California Department of Parks and Recreation
Cultural Resources Division

NUMBER 34

PUBLICATIONS IN CULTURAL HERITAGE

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Part I: The Stacked Stone Site, CA-SDI-17666

Joan S. Schneider, Ph.D.
Colorado Desert District,
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Part II: The Dripping Springs Site, CA-SDI-860

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PUBLICATIONS IN CULTURAL HERITAGE
NUMBER 34, 2017

Series Editor
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Department of Parks and Recreation
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Archaeology of the Kumeyaay:
Contributions to the Prehistory of Cuyamaca Rancho State Park, San Diego County, California

By Joan S. Schneider and Lynn H. Gamble
Editorial Advisor, Richard Fitzgerald; Series Editor, Christopher Corey

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Cover Image:

Outdoor portrait of Mariquita Cuero (Qualsch), March 1918, Photo by Edward H. Davis.
National Museum of the American Indian, Smithsonian Institution (P00395).

Design and Typesetting:

Heather Baron, DocDesign

Printed in the United States of America

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Available online at Cultural Resources Division, Cultural Heritage Publications: http://www.parks.ca.gov/29395

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Stacked Stone Site
Photo courtesy of Joan Schneider

Dripping Springs Site
Photo courtesy of Lynn Gamble

PREFACE

Cuyamaca Rancho State Park (CRSP) lies 30 miles east of San Diego in the heart of the Cuyamaca Mountains, a segment of the much larger Peninsular Ranges. Sandwiched between the broad arid coastal plain and the Salton Sink, these granite mountains range from 6,500 to 3,600 feet in elevation and are studded with mountain peaks and level tablelands. Consisting of a series of uplifted granitic batholiths of varying ages, these pinnacles are high enough to form a barrier to the prevailing westerly winds that carry moisture from the Pacific Ocean. Owing to the variations of this landscape, the park is rich in microenvironments including coniferous and mixed evergreen forests, chaparral, and riparian ecosystems that support a wide array of wildlife. This mosaic setting of open mesas, meadows, and dense pine-oak forests made the area within CRSP extremely attractive for occupation by the aboriginal Kumeyaay.

The first archaeological research in the Park was conducted by the San Diego Museum of Man under the direction of Malcom Rogers beginning in the early 1930s and lasting until the onset of World War II in 1939. Together with his assistant archaeologist, George Carter, Rogers recorded 16 sites, several of which were excavated. Regrettably, much of Roger's early work has never been fully synthesized or published and exists only as field notes and site records housed at the Museum of Man.

More thorough and modern archaeological research began in the early 1960s by D. L. True, an avocado farmer turned archaeologist. While still a student at University of California Los Angeles (UCLA) and under the guidance of Clem Meighan, True undertook an intensive survey of CRSP that resulted in the formal recordation of 146 sites. Based on his reconnaissance, True identified six site types villages: small camps, temporary camps, seed grinding stations, cache caves, and quarry sites. True also excavated three sites, one of which was a major village site (CA-SDI-860) also known as the Dripping Springs site. Over two seasons, True examined 30 cubic meters of this midden deposit, which he reported about in the UCLA Archaeological Survey Monograph series in 1970. From this work, True derived the "Cuyamaca Complex," a late period/protohistoric assemblage thought to be an in situ continuum of the La Jollan Complex, itself a manifestation of the ancient southern California Milling Stone Horizon. The definition of the "Cuyamaca Complex" represented a significant development in defining the last expression of the Hokan speaking Kumeyaay culture before the arrival of the Spanish, setting it apart from its northern "San Luis Rey Complex" or Luiseño (Uto-Aztecan) speaking neighbors. Both of these very late complexes contain ceramic traditions clearly influenced from the cultures of the Colorado River and possibly as far away as the Hohokam of southwestern Arizona. Both also relied on acorns, the labor-intensive staple that requires multi-stage processing prior to consumption. Although acorns are a "back-loaded" resource that demand intensive processing before becoming edible, they are easily stored for future consumption and provide dependable nourishment in lean years, particularly during the late winter and early spring when few other foods are available.

In this volume of *Publications in Cultural Heritage*, we present two archaeological investigations from CRSP, each engaging themes relating to the *Cuyamaca Complex*. Joan Schneider, retired Associate State Archaeologist, wrote the first report and describes the "Stacked Stone Site" as a previously unknown site exposed in the aftermath of the 2003 Cedar Fire. This unique site consists of a stone enclosure complex located on a rocky knoll with at least six "rooms" formed by enhancing the existing exposed outcrop with cobble "walls." A dense artifact scatter was found in "pristine condition" surrounding the structure and consisting of a range of ceramic vessels broken in place, as well as groundstone and flaked stone tools. Based upon analysis of the form and the contents of the ceramics, it is suspected that the Stacked Stone Site served as a specialized storage area for a large nearby village, highlighting the importance of storage in the *Cuyamaca Complex* lifeway. Lynn Gamble headed the 2008 San Diego State University field school excavation at the Dripping Springs Site (CA-SDI-860), True's type-site for the *Cuyamaca Complex*, and she presents their results in the second report. Among other significant findings, this report confirms many of True's observations about the nature and age of the complex. Nine new radiocarbon dates were generated, all but one dating to after AD 1100. Additionally, as True had previously put forward, Gamble confirmed the presence of a dedicated cemetery located away from the main living areas using specially trained dogs from the Institute of Canine Forensics. Also noteworthy was the fine-grained flotation analysis of excavated soils, which yielded the surprising presence of marine resources in the form of anchovy and sardine bones and the identification of obsidian in the form of tiny pressure flakes from Obsidian Butte a source near the Salton Sea.

Volume 34 of our California State Parks cultural series presents both of these reports; together, they add significantly to a clearer understanding of Kumeyaay culture and their lifeways at the cusp of European interruption. Moreover, they illustrate the uniqueness of the *Cuyamaca Complex* as a cultural historical tradition that was evolving under the influence of southwestern cultures located hundreds of miles to the east.

Richard Fitzgerald
Editorial Advisor

ACKNOWLEDGEMENTS

PART I

Bonnie Bruce, along with Colorado Desert Archaeology Society members Mel Sweet, Roger Riolo, “Sam” Slimak, and Rose Barrie discovered the Stacked Stone Site in the course of the survey of the West Side Trail in the aftermath of the Cedar Fire. Their keen observations and climbing abilities are commended. During follow-up survey in the same area, Astrid and Sam Webb joined the survey crew. Mel Sweet, Bonnie Bruce, and Ray McFarlane were present when the unusual ceramic bowl with lug handles was found nearby below the Stacked Stone Site.

Sue Wade, DPR Associate State Archeologist, Colorado Desert District, recognized the unique opportunity to record this relatively pristine and unusual site and secured the emergency funding to carry out the field study. Sue also made arrangements with Laura Itogawa, then Montane Sector Superintendent, to construct a fence along the West Side Trail in the vicinity of the Stacked Stone Site in order to encourage hikers to stay on the trail at this location and thus protect the site; Sue also participated in the construction of the fence. In addition, she conducted the preliminary thin-section analysis of a sample of ceramic sherds collected from the Stacked Stone Site.

Carmen Lucas, Kwaaymii Elder, visited the Stacked Stone Site soon after its discovery and participated actively and consistently in all the fieldwork. She provided direction on the treatment of the site in terms of Native American sensitivities. I thank her for her help and cooperation.

Koral Amet provided us with aerial photographs of the Stacked Stone Site, which were invaluable in being able to map the site and its boundaries in an efficient fashion. Llouise Jee provided the GIS/GPS expertise to geocode the targets we placed at the site. These data, combined with the aerial photographs, provided the means to record the site in our race-against-time fieldwork.

Bonnie Bruce was a major contributor to the fieldwork and had the responsibility to create an “on-the-ground” workable ceramic typology for the ceramic artifacts that were found. Colorado Desert Archaeology Society members who participated in the micro-mapping of segments of the site include: Chuck Bennett, Astrid Webb, Sam Webb, and “Sam” Slimak.

Patricia McFarland, Assistant State Archeologist at the Southern Service Center, provided valuable references and called attention to the Buckman Springs site and her unpublished analysis of the collection from the site. Marla Mealey, Associate State Archeologist at the Southern Service Center provided references to other stone-feature complexes in San Diego County.

Heather Thomson helped to construct the protective fencing and monitored the digging of post holes for the fencing; she also collected clay samples and sherds from the post-hole excavations.

John Foster provided some extra funding to carry out ancillary studies (ceramic studies and protein residue analysis) on some of the artifacts from the Stacked Stone Site.

David Broughton, graduate student in the Ceramics Laboratory of the University of Sheffield in Great Britain used the ceramic collection from the Stacked Stone Site as the subject of his Master's thesis. I am grateful to him for his added insights. His faculty advisor, Dr. Patrick Quinn, knew of the collection and suggested this topic.

As always, the DPR Colorado Desert District staff provided excellent administrative and technical support.

Joan S. Schneider, Ph.D.
Associate State Archeologist
DPR Colorado Desert District

PART II

This project was supported by a number of people and agencies. Funding and other support for the archaeological investigations at Cuyamaca Rancho State Park was provided by the California Department of Parks and Recreation (DPR) and the Department of Anthropology at San Diego State University. I especially want to thank Sue Wade (DPR Associate State Archaeologist, Colorado Desert District) and support staff from Cuyamaca Rancho State Park for permitting, overseeing, and aiding in the archaeological investigations at CA-SDI-860 (Wade 2004). In particular, I want to recognize John Foster, Richard Fitzgerald, and Michael Sampson of the DPR for their support of this project.

Carmen Lucas, a Kwaaymii (Kumeyaay) Indian, oversaw our archaeological investigations at Cuyamaca Rancho State Park, made important lab and field decisions, and helped sort the collection. Her dedication to understanding and protecting the past is deep and unwavering. Other Kumeyaay that were integral to this project were Clinton Linton, Gabe Kitchen, Jr., and Brandon Linton, all Kumeyaay representatives from Red Tail Monitoring & Research. The scope of the fieldwork, curation, and other issues were the primary issues discussed. I am indebted to all of the Kumeyaay for supporting my work at CA-SDI-860. The team of Historic Human Remains Detection (HHRD) dogs from the Institute for Canine Forensics were an integral part of the project and I am grateful to all the dogs and their handlers, but especially to Adela Morris.

I am also indebted to all of the many students from San Diego State University who worked at the site. The field crew included the following individuals: Judith Alvarez, Ryan Anderson, Joseph Barca, Nicole Benson, Evelyn Broussard, Bonnie Bruce, Breana Campbell, Anita Childress-Karim, Dale Clawson, Michael Garnsey, Adam Giacinto, Shelby Gunderman, Kathryn Malone, Myra Masiel-Zamora, Matthew Maxfeldt, Angela Pham, Whitney Reed, Joanne Regisford, Katherine Sholan, Dana Sinclair, Nicole Stangle, Joshua Tansey, Jennifer Wakem, and Jenna Wehr. I thank each of them, but especially recognize Michael Garnsey, an outstanding archaeologist who served as the Teaching Assistant for the

field class and was dedicated to the collection of ethnobotanical remains. In addition, Stephen Rochester helped with the mapping and the GIS, and Dr. Glenn Russell helped in all aspects of fieldwork and photography. I also want to thank Ryan Anderson for his excellent photography. Other San Diego State University students helped in the lab and include, in particular, Kent Manchen, who helped oversee the sorting and cataloguing of the collection.

A number of students at UC Santa Barbara also helped with various aspects of lab work and report preparation. I especially thank Sarah Mellinger, Megan Brady, Hannah Haas, Dana Randall, and Timothy Albe. In addition, Andrew Pigniolo provided insight into the unusual point from the site and he and Don Laylander helped with documents.

Archaeology is certainly a team effort and I thank all of you who helped with this effort.

Lynn H. Gamble, Professor
Department of Anthropology
University of California, Santa Barbara

Field Crew and Clinton Linton (on right) at CA-SDI-860.

PART I:
THE STACKED STONE SITE, CA-SDI-17666

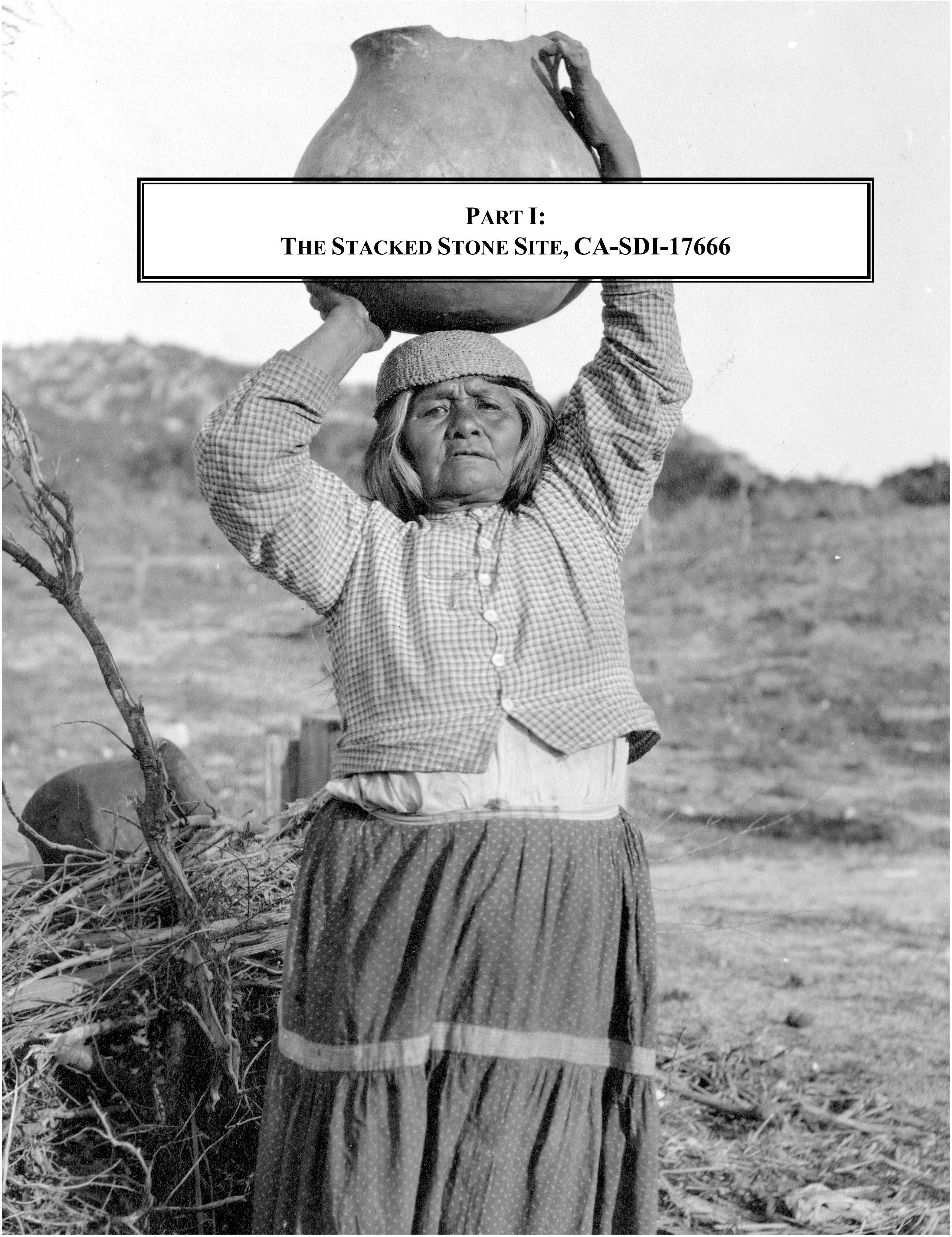


Photo on previous page:
Rosa Nejo, wife of Jim McCarty,
carrying a large olla on her head.
She wears a checkered cotton shirt,
a skirt, and a basketry hat.
March 1918, Photo by Edward H. Davis.
National Museum of the American Indian,
Smithsonian Institution (P00396).

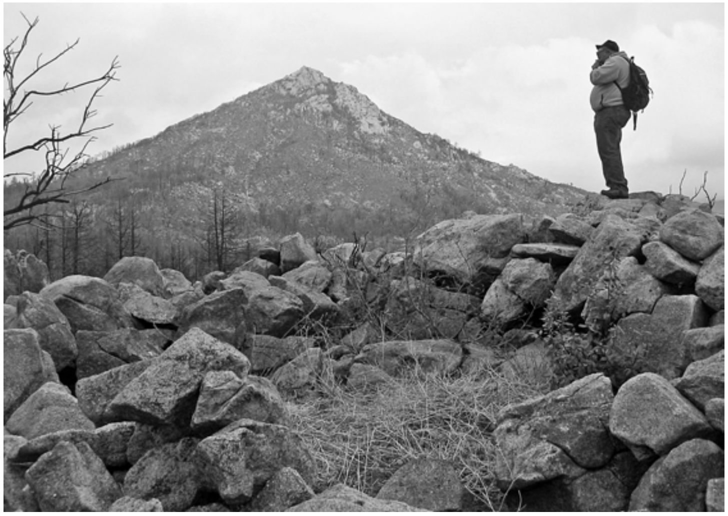
Introduction

In January 2005, during the course of emergency cultural resources inventory of Cuyamaca Rancho State Park (the Park) in the aftermath of the 2003 Cedars Fire, the Stacked Stone Site was discovered. The post-fire inventory of the West Side Trail was being conducted by a Colorado Desert District cultural resources team headed by Archaeological Specialist Bonnie Bruce (under a contract with California State University, Bakersfield Foundation), assisted by members of the Colorado Desert Archaeology Society. Preliminary mapping of the site took place immediately after its discovery (Figure 1 and Figure 2). The site had been thickly covered with vegetation prior to the Cedar Fire and was not previously known. This report presents the results of the initial phases of the work at the Stacked Stone Site, including aerial photography, recording of features and artifacts, in-field analysis of artifacts, various specialized laboratory analyses, methods of site protection, and recommendations for future management of the site.

The site consists of a series of spaces (or "rooms") formed within a stone outcrop, which is surrounded by an extremely dense scatter of artifacts (Figure 3). It appeared that spaces within the outcrop had been created by the removal of boulders and cobbles from certain areas within the outcrop. Then the outcrop was apparently enhanced by the addition of many boulders and cobbles to the "walls." Thus, the height of the walls between and surrounding the spaces or "rooms" were increased in height (Figure 4 and Figure 5). Structural features, such as those at the site, had not been previously recorded in the Park, although the Park has other abundant evidence of occupation by the indigenous peoples of the area, the Kumeyaay.

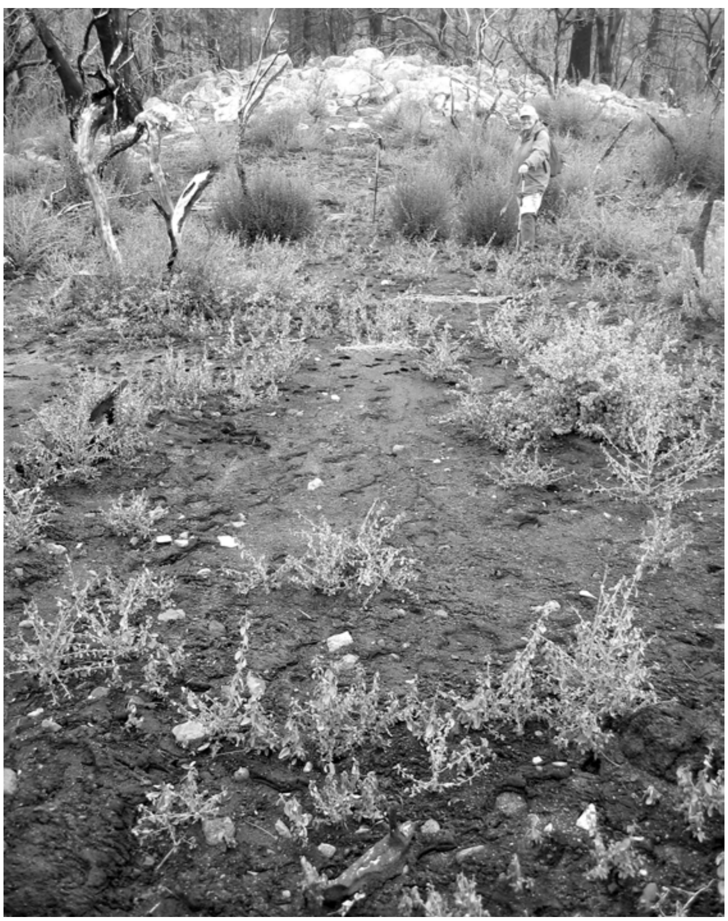
The dense artifact scatter, present within and surrounding the stone features that are central to the site, was judged by Colorado Desert District archaeologists to be in original context. The exposed situation of the site and its proximity to West Side Trail made the cultural resources extremely vulnerable and called for immediate action. In late March 2005, funding was secured for "Archaeological Documentation and Data Recovery at the Stacked Stone Site" under the California State Parks Emergency Stewardship program, Project #133-04.

