

## **UC Merced**

### **Journal of California and Great Basin Anthropology**

#### **Title**

Portable Religious Stone Features from a Ceremonial Complex on San Nicolas Island, California

#### **Permalink**

<https://escholarship.org/uc/item/4mq6k8pg>

#### **Journal**

Journal of California and Great Basin Anthropology, 33(1)

#### **ISSN**

0191-3557

#### **Authors**

Knierim, Rebekka G.  
Vellanoweth, René L.  
Kendig, William E.  
[et al.](#)

#### **Publication Date**

2013

Peer reviewed

# Portable Religious Stone Features from a Ceremonial Complex on San Nicolas Island, California

REBEKKA G. KNIERIM, RENÉ L. VELLANOWETH, WILLIAM E. KENDIG,  
BARNEY G. BARTELLE, AND RICHARD B. GUTTENBERG

Department of Anthropology, California State University, Los Angeles.  
5151 State University Dr., Los Angeles, California, 90032-8530

---

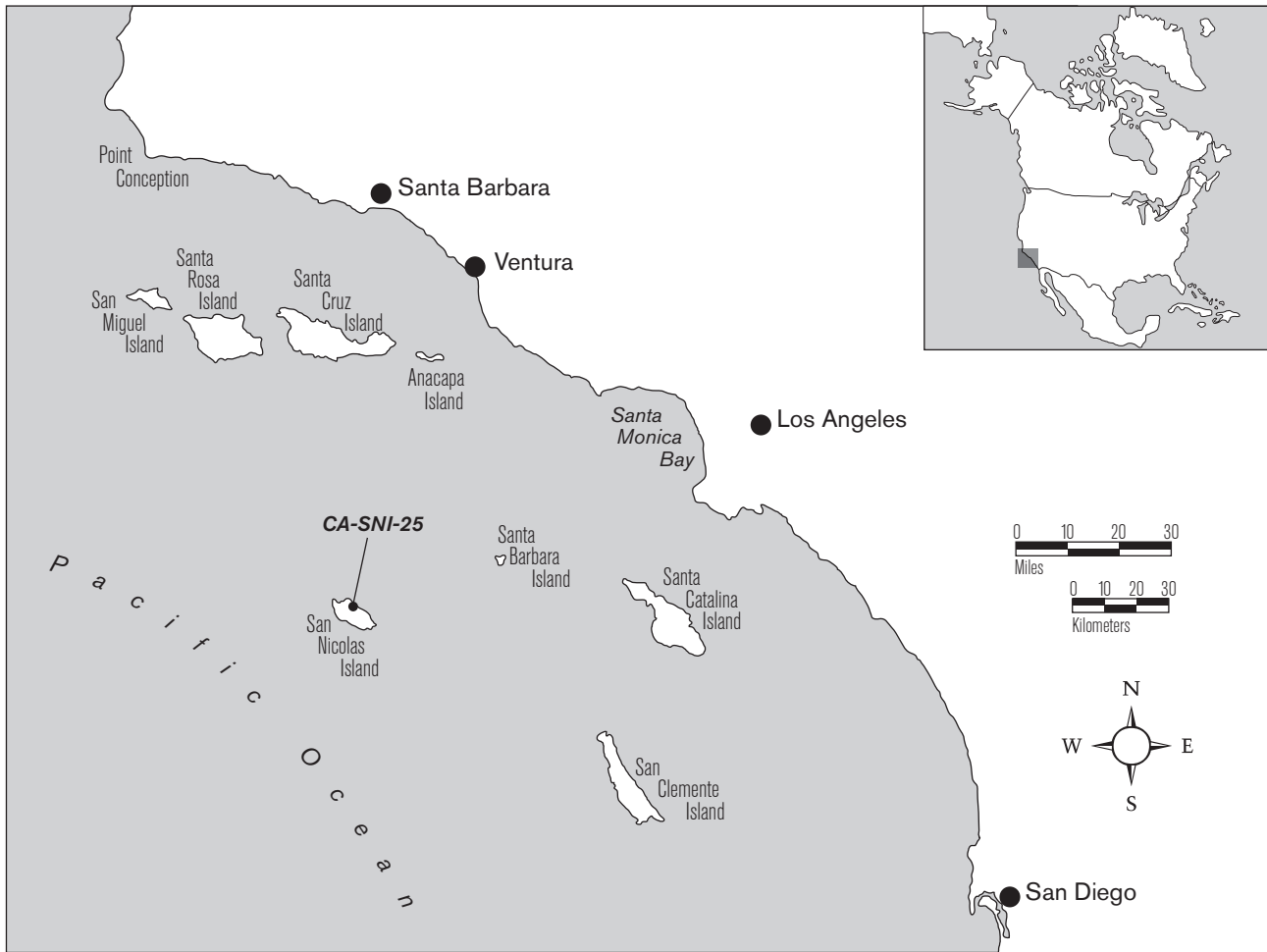
*Two caches of balancing rock features were recently uncovered during archaeological excavations at the Tule Creek site (CA-SNI-25) on San Nicolas Island, California. The features consist of groups of stacked rocks in association with cut red abalone (*Haliotis rufescens*) shell, ochre, and asphaltum. Feature 1 is made up of a serpentinite disc base and a basalt mid-section overlain by an inverted sandstone bowl. Feature 2 consists of a phallic sandstone pestle capped by a pecked pyramidal granitic top. Radiocarbon dates on associated marine shell suggest the cairns were buried during the fourteenth and fifteenth centuries A.D., before the arrival of European immigrants into the region*

---

THE CEREMONIES THAT NATIVE AMERICANS OF southern California conducted before the arrival of Europeans into the area can be traced in the oral histories of their descendants, in recorded ethnographies, and in the material remains they left behind in the archaeological record. Unfortunately, many of the reliquaries that were part of those ceremonies have deteriorated over time, or have been removed from their original context and meaning. In the best of cases, what has been preserved, often due to its fragmentary nature, poses interpretive problems for archaeologists. At the Tule Creek site (CA-SNI-25) on San Nicolas Island, California, we have recently uncovered a group of features that appear to be the remnants of such Native American ceremonial activities as feasting, offering, and the maintenance of organized space for ritual performance. Included among these features were two intentionally buried stone arrangements, both possibly stacked and balanced, that were found in pits and directly associated with dog burials, exotic artifacts, beads, burned seeds, and other objects representing votives, offerings, and ritual paraphernalia (see Renfrew and Bahn 1991:391–392). In this paper, we provide the first detailed descriptions and photographs of their discovery, recovery, and burial context, as well as their general morphologies and material make-up. We also provide an interpretive context by comparing this

site to others on the Channel Islands and by exploring the historical records of the local native peoples for possible clues to the function of these features within a ceremonial context. The stone features we uncovered appear to be an example of the global tradition of constructing and maintaining stone arrangements to meet religious needs.

Around the world, stone arrangements are used to mark burials (Fox 1938; Haiman 1992; Honea 1975; Hunt 1924; Lepofsky et al. 2000; Wilke 1978) and trails (Chartkoff 1983; Jett 1986, 1994); to act as ceremonial enclosures (Ashmore 1978; Dowd 2009; Henshall 1963) and hunting aids (Hutchins and Simons 1999); and to serve other religious purposes (Chartkoff 1983; Perry 2007; Walker 1951; Wallace 1954). Caches, consisting of intentionally gathered and buried items, are also ancient, global human phenomena that provide time-sensitive clues about the past. The contents of caches can include tools and weapons (Frison and Bradley 1999; Gary and McLearn-Gary 1990; Gramly 1993; Hibben 1938; Min 2003; Scott et al. 1986), vessels (Bayman et al. 1996; Rust 1906; Wright 1994), figurines (Negbi and Moskowitz 1966), coins (Graham-Campbell 1992; Min 2003), items of adornment (Graham-Campbell 1991), human body parts (Browne et al. 1993; Saul and Hammond 1974), food and water (Henderson 2002; Swenson 1984), religious implements (Bermann and Castillo 1995;



**Figure 1. The Southern California Bight showing the location of Tule Creek Village site.**

Hector et al. 2007; Kent 1970; Koerper and Mason 1998; Langenwalter 1980; Slusser 1996; Sutton 1996), and other artifacts (King 1966, 1976; Negbi and Moskowitz 1966).

