

REPORTS

From the *Island of the Blue Dolphins*: A Unique Nineteenth-Century Cache Feature From San Nicolas Island, California

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ABSTRACT

A cache feature salvaged from an eroding sea cliff on San Nicolas Island produced two redwood boxes containing more than 200 artifacts of Nicoleño, Native Alaskan, and Euro-American origin. Outside the boxes were four asphaltum-coated baskets, abalone shells, a sandstone dish, and a hafted stone knife. The boxes, made from split redwood planks, contained a variety of artifacts and numerous unmodified bones and teeth from marine mammals, fish, birds, and large land mammals. Nicoleño-style artifacts include 11 knives with redwood handles and stone blades, stone projectile points, steatite ornaments and effigies, a carved stone pipe, abraders and burnishing stones, bird bone whistles,

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bone and shell pendants, abalone shell dishes, and two unusual barbed shell fishhooks. Artifacts of Native Alaskan style include four bone toggling harpoons, two unilaterally barbed bone harpoon beads, bone harpoon fore-shafts, a ground slate blade, and an adze blade. Objects of Euro-American origin or materials include a brass button, metal harpoon blades, and ten flaked glass bifaces. The contents of the cache feature, dating to the early-to-mid nineteenth century, provide an extraordinary window on a time of European expansion and global economic development that created unique cultural interactions and social transformations.

Keywords Pacific Coast, North America, globalization, colonial history, culture change, technology

INTRODUCTION

The arrival of Europeans in the Americas initiated a period of global exploration, human migrations, and dramatic cultural and biological exchanges that profoundly influenced the demographic, political, economic, and ecological history of North America and the world (see Crosby 1972, 1986; Thomas 1989, 1990). Some of these dramatic changes took place along the Pacific Coast of the Americas, where historical and archaeological records have helped reconstruct a complex history of cultural contacts in the age of exploration and colonialism (Crowell 1997). In California, a wealth of information is derived from both Spanish and Russian colonial archives and archaeological sites dated between about AD 1769 and AD 1834 (see Lightfoot 2005).

California's Channel Islands were an important nexus of interaction between Native peoples (Island Chumash and Tongva) and early explorers and exploiters associated with the commercial and colonial enterprises of Spanish, Mexican, Russian, American, and other interests. In the scramble to cash in on a global market for Pacific Rim sea otter, fur seal, and other pelts, European and American captains brought native Alaskan (Aleut, Koniag, Tlingit, etc.) and other hunters to coastal California (see Ogdon 1941; Scammon 1968; Schwartz 1994). These are well documented at Fort Ross (Lightfoot 2005; Lightfoot et al. 1991), where Russian commercial interests established a multi-ethnic colony of Eurasian, Native

Alaskan, and California Indian peoples between AD 1812 and 1842. In contrast, the effects of such commercial sea otter and seal hunting activities on the Channel Islands—a major locus of marine hunting for several decades in the late eighteenth and early nineteenth centuries—has only limited historical or archaeological support.

Since the 1870s, when mapping and scientific surveys of California's islands began, just a few artifacts have been recovered that can be linked to the economic activities associated with a commercial fur trade that profoundly affected the Channel Island's Native peoples, marine mammal populations, and ecosystems. Most of these discoveries were made by early antiquarians (see Hudson and Blackburn 1982; Reichlen and Heizer 1964; Schumacher 1875) and lack specific provenience other than the island where they were collected. As a result, we are left with sporadic and fragmented historical records to document the nature of early colonial activities on the Channel Islands, which lacked Spanish missions, pueblos, or other permanent outposts such as Fort Ross (see Braje et al. 2007; Daily 1989; Hudson 1981; Lightfoot 2005). On San Nicolas Island (SNI), recent historical research is shedding important new light on the complex interactions of these tumultuous years, including contacts and conflicts between Russian American Company officials, Native Alaskan hunters, and the Nicoleño between AD 1814 and 1819 (Morris et al. 2013). As Schwartz (2005:83) noted, however, very little ethnographic information exists for the Nicoleño

