America, these sites provide important information on the antiquity and nature of early maritime cultures along the Pacific Coast. So far, however, few of these early Channel Island sites have been excavated, fully analyzed, and reported. In this paper, we report the results of our recent investigations of a Paleocoastal shell midden in Seal Cave (CA-SMI-604) on San Miguel Island, a rock shelter located on the rugged tip of Harris Point (Fig. 1) that appears to have been first occupied about 10,000 years ago (cal BP). The site adds significantly to the evidence for a substantial settlement of the northern Channel Islands by seafaring Paleocoastal peoples.

A BRIEF HISTORY OF INVESTIGATIONS AT SEAL CAVE

In searching for early archaeological sites on the northern Channel Islands, we focused on geographic features that attracted early islanders inland from now submerged shorelines. These include: (1) caves or rock shelters used for shelter;

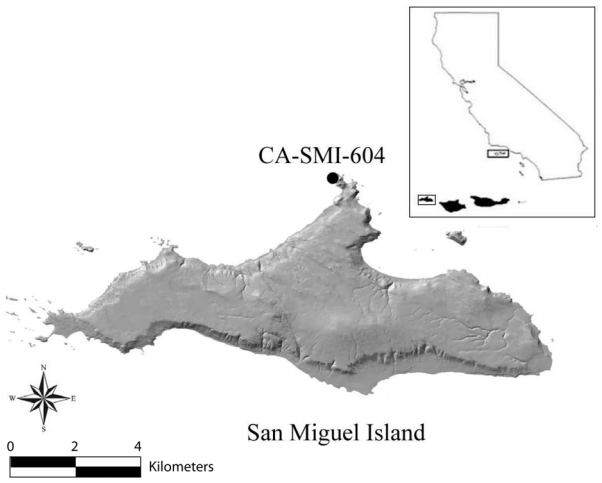

Figure 1. Map of Santa Barbara Channel area showing the general location of Seal Cave (CA-SMI-604).

(2) springs that provided freshwater, especially during the relatively dry summer and fall seasons; and (3) outcrops of chert or other siliceous rocks suitable for making stone tools. Seal Cave was first identified in 2001 by University of Oregon archaeologists assessing the condition of known archaeological sites on San Miguel Island for the National Park Service (Rick and Erlandson 2004). During a visit to two recorded open-air middens near the northwest tip of Harris Point, we noticed a cave prominently positioned at the top of a steep cliff facing westward towards Simonton Cove (Fig. 2). No archaeological site was recorded in this location and no mention of a cave or rock shelter was found in site records for the nearby middens. Climbing up to the cave, we found archaeological materials scattered on the relatively level floor of a rock shelter with an arch-like ceiling over 2 m high. Any archaeological materials that once may have existed on the slope outside the rock shelter had been lost to sea cliff retreat, which is still actively eroding a shell midden deposit along the drip line of the cave. Because two other cave sites on San Miguel contain archaeological deposits of terminal Pleistocene or Early Holocene age, the identification of another cave site was of considerable interest. To establish the depth and age of the midden inside Seal Cave, we excavated a small trowel probe to determine the depth of the deposits and collect radiocarbon (^{14}C) samples for dating. Two ^{14}C dates for well-preserved mussel shells from near the top and bottom of the midden suggested that the site was occupied between about 10,150 and 9200 years ago (Rick et al. 2003). To determine the nature of the archaeological materials being lost to coastal erosion, we returned to the site in 2003 and 2006 to excavate a small test pit and document the site structure, stratigraphy, chronology, and contents.

In keeping with National Park Service policy, our excavations were limited in nature, starting with a small 15 x 20 cm wide trowel probe through about 25 cm of intact midden deposits. We later excavated a 1.0 x 0.5 m test unit roughly in the center of the back wall of the rock shelter. This test pit, designated Unit 1, was excavated in two (50 cm x 50 cm) stages—the southern half (1S) in 2003 and the northern half (1N) in 2006. Each half was excavated in 5 cm levels, with every effort made to remove discrete strata separately. In the southern half of the unit, all excavated sediments were screened over 1/8-inch mesh, with screen residuals transported to the University of Oregon for analysis under controlled lab conditions. Sediments from the northern half of the unit were screened over 1/16-inch mesh in the field, with whole shells, animal bones, and artifacts recovered during field sorting.