In California, abundant evidence exists for the creation of stacked stone features and the burying of caches (Chartkoff 1983; King 1966, 1976; Rust 1905). In addition to the myriad functions described above, stacked stone features in California also include prayer seats and vision quest aids used by native peoples (Haynal 2000). Clusters of purposefully broken and arranged fragments of ground stone artifacts have been associated with communal mourning ceremonies on the southern California mainland (Hull 2012). On the California Channel Islands, caches (Hale 1995; Hardy 2000; Salls et al. 1993) and rock clusters or shrines (Hardy 2000; Perry 2007) have been found associated with cemeteries and ceremonial locations. The provenances of the two

stone features we describe here follow the criteria suggested by Perry (2007:108) for shrines on the Channel Islands, including the presence of post-holes, beads, and other offertory items, organically rich soils, fire-affected rock and charcoal, location on a promontory, and the arrangement of the site following the cardinal directions. The stone features discussed in this paper, part of a larger ceremonial complex, offer a unique glimpse into the religious practices of the native peoples of California before the arrival of Christianity to the region.

### **ENVIRONMENTAL AND ETHNOHISTORICAL BACKGROUND**

San Nicolas Island is the most remote of the eight California Channel Islands, and is located about 120 km. (75 mi.) southwest of Los Angeles and 98 km. (60 mi.) from

Palos Verdes Peninsula, the nearest point on the mainland (Fig. 1). It has been owned and administered by the U.S. Navy since 1933. The island, relatively small, low-lying, and exposed to the open ocean, is 13 km. (9.7 mi.) long, 5 km. (3 mi.) wide, and has a maximum elevation of 277 m. (910 ft.) (Schoenherr et al. 1999). San Nicolas is composed of uplifted and eroded Eocene marine sandstones and shales overlaid by Pleistocene and Holocene aeolian sand dunes (Vedder and Norris 1963). Conglomerate beds of metavolcanic and metasedimentary cobbles provided a source of flaked toolstone for the island's inhabitants. An abundance of earth minerals such as hematite, limonite, gypsum, and kaolinite supplied Nicoleños with a wealth of pigmentary materials (Williams 1994). San Nicolas Island's annual average of 16.8 cm. (6.61 in.) of precipitation comes primarily from fog and mist, supplemented by a small amount of rain during the winter months (Martz 2005). Fresh water collects in twelve springs and seeps found mostly on the northwest coast of the island, although no permanent streams exist (Burnham et al. 1963). Westerly winds often reach 55–80 kph (35–50 mph) (Schoenherr et al. 1999).

The windswept, arid conditions contribute to the sparse vegetation on San Nicolas, which consists of coastal scrub, succulents, and introduced grasses and small trees (Junak 2008). Beginning in the late 1800s, sheep grazing denuded the landscape; thus the vegetation in pre-contact times is largely unknown (Schoenherr et al. 1999). Although terrestrial mammals are scarce, the vegetation on San Nicolas is ample for deer mice (*Peromyscus maniculatus*) and the island foxes (*Urocyon littoralis*). In addition to several species of nesting birds, the island also accommodates two types of lizards (*Xantusia riversiana* and *Uta stansburiana*), a beetle (*Eleodopsis subvestitus*), and a land snail (*Micrarionta* sp.) (Schoenherr et al. 1999). Dogs (*Canis familiaris*) (Rick, et al. 2008) and island foxes (*Urocyon littoralis*) (Rick et al. 2009; Vellanoweth 1998), were introduced by San Nicolas Island's inhabitants by the Middle Holocene. Dogs no longer inhabit the island, as they were systematically killed off during the sheep-ranching period and were finally exterminated when the U.S. Navy took control of the island in 1933 (Swanson 1993).

Over 550 archaeological sites have been recorded, including villages located on sand dunes and ephemeral sites readily accessible to resources (Martz 2005). While

some artifacts (Davis et al. 2010) and at least three radiocarbon dates (Martz and Rosenthal 2001) suggest that the island was occupied by the Early Holocene, permanent settlement can be dated securely to the Middle Holocene (Martz 2005; Schwartz and Martz 1992). The trade in shell beads that extended to the northern Great Basin is evident as early as 5,000 years ago (Jenkins and Erlandson 1996; Vellanoweth 2001). During the Late Holocene, shell bead-crafting technologies were refined and standardized and their exportation intensified along with the emergence of large village sites and more complex social structures (Cannon 2006). The only linguistic information for the people of San Nicolas Island comes from the Lone Woman (see Heizer and Elsasser 1961; Hudson 1981), who lived there in solitude for 18 years between 1835 and 1853. The four words attributed to her have been traced to the Takiic languages, a branch of the Uto-Aztecan language family (Golla 2011; Munro 2000).

#### TULE CREEK SITE (CA-SNI-25)

CA-SNI-25, located on a promontory on the north portion of the island, offers on clear days a commanding view of all seven of the other Channel Islands and the mainland (Fig. 2). The site lies on a stabilized dune covered with vegetation. Archaeological materials on the site cover an area of approximately 620 m. (2,034 ft.) by 300 m. (984 ft.) (Cannon 2006). A freshwater source is located 243 m. (797 ft.) to the west. Corral Harbor, one of the only navigable harbors on the island, lies 963 m. (3,159 ft.) directly below the site. Reports from early excavations describe community houses, at least two cemeteries, hearths, and numerous artifacts, including doughnut stones, steatite effigies, chert blades, shell beads, and large quantities of sandstone mortars and pestles (Rogers 1930).

Recent archaeological investigations at CA-SNI-25 began in 2001 and focused on two loci: East Locus and Mound B. Both loci exhibit good preservation and stratigraphic integrity, and include numerous features such as shell bead and fishhook manufacturing areas, task-specific lithic clusters, abundant and diverse faunal remains, and other features and artifacts indicative of a marine-based lifestyle. Radiocarbon dates suggest people inhabited the site by about 5,000 cal B.P., although 41 of