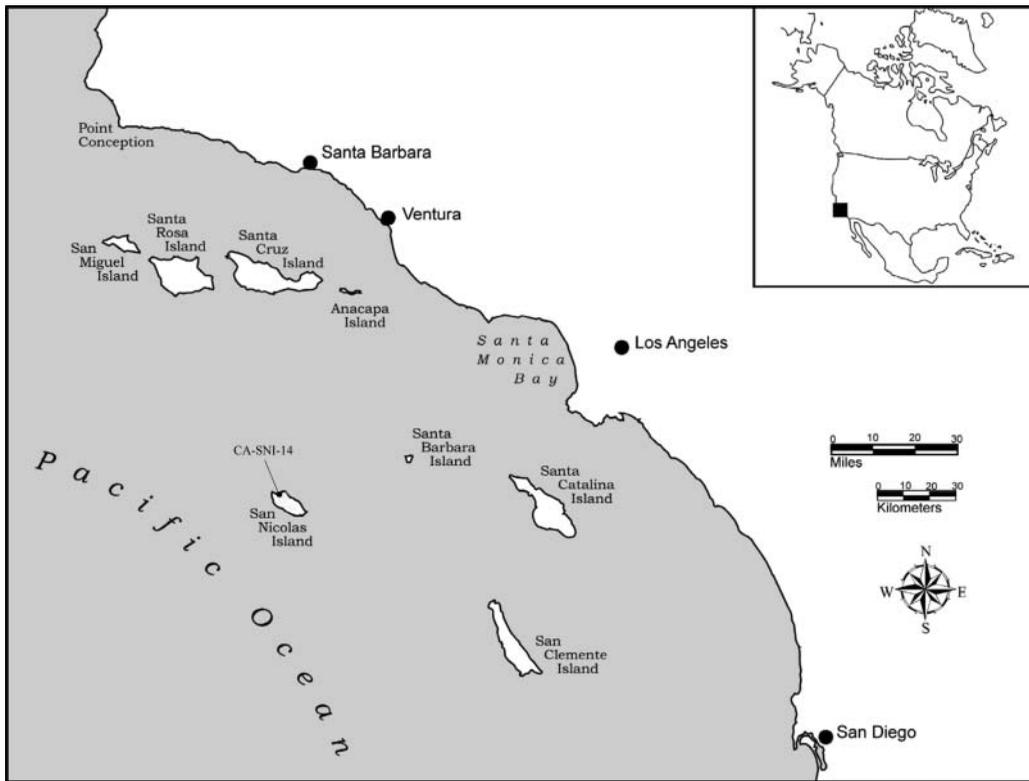


Figure 1. The general location of San Nicolas Island and CA-SNI-14.

and little is known of their material culture in historic times.

San Nicolas, the most remote of all the Channel Islands (Figure 1), has a long human history that may extend back 10,000 years or more (see Davis et al. 2010; Erlandson et al. 2011). To the general public, however, the island is most famous for its association with Juana Maria, a woman of Nicoleño (Hardacre 1950; Hudson 1981) or possibly mixed ancestry (Daily 1989), whose true story was made famous in an award-winning novel by Scott O’Dell (1960), *Island of the Blue Dolphins*. After the removal of the Nicoleño from SNI in AD 1835, the ‘Lone Woman’ of SNI was stranded and lived alone on the island for 18 years (Heizer and Elsasser 1961; Schwartz 2005). She was found by a group of otter hunters in AD 1853 and taken to the mainland town of Santa Bar-

bara, where none of the surviving Indians from surrounding missions understood her language. Tragically she died just seven weeks later (Hardacre 1950:21; Heizer and Elsasser 1961).