In the lab, we cleaned and sorted screen residuals into general categories: chipped stone, shell, bone, or other artifacts; unmodified marine shell, animal bone, charcoal, and uncarbonized plant remains; and non-cultural materials including unmodified rock and other miscellaneous materials. These general categories were analyzed in greater detail, with faunal remains identified to the most specific taxon possible, artifacts described by material and function, etc. All identified materials

Figure 2. Photo of Seal Cave (CA-SMI-604) in 2003, from point to west (photo by J. Erlandson).

were weighed and cataloged, and some materials (e.g., ^{14}C, soil, and isotope samples) were sent off for specialized analyses. In the field and in the lab, the length of whole California mussel (*Mytilus californianus*) shells, which were extremely abundant in the site deposits, were measured as part of a larger study of human impacts on intertidal and near shore ecosystems through the Holocene (Erlandson et al. 2008c). Since the analysis of vertebrate remains from our 2006 excavation has not yet been completed, only a partial account of the faunal assemblage is presented here.

The chronology of the archaeological strata at Seal Cave is based primarily on ^{14}C dating of individual, well-preserved marine shells, correlated with the stratigraphy and temporally diagnostic artifacts recovered or observed at the site. The radiocarbon chronology relies on a combination of two conventional and three AMS (accelerator mass spectrometry) dates, the latter including two dates on small fragments of spire-removed *Olivella* shell beads.

SITE SETTING, SOILS, AND STRATIGRAPHY

The northwest tip of Harris Point is a rugged and remote stretch of San Miguel Island's north-central coast. Seal Cave is located roughly 20 m (~66 feet) above sea level on a sheer cliff overlooking Secret Cove. With an opening facing to the southwest, the cave offers an expansive view of Simonton Cove, Otter Point, and the northwest coast of the island. The coastline in the immediate vicinity is dominated by rocky intertidal habitats, with extensive sand beaches to the south and west in Simonton Cove. Off Harris Point, the ocean bottom plunges rapidly into relatively deep water, so the 26 m isobath that approximates the 10,000-year-old shoreline is less than 200 m from the modern shoreline (Fig. 3).

Seal Cave is a small rock shelter, with a nearly level interior floor about 5 m wide and 3.5 m deep. With a ceiling ranging from about 1.6 m to 2.7 m high, the central part of the shelter offers ample headroom for people to stand in the interior. Midden deposits cover the entire floor and probably once draped the slope outside the shelter. On this cave floor we found a dark grayish-brown anthropogenic soil strewn with marine shells, animal bones, bird feathers, occasional artifacts, and some plant remains. Artifacts noted on the surface included several spire-removed *Olivella* beads, a small shell disk bead, a fragment of a circular shell fishhook, and a few pieces of chert tool-making debris. Also found on the surface was evidence for animal (probably seabird) activity and two human bones. The human bones, apparently from a single individual buried in the northeast corner of the cave, were left in place and no excavations were conducted in this area.

Along with erosion along the southern edge of the rock shelter, some evidence for disturbance of the floor was evident, potentially caused by both humans and animals. The presence of the human bones on the site surface suggested some erosion or disturbance of the site deposits, although no looters' pits or other signs of previous excavation were apparent. Sheep disturbed some Channel Island caves after their introduction in the mid-1850s, and may have caused erosion to the upper portion of the midden deposits. Cormorants and possibly other birds have also nested or roosted in the cave, depositing some animal bones, plant remains, feathers, guano, and other organic debris.