**Figure 2. East Locus, Tule Creek Village, and adjacent coastline looking east.**

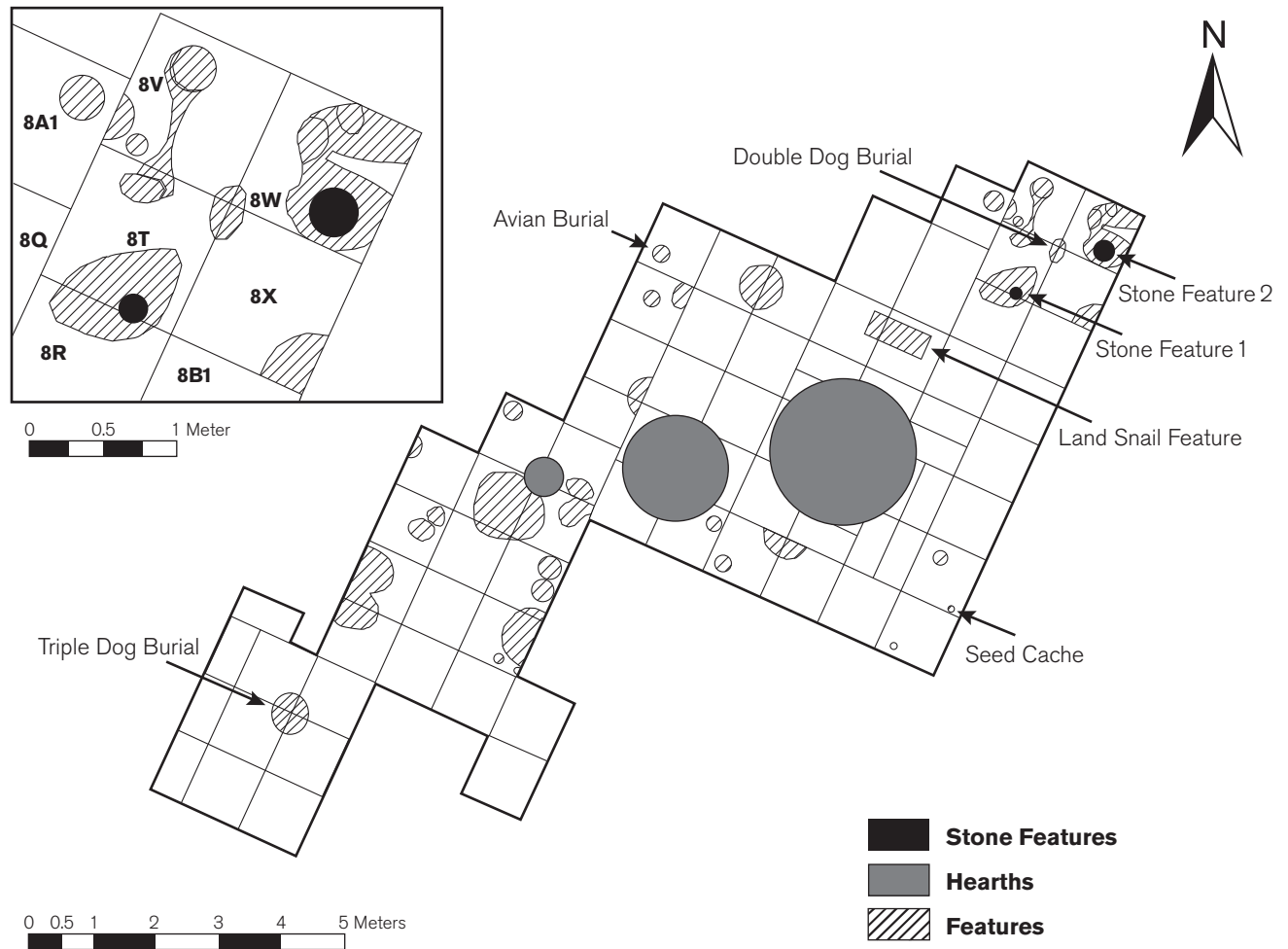
the 68 corrected and calibrated 2 sigma dates taken for this site tightly overlap between 637–282 cal B.P. or cal A.D. 1313–1898, when the site was apparently a village (Cannon 2006; Kendig et al. 2010; Martz 2005).

The features described in this paper were recovered from East Locus (Fig. 3), the apparent ceremonial center of Tule Creek Village. At least two hearths in the central excavation area were surrounded by culturally sterile dune sand adjacent to large refuse pits. Some of the pits blended into one another, suggesting repeated use, and contained—in varying quantities—fish, bird, and sea mammal bones, shell, lithics, tarring pebbles, and other debris (Cannon 2006). Within these pits were intentionally buried avian remains, seed caches, burned land snail features, effigies, ground stone implements, local lithic materials, and exotic stone such as steatite, chert, and obsidian. In 2006, a double dog burial of two juvenile females was recovered in the northeast section of the locus (Vellanoweth et al. 2008), between the two stone features described in this paper. Over

the next two years, three additional articulated dog burials were excavated from the southwest portion of the site (Bartelle et al. 2010). A closer examination of the ceremonial components of East Locus will be discussed later in this paper.

## METHODS

The site was excavated stratigraphically using arbitrary 10 cm. levels within each of three cultural strata, which were designated Stratum I, II and III. Stratum II, the most intact cultural layer, represents the phase of greatest occupation. Both stone features were discovered in Stratum II and were excavated using trowels, scoops, brushes, aspirators, pocket knives, and bamboo skewers. Each component was individually wrapped in acid-free tissue, stabilized, boxed, and transported to the mainland for analysis. Measurements of each artifact were taken using an osteometric board, digital calipers, and a flexible nylon tape. Using a 10x hand lens and a stereoscopic

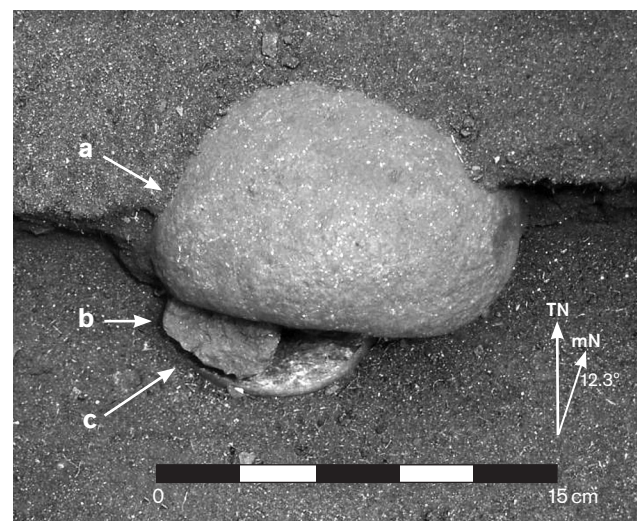


**Figure 3.** Plan view of East Locus showing significant features. Figure 3a inset: Close-up of northeast area of locus.

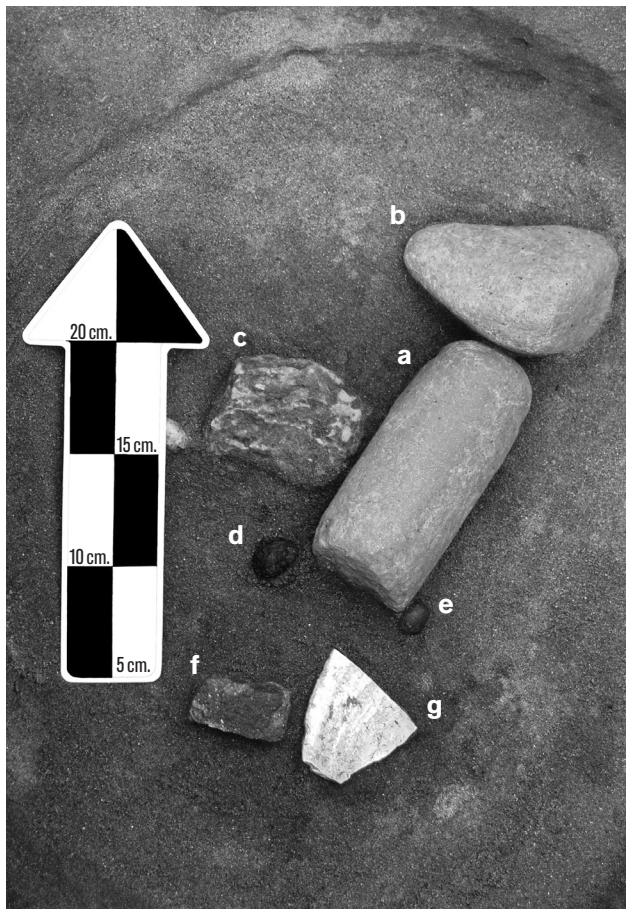
zoom microscope, items in both features were inspected for modification, use-wear, residue placement, as well as grain size and morphology.

