

## Early-Holocene Land Use and Subsistence on Eastern Santa Rosa Island, California

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California's Channel Islands are well known for the number and diversity of early Pacific Coast archaeological sites, including evidence of human occupation dated to at least 13,000 CALYBP (Erlandson et al. 1996; Johnson et al. 2000). Recent research on Santa Rosa and San Miguel islands has targeted terminal-Pleistocene and early-Holocene sites to investigate early human subsistence, settlement, and land use (Erlandson et al. 1999; Kennett 2005; Rick et al. 2001). Here we report the analysis of faunal remains from CA-SRI-666, an early-Holocene deposit that is currently the oldest known site on eastern Santa Rosa Island. Because data from early Pacific Coast shell middens are limited, our analysis of CA-SRI-666 provides important information on early New World coastal adaptations, especially the early maritime peoples who settled the Channel Islands.

CA-SRI-666 (also known as SRI-91-15 [Erlandson 1994]) is a badly eroding shell midden and lithic scatter with cemented clusters of partially deflated shell midden in pockets roughly 1–2 m in diameter. The site is currently about 30–50 m from the shoreline and appears to be situated on an old dune ridge. During surface investigations, we observed a mix of shellfish remains from rocky intertidal (California mussel, abalone) and estuarine (Washington clam, oyster, and venus clam) habitats. In 2003, we observed three Monterey chert bifaces and numerous Monterey chert and metavolcanic flakes on the site surface. The Monterey chert artifacts appear to have been obtained from the adjacent mainland through trade or direct procurement.

A  $^{14}\text{C}$  date obtained on a Washington clam shell from one of the midden clusters produced a calibrated age range (1 sigma) of 8100 to 7930 CALYBP ( $7780 \pm 70$  RCYBP) (Erlandson 1994:193), the oldest date from the island's eastern coast. The relatively crude bifaces found on the surface, the absence of shell beads or other later cultural indicators, and the presence of estuarine shellfish all support the early-Holocene age of the site.

To investigate early land use and subsistence on the island, we excavated a 5-liter bulk sample from one of the site's cemented midden clusters. Analysis of 1/8-inch screen residuals from this deposit produced over 1 kg of shell and bone. At least six shellfish taxa were present in the sample, including barnacle, California mussel, red abalone, and limpet (Table 1). California mussel makes up about 99 percent of the sample by weight and about 81 percent of the MNI. Fourteen mammal, fish, and undifferentiated bone fragments were also recovered, indicating scavenging or hunting of vertebrates. Our surface observa-

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tions suggest that people also collected shellfish from the nearby Abalone Rocks paleoestuary, albeit in smaller numbers than rocky intertidal taxa (Rick et al. 2005).

**Table 1.** Midden constituents from CA-SRI-666, bulk sample 1 (1/8-inch).

Constituent	Weight (g)	% Total weight	MNI/Ct.■	% MNI/Ct.
Barnacle undif.	10.79	1.1	—	—
<i>Haliotis rufescens</i>	1.03	0.1	1	3.1
<i>Haliotis</i> spp.	1.20	0.1	1	3.1
Limpet undif.	0.09	<0.1	4	12.5
<i>Mytilus californianus</i>	1006.36	98.6	26	81.3
<i>Pollicipes polymerus</i>	0.05	0.0	—	<0.1
<b>Subtotal</b>	<b>1019.52</b>	<b>99.9</b>	<b>32</b>	<b>—</b>
Bone undif.	0.03	<0.1	3	21.4
Fish bone	0.38	<0.1	10	71.4
Mammal bone	0.22	<0.1	1	7.1
<b>Subtotal</b>	<b>0.63</b>	<b>0.1</b>	<b>14</b>	<b>—</b>
<b>Total</b>	<b>1020.15</b>	<b>—</b>	<b>—</b>	<b>—</b>

■MNI given for shellfish, counts given for vertebrates.

The available data from CA-SRI-666 suggest that the site was a temporary camp or possibly a base camp used by early-Holocene peoples on the island. Site disturbances, including extensive wind deflation, limit our interpretation of the precise function of the site. Shellfish remains from our excavated sample and the surface suggest a mix of rocky intertidal and estuarine taxa, however, demonstrating that early coastal peoples on Santa Rosa Island made use of all available shellfish habitats in the area. The presence of estuarine shell in the CA-SRI-666 deposits is unique for Channel Islands sites, which generally lack estuarine taxa (Rick et al. 2005).

Our research at CA-SRI-666 adds to the growing body of data on the subsistence and settlement strategies of early foragers on the Pacific Coast. These data suggest that early coastal peoples relied on a variety of shellfish species and made use of all available local habitats. In this case, people may have focused largely on California mussel because of its local abundance over estuarine or other taxa. Our research at CA-SRI-666 and other eastern Santa Rosa Island sites demonstrates significant environmental change over the last 8000 years, including infilling of an ancient estuary, expansion of sandy beaches, and decline in some rocky intertidal habitats (Rick et al. 2005). Future research at CA-SRI-666 and other island sites will provide valuable information on how early New World peoples adapted to these dynamic coastal and island environments.

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