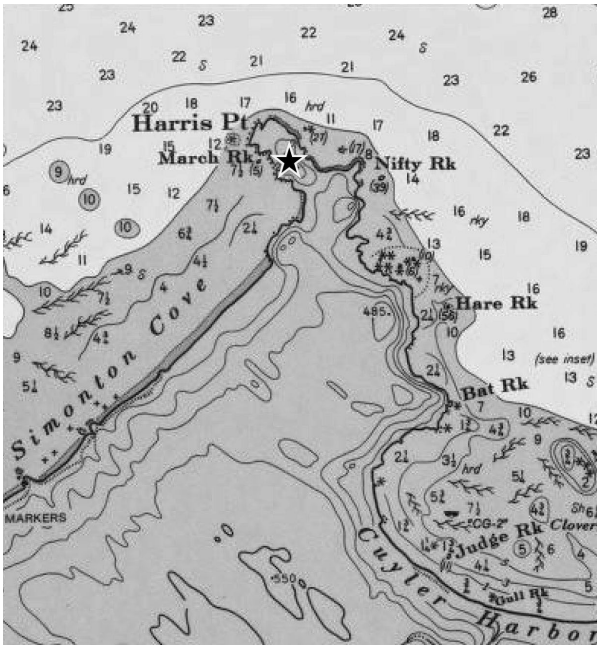

Figure 3. Topography and bathymetry of the Harris Point area, showing the 10 fathom (18 m) isobath, approximating the Early Holocene shoreline in the Seal Cave (marked by star) vicinity (soundings in fathoms, from NOAA 1987 navigation chart for San Miguel Passage).

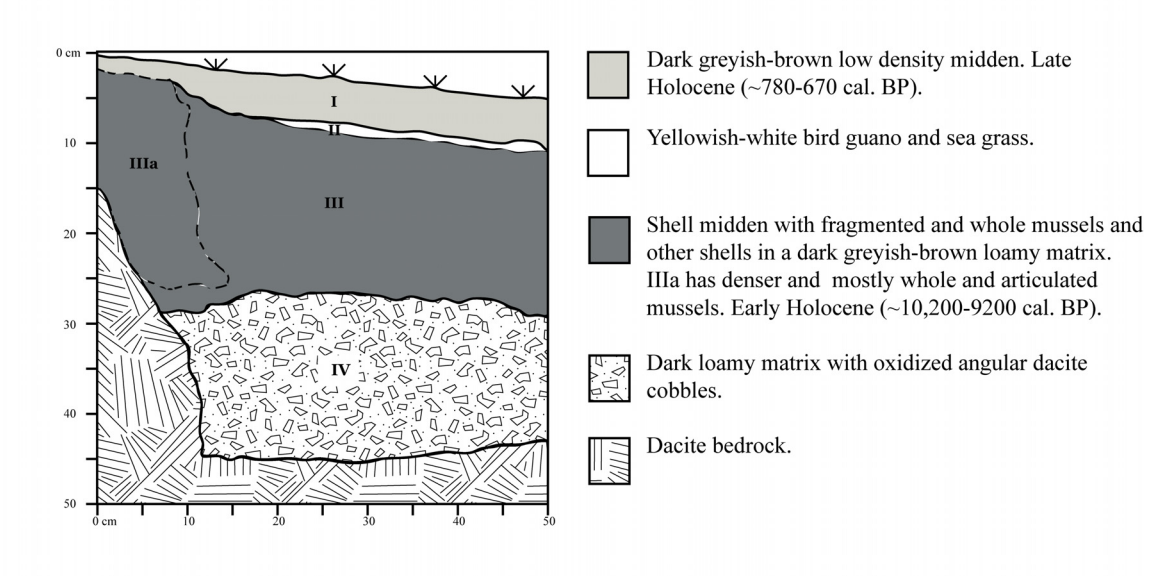

Figure 4. Stratigraphic profile of the south wall of Unit 1S at Seal Cave (CA-SMI-604). Drafted by T. Davis from original field drawing by J. Erlandson.