## RESULTS

Stone Features 1 and 2 were excavated from the northeast quadrant of East Locus in 2005 and 2007, respectively. Feature 1 (Fig. 4) was found at the top of a ~0.75 m. x 1 m. pit excavated into mostly refuse and dark (10YR3/2) anthropogenic soil. Feature 2 (Fig. 5) was found less than 2 m. northeast of Feature 1; the double dog burial lay between the two. Unlike Feature 1, Feature 2 was placed at the bottom of a refuse pit. Radiocarbon dating on associated objects suggests both features were deposited at roughly the same time.



**Figure 4.** Stone Feature 1 *in situ*. (a) Sandstone mortar; (b) Basalt-breccia stone; (c) Serpentine pestle.



**Figure 5. Stone Feature 2 *in situ* including additional components: (a) Sandstone pestle; (b) Granite stone; (c) Ochre; (d) Asphaltum; (e) Tarring pebble; (f) Fire-affected sandstone; (g) Cut black abalone shell.**

### Feature 1

Feature 1 consists of three stacked elements: an inverted sandstone mortar, a piece of basalt breccia, and a disc-shaped serpentinite pestle (Table 1). The sandstone mortar in Feature 1 is ovular in shape and points slightly upward at its narrow ends (Fig. 6a). It has a wide rim and a shallow basin in which a sooty residue is clearly visible. The serpentinite pestle (Fig. 6b) is semicircular, with a rather straight edge at the proximal surface, easily fitting in the hand. No obvious sign of modification is evident on the middle stone, a basalt breccia (Fig. 6c).

The pestle appears to have been made from a large flake struck from a serpentinite core and has a visible striking platform. The proximal edge of the pestle was not modified after it was struck from the core. The distal edge, on the other hand, exhibits a sheen and

**Table 1**

**MEASUREMENTS FOR STONE FEATURES 1 AND 2\***

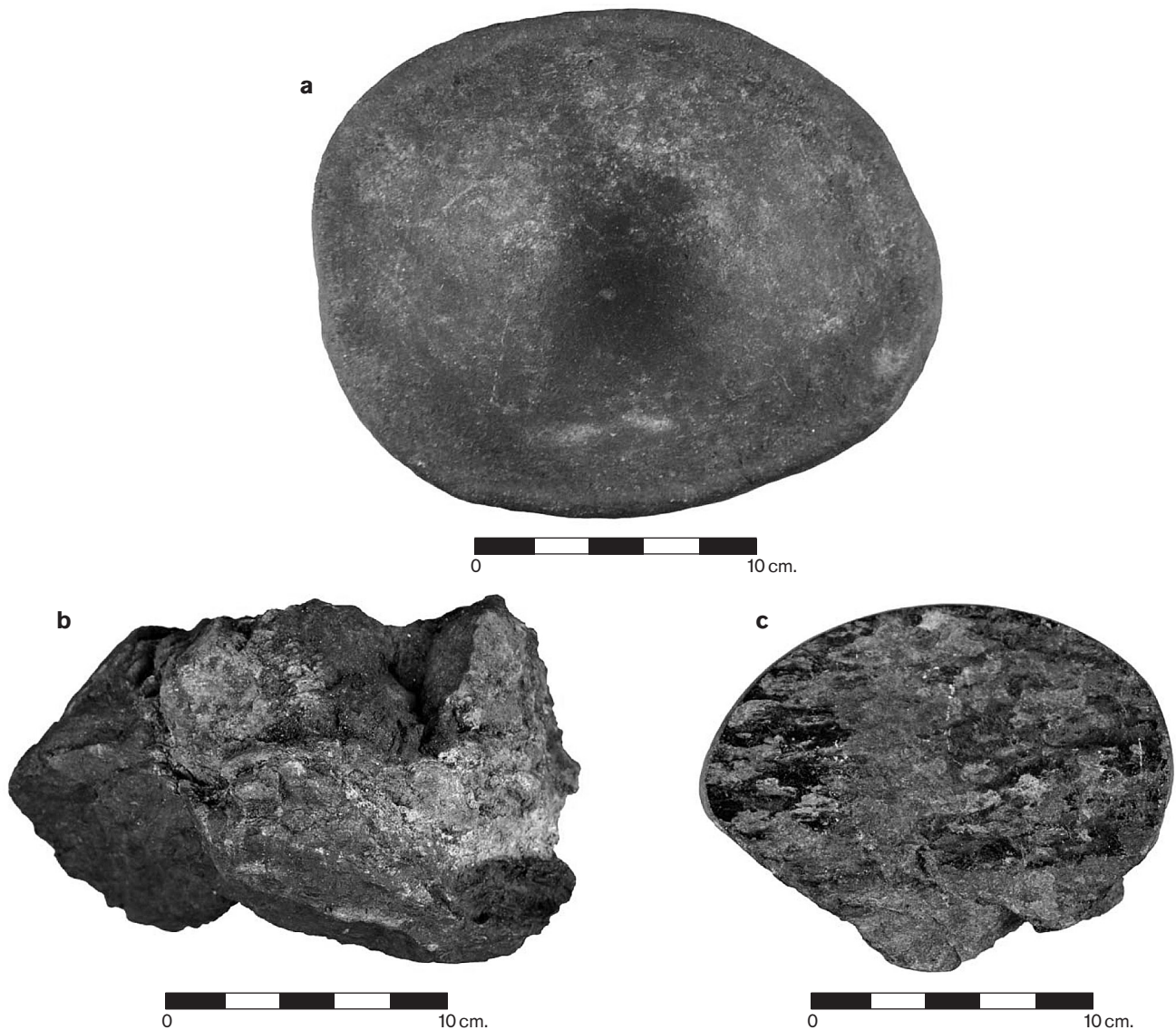
Measurement	Stone Feature 1			Stone Feature 2		
	Sandstone Mortar	Basalt Breccia	Serpentinite Pestle	Sandstone Pestle	Granite Stone	Ochre
Weight	872.51	289.46	137.55	849.00	319.15	137.58
Length	134.09	97.97	81.07	129.75	99.07	73.82
Height	66.41	61.92	21.85	57.05	49.82	62.05
Width	114.01	46.29	64.49	45.26	56.18	40.77
Circumference	392.00	—	—	192.00	—	—
Basin Depth	43.95	—	—	—	—	—

\*Weights are in grams. All other measurements represent greatest dimensions in millimeters.

patina, typical of heavy use against another surface (Adams 2002). Under 40x magnification, use-wear abrasion marks are evident on the distal edge of the pestle, perpendicular to the edges of the working surface, suggesting use in a reciprocal motion. The pestle fits inside the mortar and balances at the mid-point along its widest axis (Fig. 7). The articulating surfaces between the mortar and pestle match perfectly, likely as a result of heavy use and the relatively soft nature of serpentinite. Radiocarbon dating of a single piece of black abalone (*Haliotis cracherodii*) shell directly associated with the feature produced a 2 sigma calibrated age range of 310–489 cal B.P. or cal A.D. 1461–1640 (OS-54400).