Even before the fieldwork commenced, a split-rail fence was constructed along West Side Trail in the vicinity of the Stacked Stone Site (Figure 6) in order to encourage hikers to stay on the trail. The fence construction was a cooperative project of the Park staff, Colorado Desert



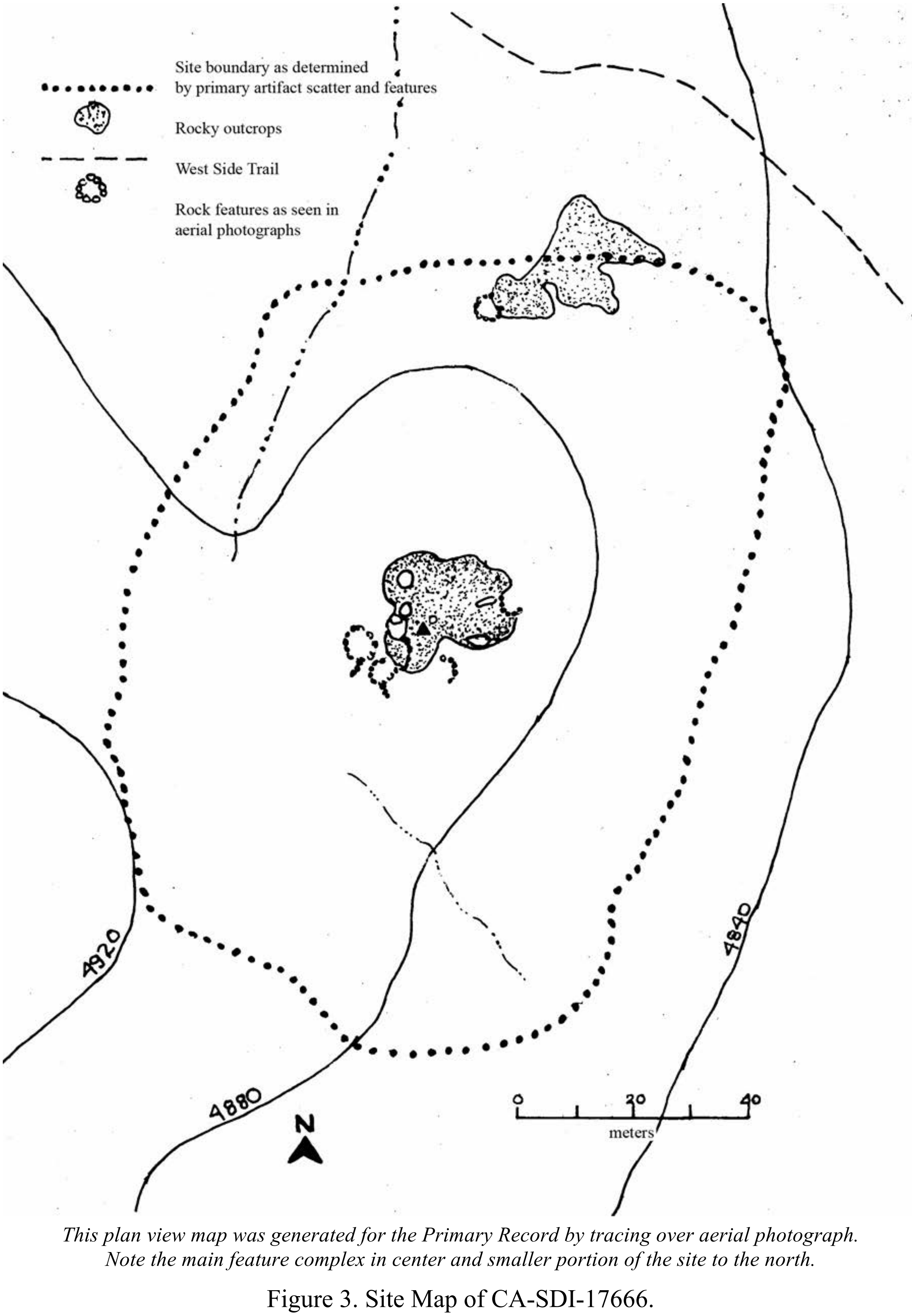
Roger Riolo stands on top of main feature complex. Photo by Mel Sweet.

Figure 1. The Stacked Stone Site with View to North on January 25, 2005, the Day of Discovery, CA-SDI-17666.



Suzanne ("Sam") Slimak stands in the background. Photo by Mel Sweet.

Figure 2. Typical View of the Surface Visibility, with View Northeast towards Main Feature, on the Day of Discovery, CA-SDI-17666.



This plan view map was generated for the Primary Record by tracing over aerial photograph. Note the main feature complex in center and smaller portion of the site to the north.

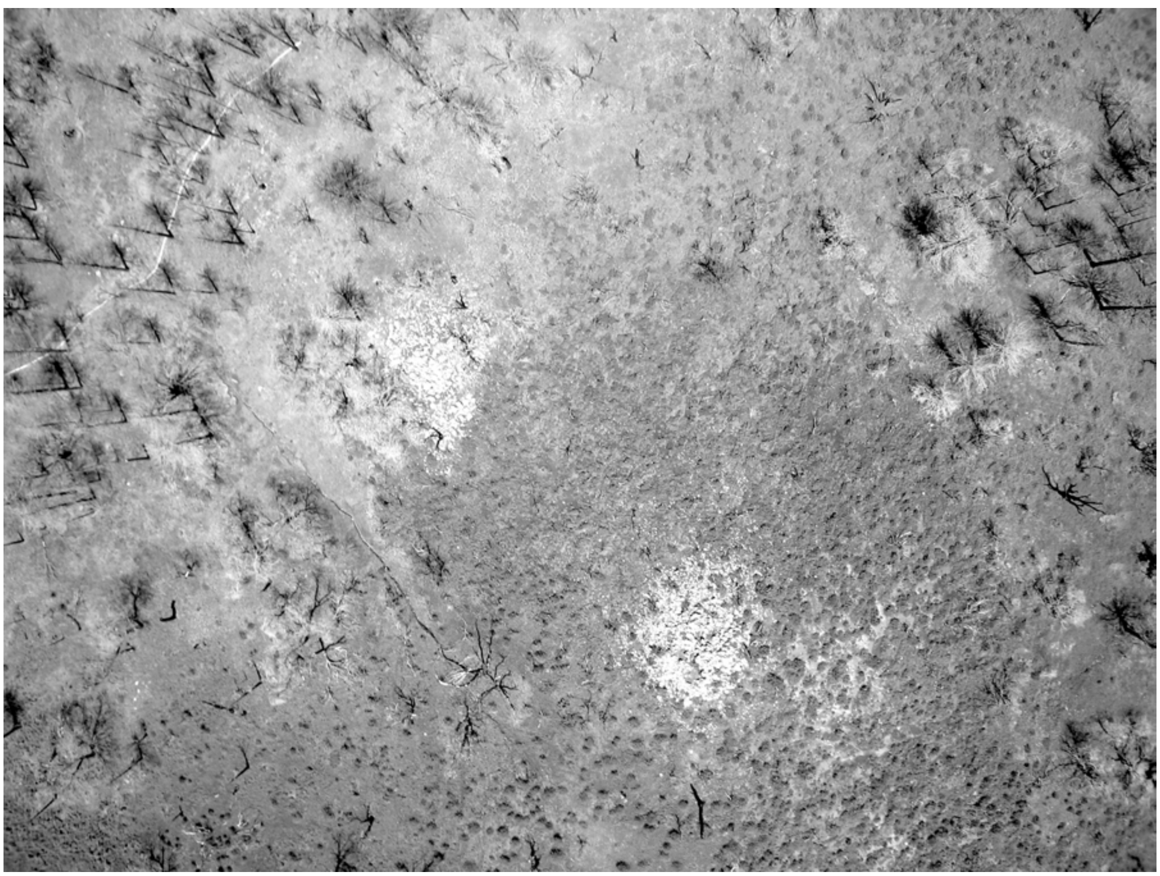
Figure 3. Site Map of CA-SDI-17666.

Photo by Mel Sweet.

Figure 4. “Room” in the Main Feature (one of at least six), CA-SDI-17666.

Photo by Sam Webb.

Figure 5. Detail of Piled-up Rocks Forming the Wall of “Room” 3, CA-SDI-17666.



Main feature complex is in lower right center. Split rail fencing constructed along West Side Trail is the thin, light-colored line in upper left corner of the photograph. Photo by Koral Amet.

Figure 6. Aerial Photograph of the Stacked Stone Site, View to the Northeast.

District archaeologists, and Colorado Desert Archaeology Society volunteers. Signs were posted that asked visitors to stay on the trail because of post-fire vegetation re-establishment efforts. After a Project Evaluation Form and DPR 5024 for the project was completed and approved, all fieldwork was conducted in the spring of 2005 under the guidelines set out in the Research Design.

The Research Design called for covering the site with brush at the conclusion of the fieldwork. This protective measure was unnecessary because of the rapid and abundant re-growth of the natural vegetation on the site (Figure 7 and Figure 8 for comparison of vegetation cover at the beginning and end of the project; also see Figure 2). At the conclusion of the fieldwork, at the end of May 2005, less than 10% of the ground surface was visible; one month later, virtually all the surface was covered. The rapid re-growth of vegetation in the spring of 2005 was due to the great amount of precipitation in the Park area throughout the winter and spring of 2005. The vegetation on the site was so dense, in fact, that it obscured the majority of the surface from the archaeologists, even when the locations of artifacts were known.

Photo by Sam Webb.

Figure 7. Site Surface at Discovery in January 2005, CA-SDI-17666.

Photo by Joan Schneider.

Figure 8. Site Surface at Project End in May 2005, CA-SDI-17666.

NATIVE AMERICAN PARTICIPATION

At the discovery of the site, nearby Native American groups were immediately notified. These included: Santa Ysabel Band of Diegueno Indians, Campo Kumeyaay Nation, Viejas Band of Mission Indians, Kumeyaay Cultural Repatriation Committee, Kwaaymii Laguna Band of Mission Indians, Manzanita Band of Mission Indians, Mesa Grande Band of Mission Indians, Ewiiaapaayp Tribe, and La Posta Band of Mission Indians. Thereafter, an invitation was extended to the same groups to work on the surface data recovery project. Ms. Carmen Lucas, Kwaaymii Elder, participated in the fieldwork and data collection, as well as in the aerial photography at the site. Ms. Lucas also determined which artifacts could be collected for further analysis before they were returned to the site. Her assistance, participation, and sage advice are sincerely appreciated.

THE SETTING

Most of the following information is abstracted from a major work (Parkman 1981) that reported the results of a project conducted in advance of planning for prescribed burns within the Park. Volume II of the project report consists of extensive descriptions of the environment (Hood 1981), ethnographic and ethnohistoric background research conducted by Parkman (1981), archival and collections research into previous work conducted at the Park (Foster 1981), and an overview of the Euro-American history of the Park (Woodward 1981). The reader is referred to Volume II, Part 1 of *Cuyamaca Rancho State Park: A Cultural Resources Inventory and Management Plan for Prescribed Burning* for more detailed and extensive information, in addition to the exhaustive bibliographic references for each chapter (Parkman 1981).

Environmental Setting

The Park is located within the Peninsular Ranges, a generally north-south-trending mountain barrier that separates the Pacific Ocean coastal regions from the Colorado Desert interior to the east. Slopes on the western side of the mountains are gradual when compared to the steep escarpments in many places on the eastern side. The mountains, ranging as they do, from 3,400 feet (1,036 meters) to 6,500 feet (1,981 meters) above mean sea level, contain a wide variety of macroclimates and microclimates that are not available in the more moderate topographical areas to the west and east of the ranges. Along with elevation differentials come climatic, vegetation, and faunal distribution variation. For these reasons, the resources available to Native peoples and to later Euro-American settlers were varied and different than those available in either the coastally influenced region to the west or in the desert region to the east.

Geology, Hydrology, and Soils

The Peninsula Range runs southward into Baja California from the Los Angeles basin to the north and is composed of "uplifted granitic batholiths of varying age" (Hood 1981). Within the major igneous geological formation are areas of metamorphic and sedimentary rocks. Soils within the Park are composed of a variety of types formed by weathering of parent rock material, alluvium, organic materials from local vegetation accumulations, and some organic materials from human and animal use of limited areas. Soils are combinations of rocky, sandy, and loamy materials. Most of the water within the Park originates in precipitation that accumulates seasonally within drainages such as the Sweetwater River (the largest drainage system in the Park) and its tributaries (Stonewall, Harper, Cold Stream, Japacha, Juaquapin, Arroyo Seco, and Descanso creeks). Springs also contribute to the hydrology of the Park and were especially important to its human and animal inhabitants during drier seasons of the year. The other major water catchment of note is the Boulder Creek watershed which drains into the San Diego River (its tributaries include Azalea and Little Stonewall creeks). Upper Pine Valley, King, and Cedar creeks are minor water sources and are either mostly outside the Park, or flow only very occasionally. Cuyamaca Reservoir was created in the location of what formerly was a silted-in lakebed.

Climate

Because the mountains of the Peninsular Range form a barrier to the prevalent west winds for most of the year, they also catch most of the precipitation of moisture gathered over the Pacific Ocean. A combination of rain and snow contribute to an annual precipitation of almost 37 inches (93.5 centimeters) annually. The winter brings snow, usually between January and March, while in the summer a Mediterranean-type climate prevails. East winds (known as *Santa Anas*) occasionally blow in the fall and early spring of the year. The elevation of the ranges, when compared to the surrounding area, creates a rain-shadow on the eastern flanks, while causing clouds to drop their precipitation on the western-facing slopes. Because of the variability in precipitation and elevation, many microclimates exist within the Park.

Vegetation

Microclimates include meadows with stands of annual grasses, chaparral, mixed broadleaf and coniferous forest, and riparian vegetation communities (Hood 1981). Most important as a food resource for the Native peoples of the Park were two types of oak trees (*Quercus* spp.) present in abundance. Hood (1981) elaborated on the many plants that are part of these communities in the Park. For more information, the reader is referred to his descriptions and those of Munz and Keck (1959). It is sufficient here to say that a wide variety of plant resources were seasonally and permanently available to both the animal and human inhabitants of the Park area; this fact probably partially accounts for the high density of cultural resources within the Park. The relationship between prehistoric settlement patterns and vegetation communities in the Park was reviewed by Shackley (1980).

Fauna

The variation in environmental zones also accounts for the variation in animal life in the Park. Hood (1981) stated that there are at least 30 aquatic avian species, four types of raptors, upland mountain birds such as quail and band-tailed pigeons, and at least 100 varieties of songbirds present in modern times. The majority of reptiles and amphibians represented include snakes, lizards, and frogs. Small-sized mammals include the usual suite of rodents (squirrels, kangaroo rats, mice), as well as bats. Medium mammals include coyote, mountain lion, fox, raccoon, and bobcat. Of the larger mammals, deer are the most prevalent. Although bear once was present, it has not been recorded within the Park since the nineteenth century.

Cultural Setting

The Park is within traditional Kumeyaay territory. The Kumeyaay are Yuman-speakers of the larger Hokan language group and are linguistically related to the other Yuman-speaking groups that lived (and still live) along the Lower Colorado and Lower Gila rivers. The term *Kumeyaay* is now used to describe, in general, the indigenous peoples of the region. They had been known by a variety of other names such as the Southern, Eastern, Desert, and Mountain Diegueño. The peoples of the Imperial Valley, sometimes called *Kamia* in the literature, also are included in this group. One of the *Kumeyaay* lineages, known as *Kwaaymii*, is included in the general group. Tom Lucas, an important provider of ethnographic information, particularly from the contact period, always named his Kwaaymii lineage when he provided information. A survey of Kumeyaay ethnographic sources was compiled by May (1975). Parkman (1989) brought together archaeological, ethnographic, and historical information to describe the area of West Mesa in the Park as the Kumeyaay settlement area known by the name of *Pilcha*.

The Kumeyaay lived "from a point just north of the Park south to Todos Santos Bay in Baja California (Luomala 1978:593). They were bordered on the north by the Northern Diegueño, Cupeño, and Cahuilla; on the east by the Quechan; and on the south by the Cocopa and the Paipai" (Parkman 1981). Among the ethnographers of the Kumeyaay (and the component groups that have been known by other names) are Spier (1923), Kroeber (1925), Gifford (1931), Drucker (1937, 1941), Shipek (1970), Lee (1978), and Luomala (1978). A substantial number of primary sources remain unpublished (e.g., DuBois photographs) and a number of collections are in local museums, national and state museums, and academic institutions.

Parkman (1981) drew together information from many of the sources mentioned above and the reader is referred to Chapter III in particular. For our purposes, a brief summary of Kumeyaay culture is included here. The Kumeyaay originally enjoyed a migratory lifestyle, moving between winter villages in the warmer desert and spring, summer, and fall villages at various altitudes on the mountain slopes and in the meadows during the rest of the year. They traveled to where food resources were located, but likely had some semi-permanent village-type locations that were occupied a good portion of the year. Hunting, gathering, or work parties set out from semi-permanent settlements to secure certain resources or carry out other economic, social, and ritual activities. Other camping places were used specifically for gathering plants, securing other resources, or hunting animals at certain times of the year. There also was a good deal of seasonal migration to take advantage of warmth in the desert in the winter and coolness of the higher elevations in the summer.

Throughout prehistory, the Kumeyaay manipulated plants to ensure adequate resources; in later times, they also practiced agriculture. Fishing may have played a role in subsistence, especially when the resources of Lake Cahuilla were available. Seasonal living structures were built, some more substantial than others, depending on need. Ceremonial structures, that were used by the collective community, also were built.

The social organization of the Kumeyaay was flexible and not highly structured. There were bands, lineage groups based on a person's father's relationships (patrilineal), and sometimes "moieties" (a system whereby every individual belonged to either one group or another). Often lineages were identified with specific locations. The loose organization allowed extended family groups to survive well and adapt to both seasonal and other environmental changes. Often, groups would coalesce and break apart, live here or there, depending on abundances or lack of food or other resources. There was a great deal of "visiting," extensive trading networks, and joining together for annual occasions.

Acorns from at least two species of oak on the mountain slopes were probably the most important food that could be stored for use during the lean times of the year. Many fruits, grasses, shrubs, and other plants and plant parts were used; scheduling the ripening of various plant foods played a large part in the movement of Kumeyaay families up and down the mountain slopes. Game mostly consisted of smaller animals, such as rodents, but larger mammals also were taken, although probably less frequently than the more accessible smaller animals. Great skill was developed in both hunting and trapping. It appears, from ethnographic information, that cultivated fruit trees (especially peaches) were a substantial item in the Kumeyaay diet after European contact.

As with all the other indigenous groups in the Southwest, the Kumeyaay obtained many items that were not locally available through trade with their near and distant neighbors and relatives. Goods and foods were known to travel from the Pacific Ocean and the Channel Islands all the way to the Colorado River, into Baja California, and even into the Four Corners region of the Southwest. Ceramics were probably introduced into the Park region between about 800 and 500 years ago, likely from the Colorado River region that, in itself, was influenced by the Hohokam culture of the Tucson/Phoenix region. Local clays were used for much of the everyday type of ceramics for storage, cooking, and serving, but it is known that some clays (and some tempers) were carried considerable distances (see pages 37 and 49). Most of the ceramics were not decorated, but some were embellished with incised or painted designs; these were relatively rare.

An annual cycle of ceremonial events was planned and people traveled substantial distances to attend and participate in them. It is difficult to estimate the population of the Kumeyaay in pre-contact times (i.e., before 1542 when Cabrillo entered San Diego harbor). It is only through mission and military observations that we can gain any idea and make educated estimates—the estimates are notoriously problematic. Kroeber (1925) estimated a population of 3,000 in 1770. European diseases traveled in advance of actual contact with Native peoples and it is well-documented that Native people were dying of European diseases well before the Europeans actually arrived in a region (cf. Ramenofsky 1987).

It was not until 1772 that the Kumeyaay of the Park area actually made contact with Europeans. The Fages expedition (with the purpose of finding deserters from the missions) traveled to the Imperial Valley through the mountain region (Englehardt 1920). Originally, the mission influence on the Kumeyaay of the Park region was minor—the area was too remote from San Diego. When a branch of Mission San Diego was established at Santa Ysabel in 1818, things began to change. Luomala (1978:595) estimated that there were 450 Kumeyaay living around Santa Ysabel in 1821. Still, the Park area was remote from Santa Ysabel. When the missions were secularized, the Indians, living at or near the missions, were virtually left on their own. Lands were supposedly deeded to them, but these lands were almost always lost due to misunderstandings and cultural differences between the Native peoples and unscrupulous settlers.

Without the consent or knowledge of the indigenous inhabitants of Cuyamaca Rancho, 35,501 acres were granted to Augustine Olvera in 1845. Many of the local Indian groups signed a treaty in 1852, but the treaty was never ratified by the US Congress. When gold was found near Julian, people flocked to the area and traditional Kumeyaay culture suffered greatly. The Kumeyaay, previously maintaining their traditions because of their relative isolation in the Park area, were no longer able to do so. It was not until 1875 that reservation lands were established.

To date (2008) there are no known historical texts that provide accounts of indigenous peoples seen living on the land that is now the Park (personal communication, Sue Wade).

The Historical Period in Cuyamaca Rancho State Park

A comprehensive view of the Euro-American history of the Park was presented by Woodward (1981) in her extensive treatment of this subject. The reader is referred to the details of the Woodward history of the Park as well as her detailed bibliography. The following section is a short summary of the major activities; most of the narrative is derived from the Woodward account.