We also identified clear evidence for stratigraphic integrity in the remaining midden deposits. In Unit 1, for instance, we identified a thin (<1 cm thick) and discontinuous yellowish-white stratum (II) 4–6 cm below the surface that separated shell midden deposits (Strata I and III) above and below it—marking what appeared to be a break in the cave occupation (Fig. 4). During excavations, we also found numerous articulated mussel shells (Stratum IIIa)—especially near the walls of the cave in the Early Holocene layers. The outstanding preservation of faunal remains—including remnants of periostracum on some very old mussel shells—suggests that portions of the midden deposits were buried relatively quickly and were not disturbed or exposed again until our excavations.

Below the archaeological deposits, we found a dark and very loose soil (Stratum IV), densely studded with small angular cobbles. We encountered occasional voids while excavating this basal soil, but it did not appear to contain archaeological materials. Due to time limitations we were never able to penetrate more than about 10–15 cm into this dark soil and its origin is not well understood. The source of the angular cobbles seems likely to have been the weathering of the dacite bedrock of the cave walls, and the dark color of the soil could result, in part, from the percolation of fine organics downward from the overlying midden.

ANALYTICAL RESULTS

Chronology

Five ^{14}C dates are available for marine shell samples from Seal Cave (Table 1). The first of these was a date of 9440 ± 50 RYBP (OS-34804), with a calibrated age range of 10,140–9940 cal BP, obtained for a well-preserved California mussel shell recovered from near the base of a small probe excavated into the midden in the north end of the shelter floor. After excavating the 50 x 50 cm wide Unit 1S, we obtained two additional dates of 1340 ± 60 RYBP (Beta-181393; 780–670 cal BP) and 9030 ± 90 RYBP (Beta-171120; 9470–9175 cal BP) for unmodified shells from the 0–5 cm and 5–10 cm levels, respectively. The younger date confirmed a suspected Late Holocene occupation of the site indicated by the grooved shank fragment from a circular or j-shaped shell fishhook and a small shell disk bead found on the site surface.

The older date from the 5–10 cm level suggests that the bulk of the midden deposit (~5–30 cm) dated to the very Early Holocene. Two additional dates were later obtained for small fragments of two spire-removed *Olivella biplicata* shell beads, which have been found in several Early Holocene sites on the northern Channel Islands (see Morris and Erlandson 1993; Erlandson et al. 2005). Unexpectedly, these beads were dated to 6875 ± 25 RYBP (UCIAMS-8676; 7240–7150 cal BP) and

Table 1. ^{14}C dates for marine shells from Seal Cave (CA-SMI-604).

Sample provenience	Lab no.	Material	^{14}C age	Calendar age (cal BP)
Unit 1S: 0–5 cm	Beta-181393	CA mussel	1340 ± 60	780–670
Unit 1S: 5–10 cm	UCIAMS-8676	*Olivella* bead	6875 ± 25	7240–7150
Surface: sea cliff area	UCIAMS-8675	*Olivella* bead	6960 ± 25	7320–7220
Unit 1S: 5–10 cm	Beta-171120	CA mussel	9030 ± 90	9470–9175
Probe: ~25 cm (midden base)	OS-34804	CA mussel	9440 ± 50	10,140–9940

Notes: Calendar age ranges BP (before "present" = AD 1950) at one sigma. Calibrated using CALIB 5.01 with a Δ R of 225 ± 35.

6960 RYBP (UCIAMS-8675; 7320–7220 cal BP), suggesting that CA-SMI-604 was also utilized about 7200 years ago. Because no midden refuse has been dated to this time period, these beads may be associated with a ritual use of the cave, deposited along with the human bones exposed on the site surface.

Artifacts

Given the limited nature of our excavations and the loss of refuse areas outside the cave to coastal erosion, the number of artifacts recovered from the Paleocoastal levels of Seal Cave is relatively small. They include a small assemblage of chipped stone artifacts dominated by tool-making debris, two crude biface fragments, and a few expedient tools; a few *Olivella* shell beads and bone artifacts; and several pieces of bitumen (asphaltum) probably used as a glue or sealant. The bitumen was found all the way to the base of the Paleocoastal midden and is probably derived from a large oil seep located off the northwest coast of San Miguel Island.