One hundred and fifty-five years later, in the winter of 2009–2010, three of the authors (JME, LTB, RLV) salvaged a cache feature exposed in an eroding sea cliff on the northwest coast of SNI, a feature that sheds considerable light on the material culture of the Nicoleño and the cultural changes that accompanied the early colonial era. Embedded in a fossil beach deposit, the feature was marked by a whale rib placed over two small redwood boxes. Around the boxes we found the remnants of four woven baskets sealed with asphaltum in the fashion of the Nicoleño and their California neighbors. When discovered, one of the redwood boxes had lost an

end to erosion, exposing several artifacts, including a steatite effigy and tube bead, a brass button, and a piece of old green bottle glass. Threatened by winter storms and erosion, the boxes and other contents of the cache feature were removed to a secure US Navy facility on SNI where they were carefully documented and stabilized. From preliminary field observations, it was clear that the boxes contained a diverse array of artifacts, including objects of Nicoleño, Native Alaskan, and European or Euro-American origin or style. Just how diverse and unusual the contents of the cache feature were only became apparent later, when the objects inside the boxes were meticulously excavated and documented by Vellanoweth and Thomas-Barnett under controlled laboratory conditions.

In this article, we provide an overview of the discovery, recovery, context, and contents of this nineteenth-century cache feature. More than 200 artifacts were recovered and a complete analysis, documentation, and stabilization of the assemblage—which includes numerous fragile and perishable objects—will take several years. Here, the goal is to share our preliminary results and interpretations with the archaeological community, other scholars, and the general public. First, however, we provide the environmental and cultural background required to contextualize the discovery for readers unfamiliar with the area.

BACKGROUND

Located 98 km from the mainland coast, SNI is 15.6 km long and 6 km wide, with a land area of 58 km². The topography of the island is defined by 14 marine terraces, which are tectonically uplifted wave-cut platforms mantled with marine sand and gravel (Muhs et al. 2012; Vedder and Norris 1963). Sand dunes overlie the youngest of these terraces. Remote, isolated, and relatively small, SNI has a comparatively impoverished terrestrial biota (Junak 2008), although geophyte plants such as blue dicks (*Dichelostemma capitatum*) were probably an important source of carbohydrates and calories for the island's

early inhabitants (Gill 2013; Timbrook 2007). The island is essentially devoid of native trees and wood resources, but redwood and other logs wash ashore as driftwood on island beaches. Foxes and dogs were brought to the island millennia ago by the Tongva or their predecessors. In contrast to the land, nearshore marine habitats provide access to a wealth of marine resources, including highly productive kelp forests, sea mammals, fish, shellfish, and seabirds (Schoenherr et al. 1999). On an arid island, where rain falls almost exclusively from late fall to early spring, fresh water is a precious resource. Western SNI has extensive dunes that store some groundwater, however, slowly releasing it in freshwater springs found primarily along the northwest coast.

The oldest well-dated archaeological sites on SNI are about 6,500 years old, but chipped stone crescents found on the island hint at a deeper human history, as similar artifacts found on the Northern Channel Islands date to as much as 11,800 cal BP (Davis et al. 2010; Erlandson et al. 2011). The history of the earliest island residents is not well understood, but sometime between ~6,000 and 2,000 years ago, SNI appears to have been colonized by Tongva people, Uto-Aztecan speakers who may have amalgamated with earlier island residents (Vellanoweth and Altschul 2002:103; Vellanoweth et al. 2002). The Island Tongva were a maritime people who used sophisticated boats made from planks split from redwood drift logs, and sewn together and caulked with asphaltum, similar to those of the Chumash to the north (Hudson et al. 1978).