### Feature 2

Feature 2 consists of three main components: a phallic-shaped sandstone pestle, a worked piece of granite, and a chunk of ochre (Table 1). It also includes a tarring pebble, a small rectangular fragment of fired sandstone, a piece of asphaltum, and cut black abalone shell. The sandstone pestle (Fig. 8a) appears to have been broken and reworked at its base. The granite stone (Fig. 8b), though not exotic, is rare among the scattered cobbles and conglomerate beds of San Nicolas Island (Williams 1994:4). The granite retains its naturally symmetrical, triangular shape. The only obvious modifications to this stone are peck marks at the convex portion of the base. The convex area of the stone sits easily atop the sandstone pestle when placed upright, as its configuration suggested when found *in situ* (see Fig. 5). The red and yellow ochre in Feature 2 (Fig. 8c) is one of only two large pieces of ochre described on San Nicolas Island in



**Figure 6. Components of Stone Feature 1: (a) Sandstone mortar, residue visible in basin; (b) Basalt-breccia stone; (c) Serpentinite pestle.**

an original ritualized setting; the other was found in the pelvic region of a burial at CA-SNI-18 (Reinman and Townsend 1960).

A corrected and calibrated  $^{14}\text{C}$  date on a piece of cut black abalone shell associated with the feature produced an age range of 444–601 cal B.P. or cal A.D. 1349–1506 (OS-66798). Six centimeters above the feature a whole black abalone shell was found with a puncture near the apex, indicating it may have been ritually “killed.” Culturally sterile dune sand was clearly visible just beneath the feature, indicating it was laid out before any other items were placed in the pit.

#### SUMMARY OF EAST LOCUS CEREMONIAL COMPLEX

As described earlier, dog burials, numerous refuse pits, and hearths dominate East Locus. Including the stone features described above, the northeast section of the locus (see Fig. 3) contains numerous other cultural features and ceremonial objects (see also Vellanoweth et al. 2008). Some of the features near the double dog burial included discrete refuse pits, a charcoal/ash deposit, and a black abalone epidermis feature. An abalone pendant, a piece of redwood, a chalcedony projectile point, and an incised steatite doughnut stone were all



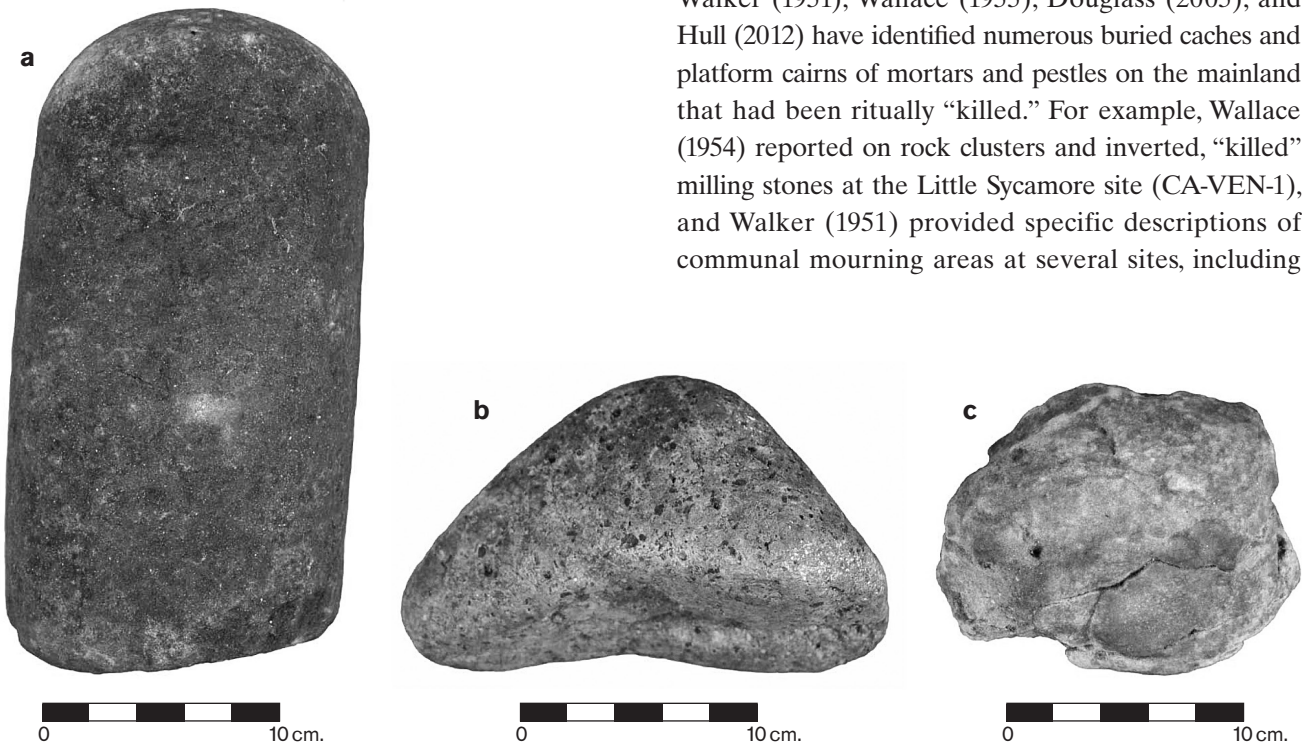


**Figure 7. Serpentinite pestle fitted into sandstone mortar showing compatible curvatures.**

recovered in the immediate vicinity. Dozens of *Olivella (Olivella biplicata)* shell beads, pieces of ochre, and calcite and quartz crystals appear to have been scattered around the features. Between this area and the first hearth, at least two post holes were discovered. On the opposite (southwest) end of the locus, separated by a series of hearths surrounded by culturally sterile sand, a triple dog burial (Bartelle et al. 2010) was found in association with discrete pits, a large steatite fishhook, a small sandstone pestle, and a steatite pendant depicting a sunfish (*Mola mola*). This sunfish pendant is one of only two archaeological examples known to exist; the other, part of the Terry Collection at the American Museum of Natural History in New York City (Nelson 1936), was crafted from abalone and was also found on San Nicolas Island. These features, when taken together, suggest that one or two large events took place here, and that the burial of animals coincided with this event, indicating that East Locus figured as a predominant ceremonial locale for the Nicoleño during the late Holocene (Cannon 2006:167; Vellanoweth et al. 2008).

**DISCUSSION**

Walker (1951), Wallace (1955), Douglass (2005), and Hull (2012) have identified numerous buried caches and platform cairns of mortars and pestles on the mainland that had been ritually “killed.” For example, Wallace (1954) reported on rock clusters and inverted, “killed” milling stones at the Little Sycamore site (CA-VEN-1), and Walker (1951) provided specific descriptions of communal mourning areas at several sites, including



**Figure 8. Components of Stone Feature 2: (a) Sandstone pestle; (b) Pecked granite stone; (c) Red and yellow ochre.**

the discrete placement of refuse, that were similar to East Locus. These features were associated with the periodic Mourning Ceremony held by many southern California native peoples, and they often included secondary inhumations and religious paraphernalia including pigments (Hull 2012). In many cases, mortars appear to have been inverted and buried (Hull 2012), as in the layout of Stone Feature 1 described in this paper. At Big Tujunga Wash (CA-LAN-167), Walker found ritual artifacts such as steatite pipe fragments; stone net weights; whale bone fragments; stone and shell beads; red, yellow, and white mineral pigments; and dozens of ground stone implements (Hull 2012:15). At CA-SNI-25, similar artifacts were surrounding the stone features, and a large cluster of broken sandstone bowls was found approximately fifty meters to the southeast on the surface of the site.