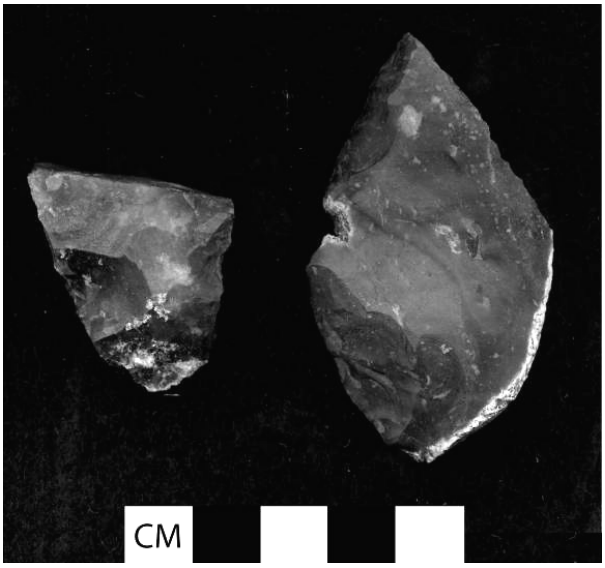

Figure 5. Two crude bifaces from the Paleocoastal levels at Seal Cave, both made from Tuqan Monterey chert (scanned image by T. Davis).

The chipped stone artifacts recovered from Unit 1 consist primarily of tool-making debris made of Tuqan and Cico cherts. Once thought to have been imported from the mainland, these rock types are now known to be available in geological outcrops near the east end of San Miguel (Erlandson et al. 2008a). Two crude bifaces made from Tuqan Monterey chert were also recovered from the Paleocoastal levels of Unit 1 (Fig. 5), one broad and roughly leaf-shaped specimen made from a large flake removed from a Tuqan chert cobble, and one fragment that appears to have broken during the early stages of manufacture.

Of the eight shell beads recovered from Seal Cave, seven are spire-removed *Olivella biplicata* beads which are found in Early Holocene and later sites in the Santa Barbara Channel area (King 1990). As noted above, two of these beads were directly dated to about 7200 calendar years ago. The other *Olivella* beads could be of similar age, but some may be associated with the Early Holocene occupation. A single shell disk bead found on the site surface was heavily weathered and could not be identified to a specific taxon or bead type. The only other shell artifact found at Seal Cave was a grooved shank fragment from a circular or j-shaped fishhook observed on the site surface in 2001. Although not collected, this fishhook fragment is almost certainly associated with a Late Holocene occupation of the cave.

Also recovered from the Paleocoastal levels were two bone tools (Fig. 6). The first is a bird bone

Figure 6. Bird bone tools and tool-making debris from Paleocoastal levels at Seal Cave (left to right: 604-204 bone splinter; 604-112, gorge preform with cut longitudinal groove; 604-111, bone splinter; 604-141, ground awl-like tool sawn off at base; scanned image by T. Davis).

awl or pin, cut and squared off on one end and sharpened to a point on the other. The second appears to be an unfinished bone gorge, partially ground to a point on both ends. On the interior surface of the bone, a groove was carefully cut or sawn along the long axis of the gorge. This pattern is consistent with a "saw-and-snap" technique documented for the manufacture of bone gorges in the Early Holocene levels at Daisy Cave (Rick et al. 2001). Several shattered fragments of bird bone recovered may also represent debris from gorge or other bone tool making.