In the late eighteenth and early nineteenth centuries, the Nicoleño and their neighbors came into contact with Spanish, Russian, English, and American authorities and entrepreneurs, as well as workers from various tribes and countries from around the Pacific and beyond (Morris et al. 2013; Schwartz 1994). Old World diseases took a terrible toll on California's coastal tribes and many of the surviving islanders were removed by Spanish authorities to mainland missions. The development of global trade in sea otter, whale, seal, and other products also brought foreign hunters and goods to

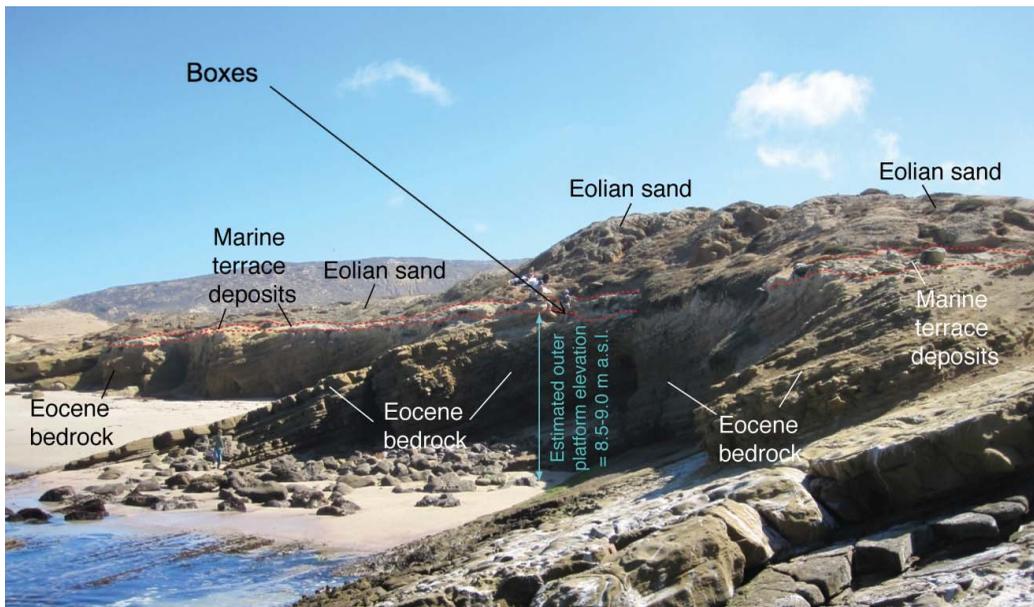


Figure 2. Geological context and location of the CA-SNI-14 cache feature, with Thomas-Barnett and Vellanoweth flanking the location of the cache feature (photo by J. Erlandson, adapted by D. Muhs).

remote and isolated SNI. Historical accounts of such contacts are rare, but identify separate parties of Koniag and Aleut hunters left on SNI for months at a time to procure sea otter furs (Daily 1989; Morris et al. 2013). In 1814, a party of Native Alaskan hunters commanded by a Russian American Company (RAC) supervisor reportedly massacred many of the Nicoleño, apparently in retaliation for the killing of one of the RAC hunters (Morris et al. 2013). Part of the complex interactions between the Nicoleño, neighboring tribes, Native Alaskan or Northwest Coast tribal members, and agents of various colonial enterprises operating in the area during the early nineteenth century, these events must have profoundly affected the survivors.

DISCOVERY AND RECOVERY OF A NINETEENTH-CENTURY CACHE FEATURE

The SNI cache feature was found during an archaeological survey of buried soils and sea

cliff exposures in search of terminal Pleistocene and early Holocene occupation sites (Figure 2). While examining exposures below archaeological site CA-SNI-14, Erlandson observed a whale rib protruding from the cliff face and climbed down to examine the bone, suspecting that it was a fossil. The rib was found to have been placed over an old redwood box, one end of which had been lost to erosion. The box was eroding from the coarse sand of a marine terrace deposit about 8 m above mean sea level, which was formed during a high sea stand about 80,000 years ago (Muhs et al. 2012). Underlying the marine deposit is Eocene bedrock (interbedded sandstone and shale) that is relatively resistant to erosion (Figure 3). More than 4 m of Late Pleistocene and Holocene dunes overlie the marine terrace deposits and are capped by a large multi-component shell midden dating to the Late Holocene.