The remoteness of the Park deterred Euro-Americans from settling in the area until the nineteenth century. The first intrusive presences were connected with both lumbering and cattle grazing. In both cases, plant resources were sought and exploited. Although the land was granted to Augustine Olvera by the Mexican government in 1845, as far as is known, he and his family never lived on the lands. It was not until 1870, long after California became a state, that gold was discovered at Cuyamaca. It was then that the Euro-American population influx really began. Cuyamaca City grew up adjacent to the gold mining operations and was active until the 1890s. When the gold was depleted, cattle grazing and ranching endured.

The first permanent settlers in what is now the Park were James Lassator and his family. Lassator owned 160 acres of land and built a stone house in what is now called Green Valley. The location was a convenient place for travelers to stop when traveling to and from the Pacific coast and San Diego, and the Lassator family, in addition to their farming and ranching, profited by accommodating the travelers, Other settlers arrived and soon a number of families and enterprises were present in the Park. The original land grant, however, was never clear, and subsequent land exchanges and sales were confusing and had many legal problems. The Dyar family arrived in what is now the Park in 1923 and acquired extensive property after the gold boom was over and Cuyamaca City was abandoned.

In 1933, Cuyamaca Rancho was brought into the State Park system. Shortly thereafter, in an effort to provide work to the unemployed during the Depression Era, the Civilian Conservation Corps became active in the Park. There were several camps, numerous work projects and Park improvements, many of which are still evident today. To summarize: lumber, cattle ranching and grazing, farming, and water supply were the major natural resources for which the Park was exploited in historical times. The gold mining era was short-lived. Each of these activities left their marks on the land, just as the original inhabitants of the land left theirs.

PREVIOUS ARCHAEOLOGICAL RESEARCH IN CUYAMACA RANCH STATE PARK

In spite of the lack of historical accounts of their presence, Kumeyaay people lived and maintained their traditional lifestyle in the Park comparatively late in time. They left many signs of their existence on the landscape. Non-indigenous people who lived locally from the late nineteenth century onward collected, and probably looted, the area even before it became a State Park. The remains of many of the larger living sites and processing locations used by indigenous people are still evident and, from the 1930s onward, have been studied by a number of archaeologists, both professional and avocational. Foster (1981) synthesized and summarized the history of archaeological research in the Park; the reader is referred to his thorough and detailed report. Below is a brief summary of his archival and collections research.

Malcolm C. Rogers and his associates, working out of the San Diego Museum of Man, was perhaps the first professional archaeologist to work in the Park. His maps, notes, and records for 14 sites in the Park are kept at the Museum of Man and are unpublished (Rogers n.d.). He excavated a number of sites in the Park. Rogers noted that most of the archaeological record within the Park could be attributed to his Yuman III period, i.e., pottery-bearing late-prehistoric period.

Delbert True conducted major research in the Park, recording 136 sites in the Park during his 1960s graduate-school years at UCLA and afterwards when he worked under the "banner" of the University of California Archaeological Survey (True 1961, 1966, 1970). True's Ph.D. dissertation (1966) used data that he acquired from the Park. True developed a list of site types that he recorded in his survey work. These included villages, small camps, temporary camps, seed-grinding stations, cache caves, and quarries. He also conducted excavations at a number of sites. Extensive collections from his work in the Park are housed at the Fowler Museum at UCLA.

Allen Prosser worked with True's data from the Park and did definitive statistical analyses of the associations between variables such as vegetation zones, altitude, and availability of water and site locations (Prosser 1975). M. Steven Shackley looked at settlement patterns in relation to ecotomes in the Park (Shackley 1980).

Over the ensuing years, California State Parks cultural resources staff conducted a few small surveys in the Park, mostly in preparation for prescribed burning. In more recent times, nearby academic institutions such as San Diego State University and Palomar College have used the Park as a venue for educating students in fieldwork methods. For the most part, these projects have entailed survey, recording, and working with older collections.

None of the previous researchers were aware of the Stacked Stone Site.

Summary of Archaeological Knowledge from Previous Research

The following bulleted items are a short summary of what we know from previous research:

- Most of the archaeological record in the Park, to date, is related to the Late-Prehistoric period, no more than 1,000 years ago, and most is more recent. This record has cultural continuity with the present-day Kumeyaay people of the region.
- There are a few, faint indications of an earlier occupation. This evidence consists mostly of projectile points of certain chronologically identified types consistent with an older technology, as well as an absence of ceramics in some sites (an indication that the site was occupied before the introduction of ceramics to the area).[1]
- Trade networks were very active and are documented by the presence of marine shell from the Pacific Ocean and the Gulf of California, lithic materials that are non-local, and perhaps steatite from other than the documented local sources.
- The intensive use of acorns for food is associated with the presence of indigenous groups in the Park. Bedrock milling features are abundant and consist of several types: mortars, oval basins, and slicks. Pestles and manos are associated with the bedrock features.[2]

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[1] In 2008, Professor Lynn Gamble was conducting research in the Dripping Springs area of the Park. The research was based, in part, on the hypothesis that archaeological deposits from earlier times are present in this area.

[2] Joan S. Schneider, Associate State Archeologist, Colorado Desert District and Bonnie Bruce were conducting research on the feasibility of identifying plant and animal residues on bedrock milling features. One of the sites incorporated into this pilot project is the Los Caballos site in the Park (CA-SDI-9538).

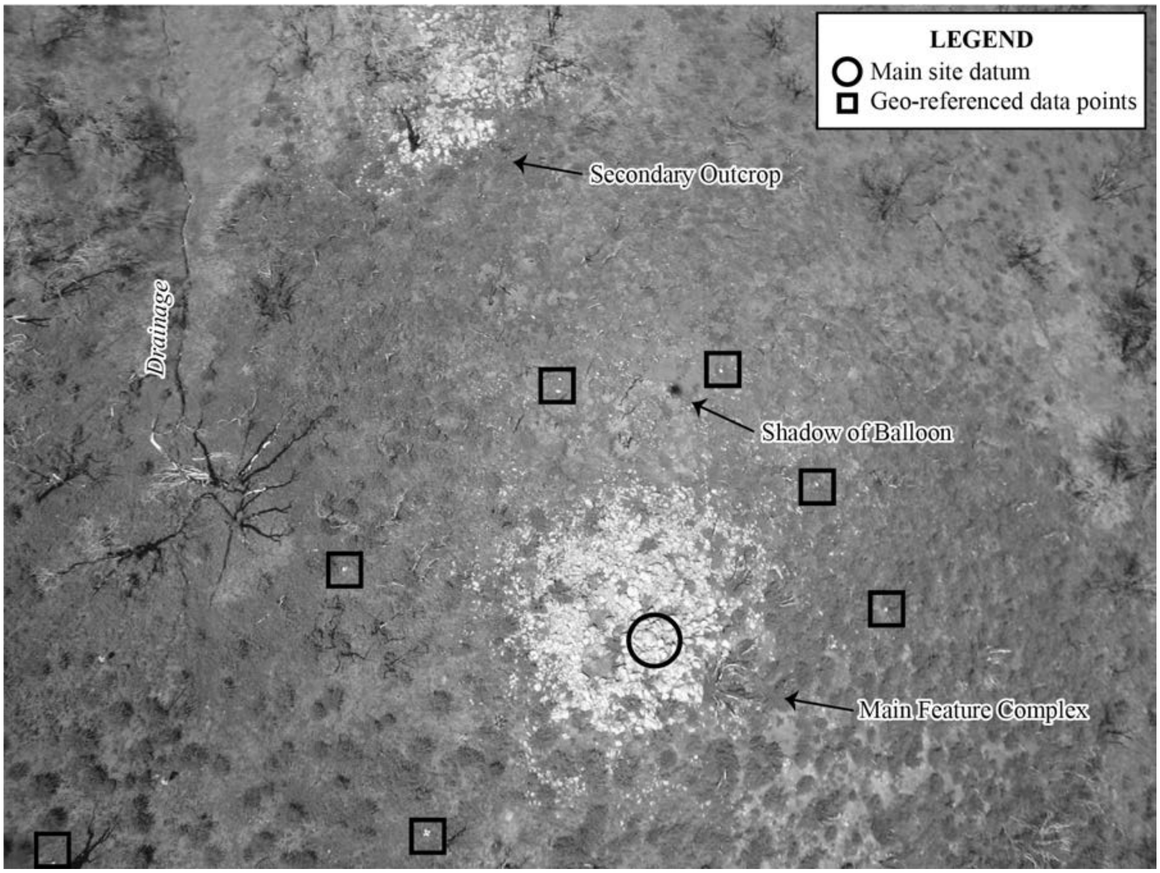
- Ceramics are present at many sites. Usually these are non-decorated, but occasionally there are incised and/or painted designs.
- Indigenous peoples carried on their traditional ways here throughout the nineteenth century; use of Euro-American materials by the Kumeyaay include the use of bottle glass for projectile points as well as the use of metal and European-made ceramics for other purposes.
- Portions of only six sites have been excavated through the years, thus our understanding of the entire range of prehistory in the Park is unclear at the present time.

Recent Archaeological Work in Cuyamaca Rancho State Park

In the aftermath of the 2003 Cedar Fire, a great deal of survey work has been carried out. The ground visibility was excellent due to the almost complete destruction of the vegetation. This left vast denuded areas where the ground was burned, but no brush concealed the cultural resources that survived the fire. It was under these circumstances that the Stacked Stone Site was discovered. The cleared vegetation had both positive and negative components: the greatly increased visibility allowed cultural resources staff to observe and record areas that had never been seen, but the increased visibility also created threats to the cultural resources in terms of illegal looting and collecting. The Park staff was concerned about this, as well as the safety of visitors. Many of the larger trees were burned and fallen due to the fire, blocking trails and roads. There were many pits where the tree roots had gone on to burn below the ground level after the above-ground tree portions were consumed by the fire. In this context of devastation, several emergency trail surveys were undertaken, both to record sites and in anticipation of tree removal and other rehabilitation work. Currently, we have a much better idea of the extent and types of the cultural resources in the Park than we did before the 2003 Cedar Fire. Some of the results of the post-fire work include: the West Side Trail Survey (Bruce 2010); fire roads and trails surveys and assessments (Mealey 2003, 2004; Mealey et al. 2005); the Green Valley Campground Survey of CA-SDI-925 (Bruce 2007); a complete site record and National Register of Historic Places nomination for Los Caballos, CA-SDI-9538 (Bruce 2004; Hector 2005); a complete recording of the named ethnohistoric area of *Mitauragui* CA-SDI-11198 (Bruce 2005); a survey for new equestrian facilities (Mealey 2007); a Master's thesis project on the effects of fire on cultural resources (McFarland 2006); and, of course, the Stacked Stone Site work, reported here.

The Stacked Stone Site: CA-SDI-17666

The Stacked Stone Site, CA-SDI-17666, is located within Township 14 S, Range 6 E, on the Cuyamaca Peak 1960 (Revised 1988) USGS 7.5-minute topographic quadrangle. The elevation is approximately 4,900 feet above mean sea level. The components of the site include a hill-top exposed rock outcrop and surrounding slopes in all directions, with the densest concentration of cultural materials on less extreme slopes to the north, west, and south of the rock outcrop (Figure 9).



View to the north. Surrounding the central feature complex are the downward slopes where the artifacts are concentrated. Burned trees and surface as visible from the air. Photo by Koral Amet.

Figure 9. Aerial Photograph Early in the Project of CA-SDI-17666.

The nearest drainage is a small creek that is a tributary of Cold Stream Creek. It lies at the northern foot of the hill upon which the site is located. A very small drainage, directly within the site boundaries is a tributary of the small drainage at the north edge of the site. Midden deposit could be seen within the walls of the drainage on the site and several artifacts were found within the drainage. It is clear that the site contains a substantial midden deposit, but at the request of Native American consultants, no testing or other excavation was carried out. The data reported here is from surface observations only. A major site, CA-SDI-191, which includes a large number of bedrock milling features, lies just to the north, across the tributary drainage, and in the immediate vicinity of CA-SDI-17666.

A vegetation survey of the site and its environs was carried out in the spring of 2005 by Kim Marsden and Larry Hendrickson, Colorado Desert District botanists. Almost all of the plants they list are new-growth plants, with only some of the aged oaks surviving the Cedars Fire at the site.

The rock features that are the major component of the site are hidden from view as one approaches the summit from the foot of the small hill. The view-shed from the site, and especially from the stone-feature complex, is extraordinary in that Stonewall Peak, a reportedly sacred landform on the geographical landscape (personal communication, Carmen Lucas, 2005), is the predominant view (Figure 10).

When first discovered, the surface surrounding the rock-feature complex was relatively bare, most of the vegetation having been burned to the ground (see Figure 2 and Figure 7). Many of the large trees on the site were skeletons of what they once were (Figure 11). It was very easy to locate the many artifacts that were on the surface. As time progressed and warmer weather came during the early spring, the rapid re-growth of the low grasses and scrubs was startling (see Figure 9). As the team conducted detailed mapping of the surface several weeks later, the new vegetation made relocation of many of the previously observed artifacts difficult.

Photo by Joan Schneider at the end of the project in May 2005.

Figure 10. View of Stonewall Peak from the Rock-feature Complex, CA-SDI-17666.

Photo by Joan Schneider taken the day of the aerial photography.

Figure 11. Trees, Burned during the Cedar Fire, at CA-SDI-17666.

Methods

It was expedient to use several different methods of recording the contents of CA-SDI-17666. These methods included aerial photography, use of aerial photographs and geo-coded targets to create a map of the site boundaries, and micro-mapping three segments of the site.

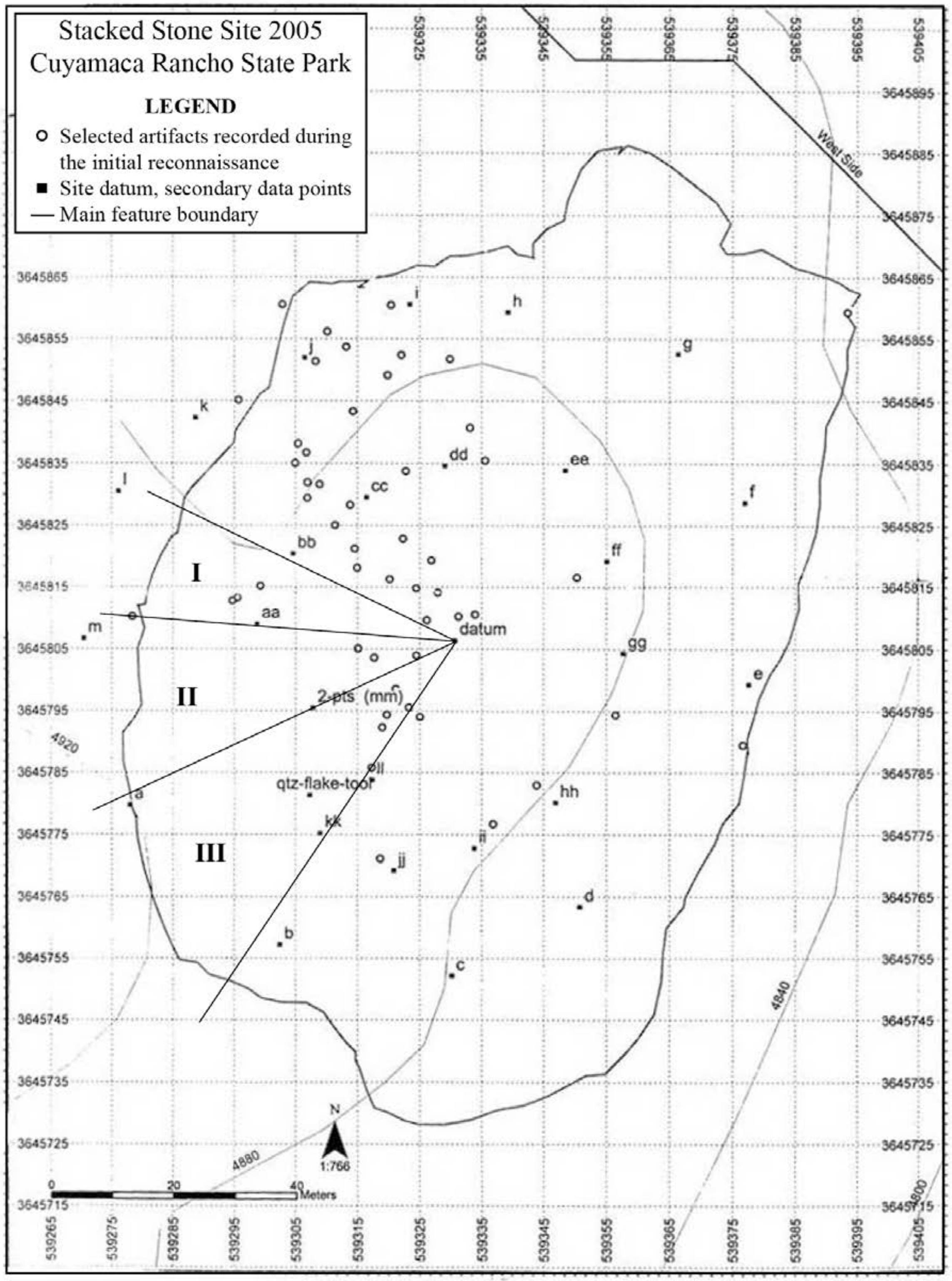
Aerial Photography

Immediately following the construction of the split-rail fencing along West Side Trail in the vicinity of the site, aerial photography was employed to document the stone-feature complex within its surroundings. The photography was conducted under a contract with Dr. Koral Amet, archaeologist and photographer. Photographs were taken using a high-definition, ground-controlled camera suspended from a helium balloon. The Principal Investigator (Schneider) and GIS specialist (Jee) visited the site in advance of the photography team. GIS geo-referenced points, as well as a central site datum, were established on the surface of the site (Figure 12). Each reference point was marked with a wooden stake with an alphabetic designation.

When Dr. Amet arrived at the site, aerial targets were created at selected wooden stakes and a series of photographs were taken from the air (see Figure 6 and Figure 9). Photographic overviews of the site were taken from appropriate altitudes. Images have sufficient resolution so that they can be greatly enlarged, yet retain sufficient detail and definition to map features directly on photographic images (see Figure 9). Rapid growth of vegetation on the site impeded the goal of mapping artifacts directly on enlarged aerial photographs. A suite of aerial photographs is available for future work at the site; all aerial photographs are in digital format and the disk is stored in the Stacked Stone Site project box at the Begole Archeological Research Center, Colorado Desert District Headquarters in Borrego Springs.

Recordation

A map of the major features of the site was created using the aerial photographs (see Figure 3). The line drawing was created by tracing over the enlarged photographs of the rock features. In this manner, the dimensions and outlines of the "room" features could be easily obtained, rather than attempting to measure the dimensions in the field. Interestingly, more features were obvious from aerial views than from observations on the ground. Several circular outlines at the edges of the main feature complex

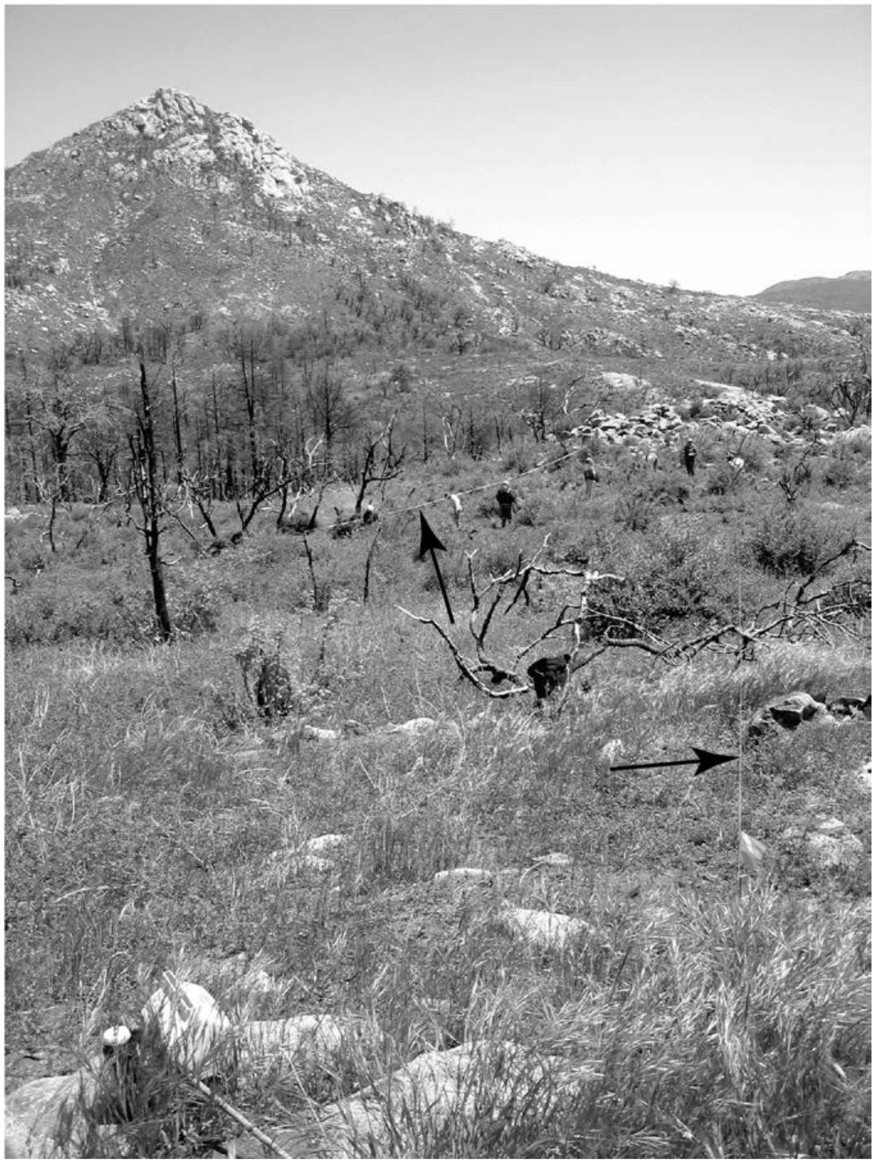


Map by Llouise Jee and Joan Schneider.