Faunal Remains

The faunal assemblage from Seal Cave is comprised primarily of the remains of marine shellfish, including over 15 kg of shell recovered from the Paleocoastal levels of Unit 1S (Table 2). At least 24 separate shellfish taxa are represented in this sample, with a minimum number of 3368 individual (MNI) organisms, almost exclusively from rocky intertidal habitats. Many of these shellfish taxa provide only miniscule proportions of the assemblage by weight, however, and appear to be either minor dietary contributors (e.g., *Tegula*, crabs, and chitons) or incidental additions to the midden (tiny limpets, barnacles, and gastropods, etc.). The assemblage is dominated by mussels (especially sea mussels, *Mytilus californianus*) which comprise almost 92% of the total weight of shell recovered from the Paleocoastal levels and over 74% of the MNI. In contrast, among the other shellfish species intentionally harvested by Paleocoastal peoples, owl limpets (*Lottia gigantea*) contribute only about 1.2% of the shell weight (MNI = 34, <1% of the total), while black and red abalones (*Haliotis cracherodii* and *H. rufescens*) together comprise only about 1.0% of the shell weight and only 12 individuals. Although they provide only about 1.6% of the shell by weight, leaf or gooseneck barnacles (*Pollicipes polymerus*) are relatively abundant compared to most San Miguel Island shell middens.

The abundance of very small mussels in the assemblage suggests that mussels were stripped off intertidal rocks in clumps or mats. The abundance of articulated mussels in the Seal Cave midden also indicates that mussels were carried to the site whole, where they were processed and discarded after consumption. Such a harvesting and processing pattern probably introduced numerous epifauna into the midden, including the scores of very small barnacle, limpet, and gastropod shells found in the sample from Seal Cave. Aggregations of leaf barnacles often live among mats of California mussels and platform mussels (*Septifer bifurcatus*), so these edible barnacles may have been harvested simultaneously as clumps of mussels were stripped from intertidal rocks. Such stripping techniques may also help explain the relatively small average size of California mussels in the Paleocoastal strata. The mean size of 363 whole California mussel shells from the 5–25 cm levels was just 36.8 mm, the lowest value yet recorded for a site older than 8000 years (Fig. 7; see Erlandson et al. 2008c). The mean size of the mussels also declines from the Early Holocene to Late Holocene, with 32 whole shells from the 0–5 cm level averaging just 25.3 mm long.

The vertebrate remains from Seal Cave have not yet been fully analyzed, but the Paleocoastal levels produced small amounts of marine fish, bird, and mammal bone. The low density of vertebrate remains is typical of most Early Holocene sites (other than Daisy Cave) on the northern Channel Islands and the adjacent mainland (see Erlandson 1994). Most of the fish remains consist of unidentifiable bone fragments, but among the identifiable elements analyzed so far, surfperch (Embiotocidae), California sheephead (*Semicossyphus pulcher*), senorita (*Oxyjulis*

Table 2. Shellfish remains from the Paleocoastal levels of Unit 1S at Seal Cave (CA-SMI-604).