The next day, due to impending threats from winter storms and marine erosion, most of the cache feature was excavated, exposing two small redwood boxes lying side-by-side,



Figure 3. The CA-SNI-14 cache feature partially exposed, with sea cliff at bottom (north), whale rib over western (right) and eastern (left) boxes, a black abalone shell, and portions of two asphaltum-coated water bottles visible—a bottle neck (upper left) and a basal fragment just to the right of the western box (photo by J. Erlandson).

smaller plank fragments lying on top of them, the remnants of four asphaltum-coated baskets, a small sandstone dish, a bird skull, and three whole black abalone (*Haliotis cracherodii*) shells found in the immediate area. After each box was fully exposed, a piece of sheet metal was slid beneath it then carefully lifted into a cardboard container and transported back to the US Navy's Environmental Lab on SNI. Two fragmentary asphaltum-coated baskets were recovered at this time, but two complete basketry water bottles were covered up and salvaged later by Thomas-Barnett, Vellanoweth, and Jane Mitchell. In January of 2010, the contents of the redwood boxes were meticulously excavated by Vellanoweth and Thomas-Barnett under controlled laboratory conditions, with extensive still photography and continuous

videography documenting the process. As objects were removed from the boxes, they were carefully cleaned, stabilized, cataloged, and photographed. Conservation efforts and analysis of the cache contents are continuing.

DESCRIPTION OF THE BOXES AND THEIR CONTENTS

Because some of the CA-SNI-14 cache may have been lost to erosion prior to discovery, the original structure of the feature is only partly known. The redwood boxes were at the center of the feature, with three asphaltum-coated water bottles and other contents tightly packed around them (Figure 4). A plank from the exposed end