Figure 12. GIS-Generated Site Map of CA-SDI-17666 showing Micro-Mapped Segments.

could be discerned on the aerial views and were later confirmed on the ground (see Figure 3, Figure 6, and Figure 9).

The site was divided into pie-shaped segments converging on the central datum (see Figure 12; Figure 13). Because of limitations of time and the rapid re-growth of the vegetation, Schneider decided to gather data from the segments that appeared to have the densest concentration of artifacts. While the biases in this type of data collection are fully recognized, in order to optimize time and effort, this was the plan that was followed.



View to the northeast. The major stone-feature complex is in upper right of photo and Stonewall Peak is in the upper left. Note also the string that marked off the segment (with arrows). Photo by Joan Schneider.

Figure 13. Crew at Work within One of the Surface Samples Segment at CA-SDI-17666.

Concentrations of artifacts appeared to be densest on the western side of the central feature complex and where the topography was less steep. At the northern, eastern, and southeastern borders of the central outcrop, hill slopes were steeper than on the western and southwestern borders. While the preliminary reconnaissance of the surface indicated that there were artifacts in nearly every area surrounding the central outcrop, the frequencies were higher in the area that was micro-mapped and from which detailed data was collected (see Figure 12).

Within each pie-shaped segment (I-III), the crew placed pin flags at the location of each artifact observed on the surface. The location was recorded by distance (using a metric tape) and azimuth (using a hand-held compass), from one of the geo-referenced sub-datums. A data-record form was developed for the site that included this information. On the data sheet, the provenience of each artifact or small, tightly associated group of artifacts was recorded, along with the results of in-field analysis of each artifact. No artifacts were collected with the exception of those collected at the request of the Native American participant (Lucas), with the agreement of the Principal Investigator. The artifacts collected were destined for specialized analyses such as thin-section petrographic descriptions, sourcing of clays and lithics, protein-residue analysis, and ceramic paste-and-temper correlations with vessel types.

In-Field Preliminary Analyses

The basic analysis of each artifact within each of the segments was carried out in the field. The data gathered included (but was not limited to) artifact type, size, shape, material, diagnostic criteria (if present), presence or absence of use-wear, breakage, cortex, decoration, etc. All temporally or functionally diagnostic artifacts were illustrated by drawings or photographs.

All articles (with the following exceptions) were left in place. If an article had high potential for looting (e.g., projectile points, complete recognizable tools, complete vessels), those items were buried just under the surface or obscured beneath vegetation in proximity to their location.

Each pie-shaped segment was recorded separately. Segment I constituted about 600 square meters; Segment II, about 650 square meters; and Segment III, about 1,100 square meters. In all, a sample of about 2,350 square meters of the site surface was micro-mapped, about 20% of the entire site. The product of this recording procedure is a map showing distribution of material remains within the segments (Figure 14). This map can be overlain on a same-scale aerial photograph of the entire site.

Basic analyses in the field were carried out by the Principal Investigator and the Archaeological Specialist with the assistance of Ms. Carmen Lucas (Native American participant) and volunteers of the Colorado Desert Archaeology Society. During this phase of the work, the Native American Participant, along with the Principal Investigator, identified items to be collected for further analyses. After further analyses, these items were returned to the site.

Figure 14. GIS-Generated Map of GPS Artifact Locations at CA-SDI-17666.

Results

The site boundary was first determined by the locations of 52 GPS points taken on site features or individual artifacts during the preliminary reconnaissance survey of the site. Later, three pie-shaped segments, consisting of about 20% of the site surface, were completely micro-mapped and all artifacts observed on the surface were analyzed in the field.

Preliminary Reconnaissance Survey

In the preliminary mapping of the site boundaries, selected artifacts were located using GPS and photographed (see Figure 12). A few artifacts were collected for further analysis, but most remain in-place at the site. Data was gathered from ceramic vessels, found broken in-place (e.g., Figure 15 through Figure 17): rim outline and profile, shape of the vessel, and approximate size. A small ceramic fragment was taken from each ceramic vessel identified in order to provide a thin-section of the ceramic for further analysis, for correlation with the vessel type, and for the development of a ceramic database for the Colorado Desert District.[3]

The preliminary reconnaissance of the site also resulted in the discovery of a number of other artifacts that included other vessels broken in place, a steatite arrow-shaft straightener, a few historic-period artifacts, a possible ceramic figurine fragment, projectile points, other flaked-stone tools, and diagnostic ceramic fragments that were large rim fragments, had incised decoration or perforations, or other distinguishing features (Figure 18 through Figure 30). Many of these objects were photographed and GPS points marked the locations of some. Figure 18 through Figure 30 show some of the objects photographed and mapped as indicated by GPS points (see Figure 12).

Table 1 identifies the majority of the 52 GPS points that were taken during the initial reconnaissance survey. Specific information is not available for 23 of these points. We do know, however, that other points represent additional rim sherds and ceramic fragments (including one ceramic bowl

[3] After the conclusion of the fieldwork, and hand-sample description by Sue Wade, Associate State Archeologist for the Colorado Desert District, Professor Patrick Quinn of the Ceramics Laboratory at the University of Sheffield, England, requested the use of the Stacked Stone Site ceramics collection for the Master's thesis research of a graduate student. Permission was granted. The resulting thesis is archived at the Begole Archeological Research Center (Broughton 2009). An abstract of the thesis is included here within Appendix A.

broken into two large pieces), a steatite arrow-shaft straightener and a steatite "blank," at least two manos, a pestle, a projectile point of quartz and an unfinished projectile point of quartz, a glass marble, a glass bottle fragment, large burned bones, a felsite stone flake, a smoothing stone, and a quartz hammerstone. Photos of many of these objects have been used within this report and are available on digital photo files, but we are unable to correlate the objects with specific GPS points.

Table 1. Items Identified during the Initial Reconnaissance Survey of CA-SDI-17666.

GPS #	Description	Comments
1	Main room	-
2	Room 2	-
3	Room 3	-
4	Room 4	-
5	Room 5	-
6	Large rim sherd of storage vessel; quartzite core	Artifacts 1 and 2
7	Drilled rim sherd; sherd; rim sherd thinner than Artifact 1	Artifact 3 and 4
8	Burned bone	-
9	Broken olla in place; 17 associated large fragments	Artifact 5a: rim and shoulder; bone associated
10	Projectile point	Artifact 6: white quartz Cottonwood triangular
11	Sherd scatter	Artifact 5b: sherds scattered downhill
12	Large body sherds from broken olla	Artifact 5c
13	Sherd scatter with one rim different from seven others	Artifact 5d: additional sherds scattered downhill
14	Two large rim sherds	Artifacts 7a and 7b
15	Body sherds and one rim sherd	Artifact 8
16	Burned bone fragments	-
17	Porcelain historic ceramic fragment, blue-painted	Artifact 9: blue-on-white
18	Assorted bone fragments; deer?	Bone scatter
19	Rim sherd and body sherds	Artifact 10: bone associated; up and down slope
20	Rim sherd from in-curving vessel	Artifact 11: associated bone
21	Rim sherd from vertical-sided bowl	Artifact 12
22	Hammerstone/grinder	Artifact 13: quartz
23	Mano fragment	Artifact 14: red porphritic volcanic

Table 1. Items Identified during the Initial Reconnaissance Survey of CA-SDI-17666.

GPS #	DESCRIPTION	COMMENTS
24	Ceramic effigy fragment	Artifact 15
25	Burned bone	-
26	Large rim sherd	Artifact 16
27	Rim sherd	Artifact 17
28	Rim sherd	Artifact 18
29	Room 6; potsherds and flakes	-
30	Rim sherd next to Room 6	Artifact 19
31	Rim sherd; in-curving	Artifact 20
32	Rim sherd	Artifact 21
33	Burned bone	-
34	Flaked stone tool	Artifact 23: fine-grained volcanic retouched flake too
35	Rim sherd; incised parallel lines	Artifact 22: bone associated
36	Rim sherd with little re-curve	Artifact 24
37	Glass marble; orange and white swirl	Artifact 25
38	Burned bone	-
39	Incised rim and body sherds; many other body sherds	Artifact 26
40	Burned bone	-
41	Sherd scatter; large rimsherds from single pot	Artifact 27
42	Burned bone	-
43	Rim sherd, small diameter vessel	Artifact 28
44	Sherd scatter	Artifact 29
45	Sherd ground on two edges	Artifact 30
46	Pestle fragment, granitic	Artifact 31
47	Smoothing stone; purple quartzite	Artifact 32
48	Bifacial mano fragment	Artifact 33: granitic
49	Glass marble; white with tan swirl	Artifact 34: no photo
50	Site boundary; west and south	-
51	Site boundary; east	-
52	Buffware rim sherd; buffware body sherd scatter	Artifact 35: no photo
53	Site boundary; north	-

Figure 15. Vessel, CA-SDI-17666.

Figure 16. Close-up View of Vessel in Figure 15, CA-SDI-17666.

Figure 17. Major Portion of Olla, Broken in Place, CA-SDI-17666.

Photo by Sam Webb.

Figure 18. Drilled Rim Sherd (GPS Point 7), CA-SDI-17666.

Photo by Sam Webb.

Figure 19. Vessel Fragments with Incising, CA-SDI-17666.

Photo by Sam Webb.

Figure 20. Quartz Cottonwood Triangular Projectile Point (GPS Point 10; Artifact #6), CA-SDI-17666.

Photo by Sam Webb.

Figure 21. Retouched Unifacial Tool Outside Room 1, CA-SDI-17666.

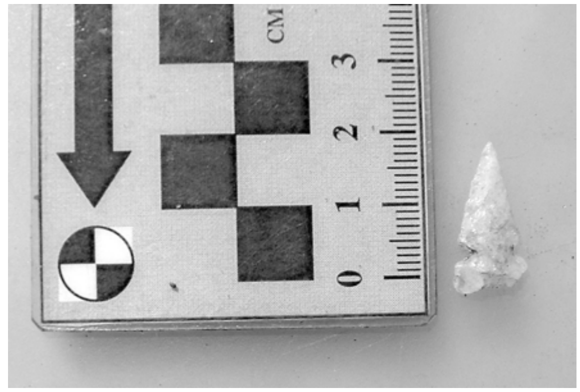


Figure 22. White quartz Desert Side-notched Projectile Point Found Near Geo-Referenced Point *mm,* CA-SDI-17666.

Figure 23. Incised Rim Sherd (GPS Point 35; Artifact #22), CA-SDI-17666.

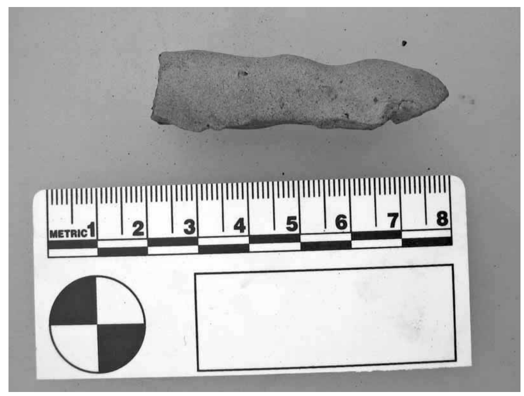


Figure 24. Possible Ceramic Figurine Fragment, CA-SDI-17666.

Figure 25. Arrow-shaft Straightener of Steatite, CA-SDI-17666.

Figure 26. Crystal Quartz Projectile Point Fragment and Obsidian Biface Fragment, CA-SDI-17666.

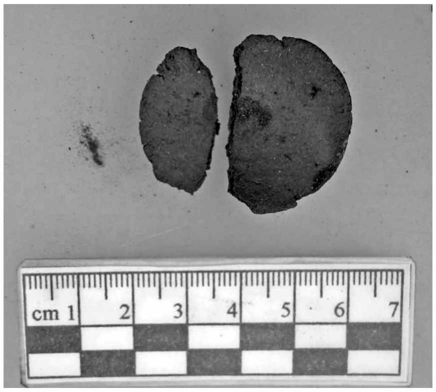


Figure 27. Bottom of Small Bowl in Two Fragments, CA-SDI-17666.

Figure 28. Quartz Hammerstone of Local Stone, CA-SDI-17666.

Figure 29. Historic White Porcelain with Blue Decoration, CA-SDI-17666.

Figure 30. Historic Glass Marble, CA-SDI-17666.

COMPLETION OF SITE RECORD

A Primary Record was completed by Schneider and filed with the South Coastal Information Center. The trinomial CA-SDI-17666 was assigned. After the fieldwork was completed, and locations of artifact scatters and features recorded along West Side Trail in the area surrounding Stacked Stone were further considered, the site was combined with the West Side Trail Mortars Locus and the two loci (Stacked Stone and West Side Mortars) were combined with CA-SDI-901 and CA-SDI-11445 (see updated site record of June 2009 [Schneider and Bruce 2009]) into one site complex.

IN-FIELD ANALYSES

In the course of the fieldwork in the three segments (see Figure 12 and Figure 14), approximately 856 items were mapped and analyzed or collected. These include:

- 552 ceramic body sherds
- 34 ceramic rim sherds representing more than 25 vessels
- 3 fragments of smoking pipes
- 225 pieces of flaked-stone debitage

- 11 flaked-stone tools including 7 projectile points, 1 biface, and 3 unifaces
- 9 cores
- 11 ground stone tools or fragments
- 11 loci with burned bone

The original data sheets are stored with the other materials from the site. A photo record and photolog of all artifacts analyzed in the field are stored in the Stacked Stone Site project box at the Begole Archeological Research Center at Colorado Desert District Headquarters.

Based on the sample derived from approximately 20% of the site surface (the three segments that were micro-mapped [see Figure 12 and Figure 14]) over the course of seven field days in May 2005, the following data are presented. The reader is reminded that this sample is derived only from the *surface* of the site. It is, however, evident that substantial midden deposits of unknown depth are present at the site. The only subsurface documentation that is available is from the postholes that were dug for the construction of the split-rail fence along West Side Trail in the vicinity of the site.

The reader should also be aware that the vegetation growth was extremely rapid at the site between its discovery in January 2005 and May 2005, when the micro-mapping and in-field analysis took place. Field notes for the project especially note this; Schneider (2005) wrote on May 9 that "there was little or no attempt to look under newly growing vegetation on the site, so that I believe that there are probably twice as many artifacts within this segment of the circle as were seen and flagged." On May 24th, when work resumed after ten days of absence from the site, field notes (Schneider 2005) stated that "vegetation growth in 10 days has been phenomenal. Visibility is much less." After the field data was collected within the sample segments, the locations were entered into the GIS system and mapped accordingly.

Lithics

Lithics are divided here into flaked stone and ground stone. The data presented below in each of these artifact classes are from data derived from the mapping and in-field analysis of artifacts within the three segment sample of CA-SDI-17666, unless otherwise noted. During the course of early visits to the site, a number of formed lithic artifacts were found and recorded by geocoded points and photographs (e.g., see Figure 20 through Figure 22, Figure 25, and Figure 26). Where these are described below, they will be identified in a footnote as outside of the three segments studied. Due to the restrictions on in-field analysis, artifact descriptions are not as complete as they would have been if artifacts were brought into the laboratory.

Flaked Stone

Flaked-stone artifacts are formed using percussion or pressure. The resulting forms may be intentional (tools) or non-intentional (flakes/debitage).

Formed Tools

The purposely formed flaked-stone tools at CA-SDI-17666 include projectile points, a biface, and several unifacial tools. Figure 31 shows the distribution of flaked stone tools in the three sample segments at the site. The middle segment appears to have fewer tools than either of the other two segments.

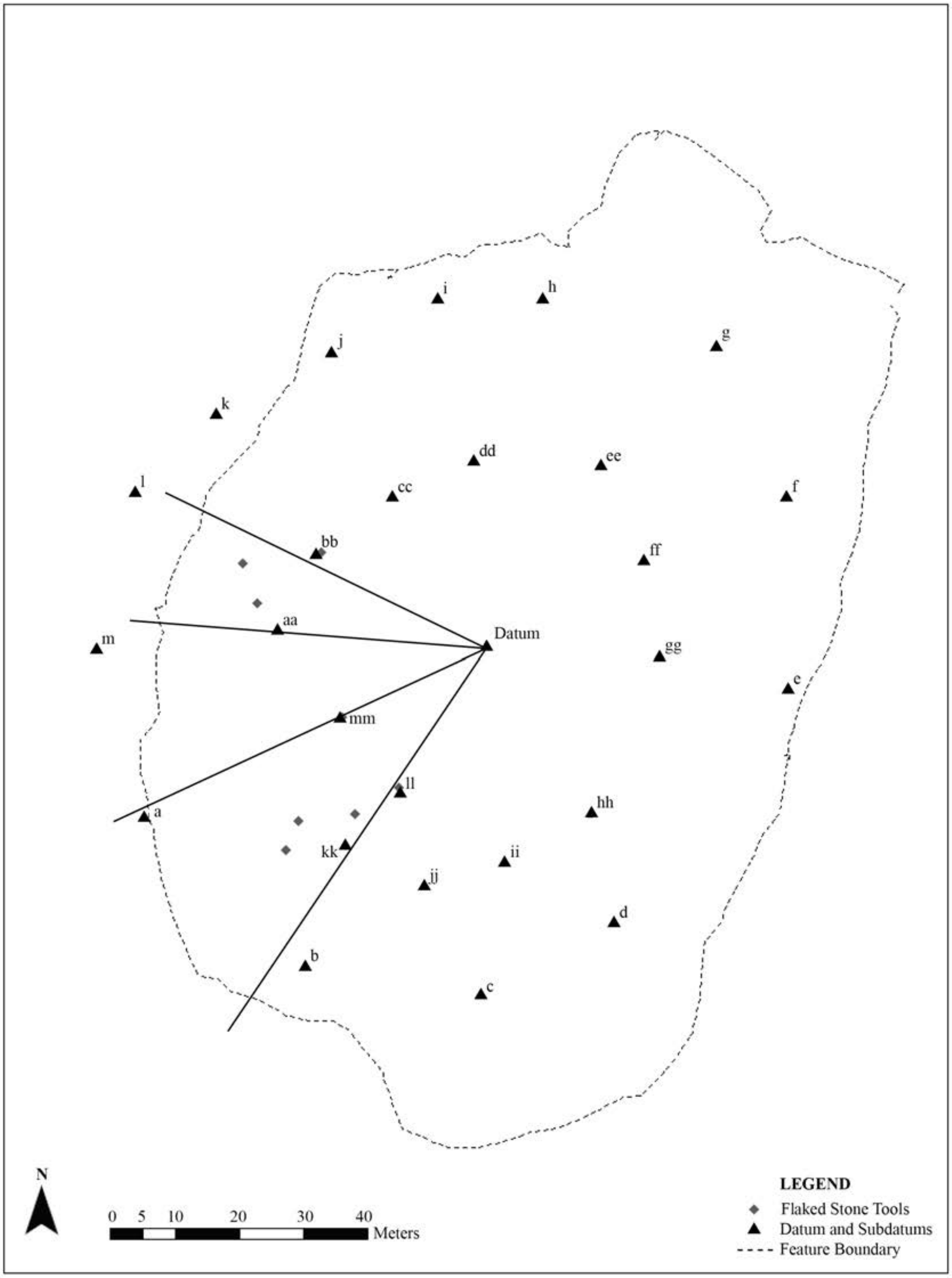
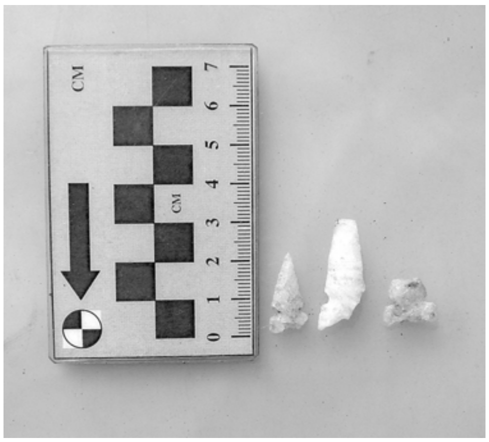


Figure 31. Distribution of Flaked-Stone Tools
within the Three Sample Segments at CA-SDI-17666.