A variety of other ceremonial sites on the California Channel Islands share similar attributes with East Locus. Hardy (2000) reported the presence of animal burials at the Eel Point C (CA-SCLI-43C) site, as well as offertory pits containing shell, seeds, beads, and broken artifacts, post holes, and rock clusters, including ground stone bowls. Hale (1995) excavated eight features at the Lemon Tank site (CA-SCLI-1524), which yielded numerous dog, fox, and raptor burials, hearth features, fire-affected rock fragments, post holes, and many items of ritual paraphernalia, including ochre, crystals, and ground steatite. Other sites on San Clemente Island, such as the Ledge site (CA-SCLI-126) and the Old Airfield site (CA-SCLI-1487), share similar characteristics of animal burials and ritual behavior (Hale and Salls 2000; Hardy 2000). Like East Locus at CA-SNI-25, these two sites also have clear views of the mainland and Santa Catalina Island (Hale and Salls 2000).

Given the contexts, the stone feature assemblages from CA-SNI-25 might be “dedicated objects” similar to those described by Osborne (2004), which include inextricably linked exotic constituents buried in a special or set-aside place. The configuration of Feature 1 appears similar to descriptions of ritual paraphernalia used in other ceremonies practiced by southern California peoples (see Dubois 1908; Harrington 1933). The elements of this feature, its burial, and the sooty residue visible in the basin of the mortar are consistent with the burial of implements used in boys’ puberty rites

throughout southern California (DuBois 1908). This ritual, called *Mani* by the Luiseño (DuBois 1908:77), included the ingestion of a hallucinogenic drink made from jimsonweed root (*Datura wrightii*) and referred to by the Spanish as *toloache* (Applegate 1975:7; DuBois 1905:622; Harrington 1933; Kroeber et al. 1908; Sparkman 1908:221; Strong 1972; Timbrook 2007:66). Among the Luiseño, a village leader was charged with the care of the objects used in the *Mani*, which were kept buried in an undisclosed location (DuBois 1908). The stone bowl or *tamyush* used to administer the *toloache* was said to be one of the “First People” (DuBois 1905:629) and had its own innate “knowledge” or *ayelkwi* (White 1957:5). The buried *tamyush* was disinterred and painted before preparing the *Datura* drink, after which it was cleaned and reburied (DuBois 1908).

The mortar and pestle in Feature 1 may have been used in other types of ceremonies as well. Father Gerónimo Boscana (Harrington 1934:17) described *pibat*, which he identified as tobacco, being crushed and mixed into a drink with limestone and urine and then ingested by boys at the San Juan Capistrano Mission in order to identify their animal helpers. Also, according to Henshaw (in Oxendine 1980), lumps of tobacco and ash were ingested during the girls’ puberty ceremony among the Luiseño.

## SUGGESTIONS FOR FUTURE RESEARCH

Although we consider the components of Feature 1 to be consistent with descriptions of the implements used in the rituals described above, charred wild cucumber (*Marah macrocarpus*) seeds and morning glory (*Convolvulaceae*) seeds are also present nearby, and may account for the residue in the mortar in Feature 1. Like *Datura wrightii*, certain types of morning glory have hallucinogenic properties. Wild cucumber was used by southern California native peoples as a hair dressing, for medicinal purposes, and as a pigment binder (Timbrook 2007:122–24). Residue analysis currently being conducted on the implements in Stone Feature 1 will undoubtedly shed light on these questions.

The ceremonial activities on San Nicolas Island are especially interesting given the ethnographic information relating to it obtained from other southern California peoples. One of J.P. Harrington’s consultants, José de

los Santa Juncos, described the islanders as “powerful witches” (Harrington 1986:R104F40). The island is surrounded by open ocean, is the least visible from any location, and would have been the most difficult and dangerous to reach of all the California Channel Islands.

As stated previously, these two stone features and their contexts recall similar descriptions provided by Hale (1995) and Hardy (2000) for San Clemente Island. These, as well as Perry’s (2007) extensive study of shrines and associated religious paraphernalia on Santa Cruz Island, include many correlates to the Tule Creek site on San Nicolas. Analyses of the stone features at this site, along with comparisons with data from new research pertaining to other island and mainland ceremonial sites that is currently under way, are thus illuminating many previously unrecorded and undescribed religious practices of the Nicoleño people and their neighboring islanders.

### ACKNOWLEDGEMENTS

We thank the U.S. Navy for its continued support and for access to the archaeological resources on San Nicolas Island. Excavation and lab work was funded by NAVAIR Weapons Division, Range Sustainability Office, Pt. Mugu, California, as well as both Humboldt State University and California State University, Los Angeles. We thank Dr. Jennifer Garrison of the Geology Department at California State University, Los Angeles, for her help in identifying two of the stones described in this paper and for insights into local mineralogy. Finally, we acknowledge the many students who have worked on CA-SNI-25 in conjunction with field and lab courses from Humboldt State University, California and California State University, Los Angeles.

### REFERENCES

- Adams, Jenny L.  
2002 *Ground Stone Analysis: A Technological Approach*. Salt Lake City: University of Utah Press.
- Applegate, Richard B.  
1975 The Datura Cult Among the Chumash. *Journal of California Anthropology* 2(1):7–17.
- Ashmore, P. J.  
1978 Low cairns, long cists, and symbol stones. *Proceedings of the Society of Antiquaries of Scotland* 110:346–355.
- Bartelle, Barney, René L. Vellanoweth, Elizabeth S. Netherton, Nicholas W. Poister, William E. Kendig, Amira F. Ainis, Ryan J. Glenn, Johanna V. Marty, Lisa Thomas-Barnett, and Steven J. Schwartz  
2010 Trauma and Pathology of a Buried Dog from San Nicolas Island, California, U.S.A. *Journal of Archaeological Science* 37(11):2721–2734.
- Bayman, James M., Richard H. Hevly, Boma Johnson, Karl J. Reinhard, and Richard Ryan  
1996 Analytical Perspectives on a Protohistoric Cache of Ceramic Jars from the Lower Colorado Desert. *Journal of California and Great Basin Anthropology* 18(1):131–154.
- Bermann, Marc, and José Estévez Castillo  
1995 Artifact Assemblages and Ritual Activities in the Bolivian Formative. *Journal of Field Archaeology* 22(4): 389–398.
- Browne, David M., Helaine Silverman, and Rubén García  
1993 A Cache of 48 Nasca Trophy Heads from Cerro Carapo, Peru. *Latin American Antiquity* 4(3):274–294.
- Burnham, W. L., Fred Kunkel, Walter Hoffman, and W. C. Peterson  
1963 Hydrogeologic reconnaissance of San Nicolas Island, California. *Geological Survey Water-Supply Paper* 1539–O. Washington, D.C.
- Cannon, Amanda C.  
2006 *Giving Voice to Juana Maria’s People: The Organization of Shell and Exotic Stone Artifact Production and Trade at a Late Holocene Village on San Nicolas Island, California*. Master’s thesis, Humboldt State University, Arcata.
- Chartkoff, Joseph L.  
1983 A Rock Feature Complex from Northwestern California. *American Antiquity* 48(4):745–760.
- Davis, Troy, Jon M. Erlandson, Gerrit L. Fenenga, and Keith Hamm  
2010 Chipped Stone Crescents and the Antiquity of Maritime Settlement on San Nicolas Island, Alta California. *California Archaeology* 2(2):185–202.
- Douglass, John G., Jeffrey H. Altschul, and Richard Ciolek-Torrello  
2005 *Overlooking the Wetlands: Archaeological Investigations at the West Bluffs Project, CA-LAN-63, CA-LAN-64, and CA-LAN-206A, Playa del Rey, California*. SRI Technical Report 05-93. Redlands: Statistical Research, Inc.
- Dowd, Marion A.  
2009 Middle and Late Bronze Age Ritual Activity at Glencurran Cave, Co. Clare. In *Bann Flakes to Bushmills: Papers in honour of Peter C. Woodman*. Nyree Finlay, Sinéad McCarten, Nicky Milner, and Caroline Wickham-Jones, eds., pp. 89–100. Oxford: Oxbow Books.
- DuBois, Constance G.  
1905 Religious Ceremonies and Myths of the Mission Indians. *American Anthropologist* 7(4):620–629.  
1908 The Religion of the Luiseño Indians of Southern California. *University of California Publications in American Archaeology and Ethnology* 8(3):69–186.
- Fox, C.  
1938 Two Bronze Age Cairns near Bridgend, Glamorgan. *Man* 38:90–91.