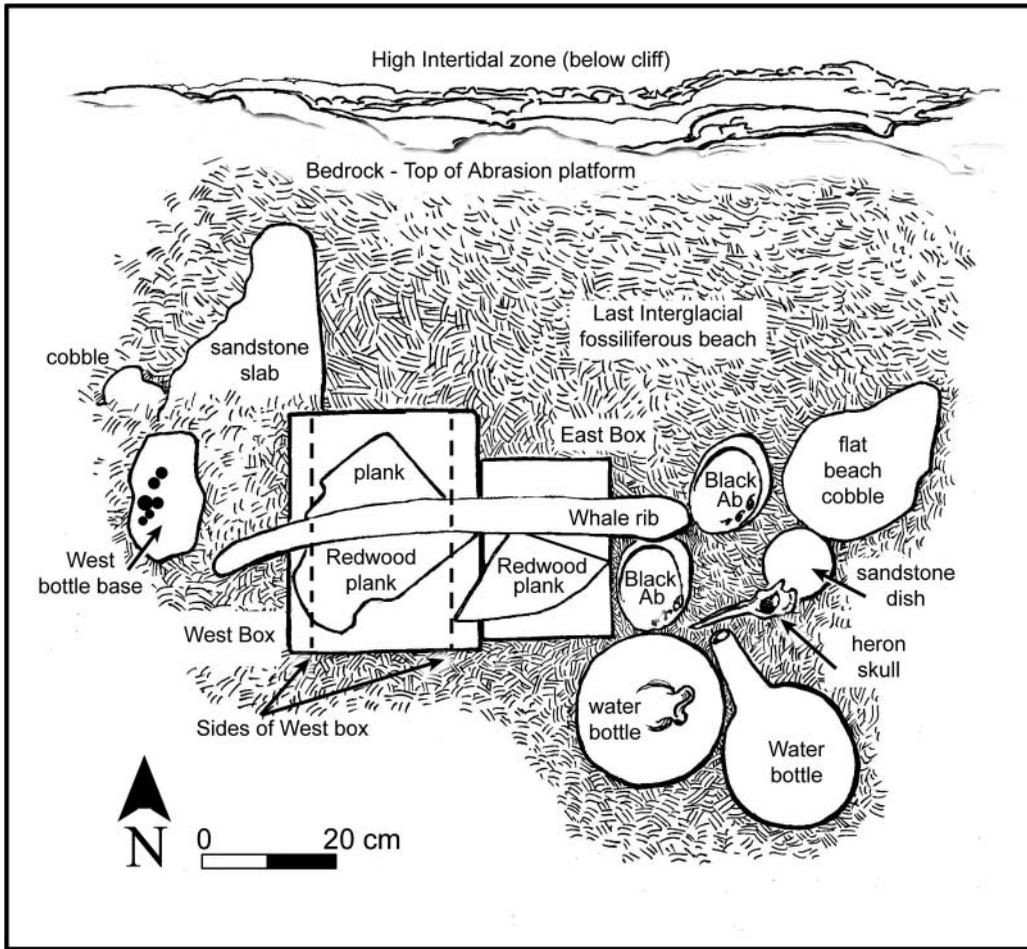


Figure 4. Plan view of the CA-SNI-14 cache feature (drafted by Rusty Van Rossmann from original sketch by J. Erlandson).

of the western box, which initially appeared to have been lost to erosion, was found on the hillside above the feature, blown upward by strong winds. A few artifacts may have been lost from the open end of the western box, but the contents of the eastern box were found intact.

Both boxes were made from split and shaped redwood planks glued together with asphaltum. The larger western box was ~36 cm long, 22 cm wide, and 16.5 cm deep. The lid of this box was thicker and 6 cm wider (28 cm) than the walls of the box itself. The

eastern box, smaller and more deteriorated, was ~26 cm long, 20 cm wide, and 14.5 cm deep. The eastern box also had thicker redwood plank fragments lying diagonally on top of it. In the lab, when the plank covering the western box was removed, it was found to cover an asphalt impression of what appears to have been a flat or shallow basketry tray. Both boxes were probably made, at least in part, from recycled canoe planks. Some planks are poorly preserved, especially in the eastern box where the bottom and lid were almost completely disintegrated. In the

western box, every side plank has oval or slot-shaped holes in the corners and often along the edges of one or both of the long sides. The holes in the corners of these side planks may have been used to lash the box walls together, but the other holes on the plank edges have no corresponding holes on the base or lid of the box. The walls appear to have been glued to the base of the box with asphaltum, some to the top of the basal plank, and others to the side. Our analysis suggests that the boxes were made somewhat haphazardly using expedient materials.

Inside the two boxes more than 200 artifacts were found (Table 1). Most of these appear to be of local Nicoleño style and manufacture, with smaller numbers of objects made in Native Alaskan style or from European or Euro-American materials (Figure 5). The objects recovered include numerous finished artifacts as well as unmodified or minimally modified raw materials apparently intended for the future production of tools or ornaments. Finished artifacts that appear to be of Nicoleño origin include: 11 hafted knives with stone blades set into redwood handles with asphaltum mastic; several flaked stone projectile points or blades made from chert or siliceous shale; several whole abalone shells, including two shell containers with the siphon holes plugged with asphaltum; effigies, tube beads, and ornaments made from soapstone or steatite; a variety of shell and bone pendants; two bird bone whistles and five bird bone pins; and a cylindrical red stone pipe containing a wad of tobacco. Also found were two composite Nicoleño-style harpoon heads, with stone blades attached to a shaft with a curved bone barb. There were also many artifacts of a more mundane nature: a spatulate bone tool with a large blob of asphaltum attached, two abraders made from local eolianite root casts, five burnishing stones, numerous unmodified shells and bones, 47 dolphin teeth, and many more.

Also found in the western box was a shell container made from two large black abalone shells. The bottom shell was a dish with the siphon holes plugged with asphaltum, and the top shell had the epidermis carefully ground away to produce a mother-of-pearl

lid. Inside the shells were 20 artifacts: 5 flaked bifaces made from glass, single stone projectile points of siliceous shale and Monterey chert, a steatite tube bead, a steatite ring, and a fragment of soapstone; 2 bone pendants; a colorful scallop (*Argopecten aequisulcatus*) shell with red ochre and a perforated umbo; a pendant and button made from abalone shell; a large perforated abalone pearl; 2 elaborately barbed circular abalone shell fishhooks, and unmodified black abalone (1) and scallop (1) shells.