Projectile Points (n=7). Two projectile points are represented by distal fragments only; the other five projectile points are complete or nearly complete. Three of the points are of fine-grained volcanic stone, three are quartz, and one is obsidian, probably from the Obsidian Butte source. Figure 32 through Figure 36 show the projectile points that are sufficiently complete to derive chronological information; Figure 37 presents drawings of the projectile points and their metric attributes. All projectile points are characteristic of the Late-Prehistoric period.



Point on left is also shown in Figure 22.

Figure 32. Desert Side-notched Projectile Points of Quartz, CA-SDI-17666.

Photo by Sam Webb.

Figure 33. Obsidian Cottonwood Triangular Projectile Point, CA-SDI-17666.

Photo by Sam Webb.

Figure 34. Cottonwood Triangular Projectile of Fine-Grained Volcanic Stone, CA-SDI-17666.

Photo by Sam Webb.

Figure 35. Cottonwood Triangular Projectile of Banded Obsidian, CA-SDI-17666.

See also Figure 22 and Figure 32. Drawings by Bonnie Bruce.

Figure 36. Quartz Desert Side-notched Projectile Points, CA-SDI-17666.

Found in drainage, outside of sample segments. See also Figure 35. Drawing by Bonnie Bruce.

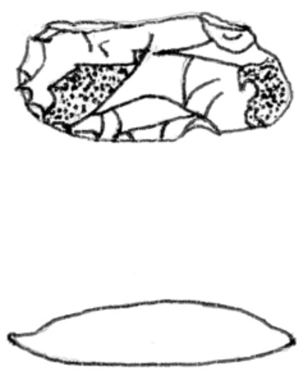
Figure 37. Banded-Obsidian Cottonwood Triangular Projectile Point, CA-SDI-17666.

Unifaces (n=4). Three unifacial tools are made on large flakes. Two are both end- and side-scrapers, one of quartz (III-1) and one of quartzite (III-56-b). The third (III-10-a, also quartz) has a single working edge (Figure 38). The fourth uniface is a small porphry core-scraper (see ahead to Figure 40).

Two flake-scrapers of quartz (III-1 left and III-10-a center); flake scraper of quartzite (III-56-b right).

Figure 38. Unifacial Flake Tools, CA-SDI-17666.

Biface (n=1). A fragment of a large bifacial tool (III-30-f) of fine-grained volcanic material was found, but not photographed (Figure 39).

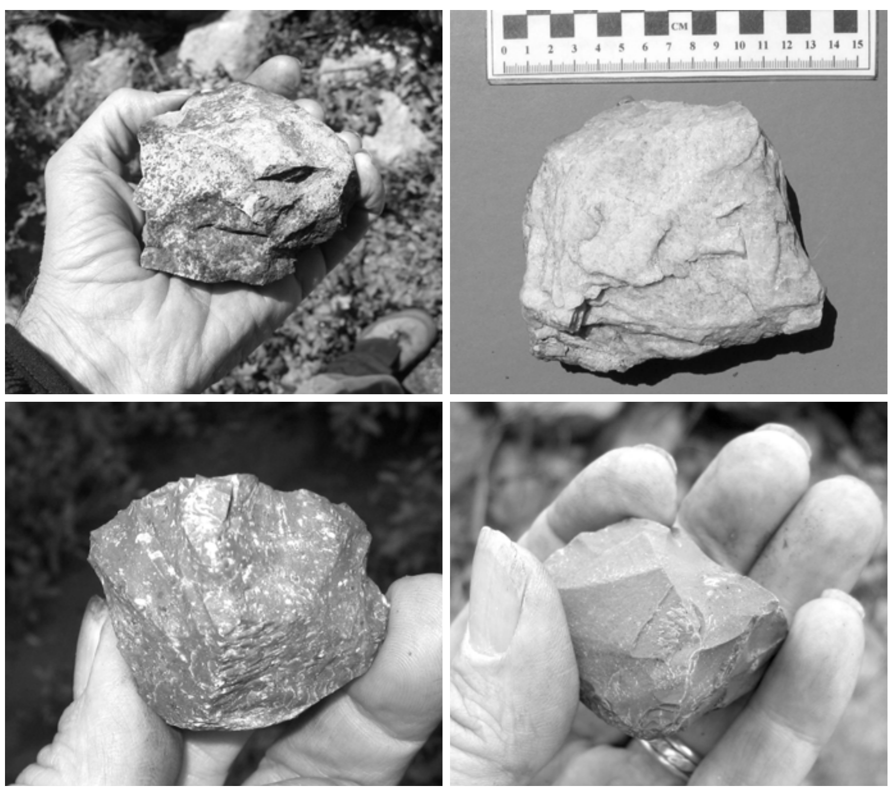


III-30-f. Stippled area is cortex. Bottom image is cross section. Drawing by Bonnie Bruce.

Figure 39. Large Biface Fragment, CA-SDI-17666.

Cores

Nine cores were present within the three segments mapped (Figure 40). Five of these were of quartz, one was of quartzite, one was of granite, one was of porphyritic volcanic material, and one, collected from within a stone enclosure, was fine-grained volcanic known as felsite.



Top left: quartzite; Top right: quartz.
Bottom left: porphyritic volcanic [also used as a scraper]; Bottom right, fine-grained volcanic (felsite).

Figure 40. Cores of Different Materials, CA-SDI-17666.

Flakes

During mapping and in-field analysis, 208 flakes were recorded within the three segment sample of the site.[4] Table 2 shows the distribution of lithic materials. It is evident from Table 2 that the vast majority (over 70%) of the debitage in the sample segments was either non-porphyritic volcanic stone or quartzite, in about equal amounts. Quartz was the next most-frequent material (almost 14%). It is interesting to note that, although at least two obsidian projectile points and an obsidian biface fragment were present at the site, no obsidian debitage was recorded within the sample area.

Most flakes were tertiary flakes (i.e., no cortex was present). This indicates that little or no primary reduction of lithic materials took place at CA-SDI-17666. Most stone-working consisted of the removal of flakes from prepared cores or refurbishing tools.

Table 2. Flakes Mapped and Analyzed in the Field by Material Type at CA-SDI-17666.

LITHIC MATERIAL TYPE	# OF FLAKES	% OF DEBITAGE
Fine-grained volcanic (non porphyritic)	76	36.6
Fine-grained volcanic (porphyritic)	2	1.0
Volcanic (non-porphyritic)	5	2.4
Volcanic (porphyritic)	15	7.2
Quartzite	71	34.1
Quartz	29	13.9
Granite	3	1.4
Unidentified metavolcanic	1	0.5
Wonderstone	1	0.5
Unknown or unidentified	5	2.4
Total	208	100.0

Shatter

Nineteen pieces of lithic shatter were mapped within the three segments. Of these, 12 were quartz, six were quartzite, and one was fine-grained volcanic stone. Shatter is defined here as debitage that cannot be recognized as a flake, but rather a portion of waste that is inadvertently broken from a core during lithic percussion reduction. The negative correlation between the frequencies of flakes and shatter of fine-grained non-porphyritic volcanic materials emphasizes the superior quality of this material in flaked-stone production. Quartz and quartzite frequently shatter because percussion is much more difficult to control.

Figure 41 shows the distribution of debitage in the three sample segments at the site. There is a definite pattern of increased density in proximity to the central rock-feature complex. However, a cluster near the sub-datum *m*, may represent a segregated stone-working area.

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[4] Although 225 pieces of debitage were recorded, additional information was collected on only 208.

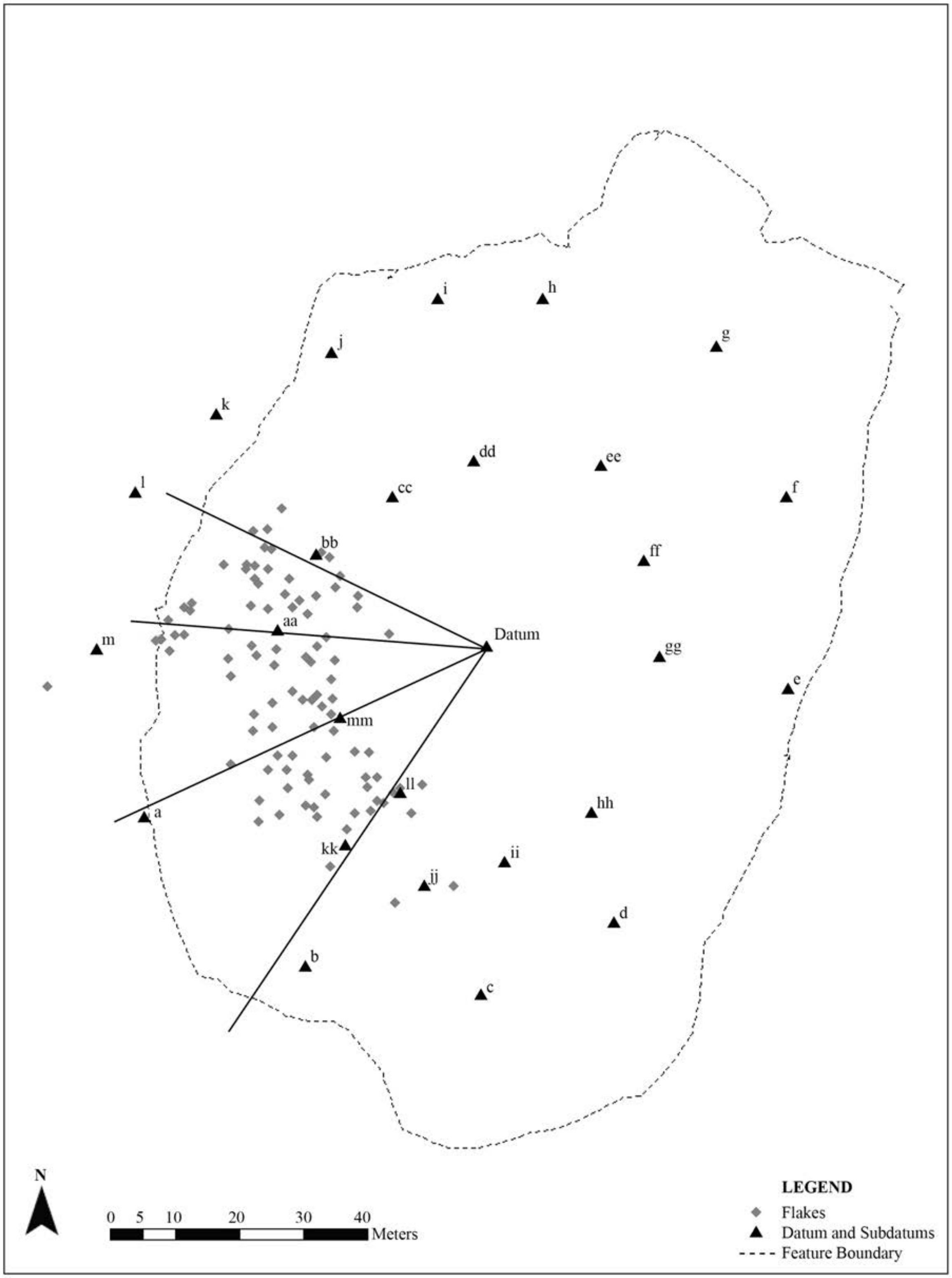

Figure 41. Distribution of Debitage (Flakes and Shatter) within the Three Sample Segments at CA-SDI-17666.

Miscellaneous

One chunk of quartzite was found that is likely a portion of a core, although no definitive flake scars were visible.

Ground Stone

During the micro-mapping, 11 ground-stone artifacts were recorded. These consisted of five manos, portions of three pestles, and three metate fragments. Two manos were collected for protein residue analysis. Figure 42 through Figure 44 show representative ground-stone artifacts. Figure 45 shows the distribution of ground-stone artifacts within the three sample segments. There appears to be a small cluster of ground-stone artifacts within the northern-most sample segment, about midway between the central stone feature complex and the periphery of the site.

Granitic, bifacial (II-1001-c) | *Porphyritic volcanic, trifacial river cobble [collected] (III-3-b)* | *Half of granitic [collected] (II-21-a).*

Figure 42. Representative Manos from the Sample Units at CA-SDI-17666.

Granitic pestle fragment, tip also broken vertically (II-29) | *Angular granitic cobble pestle/pounder (II-1001-d)*

Figure 43. Representative Pestles from the Sample Units at CA-SDI-17666.

About one quarter of a large oval or circular metate (11-9-h).

Figure 44. Metate Fragment from the Sample Units at CA-SDI-17666.

Bone

Eleven locations with burned bone fragments were recorded within the three sample segments. Most of these fragments were large mammal bone (deer), although there were some fragments of medium-sized mammals. Many fragments of smaller mammals and other animals were observed, but these were not recorded. All bone was burned, and the burning was assumed to have occurred during the 2003 Cedar Fire. No further investigations of faunal remains were conducted.

Historical Materials

Although a few historical items were located during the initial discovery and reconnaissance phases of the work at the site (see Figure 29 and Figure 30), no historical items were recorded during the micro-mapping of the three sample segments.

Ceramics

Ceramics are very well represented at CA-SDI-17666 and make up the major portion of the artifact assemblage. Ceramics represented in the site assemblage include: (1) *in situ* broken vessels and their associated fragments; (2) fragments of pipes and possible figurines; and (3) ceramic sherds not parts of *in situ* vessels. Four types of ceramic analyses were conducted: in-field analysis of body sherds using a standard typology and type hand samples; thin-section petrographic descriptions of ceramic paste and temper of a sample of both rim and body sherds collected from the site; vessel shape, extrapolating from rim sizes, curvatures, and finishes; and descriptions of decorative elements.

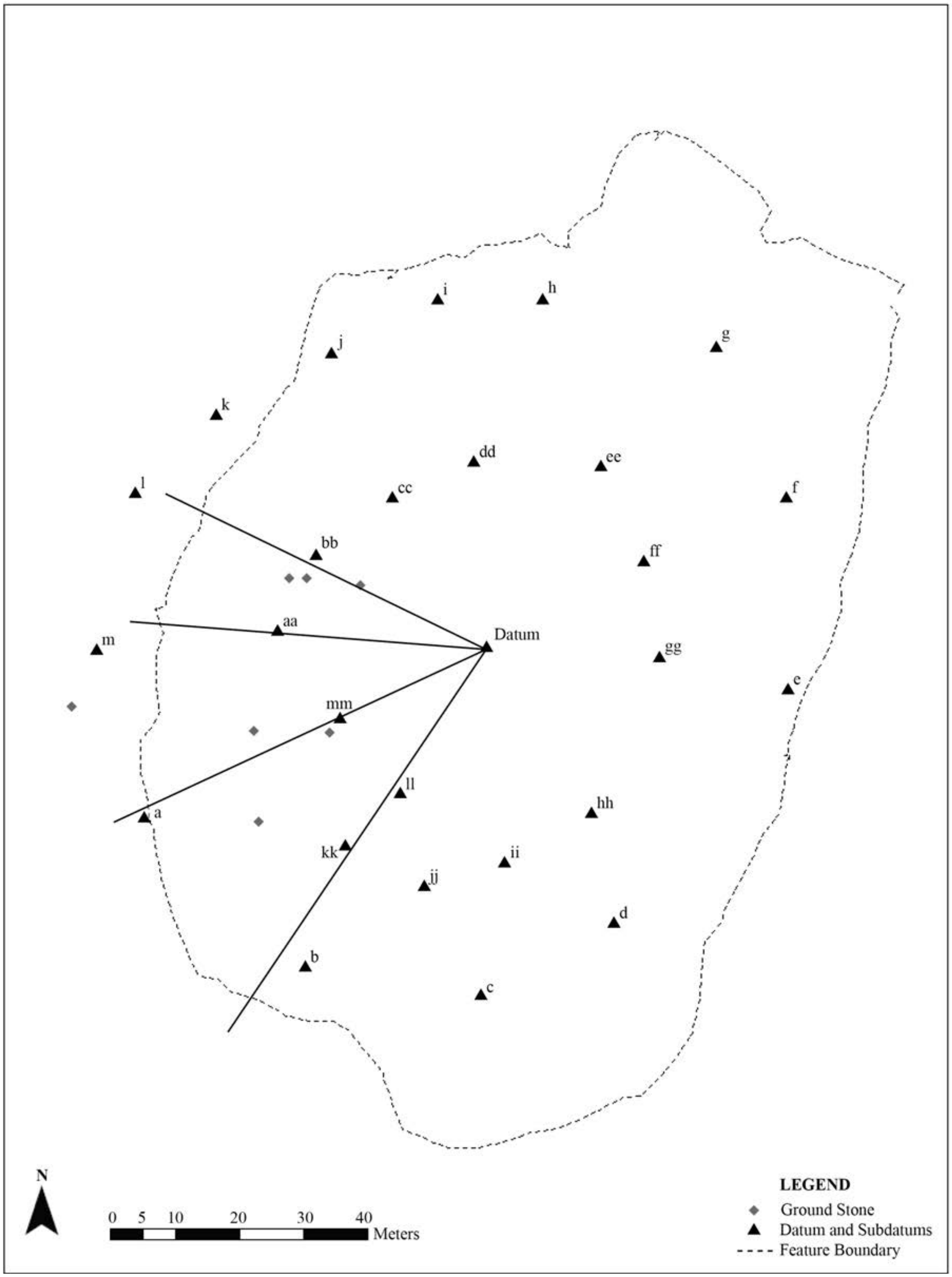

Figure 45. Distribution of Ground-Stone Tools
within The Three Sample Segments at CA-SDI-17666.

Ceramic Vessels

The ceramic data from the site has made a major contribution to archaeological knowledge of the Park area. The condition of the site surface at the time of its discovery, and the fact that it had been protected by vegetation and had not been previously visited during modern times (i.e., not been collected or looted), was quite unique. This situation provided the opportunity to (1) observe several whole but broken vessels *in situ* (see Figure 15 through Figure 17); (2) collect substantial information from rim sherds and body sherds that were not associated with the whole but broken vessels; (3) document various types of applied vessel decorations as well as elaborations such as piercing and incising (see Figure 18, Figure 19, Figure 23, and Figure 27); (4) develop a type collection of ceramic wares (both hand samples and thin-sections) that can be correlated with vessel types and sizes and used for future research purposes; and (5) observe and document a number of ceramic artifacts, other than vessels, including possible ritual objects such as smoking pipes.

Ceramic Data Collection

Two major bodies of ceramic data was collected from the site. First, during the initial discovery and reconnaissance at the site, a number of broken vessels were found, as well as ceramic objects which may have been fragments of ritual objects. These were photographed and studied in-place. Locations were determined using GPS points (see Figure 12 and Figure 14).

Second, within the three sample segments (see *Methods* above, as well as Figure 46), all ceramic objects were recorded. When rim sherds or other diagnostic ceramic objects (such as pipe fragments) were found, these were photographed and recorded in the digital photo records. Within the three segment sample of the site, 586 ceramic sherds were recorded and analyzed by a variety of methods. Of these, 552 are vessel body sherds and 34 are rim fragments of vessels. A sample collection of rim sherds, for further analysis, was taken from the three segment sample of the site surface. The results of hand-sample description of 17 of these are presented in Table 3. A ceramics typology for the site was developed by Sue Wade and implemented by Wade and Bonnie Bruce in the field. This typology was based on previous work by Wade. Sherds of wares not previously described were also present at the site. Samples of these ceramics were also collected for thin-section analysis to be developed into a ceramic type collection for further research comparisons. This collection is permanently curated at the Begole Archeological Research Center at Colorado Desert District Headquarters.[5] The results of these data-collection portions of the project are reported below and in Appendix A.

Reconnaissance Survey Sample: Ware Identification by Hand Specimen

From 20 locations where concentrations of ceramic sherds or whole broken vessels were observed on the surface of the site, 41 sherds were collected: eight were rim sherds and the remainder body sherds. The collection criteria were that diagnostic characteristics of a vessel were retrievable (i.e., that vessel rim, type, or size could be inferred from fragments).

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[5] This type collection was loaned to the Ceramics Laboratory at the University of Sheffield for further geochemical analysis and thin-section petrography (Broughton 2008).