- Frison, G. C., and B. A. Bradley  
1999 *The Fenn Cache: Clovis weapons and tools*. Santa Fe: One Horse Land and Cattle Company.
- Gary, M. A., and D. L. McLearn-Gary  
1990 The Caballo Blanco Biface Cache, Mendocino County, California (CA-MEN-1608). *Journal of California and Great Basin Anthropology* 12(1):19–27.
- Golla, V.  
2011 *California Indian Languages*. Berkeley: University of California Press.
- Graham-Campbell, J. A.  
1991 Norrie's Law, Fife: On the Nature and Dating of the Silver Hoard. *Proceedings of the Society of Antiquaries of Scotland* 121:241–259.  
1992 The Cuerdale hoard: comparisons and context. In *Viking Treasure from the North West: The Cuerdale Hoard and Its Context*, James A. Graham-Campbell, ed., pp. 107–115. [*National Museums and Galleries on Merseyside Occasional Papers* 5.] Liverpool.
- Gramly, Richard M.  
1993 *The Richey Clovis Cache: Earliest Americans along the Columbia River*. Buffalo: Persimmon Press.
- Haiman, Mordechai  
1992 Cairn Burials and Cairn Fields in the Negev. *Bulletin of the American Schools of Oriental Research* 287:25–45.
- Hale, A.  
1995 *The World in a Basket: Late Period Gabrieliño Ceremonial Features from the Lemon Tank Site, San Clemente Island, California*. Master's thesis, California State University, Northridge.
- Hale, A., and Roy A. Salls  
2000 The Canine Ceremony: Dog and Fox Burials of San Clemente Island. *Pacific Coast Archaeological Society Quarterly* 36(4):80–112.
- Hardy, Ellen T.  
2000 Religious Aspects of the Material Remains from San Clemente Island. *Pacific Coast Archaeological Society Quarterly* 36(1):78–96.
- Harrington, John P.  
1933 *Annotations to Chinigchinich: A Revised and Annotated Version of Alfred Robinson's Translation of Father Gerónimo Boscana's Historical Account of the Belief, Usages, Customs and Extravagances of the Indians of this Mission of San Juan Capistrano called the Acagchemem Tribe*. Banning: The Malki Museum Press. [Reprint 2005.]  
1934 A New Original Version of Boscana's Historical Account of the San Juan Capistrano Indians of Southern California. *Smithsonian Miscellaneous Collections* 92(4).  
1986 *John Harrington Papers, Vol. 3: Southern California/Basin*. Washington D.C.: Smithsonian Institution. National Anthropological Archives. [Microfilm edition. Millwood: Kraus International Publications].
- Haynal, Patrick M.  
2000 The Influence of Sacred Rock Cairns and Prayer Seats on Modern Klamath and Modoc Religion and World View. *Journal of California and Great Basin Anthropology*, 22(2):170–185.
- Hector, Susan M., Daniel G. Foster, Linda C. Pollack, and Gerrit L. Fenenga  
2007 The Plantation Cache and a New Charmstone Type from Northern California. *Journal of California and Great Basin Anthropology* 27(1):29–44.
- Heizer, R. F., and A. B. Elsasser  
1961 Original Accounts of the Lone Woman of San Nicolas Island. *Reports of the University of California Archaeological Survey* 55. Berkeley.
- Henderson, Zoë  
2002 A Dated Cache of Ostrich-Eggshell Flasks from Thomas' Farm, Northern Cape Province, South Africa. *South African Archaeological Bulletin* 57(175):38–40.
- Henshall, Audrey  
1963 *The Chambered Tombs of Scotland*, Vol. 1. Edinburgh: Edinburgh University Press.
- Hibben, F. C.  
1938 A Cache of Wooden Bows from the Mogollon Mountains. *American Antiquity* 4(1):36–38.
- Honea, K.  
1975 Prehistoric Remains on the Island of Kythnos. *American Journal of Archaeology* 79(3):277–279.
- Hudson, T.  
1981 Recently Discovered Accounts Concerning the “Lone Woman” of San Nicolas Island. *Journal of California and Great Basin Anthropology* 3(2):187–99.
- Hull, K. L.  
2012 Communal Mourning Revisited: A New Appraisal of Old Evidence. *California Archaeology* 4(1):3–38
- Hunt, E. H.  
1924 Hyderabad Cairn Burials and Their Significance. *Journal of the Royal Anthropological Institute of Great Britain and Ireland* 54:140–156.
- Hutchins, J., and D. D. Simons  
1999 Archaeological Investigations at Tucker Hill, Lake County, Oregon. *Journal of California and Great Basin Anthropology* 21(1):112–124.
- Jenkins, D. L., and J. M. Erlandson  
1996 *Olivella* Grooved Rectangle Beads from a Middle Holocene Site in the Fort Rock Valley, Northern Great Basin. *Journal of California and Great Basin Anthropology* 18(2):296–302.
- Jett, S. C.  
1986 Observations Regarding Chartkoff's California “Rock Feature Complex.” *American Antiquity* 51(3):615–616.  
1994 Cairn Trail Shrines in Middle and South America. *Yearbook, Conference of Latin Americanist Geographers* 20:1–8.