Among those artifacts made from European materials were 10 glass bifaces, four fragments of bottle glass, a large brass button, an iron bar, 2 brass nails, and several fragments of undiagnostic iron. Also found was a copper rod embedded in a wood handle, a tool that appears to have been used in pressure flaking chipped stone or glass artifacts.

Finally, several artifacts made in Native Alaskan or Northwest Coast style were found in the boxes, including four slotted bone toggling harpoons and two unilaterally barbed bone harpoons, all with line holes. One of the toggling harpoon heads still has the base of a serrated blade made from sheet copper in the distal slot, another has a small tip of badly corroded iron. Also of probable Native Alaskan origin are two cylindrical bone artifacts that appear to be components of harpoon shafts, one large example with a socketed end and a smaller one with one end socketed and the other slotted. A large ground slate knife or lance head, a bifacially chipped slate blade, and a ground schist adze are probably also of Native Alaskan or Northwest Coast origin.

DISCUSSION AND CONCLUSIONS

The contents of the CA-SNI-14 cache feature—expedient redwood boxes, their diverse contents, asphaltum-coated water bottles, and other objects—appear to have been intentionally stowed or buried where they could be accessed as needed. This context suggests that they served a utilitarian storage function, with both finished artifacts and raw materials for producing additional tools

Table 1. Inventory of artifacts found in the historic CA-SNI-14 cache feature.*

Artifact/object type	West box	East box	Outside boxes	Total
Wood or plant materials (n = 21)				
Redwood plank box	1	1	—	2
Redwood plank fragment	—	—	3	3
Asphaltum-coated basket	—	—	4	4
Redwood knife handles (with stone tips)	1	9	1	11
Pipe tobacco wad, unidentified	1	—	—	1
Bone (n = 92)				
Whale rib (unmodified) over redwood boxes	—	—	1	1
Toggling harpoon heads (2 with metal blades)	1	3	—	4
Unilaterally barbed harpoon heads with line holes	—	2	—	2
Bone harpoon foreshaft, with socketed end	1	1	—	2
Broad bone wands	3	1	—	4
Whale bone spatulate tool with asphaltum	—	—	1	1
Dolphin teeth, unmodified	47	—	—	47
Bird bone pins	5	—	—	5
Bird bone whistles	2	—	—	2
Bird bone pendants	4	—	—	4
Miscellaneous modified bones	12	7	1	20
Marine shell (n = 18)				
Abalone shell fishhooks with external barbs	2	—	—	2
Whole abalone shell dish (asphaltum in siphon holes)	2	—	—	2
Whole abalone shell, epidermis removed	2	—	—	2
Shell ornaments, miscellaneous	7	—	—	7
Miscellaneous shell, modified	2	1	2	5
Chipped stone (n = 16)				
Chert or siliceous shale bifaces	12	1	1	14
Slate point or knife preform (flaked but unground)	—	1	—	1
Metavolcanic tool	1	—	—	1
Ground stone (n = 32)				
Sandstone dish	—	—	1	1
Sandstone abrader	4	—	—	4
Siliceous shale biface (flaked and ground)	2	—	—	2
Ground slate lance blade, asphaltum on base	1	—	—	1
Schist adze blade, asphaltum on base	—	1	—	1
Pipe (with bird bone stem and tobacco wad)	1	—	—	1
Soapstone effigy	2	—	—	2
Soapstone ornament (bead or pendant)	7	—	—	7
Soapstone or shale, worked	6	—	—	6
Burnishing stones	4	3	—	7

(Continued on next page)

Table 1. Inventory of artifacts found in the historic CA-SNI-14 cache feature.* (Continued)