	5–10cm		10–15cm		15–20cm		20–25cm		25–30cm		Total	%	Total	%
Taxon	MNI	Wt.	MNI	Wt.	MNI	Wt.	MNI	Wt.	MNI	Wt.	MNI	MNI	Wt.	Wt.
Acanthina punctulati							1	0.1			1	-	0.1	-
Amphissa columbiana	1	0.1					1	0.1			2	0.1	0.2	-
Balanus spp.	130	159	96	127	46	44.6	27	22.4	1	1.1	300	8.9	354.8	2.4
Chiton, undif.	1	0.5	2	5.1	1	3.6	1	1.8			5	0.2	11.0	0.1
Clam, undif.	2	0.2	2	0.2						0.5	4	0.1	0.9	-
Crab, undif.	1	1.1		1.5	1	5.8	1	6.0			3	0.1	14.4	0.1
Crepidula adunca							1	0.1			1	-	0.1	-
Fissurella volcano	1	0.3	2	1.4					1	0.1	4	0.1	1.8	-
Gastropods, undif.	12	0.9	9	0.3	7	0.3	2	0.1			30	0.9	1.6	-
Haliotis cracherodii	2	23.4	5	66.5	3	20.7					10	0.3	110.5	0.7
Haliotis rufescens		2.6									0	-	2.6	-
Haliotis, undif.	1	14.6		11.5				6.3	1	17.7	2	0.1	50.1	0.3
Lacuna vincta			4	0.4			1	<0.1			5	0.2	0.4	-
Limpet, undif.	149	10.8	168	16.1	92	6.4	78	18.4	3	0.2	490	14.6	51.8	0.3
Littorina planaxis			2	0.4			1	0.06			3	0.1	0.4	-
Lottia gigantea	14	49.8	15	92.3	5	30.3				1.1	34	1.0	173.5	1.2
Modiolus modiolus	2	0.4	2	0.5	1	0.2					5	0.2	1.2	-
Mytilus californianus	324	3759	924	6102	479	2659	215	1011	43	120	1985	59.1	13652	90.6
Olivella biplicata	1	0.4			1	<0.1	1	0.4			3	0.1	0.9	-
Pollicipes polymerus	1	113	1	59.7	1	38.8	1	22.4	1	0.8	5	0.2	234.2	1.6
Septifer bifurcatus	18	10	150	60.1	152	61.2	102	32	18	5.1	440	13.1	168.3	1.1
Serpulorbis spp.	1	1.3	1	1.0	1	1.7					3	0.1	4.0	-
Shell, undif.		83.9		47.6		3.1		2328		0. 7	0	-	158. 7	1.1
Strongylocentrotus spp.	1	13.3	1	16	1	4.2	1	2.4	1	0.1	5	0.2	36.0	0.2
Tegula brunnea	1	0.3									1	-	0.3	-
Tegula funebralis	4	4.1	5	11.8	5	15.6	1	7.8		0.4	15	0.4	39.7	0.3
Thais canaliculata	3	0.1	1	0.3					1	0.5	5	0.2	0.9	-
Thais spp.	3	1.7	1	0.4	3	1.9			1	0.4	8	0.2	4.4	-
Totals	673	4251	1391	6622	798	2897	435	1155	71	149	3368	100.0	15074	100

Note: Based on 1/8-inch screen recovery; MNI = minimum number of individuals.