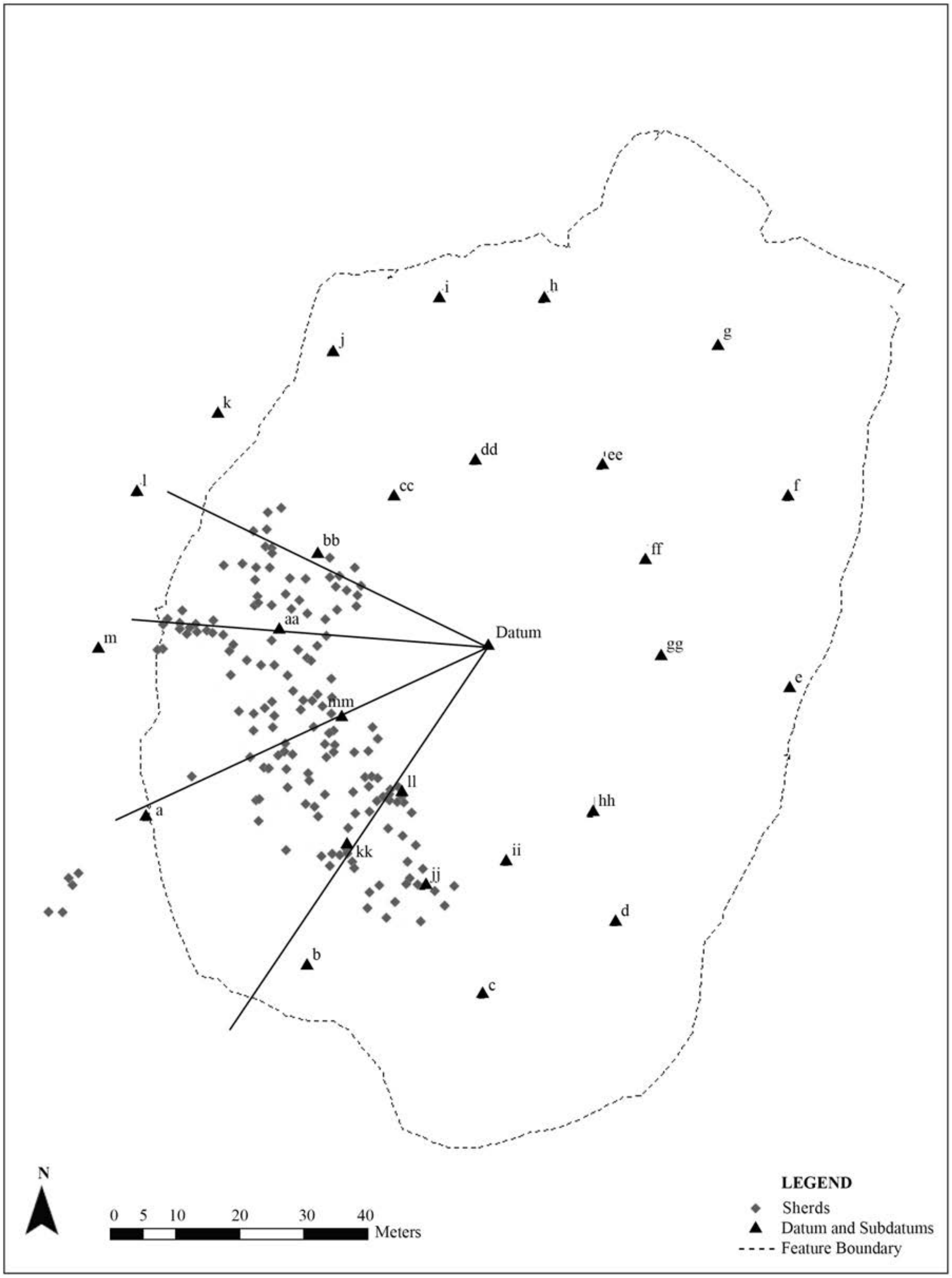


Figure 46. Distribution of Ceramic Sherds
within the Three Sample Segments at CA-SDI-17666.

Table 3. Typological Characteristics, based on Hand Samples of 17 Rim Sherds from within the Micro-mapped Sample Area at CA-SDI-17666.

THIN-SECTION DESCRIPTION	# OF VESSELS
Salton Brown/Buff	5
Tizon Brown	1
Fine-paste brown	5
Gray paste with medium quartz and tourmaline inclusions	2
Buffware?	1
Brown with natural inclusions	1
Unidentified (large amounts of quartz)	2
Total	17

Notes: Upon closer examination, one sherd was recognized as a body sherd, rather than a rim sherd. Nevertheless, the sherd is included here (Tizon Brown).

Seventeen sherds (almost all *body* sherds) were analyzed. The hand-sample descriptions, were carried out by Sue Wade. She used the following criteria:

- *Salton Brown*: predominantly large angular quartz inclusions in sandy matrix—*residual clay*
- *Salton Buff:* subangular-rounded quartz inclusions—*sedimentary clay*
- *Tizon Brown:* poorly sorted small inclusions—*residual clay*

Four different wares were identified: five sherds were classified as Salton Brown, three as Salton Buff, seven as Tizon Brown, and one was an unidentified buffware with a large proportion of amphibole crystals; one thin-section was too burned to classify. Six of the collected and thin-sectioned sherds had red-paint decorations; one had a drilled hole near the rim.

Vessel Rim Sherd Profiles and Vessel Types

Of the 14 vessels recognized during the reconnaissance survey, representative rim sherds were collected from three; the remainder was analyzed in the field. Figure 1 in Appendix A shows the profile drawings of the rim sherds of the vessels (numerical designations). The data from the Wade analysis of the rim sherds are in Table 1 of Appendix A. Six different rim forms were recognized. Rim radii ranged from 6.0 to 16.0 centimeters (neck openings between 12 centimeters and 32 centimeters) with the mean radius about 9.8 centimeters (vessel opening about 19.6 centimeters). Most vessel surfaces were wiped (n=10), a few were burnished (n=3), and one appears to be molded.

Three Segment Sample

The detailed mapping of the three segment sample resulted in the recording 34 rim sherds and 552 body sherds (see Figure 46). Rim sherds were collected for thin-section petrographic analysis because of the diagnostic information regarding vessel shape and size that they represent.

Vessel Rim Sherds

Of the 34 rim sherds documented and collected within this area, a 50% sample of 17 sherds was selected for thin-section analysis. The thin-section petrographic analysis determined that, although some of the vessels could be classified into well-recognized types, there were a number of non-recognized ware types. The results of the hand-sample analysis by Wade are in Appendix A and Table 4. Table 3 presents a summary of this information: among 17 vessels represented by their rims, seven different wares were identified. This is particularly interesting in that vessel clays were derived from a wide variety of sources and were not confined to mountain sources.

Table 4. Available Descriptions under 10x Hand Lens for All Collected Ceramic Sherds from CA-SDI-17666.

Rim Sherd	Thin Sect	Vessel Type	#	Ceramic Description
A	X	Rim: Same vessel as B	-	#5 Salton Brown
B	X	Rim: Same vessel as A	-	#5 Salton Brown. Greyish matrix with fine/medium sorted quartz and feldspar inclusions.
C	X	Rim: Segment III. Fine brown paste	-	Brown matrix with fine/medium quartz, hornblende, tourmaline inclusions.
D	-	**Rim: Not thin-sectioned**	-	-
E	X	Body sherd: Tizon Brown	-	Brown matrix with fine/coarse poorly sorted primarily quartz, but hornblende and feldspar inclusions.
F	X	Rim: Fine paste brown	-	Poorly sorted fine/medium matrix; poorly sorted primarily quartz inclusions.
G	X	Rim: Fine paste brown	-	Brown matrix with few fine inclusions.
H	-	**Rim: Not thin-sectioned**	-	Buffware?
I	X	Rims: Field #18 A, D Salton Buff/Brown	-	Grey matrix with fine/medium quartz inclusions.
J	X	Rims: Field # 19 ae, af. Gray Paste	-	Fine grey paste with few fine quartz inclusions.
K	X	Rim: Segment III-22-b. Fine paste brown, incised	-	Fine paste with few inclusions.
L	X	Rim: Segment III-31-e; Gray paste (#6)	-	Gray paste with fine/medium inclusions.
M	-	**Rim: Not thin-sectioned**	-	-
N	X	Rim: Segment III-44-c. Buff?	-	Tan sandy matrix with few fine quartz inclusions.
O	-	**Rim: Not thin-sectioned**	-	Possible pipe fragment.
P	-	**Rim: Not thin-sectioned**	-	-
Q	-	**Rim: Not thin-sectioned**	-	-

Table 4. Available Descriptions under 10x Hand Lens for
All Collected Ceramic Sherds from CA-SDI-17666.

Rim Sherd	Thin Sect	Vessel Type	#	Ceramic Description
R	X	Rim: Field #55a. Salton Buff/Brown	-	Fine gray matrix with well-sorted medium quartz inclusions.
S	X	Rim: Field #56c. Salton Buff/Brown	-	Fine gray paste with few fine quartz inclusions.
T	X	Rim: Field #57a. Brown	-	Grey matrix with coarse/very coarse quartz inclusions.
U	-	**Rim: Not thin-sectioned**	-	-
V	X	Rim: Field #69g. Brown	-	Fine brown paste with few medium/ coarse inclusions.
1	X	Field #22	-	Sandy brown matrix with primarily quartz find/medium poorly sorted inclusions.
2	-	2 rim fragments of small bowl. **Not thin-sectioned**	-	-
13+14	X	2 rim fragments of large vessel (part of 11-12-c)	-	Fine brown paste; fine brown matrix with variety of fine/medium/coarse poorly sorted inclusions. Buried in place.
II-8-e	-	-	1	-
II-10-b	-	-	24	-
II-19	-	-	13	-
II-13-f	-	-	11	-
II-14	-	Fine paste brown	2	-
III-B	-	-	1	-
III-2	-	-	1	-
III-13-f	-	-	1 or 3	-
III-39	-	Neck: brown	-	Brown paste with medium/coarse quartz inclusions .
III-39	-	Body: buff	-	Reddish buff fine paste with few medium quartz inclusions.

Notes: Thin sections derived from this project are available for those sherds indicated. Additional sherds (both rim and body) were subsequently thin-sectioned and studied by the University of Sheffield, Great Britain. All thin sections and sherds are curated at the Begole Archeological Research Center, Borrego Springs and are available to researchers.

Sherds and Vessel Types

Figure 2 in Appendix A presents drawings of profiles of rim sherds (and some vessel walls) of specimens that were found within the three segment sample (alphabetical designations). Rim radii ranged between 4.5 centimeters and about 13 centimeters (vessel openings between 9 centimeters and about 26 centimeters) and the mean radius about 9.0 centimeters (vessel opening about 18 centimeters). Bonnie Bruce further analyzed the vessel types using a standard rim-shape typology developed by Wade. Of 22 rim sherds analyzed, nine vessel types could be identified including: one flare-sided open bowl (Type 1); four open-mouthed vessels with vertical sides (bowls) and recurved neck (Type 2); three small bowls and a neck with minimal recurve (Type 2b); two neck-less vessels (jars) with moderately constricted opening and little recurving (Type 5); one jar without recurving (Type 5a); two large-mouthed jars (Type 5b); one direct-rim vessel (Type 6); one olla with a moderately constricted neck (Type 7); and two ollas with narrow necks (Type 10). Three other rims were too small to determine a vessel shape: one might be a jar or a seed jar (Type 4); one might be either a cooking pot (Type 3) or a jar or bowl; and one might be either a jar or bowl. One sherd is a rim from a ceramic smoking pipe and one sherd, on closer examination, is not a rim sherd. Surface treatments were almost all wiped; finger-nail incision was observed on one rim sherd and thumb impressions on another. Table 2 in Appendix A presents the data from either field or laboratory analysis of the vessel rim sherds.

Vessel Body Sherds

The information gained from the 361 of the 552 body sherds was through in-field analysis based on an evolving typology from previous work by Wade, but continually modified by findings during fieldwork (Figure 47 through Figure 50). Because of the heavy burning of the surface of the site, many sherds were too burned to classify. In addition, the conditions of in-field analysis (lack of laboratory facilities and use of low-magnification observations of paste and temper characteristics), make the field-collected data tentative. Nevertheless, the information emphasizes the wide variety of ceramic types represented at CA-SDI-17666.

The surface density of ceramic sherds within the three sample segments, as shown in Figure 46, is startling (the majority of the symbols on the map of the site represent more than one sherd). The density of ceramics in proximity to the central rock feature complex is obvious, as is the fall-off in density, from the center toward the periphery of the site, with two exceptions. One exception is similar to that of the distribution of flaked-stone debitage: there is a small, but tight, concentration of ceramics at the periphery of the site near sub-

Artifact #11 (GPS Point 20) *Artifact #12 (GPS Point 21)* *Artifact #20 (GPS Point 31)*

Figure 47. Three Representative Vessel Rim Fragments
from Reconnaissance Survey at CA-SDI-17666.

Rim sherd
Artifact #1 (GPS Point 6)

Rim sherd
Artifact #19 (GPS Point 30)

Modified sherd

Figure 48. Three Representative Ceramic Fragments
from Reconnaissance Survey at CA-SDI-17666.

Figure 49. Archaeologist Bonnie Bruce Conducting In-field Analysis of Vessel Sherds Recorded during Micro-Mapping of Three Segment Sample at CA-SDI-17666.

III-2-k (Rim B), a large open-mouthed jar, Salton Brown [thin section]

III-8-f (Rim C) a small bowl, fine paste brown [thin section]

III-12-p (Rim G) an olla with a moderately constricted neck, fine paste brown [thin section]

Figure 50. Three Representative Vessel Rim Sherds
from the Micro-Mapped Three Segment Sample at CA-SDI-17666.

datum *m*. Whether or not this represents some sort of segregated work or disposal area cannot be determined without further fieldwork at the site and additional data recovery. The other exception is a very tight concentration of ceramics just outside the entrance to the major "room" in the central rock feature near sub-datum *ll*.

Table 5 presents the results of the in-field analysis of ceramic sherds located within the three sample segments.

Table 5. Data from In-Field Analysis of Body Sherds within the Micro-Mapped Sample Area at CA-SDI-17666.

HAND SAMPLE DESCRIPTION	# OF SHERDS
Tizon Brown	35
Salton Brown	4 or 5
Fine-paste Brown	108
Unidentified Brown	24
Total Brown Ware	**172**
Unidentified Grey Ware	1
Odd Grey Ware	10
Total Grey Ware	**11**
Salton Buff	8
Colorado Buff	9
Micaceous Buffware	3
Unidentified Buffware	29
Buffware too burned to further classify	4
Total Buffware	**53**
Unidentified: too burned	108
Unidentified: too small	1
Total Unidentified	**109**
Painted sherds	12
Rim sherd with pine sap (collected)	1
Incised	2
Fiber-wiped sherd	1
Fiber-impressed glob of clay	1
Total with applied design or material	**17**
GRAND TOTAL	**361**

Notes: Data from in-field analysis of body sherds within the micro-mapped sample area.

Pipe Fragments

Three pipe fragments were documented within the three micro-mapped segment sample. With the exception of the handle fragment of a "bow pipe" characteristic of Yuman-speaking peoples (Figure 51), the other two were small pieces of very fine paste and were thin-walled. None of the pipe fragments were collected except for Rim-O, thought to be a vessel fragment.

Drawing by Bonnie Bruce.

Figure 51. Pipe Fragment, CA-SDI-17666.

Analysis and Interpretation

COMPARATIVE CERAMICS COLLECTION ANALYSIS

As a Master's thesis project, David Broughton, a graduate student at the University of Sheffield in Great Britain advised by Dr. Patrick Quinn, undertook a comparative re-analysis of the ceramics collection from the CA-SDI-17666. The full report of this re-analysis is attached as Appendix C. The report is summarized and synthesized here, based on that document. The results of the analyses of Broughton and Quinn (2009) are in substantial contrast to the more traditional analytical methods that have been used in the region and the findings of Broughton and Quinn question the validity of the traditional methods.

Broughton and Quinn (2009) proposed to use three independent analytical methods to create independent data sets and then to compare the results from the following methods: (1) hand-specimen fabric analysis; (2) thin-section petrography; and (3) analytical chemistry. They were confined to the existing 76-sherd sample; 52 of which were the sherds from the 589 ceramic artifacts recorded within the three segment sample of the site, while the remaining (n=24) were sherds collected outside the micro-mapped area of the site. They also compared the site sample to raw material clays collected from both Cuyamaca Rancho State Park and Anza-Borrego Desert State Park in previous projects. In addition, they studied findings and collections from other nearby sites such as *Wikalokal* (Buckman Springs) studied by Galluci (2001, 2004) and Hildebrand et al. (2002). They also looked at previous work in the Colorado Desert (Quinn and Burton 2008) where a sample of 70 sherds from seven different sites in Anza-Borrego Desert State Park was studied. Additionally, they used comparative data from both published and unpublished reports from other sites.

Hand-Specimen Analysis

The hand-specimen analysis method described sample color, texture, and inclusions using a binocular microscope under low magnification. Each sherd in the 76-sherd sample was assigned to one of the five general types proposed by Laylander (1997) in his work at CA-IMP-6427. These types include:

- BT (previously called Tumco Buff and Black Mesa Buff) characterized by angular clay or sherd temper with thicker walls and less firing than Type C;

- C characterized by meager amounts of quartz and feldspar temper, well-fired, and with thin walls of uniform thickness;
- CPPT (previously called Colorado Beige, Palomas Buff, Parker Buff, Topoc Buff, and Salton Brown within the Lower Colorado River basin) characterized as containing abundant angular-to-rounded inclusions of quartz and feldspar and with a crumbly texture;
- S (also within the Lower Colorado basin) characterized by abundant sand temper, uniform in size, well-rounded, and “frosted”; and
- Tz (previously called Tizon Brown), characterized by its brown color, rough, poorly sorted matrix, abundant angular inclusions as well as micaceous material.

According to Broughton and Quinn (2009), the 72-sherd sample contained 14 rim sherds and 61 body sherds. The rim sherds represented six ollas (cf. jars), one bowl, one scoop, and one pipe. Five of the vessels had mouth openings greater than 12 centimeters in diameter, suggesting that there were many open-mouthed vessels on the site. There was one narrow-necked vessel (i.e., ca. three centimeters diameter mouth opening). No base sherds were recognized, but this may have been due to the rounded shapes of traditional vessels.

Three of the 76-sherd sample had decorations, two of which were incised or notched rims. There was also fire-clouding, finger impressions, relic coil structures, and grass or fiber impressions. Colors ranged from black/dark brown to reds, to light grays. The color variation reflects the differences in raw materials and the firing conditions, according to Broughton and Quinn (2009).

All but four of the 76-sherd sample could be ascribed to one of Laylander’s 1997 general types: Tz: n=33; CPPT: n=26; C: n=10; BT: n=3; S: n=?. One could not be assigned to any type and three could not be distinguished between types S and CPPT.

Thin-Section Petrography

From the 76-sherd sample, 52 thin sections were available for study. These were viewed under polarized light in using a petrographic microscope. Each sherd was assigned to a Fabric Group (as contrasted with a more quantitative approach used by Hildebrand et al. 2002). The assignment to fabric group was based on composition, size and abundance of dominant particles or inclusions, nature of the clay matrix, and the presence of pores (i.e., voids). This method was based on a previously developed hierarchal system (Day et al. n.d.). The fabric groups for southern California ceramics was based on previous work in the Colorado Desert (Quinn and Burton 2008) where 19 fabric groups for plain-ware ceramics had been proposed.

The results of the petrography of the 52 thin sections suggest that all the samples could be placed in four fabric groups, two of which (Fabric Groups 2 and 14) had been previously described by Quinn and Burton (2008) and two of which are newly described fabric groups (Fabric Groups 20 and 21). The proportions are:

- Fabric Group 2: 14 sherds (27%)
- Fabric Group 14: 4 sherds (8%)
- Fabric Group 20: 33 sherds (63%)
- Fabric Group 21: 1 sherd (2%)

A majority (63%) of the examined sherds were placed in Fabric Group 20, newly described as being characterized by poorly sorted sub-angular to sub-rounded coarse-to-medium-sized inclusions of quartz, plagioclase feldspar, hornblende, and rock fragments in a non-calcareous clay matrix, probably residual from the weathering of granodiorite or gabbro. This fabric group was not present in any of the Anza-Borrego Desert State Park samples (Quinn and Burton 2008). Broughton and Quinn (2009) went on to re-analyze 100 sherds from Wikalokal (Galluci 2001) and found that 46% of those sherds fell within the Fabric Group 20.

The next most frequent fabric group represented in the site sample was Fabric Group 2 (27%). This fabric group had been previously described by Quinn and Burton (2008) and is characterized as containing medium-sized, generally poorly sorted angular mineral (quartz and plagioclase feldspar) and rock inclusions of medium-grained acid-to-intermediate igneous rock (probably a micro-granodiorite) in a red- or orange-firing non-calcareous clay matrix. There are smaller amounts of orthoclase feldspar, biotite, and hornblende. Fabric Group 2 was common in the ceramic sample collections from Anza-Borrego Desert State Park (Quinn and Burton 2008) and Wikalokal (Galluci 2001) where 11% of the re-examined collection was placed in Fabric Group 2.

Four sample sherds (8%) were placed in Fabric Group 14, also previously described by Quinn and Burton (2008). This fabric group is characterized as having poorly sorted sub-angular to sub-rounded quartz, plagioclase feldspar, and biotite inclusions in a residual non-calcareous red-firing clay matrix. This clay may have been derived from the weathering of a medium-grained acid or intermediate igneous rock rich in biotite or a biotite-mica schist. The main characteristic that distinguishes Fabric Group 14 from Fabric Groups 20 and 2 is the abundance of biotite. Comparisons with other site samples revealed that only one sherd of this fabric group was present in the Anza-Borrego Desert State Park sample—that sherd came from CA-SDI-343, at Middle Willows in Coyote Canyon, in the far north of the park; a re-examination of the Wikalokal sample (Galluci 2001) found that 35% of those sherds could be placed within Fabric Group 14.

The remaining sherd in the sample collection was assigned to a new fabric group: Fabric Group 21. It is characterized as having medium-grained, poorly sorted inclusions of quartz, polycrystalline quartz, and muscovite mica in a non-calcareous clay matrix. The source of this naturally residual clay was likely a muscovite mica schist. No sherds of this fabric group were found in either the Anza-Borrego Desert State Park or the Wikalokal sample collections.