- Junak, S. A.  
2008 *A Flora of San Nicolas Island California*. Santa Barbara: Santa Barbara Botanical Garden.
- Kendig, W. E., K. N. Smith, R. L. Vellanoweth, J. A. Allen, C. M. Smith, and A. M. Points  
2010 The Use of Replicative Studies in Understanding the Function of Expedient Tools: The Sandstone Saws of San Nicolas Island, California. *Journal of California and Great Basin Anthropology* 30(2):193–210.
- Kent, B. C.  
1970 An Unusual Cache from the Wyoming Valley, Pennsylvania. *American Antiquity* 35(2):185–193.
- King, T. J., Jr.  
1966 A Cache of Stone Artifacts Having “Musical” Properties from Marin County, California. *American Antiquity* 31(5), Part 1:739–740.  
1976 A Cache of Vessels from Cottonwood Spring (Riv-937). *Journal of California Anthropology* 3(1):136–142.
- Koerper, H. C., and R. Mason  
1998 A Red Ochre Cogged Stone from Orange County. *Pacific Coast Archaeological Society Quarterly* 34(1): 59–72.
- Kroeber, A. L., J. Francisco de Paula Señán, and V. Francisco Sarría  
1908 A Mission Record of the California Indians. *University of California Publications in American Archaeology and Ethnology* 8(1):1–27.
- Langenwalter, R. E.  
1980 A Possible Shaman’s Cache from CA-Riv-102, Hemet, California. *Journal of California and Great Basin Anthropology* 2(2):233–244.
- Lepofsky, D., M. Blake, D. Brown, S. Morrison, N. Oates, and N. Lyons  
2000 The Archaeology of the Scowlitz Site, SW British Columbia. *Journal of Field Archaeology* 27(4):391–416.
- Martz, P. C.  
2005 Prehistoric subsistence and settlement on San Nicolas Island. In *Proceedings of the Sixth California Island Symposium*, Dave K. Garcelon and Catherin A. Schwemm, eds., pp. 65–82. [National Park Service Technical Publication CHIS-05-01.] Arcata: Institute for Wildlife Studies.
- Martz, P. C., and E. J. Rosenthal  
2001 The Maritime Hunter-Gatherers of San Nicolas Island, California: An Analogy to Rapa Nui? In *Pacific 2000: Proceedings of the Fifth International Conference on Easter Island and the Pacific*, C. M. Stevenson, G. Lee, and F. J. Morin, eds., pp. 59–70. Los Osos: Bearsville Press.
- Min, L.  
2003 Ji’nan in the First Millenium, B.C.: Archaeology and History. *Journal of the Economic and Social History of the Orient* 46(1):88–126.
- Munro, P.  
2000. Tactic Foundations of Nicoleño Vocabulary. *Proceedings of the Fifth California Islands Symposium*, D. Browne, K. Mitchell, and H. W. Chaney, eds., pp. 659–668. U.S. Department of the Interior Minerals Management Service, Pacific OCS Region.
- Negbi, O., and S. Moskowitz  
1966 The “Foundation Deposits” or “Offering Deposits” of Byblos. *Bulletin of the American Schools of Oriental Research* 184:21–26.
- Nelson, N. C.  
1936 Notes on the Santa Barbara Culture. In *Essays in Anthropology Presented to A. L. Kroeber in Celebration of His Sixtieth Birthday*, pp. 199–209. Berkeley: University of California Press.
- Osborne, R.  
2004 Hordes, Votives, Offerings: The Archaeology of the Dedicated Object. *World Archaeology* 36(1):1–10.
- Oxendine, J.  
1980 The Luiseño Girls’ Ceremony. *Journal of California and Great Basin Anthropology* 2(1):37–50.
- Perry, J. E.  
2007 Chumash Ritual and Sacred Geography on Santa Cruz Island, California. *Journal of California and Great Basin Anthropology* 27(2):103–124.
- Reinman, F. M., and S. J. Townsend  
1960 Six Burial Sites on San Nicolas Island. *UCLA Archaeological Survey Annual Reports* 2:1–134.
- Renfrew, C., and P. Bahn  
1991 *Archaeology, Theories, Methods and Practice*. London: Thames and Hudson.
- Rick, T. C., P. L. Walker, L. M. Willis, A. C. Noah, J. M. Erlandson, R. L. Vellanoweth, T. J. Braje, and D. J. Kennett  
2008 Dogs, humans, and island ecosystems: the distribution, antiquity, and ecology of domestic dogs (*Canis familiaris*) on California’s Channel Islands, USA. *The Holocene* 18(7):1077–1087.
- Rick, T. C., J. M. Erlandson, R. L. Vellanoweth, T. J. Braje, P. W. Collins, D. A. Guthrie, and T. W. Stafford, Jr.  
2009 Origins and Antiquity of the Island Fox (*Urocyon littoralis*) on California’s Channel Islands. *Quaternary Research* 71:93–98.
- Rogers, M. J.  
1930 *Field Notes: 1930 Expeditions to San Nicolas Island*. Transcribed and edited by Steven J. Schwartz, 1994. MS on file at Range Sustainability Office, Naval Air Weapons Station, Point Mugu, California.
- Rust, H. N.  
1906 A Cache of Stone Bowls in California. *American Anthropologist*, New Series, 8(4):686–687.

- Salls, R. A., M. L. Raab, and K. G. Bradford  
1993 A San Clemente Island Perspective on Coastal Residential Structures and the Emergence of Sendentism. *Journal of California and Great Basin Anthropology* 15(2):176–194.
- Saul, F. P., and N. Hammond  
1974 A Classic Maya Tooth Cache from Lubaantun, Belize. *Man, New Series*, 9(1):123–127.
- Schoenherr, A. A., C. R. Feldmeth, and M. J. Emerson  
1999 *Natural History of the Islands of California*. California Natural History Guides, 61. Berkeley: University of California Press.
- Scott, S. A., C. M. Davis, and J. J. Flenniken  
1986 The Pahoehoe Site: A Lanceolate Biface Cache in Central Oregon. *Journal of California and Great Basin Anthropology* 8(1):7–23.
- Schwartz, S. J., and P. C. Martz  
1992 An Overview of the Archaeology of San Nicolas Island. *The Fourth California Islands Symposium: Update on the Status of Resources*, W. L. Halvorsen and G. J. Maender, eds., pp. 171–180. Santa Barbara: Santa Barbara Museum of Natural History.
- Slusser, M. S.  
1996 The Purandi Hoard: Metalwork from Eleventh-Century Nepal. *Artibus Asiae* 56(1/2):95–137 and 139–143.
- Sparkman, P. S.  
1908 The Culture of the Luiseño Indians. *University of California Publications in American Archaeology and Ethnology* 8(4):187–234.
- Strong, W. D.  
1972 *Aboriginal Society in Southern California*. Banning: Malki Press.
- Sutton, M. Q.  
1996 A Charmstone Cache from Southern San Joaquin Valley. *Pacific Coast Archaeological Society Quarterly* 32(4):41–54.
- Swanson, M. T.  
1993 *Historic Sheep Ranching on San Nicolas Island*. [Technical Series 42.] Tuscon: Statistical Research, Inc.
- Swenson, J. D.  
1984 A Cache of Mesquite Beans from the Mecca Hills, Salton Basin. *Journal of California and Great Basin Anthropology* 6(2):246–252.
- Timbrook, J.  
2007 *Chumash Ethnobotany: Plant Knowledge Among the Chumash People of Southern California*. Santa Barbara: Santa Barbara Museum of Natural History.
- Vedder, J. G., and R. M. Norris  
1963 Geology of San Nicolas Island, California. *Geological Survey Professional Papers* 369. Washington, D.C.
- Vellanoweth, R. L.  
1998 Earliest Island Fox Remains on the Southern Channel Islands: Evidence from San Nicolas Island, California. *Journal of California and Great Basin Anthropology* 20:100–108.  
2001 AMS Radiocarbon Dating and Shell Bead Chronologies: Middle Holocene Trade and Interaction in Western North America. *Journal of Archaeological Science* 28:941–950.
- Vellanoweth, R. L., B. G. Bartelle, A. F. Ainis, A. C. Cannon, and S. J. Schwartz  
2008 A Double Dog Burial from San Nicolas Island, California, USA: Osteology, Context and Significance. *Journal of Archaeological Science*, 35(12):3111–3123.
- Walker, E. F.  
1951 *Five Prehistoric Archaeological Sites in Los Angeles County, California*. Los Angeles: Southwest Museum. [Publications of the Frederick Webb Hodge Anniversary Publication Fund 6.]
- Wallace, W. J.  
1954 The Little Sycamore Site and the Early Millingstone Cultures of Southern California. *American Antiquity* 20(2):112–123.  
1955 A Suggested Chronology for Southern California Coastal Archaeology. *Southwestern Journal of Anthropology* 11(3): 214–230.
- White, R. C.  
1957 The Luiseño Theory of “Knowledge.” *American Anthropologist*, New Series, 59(1):1–19.
- Wilke, P. J.  
1978 Cairn Burials of the California Deserts. *American Antiquity* 43(3):444–448.
- Williams, S. L.  
1994 Geological and Paleoenvironmental Research Design. Appendix G in Patricia Martz, *A Research Design for Prehistoric Archaeological Sites, San Nicolas Island, California*. California State University, Los Angeles. MS on file at Naval Air Weapons Station, Point Mugu, California.
- Wright, K. I.  
1994 Ground-Stone Tools and Hunter-Gatherer Subsistence in Southwest Asia: Implications for the Transition to Farming. *American Antiquity* 59(2):238–263.