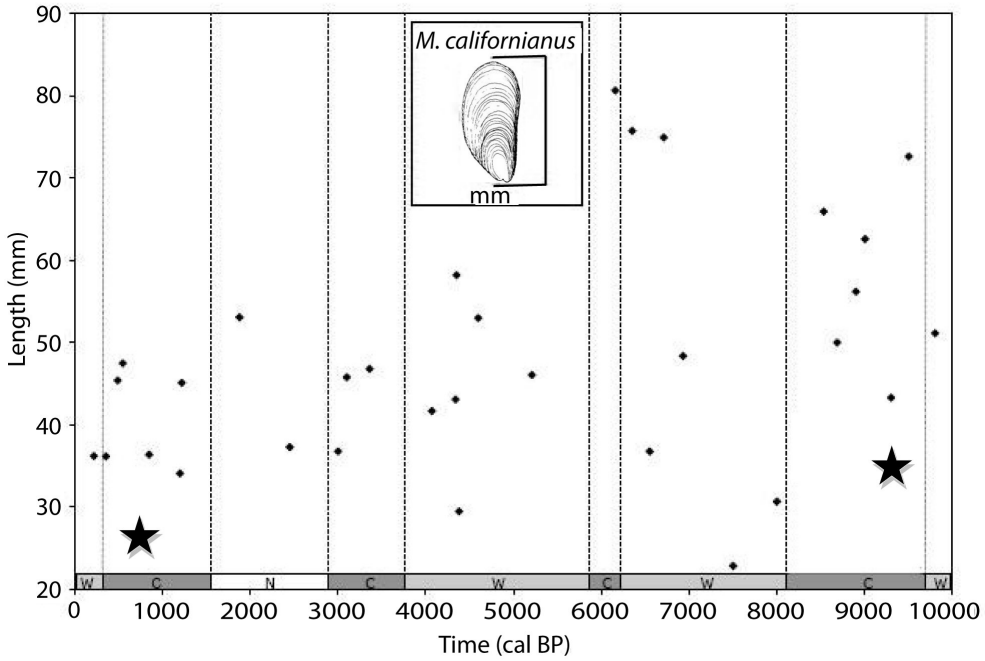

Figure 7. Mean California mussel shell size in Early and Late Holocene components (marked by black stars) at Seal Cave, compared to other San Miguel Island sites (adapted from Erlandson et al. 2008c). The bar at the base identifies periods of relatively cool (c), warm (w), or intermediate (n) sea surface temperatures (see Kennett 2005).

californica), ling cod (*Ophiodon elongatus*), rockfish (*Sebastes* spp.), and hound shark (Triakidae) have been identified. All these fish taxa can be caught in kelp forest and other near shore habitats off San Miguel Island. The large mammal remains recovered are fragmented and mostly unidentifiable, but at least some appear to be from sea mammals.

SUMMARY AND CONCLUSIONS

Although limited in scope, our research at Seal Cave has produced valuable information on the antiquity and nature of early maritime adaptations on San Miguel Island. Much of the site appears to have been lost to coastal erosion, but data recovered from the site remnants suggest that the cave was used episodically by the Chumash and their predecessors during the Early, Middle, and Late Holocene. The most recent of these episodes was an occupation about 700 years ago (AD 1250), represented by the truncated midden remnants found in the upper 4–6 cm of Unit 1. A Middle Holocene use of the cave, presently identified only by AMS ^{14}C dates for two *Olivella* beads of about 7200 years ago, may be related to a ritual use of the rock shelter as a burial place. The most extensive use of the cave is marked by 20–25 cm of dark anthropogenic midden soil deposited between about 10,150 and 9200 years ago, possibly during two or more discrete occupations by Paleocoastal peoples. While it seems likely that the early occupation of the cave was intermittent, the lack of microstratigraphy and the available ^{14}C dates do not currently allow further resolution of the early occupational chronology.

Due to the small size of the artifact assemblage and the lack of detailed data on the vertebrate remains, the conclusions we can make about the nature of Paleocoastal adaptations at Seal Cave are limited. Nonetheless, several aspects of the assemblage are generally consistent with data from several other Early Holocene sites on San Miguel Island, including: (1) a heavy economic emphasis on shellfish collecting in rocky intertidal habitats; (2) faunal and artifactual evidence for a broader subsistence economy that included marine fishing and hunting; (3) an early fishing technology that employed bone gorge fishhooks carefully manufactured with a combination of "saw-and-snap" and grinding methods; (4) a chipped stone

technology including bifaces and expedient tools made primarily from local raw material types, including Tuqan and Cico cherts, as well as coarse-grained metavolcanic cobbles; and (5) spire-removed *Olivella* beads used for personal ornamentation.

Because Seal Cave is rapidly being lost to coastal erosion, we are fortunate to have identified the Paleocoastal and later components at the site before they were completely destroyed. Seal Cave is one of over 30 archaeological sites on San Miguel Island now known to have been occupied on one or more occasions between about 12,000 and 8000 years ago. As such, it provides additional evidence for a relatively substantial presence of early maritime peoples on the northern Channel Islands. The antiquity and number of early sites is particularly impressive considering that the shorelines and extensive coastal lowlands of the terminal Pleistocene and Early Holocene have been lost to erosion or submerged by rising seas since the Last Glacial Maximum. Given the number and variety of early sites documented in the area, however, it seems increasingly likely that there was a permanent occupation of the northern Channel Islands by Paleocoastal peoples, beginning as much as 13,000 years ago. Whether these early Channel Islanders were descended from maritime people who followed the coastlines from Asia into the Americas is not yet known. What is clear is that the Channel Islands and the Pacific Coast of North America were settled by relatively sophisticated maritime peoples much earlier than most American archaeologists would have believed possible just a decade or two ago.

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