Artifact/object type	West box	East box	Outside boxes	Total
Mineral (<i>n</i> = 10)				
Red ochre	—	3	—	3
Tarring pebbles	—	—	7	7
Glass (<i>n</i> = 14)				
Bifaces, bottle glass	10	—	—	10
Bottle glass fragments	4	—	—	4
Metal (<i>n</i> = 11)				
Large button	1	—	—	1
Pressure flaking tool (in wood handle)	1	—	—	1
Toggling harpoon tip blade	2	—	—	2
Nails and miscellaneous metal	2	5	—	7

*Artifact counts depend on decisions about how to quantify composite artifacts, distinguishing cached objects from intrusive elements. Not included are unmodified bones (9), shells (7), asphaltum (1), basalt (3), or soapstone (1).

stored for future use. The water bottles were utilitarian, for instance, and many objects in the boxes consisted of unmodified bones, teeth, shells, and other objects that appear to have been utilitarian in nature. No human remains were found in the feature, which also lacked shell beads, bowls, pestles, charm stones, and other objects commonly found in funerary or ceremonial associations on California's Channel Islands.

The expedient nature of the box construction, the apparent recycling of redwood boat planks—along with the lack of milled lumber, metal nails and wire, or a bent-wood construction technique typical of the Northwest Coast—all suggest that the cache feature was of Nicoleño origin, although it could also have been used by islanders of mixed ancestry. The presence of asphaltum-coated baskets, including three water bottles typical of Channel Islands construction, also supports a Nicoleño origin for the feature. Another alternative, that the boxes were left behind by an early relic hunter or antiquarian in the late nineteenth or early twentieth century, seems improbable. It seems unlikely that relic hunters would have collected some of the mundane or unmodified objects found in the feature, and even more unlikely that

they would have left so many rare and light artifacts behind. The lack of beads, ground stone mortars and pestles, and other objects often collected by amateurs or antiquarians also argues for a Native origin.

The CA-SNI-14 cache feature represents a remarkable time capsule from a nineteenth-century clash of cultures that was created by European exploration and the development of globalized economies. The presence of bottle glass and metal artifacts demonstrates that the cache feature is historical in origin, but its precise age has not yet been determined. The presence of Native Alaskan, glass, and metal artifacts suggests that it was used during or after the period when Koniag, Aleut, and other non-Nicoleño hunters were present on the island, probably after AD 1814. If the feature is of Nicoleño origin, then it was almost certainly abandoned by AD 1853, when 'Juana Maria' was taken to the mainland.

Although we cannot definitively link the cache feature to Juana Maria, she was the only permanent Native occupant of the island for 18 of the 39 years from AD 1814 to 1853. Historical accounts suggest that Juana Maria may have had multiple living areas on SNI, but she spent much of her time along



Figure 5. Composite photo showing the interior of the western box (center) after partial excavation in the laboratory, including the base of the “jewelry box” (center left) and some of the bone, shell, and other artifacts found inside the box. Other artifacts shown include: a bone toggling harpoon with rusted iron blade (top left); a barbed abalone shell fishhook (top center); a flaked glass projectile point (top right); a hafted knife with reewood handle and a siliceous shale blade (right); a carved and ground stone pipe, with the tobacco was found inside it (bottom); and a bird bone whistle (left). Photos and composite image by William Kendig.

the northwest coast of SNI, where she is known to have cached a variety of foods and equipment (Schwartz 2005). When she was found by otter hunters in 1853, she was observed making an asphaltum-coated water bottle and used a wooden knife with a blade made of barrel hoop iron (Schwartz 2005:85–86). With the data currently available, we believe a logical argument can be made that the CA-SNI-14 cache feature was used either by either Juana Maria herself or by one of her few surviving family and

band members who left the island in AD 1835.

Whoever created and used the cache feature, the primary archaeological value of its discovery is to illuminate a poorly documented period in the history of California’s Channel Islands, the technologies used by the island’s historical occupants, and the extraordinary cultural interactions and changes that occurred in the wake of European colonialism and economic globalization of the nineteenth century.

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