Chemical Analysis

The third independent data set on the CA-SDI-17666 ceramic sample was through bulk analysis of whole sherds using newly available portable X-ray fluorescence (XRF) technology; this portion of the project was considered experimental. In order to test the validity of the XRF, plans were made to compare the findings with those of neutron activation analysis (NAA) conducted by Hildebrand et al. (2002). No NAA analysis was carried out on the ceramics. The portable XRF recorded 28 elements within each sherd. Of the 28 possible elements, 11 registered, but there was great variation, even within a single sherd and at the same location on each sherd at different times. This data was then subjected to cluster and principal component analyses. The results of the chemical analysis were found to be unreliable and it was not generally possible to reproduce results. For these reasons, chemical analysis results were discarded as one of the comparative datasets.

Local Raw Material Analysis

Two approaches to determining the sources of the clays from which the site ceramics were made were attempted. One approach was the analyses of two local raw clays; the second was using available geological information to determine possible sources. Two samples of local clays were available: one was in proximity to CA-SDI-17666, having been acquired from a posthole dug for a protective fence (STP-L); the other was a local clay sample from Descanso within the Park. These clays were processed and fired into briquettes. The fired briquettes were thin-sectioned and subjected to petrographic analysis. The local clay was a good match for Fabric Group 20, but appeared to have more hornblende and was somewhat coarser. The Descanso raw clay sample was only a fair match for Fabric Group 20, but had more biotite.

The second approach, using available geological data, was hampered by a lack of highly detailed geological mapping for the area. However, it was possible to make some statements. It is "possible that Fabric Group 2 and/or Fabric Group 14 are derived from residual clays formed on one of the granodiorite or tonalite masses that occur in the Peninsular Ranges near the Park" (Broughton and Quinn 2009:13). The source possibilities for Fabric Group 14 also include Julian Schist or a mix of the schist with Stonewall granodiorite. Fabric Group 21 may also be from a metamorphic source. Very few compositional matches existed between the CA-SDI-17666 ceramics and the raw material database of Quinn and Burton (2008).

Intrasite Comparisons

The researchers did not find any indication of spatial patterning for the ceramics within the three segment sample at the site. A larger sample might produce such patterning.

Discussion of the Results

Below are some of the major points that can be made concerning this project that compared three different analytical methods. Basically, the results obtained from the three methods are contradictory, and few good correlations exist. For example, hand-sample type Tz contains all four fabric groups and all chemical groups. "Petrographically identical ceramics to those classified as Tz have also been classified as CPPT, C, and BT" (Broughton and Quinn 2009:16). Moreover, "there are clear discrepancies between the types to which site ceramics were ascribed and their composition in thin section" and "typological classification of the sherds also suggests that the typological classification does not capture the true picture of the assemblage" (Broughton and Quinn 2009:18). To summarize, this study found that for the undecorated paddle-and-anvil ceramics of southern California, there is very little information in hand samples which can be used to separate the ceramics into meaningful groups (Broughton and Quinn 2009:18).

There are some findings, however, related to understanding the ceramic technology used by indigenous people who used the site. Local clays were used that often had angular inclusions and rock fragments; refinement probably was minimal, with only the larger particles of rock removed from the raw clays. There is no evidence of added temper. Coiling and beating was used to construct vessels that were then fired in both oxidizing and reducing environments.

Through the fabric group comparisons of CA-SDI-17666 ceramic sample with the ceramic samples from both Wikolocal and Anza-Borrego Desert State Park sites, the researchers suggest that there were strong social and economic connections between CA-SDI-17666 and Wikolokal and between Wikolokal and the desert sites of Anza-Borrego Desert State Park.

Interpretations and Conclusions

The authors' own words best present the interpretations and conclusions of this study. They are quoted below.

> The conclusion of this comparison between the results of the three different compositional techniques is that, in the case of these ceramics, thin section petrography is the most reliable method for capturing the meaningful variation in the Stacked Stone Site assemblage. Visual petrographic analysis has permitted the identification of four clear groups, distinguished by obvious mineralogical characteristics that must represent differences between the origins of the materials used in the production of the ceramics. Added to this, the petrographic analysis has also provided several important clues about the technological steps involved in pottery manufacture. [Broughton and Quinn 2009:19]

> On the whole then, most of the ceramics analysed from the Stacked Stone Site could be broadly local to the site. There is sufficient evidence in most cases to suggest that they may have been produced somewhere in the Laguna Mountains from residual clays formed on one or other of the igneous or metamorphic bedrock formations that occur here. No obviously non-local ceramics, such as the fine, clay-rich, grog tempered 'buff ware' ceramics of Quinn and Burton's (2008) Fabric Group 7, which is likely to have been produced in the desert and transported to Wikalokal (based upon re-examination of the thin sections of these authors). Despite the typological classification of the Stacked Stone Site sherds into four, or perhaps all five of Laylander's (1997) types, no true 'buff ware' sherds with a desert origin occur in the samples analysed. Instead most are relatively coarse, rich in natural angular inclusions, have a non-calcareous clay and are likely to have originated from the mountains. [Broughton and Quinn 2009:24]

> The existence at the site of sherds of more than one composition, could suggest that potters were utilising several different local raw material sources to produce ceramics close to the site . . . in addition to Fabric Class 20, suitable raw materials for the other three fabric classes might exist within reasonable walking distance from the site. Another, perhaps more likely interpretation of this ceramic diversity is that ceramics were brought to the Stacked Stone Site from several different sources . . . one or more of these sites could have existed within Cuyamaca Rancho State Park or the Laguna Mountains. The implication of this suggestion is that the Stacked Stone Site did not exist in isolation and was connected to other native sites in southern

California. People were travelling to the site, perhaps from more than one direction and bringing ceramics with them. The diversity of the assemblage analysed from the Stacked Stone Site compared to sites such as CA-SDI-343 in northern Anza-Borrego Desert State Park, at which Quinn and Burton (2008) found some 11 different fabric classes in their analysis of 27 sherds, is rather low. The four fabric classes found at the Stacked Stone Site could all be made from raw materials in the Peninsular Ranges and no clear sedimentary 'buff' fabric classes were detected. This indicates that the site was connected mainly to one or more other sites in the mountains and not connected directly to the desert to the east. [Broughton and Quinn 2009:24-25]

PROTEIN RESIDUE ANALYSIS

Five artifacts and accompanying soil samples from CA-SDI-17666 were submitted to the Laboratory of Archaeological Sciences at California State University, Bakersfield, for protein residue analysis. The artifacts were selected based on tool type and the potential for the presence of protein residues. The report from the laboratory is provided as Appendix B. All five artifacts tested positive for at least one type of protein residue (Table 6).

Table 6. Results of Protein Residue Analysis on
Five Artifacts and Soils from CA-SDI-17666.

ITEM	RABBIT	CHICKEN	CAPPARIDACEAE	POACEAE	AGAVE
Pestle, fragment	+	-	+	-	-
Mano, Granite	-	-	+	-	-
Associated Soil	-	-	-	+	-
Mano, Porphyry	+	-	-	+	-
Uniface, Quartz	+	+	-	-	-
Mano, fragment	-	-	-	+	+
Associated Soil	+	-	-	+	-

Three of the artifacts tested positive for Rabbit. It is well documented in the ethnographic literature that rabbits, both cottontail (*Sylvilagus audubonii*) and jackrabbit (*Lepus californicus*), were major stable meat protein subsistence items in the diet of indigenous peoples of southern California (e.g., Bean 1972:59; Bean and Smith 1978:571; Luomala 1978:601; Steward 1938:38-39) but we also know that rabbits were taken and the skins used for rabbit-skin blankets. That animals, as well as plants, were processed using ground stone artifacts has been well documented (Yohe et al. 1991).

Two artifacts tested positive for Capparidaceae, plants of the caper family (Munz and Keck 1959). The only common plant of this family known to have been used by indigenous peoples is bladderpod (*Isomeris arborea*). Although it has quite a disagreeable odor, this plant flowers throughout the year and was eaten at various stages of its growth as a vegetable with much the same texture and taste as spinach. Evidently, the Kumeyaay used mature flowers and leaves and boiled them together to rid them of their bitterness; the

Cahuilla preferred using immature plants, perhaps because they were less bitter (Barrows 1890:66; Bean and Saubel 1972:79-80). Perhaps the cooked greens were smashed or pulverized to make them more palatable. Although Bean and Saubel (1972) reported that this plant grows in the foothills and in the Banning Pass area, it is most common along desert washes, although it is also present on hills, coastal bluffs, and stabilized dunes (Munz and Keck 1959:207).

Two manos and their associated soil samples tested positive for Poaceae, plants of the grass family (Munz and Keck 1959). There are many species of grasses in the southern California mountains; most of these have edible seeds. The larger seeds were particularly economically important. Grains were harvested with a seed beater and a basket, were often ground, but more often roasted and then ground. Seeds of several grass species were often combined in the cuisine of indigenous peoples of the region (Vizgirdas 2003). Some of the more important grass seeds used by Native peoples as food include ricegrass (*Oryzopsis hymenoides*), panic grass (*Panicum urvilleanum*), and perhaps cultivated wheat and barley (Bean and Saubel 1972; Vizgirdas 2003). The protein residue results do not allow us to identify proteins to a species level; therefore, we are only able to say that processing of grass seeds may have been carried out at the site. At the time of the fieldwork, many new grasses were in rapid growth stage at the site. Because there were positive results for grasses from both artifacts and their associated soil, it is not possible to definitively say that the tested manos were used for grass processing.

One mano fragment tested positive for agave. The significance of this positive result is that it documents that the tool may have traveled with its owner from the desert into the mountains or that agave was transported into the mountain area as a stored resource. Agave (*Agave deserti*), sometimes also known as *mescal*, was a staple springtime food resource of the Kumeyaay and other indigenous peoples of the Sonoran desert region and was very important in that it became available in early spring after a winter of limited plant foods (Bean 1978:578; Bean and Saubel 1972:31-36; Luomala 1978:599). Agave could be dried and stored and then reconstituted when needed.

A surprising positive reaction to chicken was obtained on the unifacial tool that was tested. Since it is thought that the site may have been occupied into the contact/historical period, chicken may have been obtained from Euro-American settlers. It is more likely, however, that the positive result for chicken may have been a generic positive for related wild fowl.

The high percentage of positive results was obtained on the artifacts submitted for protein residue analysis. The information obtained is an indication that food was being prepared at the site. That neither acorn nor pine nut residue was found is somewhat problematic because of the environment at the site. The grasses and rabbits are ubiquitous and they would be expected as part of the diet of the people who used the site. Moreover, the presence of bladderpod and agave proteins on the tools suggests that other foods were brought from beyond the immediate area.

Discussion and Interpretation of the Site

To better understand the Stacked Stone Site, a review of similar sites was undertaken. Late-Prehistoric sites with built-stone architecture in the Peninsular Ranges have been known since the early investigations of Malcolm J. Rogers (Minor 1975). Indeed, one site described by Rogers (SDM-W-205) bears a striking resemblance to CA-SDI-17666 (Minor 1975:31). Minor reviewed the possible functions of such sites. He then went on to describe the Kitchen Creek Site (San Diego State University Site No. F:7:1:4) that was excavated as part of a larger highway salvage project (Minor 1975:33-39). The data recovered from this salvage excavation project bears a strong resemblance to the surface materials recorded at CA-SDI-17666, although the quantity and variety of materials was not as great. Following several lines of reasoning, Minor (1975:40) concluded that the Kitchen Creek "rock enclosure" site was likely a domestic living site. Minor noted, however, that the site had probably been compromised by visitation from highway workers over the years and some evidence of other possible uses might be missing. The site, as stated previously, appears to have been in pristine condition when it was discovered after the Cedar Fire. There are several items that might represent a ceremonial function such as fragments of ceramic pipes and complete ceramic vessels, broken in place.

One radiocarbon date on charcoal was obtained from the Kitchen Creek Site: AD 1870 ± 80. Minor was somewhat puzzled by this late date and the absence of historic-period artifacts. However, he suggested that, based on the comments of True (1970) and on historic notes (Caughey 1952; Woodward 1934), the mountain regions of San Diego County were used as a refuge for the indigenous peoples of the region who wanted to separate themselves from the efforts of the missionaries. These people also avoided contacts with other indigenous groups that were in contact with and /or influenced by the Euro-American settling in the region.

> According to True (1970:56), in early historic times the interior mountain region of San Diego County was an area of retreat for Indians moving from the lower valleys as their land was taken over by white ranchers. This view is supported by information contained in historic notes published by Caughey (1952) and Woodward (1934). Apparently, at least as late as the 1850s many Indians living in the interior mountain areas of San Diego County were still "gentiles," as the missions were never able to convert them. These Indians had no intercourse with white people and even kept themselves apart from the Indians at San Felipe, Santa Ysabel, and other villages at that time that were more or less Christianized. Even so, True (1970:44) stated that historic artifacts are not rare at sites in the interior mountain areas; but he noted that they are most often found with cremations, and that few are recovered from the habitation areas apart from the cemeteries. In view of these reports, the absence of any artifacts dating from the early historic period within the stone enclosure at Kitchen Creek seems somewhat more understandable. [Minor 1975:38]

Buckman Springs (W-205; CA-SDI-4787) near Kitchen Creek, originally recorded by Rogers, also has stone enclosures (McFarland 1998). It was excavated in the 1970s during preparation for Interstate 8, but no report is available. It was interpreted as a long-term camp with rock walls, bedrock milling features, ceramics, and lithics. Patricia McFarland rehabilitated the collection and carried out some analysis as part of a student project (McFarland 1998). Of an artifact assemblage of 4,305 items, 52% were ceramic sherds, 21.6% lithic debitage and tool fragments, 5.1% lithic tools, 6% ground stone, 11.6% unmodified faunal specimens, 1.7% unworked shell, and less than 1% modified bone and shell.

Marla Mealey recorded rock enclosures in Cuyamaca Rancho State Park (personal communication, Marla Mealey, 2006). She generously shared the information as well as the sketch and photographs below (Figure 52). Bonnie Bruce, conducting trail surveys in the Park, also reported rock enclosures on Dead Horse Trail in the southern end of the Park (personal communication, 2008).

Sketch Map *Photo of Lower Enclosure* *Photo of Upper Enclosure*

Figure 52. Recorded Rock Art Enclosures in Cuyamaca Rancho State Park (personal communication, Mealey, 2006).

Joan Oxendine (1981) described other possible uses of stone enclosures, such as a dance ground, a place to store ritual objects, or a fort. Moreover, she convincingly and precisely interpreted a Luiseño complex of rock enclosures as a ritual place. The assemblage at the site does not conform to any of the rock enclosure sites that Oxendine described except for use as a residential structure.

The Spring Hill Site (W-222; CA-SDI-238) was recorded by Malcolm Rogers sometime before World War II. He called the site “Santa Teresa Hill and Ballena Pictographs.” He described the site as composed of several boulder-rimmed walls up to two-feet high. There were also two pictographs. The site was identified as being in the territory of the Western Diegueño. The site evidently had been visited previously in 1903 by Constance DuBois and Edward H. Davis (DuBois 1908:169). Ken Hedges of the San Diego Museum of Man visited the same site in 1977 and had additional comments (Hedges 1977). In the site record and site record update for CA-SDI-238 A, B, C, he said the structures were circular, rather than rectangular, as Rogers had described them, that the site was on two hill summits and the saddle between them, and the rock enclosures were “behind” a large boulder with a pictograph. One of the stone enclosures was built into the rock outcrop, and there were two contiguous rooms (three meters and 1.4 meters in diameter) as well as another rock enclosure lower on the hill which was four meters in diameter. Although a light scatter of artifacts was noted by Hedges, no ceramics were noted. Down-slope from the enclosures there were slicks and a metate fragment. Hedges also observed a midden deposit at the site and found archaeological screens abandoned there, apparently by looters. Hedges also noted that, from the characteristic style of a bowl (presumably ceramic) found there by DuBois in 1903, the site had been used up into the American period.

Richard Carrico recorded several rock "room" enclosures at the ethnographic village of *Pamu*, a site that was part of a development project known as Oak Country. He did not assign function to the enclosures because he did not carry out excavations at the location. He also recorded similar features on the Campo Reservation (Taylor and Carrico 1982). Excavations, however, did take place at a similar site, CA-SDI-5938 located south of Lake Hodges in northern San Diego County (Carrico and Kyle 1987; Van Wormer and Carrico 1993). The data from these excavations can provide some insights to the features at the site.

The purpose of the excavations at Feature G of Locus 1 at CA-SDI-5938 was to determine functionality of the stone-enclosure feature complex. From the description, the rock enclosures at the site appear to closely resemble those at CA-SDI-17666. Eight of the 16 "rooms" were excavated and an archaeological assemblage of nearly 14,700 items was recovered: 58% were lithic artifacts, 35% faunal fragments, and 7% ceramic sherds. Investigators also excavated three 1-x-1-meter units outside the stone feature complex, finding that all three were sterile (Van Wormer and Carrico 1993:236). An overwhelming percentage of the lithic artifacts (91%) were microflakes and biface trimming flakes, indicating tool making and refurbishing, supported by the recovery of a deer-antler flaker. The analysis of the faunal collection showed that rabbits (both cottontail and hare) made up 11%, ground squirrel and other small mammals made up 1.5%. Other game animals identified to species included mule deer, pond turtle, and a variety of other smaller animals. The faunal analysis suggested that food processing and preparation was a major activity at the feature complex and it is likely that activity at the site was primarily in the winter months. Twelve bone awls made from deer-sized long bones were in the faunal collection, perhaps indicative that the taking of rabbits also included making rabbit-skin garments (Reynolds 1987). The stone assemblage, other than projectile points, included many manos, flake scrapers, and angular hammer-pounders, often interpreted as food preparation equipment. In summary, the stone-feature complex excavations at CA-SDI-5938 seem to indicate residential activities, especially in the winter months. That the Kumeyaay and the Luiseño practiced basic masonry and built their homes of stone, as well as plant materials, was the major conclusion of this study, based on the results of the excavations and ethnographic information (Van Wormer and Carrico 1993:245).

Comparisons between CA-SDI-5938 (Van Wormer and Carrico 1993), the Kitchen Creek site (Minor 1975), Buckman Springs (McFarland 1998), and CA-SDI-17666 are problematic. Site CA-SDI-17666 has a dense surface scatter of extramural artifacts and much fewer visible within the rock-room features; there was, however, no excavation. Excavation data is available from the other three sites. The CA-SDI-5938 test units excavated outside the feature complex were sterile and, in addition, the main data came from the excavations within eight of the stone enclosures. At Kitchen Creek, the surface had been seriously compromised by visitation and collection, as is also likely the case at CA-SDI-5938. At Kitchen Creek, the assemblage lacked the density and diversity of that at CA-SDI-17666. Another difference is that CA-SDI-17666 seems to have a preponderance of ceramic artifacts, as well as a variety of types of ceramics (both paste and vessel form), while CA-SDI-5938 apparently had a much smaller and more limited ceramic assemblage. The proportion of the gross collection from Buckman Springs, however, is most similar to that of the Stacked Stone data; a preponderance of ceramics (Stacked Stone with 69% vs. Buckman Springs with 52%) and a high proportion of lithics (Stacked Stone with 26% vs. Buckman Springs with 21.6%). No faunal collection was made at CA-SDI-17666; therefore we have missed the opportunity to make any comparisons with the collection from CA-SDI-5938 or Buckman Springs. All four stone-enclosure complexes (and likely others that have been recorded in San Diego County) apparently functioned (at least partly) as domestic structures. The uniqueness of CA-SDI-17666 is that the surface scatter of artifacts remained untouched until revealed by the Cedar Fire.

Stone was used to enlarge and/or enhance occupation areas at many other sites in the region. These rock walls may have been windbreaks, formed protection or concealment for caches, provided security by obscuring the view of others, or may have had other functions. Most common is the addition of stone walls or windbreaks at rockshelter sites (Chase 1980:20-21); these constructed stone walls have also been recorded at a number of sites in Anza-Borrego Desert State Park such as those in the Blair Valley, Culp Valley, and Vallecito areas (Figure 53). In general, enhancement of natural stone outcrops is not uncommon.

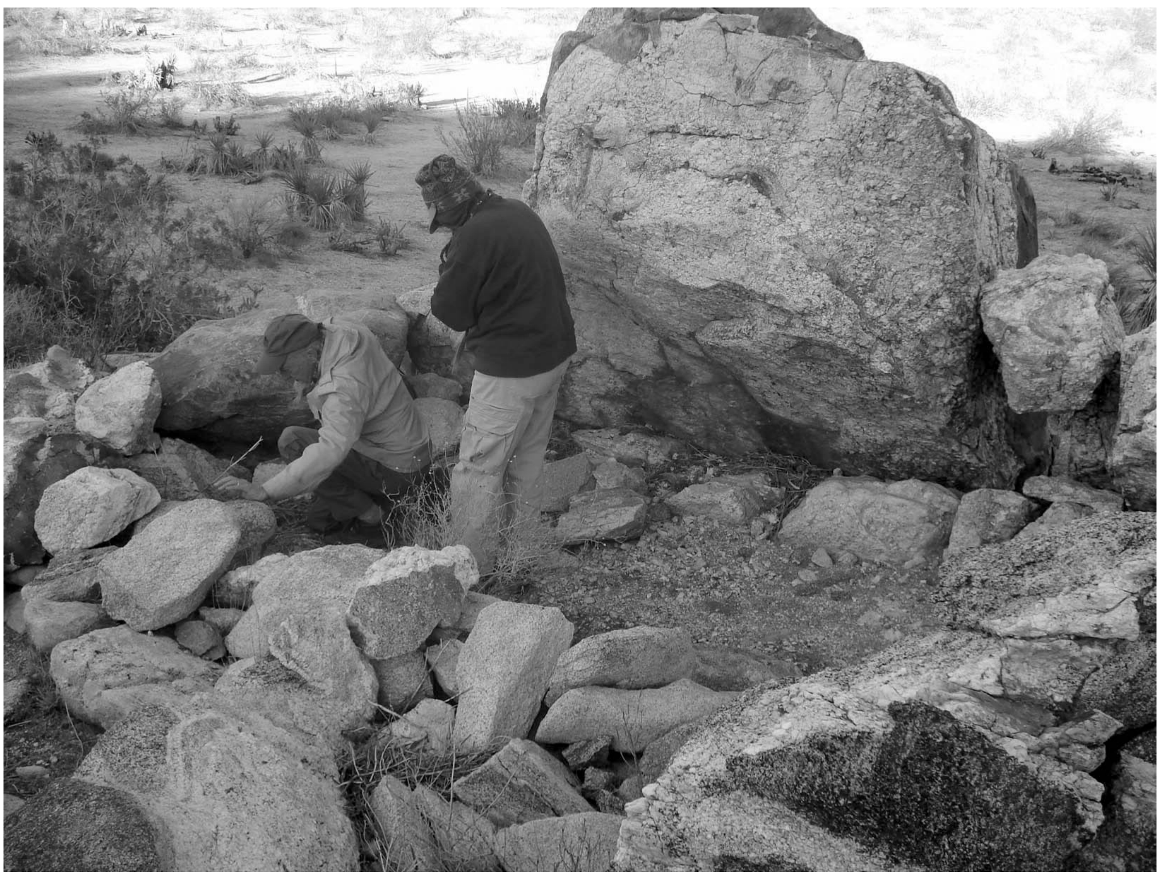


Figure 53. Volunteers Record a Rock Enclosure Feature near
Los Morteros, Blair Valley, Anza-Borrego Desert State Park.

In summary, although the Stacked Stone Site is tentatively identified as a residential complex, there are some important factors to take into consideration. First, we have only the surface assemblage as data, albeit the surface is believed to be in pristine condition. At other sites, there are data derived from excavation and which produce a more complete picture of the entire site assemblage. Second, the ceramic analyses that have been carried out as part of the project seem to indicate that most of the vessels were storage and serving vessels rather than cooking vessels. This suggests possible functions other than, or in addition to, routine everyday living. This suggestion is supported by the recent reevaluation of the site within the GIS data of its immediate surroundings in that Colorado Desert District is now considering CA-SDI-17666 as a component of a larger site complex that is likely the prehistoric village of *Japatai* (Schneider and Bruce 2009 [site record update]). In this revised view of the site, the rock-enclosure complex may have functioned as a specialized storage area for the larger site and population of the village. In terms of the large and diverse ceramic assemblage, as well as the presence of whole vessels, this interpretation of site function may be supported.

Conclusions

NATIONAL REGISTER ELIGIBILITY

The Stacked Stone Site (CA-SDI-17666) is eligible for nomination to the National Register of Historic Places under Criterion D: property has yielded or is likely to yield information important in prehistory or history. This assessment is based on several factors: (1) the site has an obvious midden deposit of unknown depth; (2) little is known of this site type; (3) this site is unique in that it remains pristine, with little or no collection from the surface by either archaeological investigators or looters; (4) the surface inventory of the site has documented a wide variety and high frequency of cultural materials that encompass both prehistoric and American periods; (5) the site is important to the living Kumeyaay community of the area in that it represents a link to their ancestral past; and (6) the site may contribute to our knowledge of the use and history of the land in the Peninsular Ranges of California and the West. Further consideration should be given to the possibility of the site being a component of a Cultural Landscape of the Stonewall Mountain area and/or the site being considered a Traditional Cultural Property, as recommended by Hector's 2005 National Register of Historical Places nomination of the Village of *Ah-ha' Kwe-ah-mac'* (CA-SDI-9538).

The reevaluation of CA-SDI-17666 as a component of the Village of *Japatai* (Schneider and Bruce 2009) further enhances the scientific and cultural significance of the site in the Cultural Landscape of Cuyamaca Rancho State Park.

MANAGEMENT PLAN

At the beginning of this project, there was great concern about the visibility of the site in the aftermath of the Cedar Fire and the opportunity provided to illegal collectors. For this reason, the West Side Trail was kept closed until protective measures could be taken. A split rail fence was constructed along the West Side Trail in the vicinity of the site in order to encourage hikers to stay on the trail (Figure 54). The Research Design called for covering the site with brush at the conclusion of the fieldwork. This protective measure was unnecessary because of the rapid and abundant re-growth of the natural vegetation on the site. Upon the conclusion of the fieldwork at the end of May 2005, less than 10% of the ground surface was visible; one month later, virtually all the surface was covered with vegetation.

At the present time, CA-SDI-17666 is invisible except to those who know its whereabouts. The rock feature complex can only be seen when one is at the top of the hill; the artifact scatter on the surface of the site is covered with vegetation. For these reasons, no further protective measures are necessary except for monitoring the area between West Side Trail and the site. From a scientific research standpoint, the site should be tested for the depth and content of the subsurface deposit, but it is unlikely that this will happen in the near future because of Native American sensitivity issues. The Park law enforcement personnel should be aware of the sensitivity of the site area.

Sign states "Area closed for plant rehabilitation".

Figure 54. The Split Rail Fencing along West Side Trail in the Vicinity of the Stacked Stone Site, CA-SDI-17666.

SUMMARY

During trail surveys within Cuyamaca Rancho State Park, in the aftermath of the 2003 Cedar Fire, a stone-enclosure complex was discovered. Within a rock outcrop on a hilltop, at least six "rooms" had been cleared and walls surrounding these "rooms" had been built up, chinked, and enhanced with piled rocks. Other rock features were appended to the central stone complex. Recording of the site and protective measures were undertaken. The site had not been previously known and appeared to be pristine. In an effort to record as much data as possible from the surface, a reconnaissance survey and micro-mapping of an approximately 20% sample of the site surface were carried out, aided by aerial photography and GIS-registered data points. Most of the recording efforts were in the immediate area surrounding the stone-enclosure complex. Special ceramic studies were undertaken on a sample of ceramics and these indicate that a variety of ceramic pastes and vessel types were present at the site. It is likely that most, if not all, of the clays were obtained in the local area. Residue studies on selected artifacts suggest that a variety of plants and animals were processed at the site.

Comparisons with other sites of this type, analyses of the abundant ceramics at the site, as well as a reevaluation of CA-SDI-17666 in terms of its association with other recorded cultural resources in its immediate area have contributed to the interpretation that the site is part of a larger village complex identified as *Japatai* and that the rock enclosure complex may have functioned as a storage facility for the larger community. This interpretation is tentative because a full understanding of what the rock-enclosure complex represents is prevented by the lack of excavation, the lack of more definitive mapping, and full analysis of the entire artifact assemblage. It is likely that the site represents part of a residential complex that may be part of a larger district or landscape that is associated with the ancestral Kumeyaay peoples of the area in the years just before and during the Contact Period. The site is eligible for nomination to the National Register of Historic Places under Criterion D. Further consideration should be given to the possibility of the site being a component of a Cultural Landscape of the Stonewall Mountain area and/or the site being considered a Traditional Cultural Property.

PART II:
THE DRIPPING SPRINGS SITE, CA-SDI-860

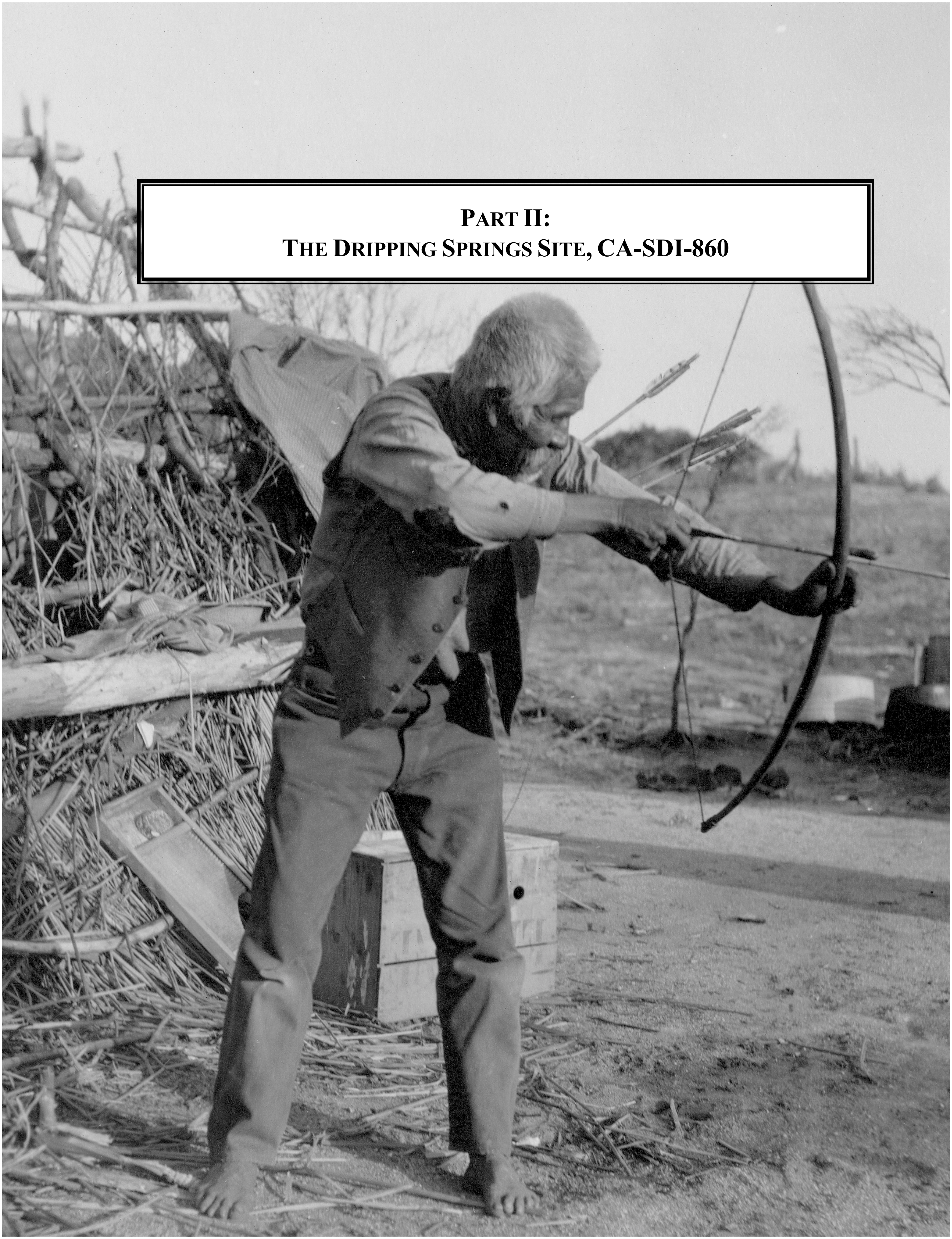


Photo on previous page:
In a yard, James McCarty (Ha-la-pooka) shoots a bow and arrow.
According to Edward H. Davis, McCarty is demonstrating how
he uses the bow and arrow when hunting for game.
March 1918, Photo by Edward H. Davis.
National Museum of the American Indian,
Smithsonian Institution (P00386).

Introduction

In the spring of 2008, Gamble conducted archaeological fieldwork with a field class from San Diego State University at the site of CA-SDI-860 to investigate subsistence, settlement, and exchange practices of the Kumeyaay at Cuyamaca Rancho State Park (the Park), a region known to have been an inland complex of large, late prehistoric settlements. Despite the fact that True's (1961, 1970) pioneering research at the Park defined the Cuyamaca Complex as a distinct archaeological tradition ancestral to the ethnographic Kumeyaay, basic questions concerning subsistence and settlement strategies remained unanswered. This project adds considerable information to True's earlier work at CA-SDI-860, because of the collection and detailed analyses of subsistence data and artifacts recovered in fine mesh screens, such as beads. CA-SDI-860, also known Dripping Springs, is a Late Prehistoric village site situated on the southern boundary of the Park on East Mesa (Figure 55).

Background

Cuyamaca Rancho State Park is situated in eastern San Diego County within the Cuyamaca and Laguna Mountains in the Southern California Peninsular Range, which stretches from the San Jacinto Mountains to the tip of Baja California. This area consists of a series of uplifted granitic batholiths of varying age and elements of pre-Cretaceous metamorphic rocks known collectively in the area as Julian Schist (True 1970). Elevations in this region range between 1,036 meters (3,400 feet) and 1,985 meters (6,512 feet) at Cuyamaca Peak. Several vegetative communities occur in the park, including meadows, grasslands, mixed broadleaf and coniferous forests, and chaparral, with chaparral the most common community in the region (Parkman 1981; True 1970). Numerous species of oak (*Quercus* sp.) are found in the park, in addition to other important plants, including sage (*Salvia* sp.), holly leaf cherry (*Prunus* sp.), sumac (*Rhus* sp.), manzanita (*Arctostaphylos* sp.), elderberry (*Sambucus mexicana*), and western choke-cherry (*Prunus virginiana*). Substantial animal populations at the park include deer, rabbit, fox, coyote, bobcat, mountain lion, and numerous rodents and reptiles. The climate at the park is Mediterranean, as is most of southern California. However, because of the relatively high elevations in portions of the park, snow can fall in places between October and May (Gamble 2000a, 2000b).

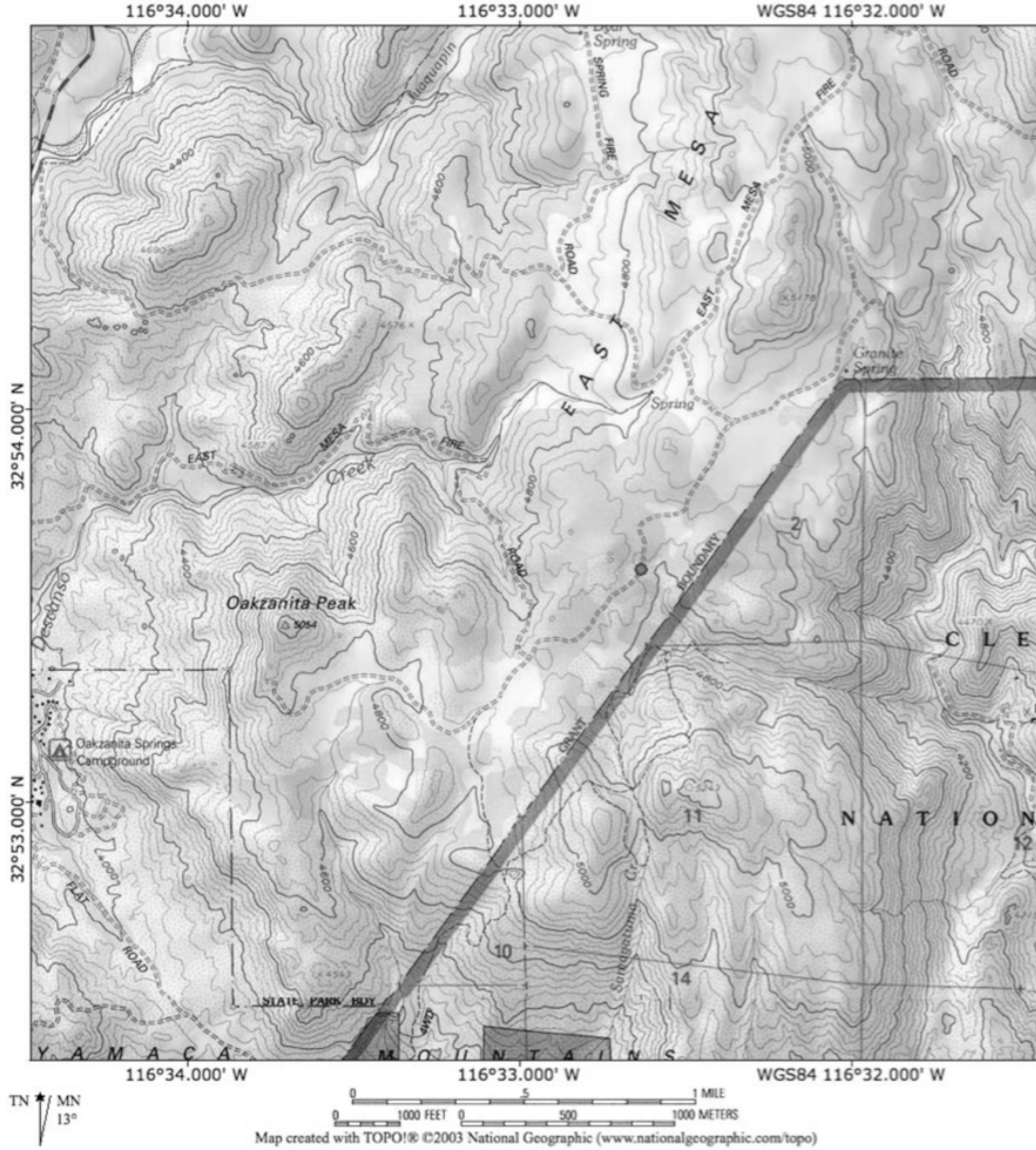


Figure 55. East Mesa (USGS Cuyamaca Peak 7.5 Quadrangle 1997).

Historically, the Kumeyaay occupied the region in and surrounding the Park. The Kumeyaay Indians are also known as the Tipai-Ipai and the Diegueño. The Kumeyaay are Yuman-speakers who were organized into patrilineal clans. Ethnographic sources indicate that the Kumeyaay historically lived in the mountain areas during the summer months and then moved to lower elevations, such as the desert or the coast, in the late fall after the acorn harvest (Hildebrand and Hagstrum 1995:87; Luomala 1978; Spier 1923; True 1970:54).

Some of the earliest archaeological investigations at the Park occurred between the 1930s and 1950s under the sponsorship of the San Diego Museum of Man and under the direction of Malcolm Rogers, a pioneering archaeologist who was associated with the museum between 1919 and the 1950s. As a result of these relatively early archaeological investigations, collections and notes from 14 sites were recorded at the San Diego Museum of Man. Of these 14 sites, five were excavated and showed evidence of cremations. During the late prehistoric period in this region, cremations were much more common than inhumations (Parkman 1981).

More carefully documented archaeological investigations were undertaken by True (1961) in the 1960s at the Park. True's investigations included intensive archaeological survey resulting in the recordation of 146 sites, and based on surface observations, he identified six site types: villages, small camps, temporary camps, seed grinding stations, cache caves, and quarry sites. Based on the survey data, True concluded that a relatively dense population inhabited the region. Village sites identified by True consisted of well-developed midden deposits that he viewed as late prehistoric or protohistoric in most instances, some of which are historically known settlements (True 1970:5). Of these sites, 27 contained ceramics. It is believed that ceramics were first used in the Kumeyaay region around AD 1000. In particular, May (1976, 1978) has suggested that the advent of ceramics in the Laguna Mountains, which is in the east portion of the Park, occurred at about AD 990-1000.

True (1970) conducted test excavations at three sites in the park; however, most of the excavations occurred at one site, Dripping Springs (CA-SDI-860), where he recovered a considerable collection of artifacts using 1/4-inch mesh screen and, to a lesser extent, 1/8-inch mesh. In 1961, he excavated four five-foot-square units, and in 1962, he returned to excavate 27 additional units (Foster 1981:40). True identified this site as the type site for the Cuyamaca region. It is one of the largest sites in the Park, if not the largest. True recovered a wide range of artifacts and faunal remains from the site, including historic artifacts, ceramics, chipped stone tools and points, ground stone, shell, and bone. He also identified a number of features including hearths. Although he suggested, based on ethnographic information, that this site was occupied during the summer months, he did not find any direct evidence for a seasonal occupation. He noted that this site is typical of the terminal occupation of the Cuyamaca region and that it is unknown how far back in prehistory this pattern extended. True (1970:6) proposed that most village sites at the Park corresponded with winter villages in lower elevations at Anza Borrego State Park to the east or in the Descanso region to the south. Other scholars have also suggested that the Kumeyaay moved seasonally (Carrico 1987:17; Cline 1979:12; Lee 1978; Luomala 1976:246, 1978:599; Rensch 1950:iii; Treganza 1942:152; VanWormer 1986:40). Based on his archaeological investigations in the Park, True defined the following traits as typical for the Cuyamaca complex (True 1970:53-54):

1. Defined cemetery areas apart from living areas;
2. Use of grave markers;
3. Cremations placed in urns;
4. Use of specially made mortuary offerings such as miniature vessels, miniature shaft straighteners, elaborate projectile points, etc.;
5. Cultural preferences for side-notched projectile points;
6. Substantial numbers of scrapers, scraper planes, etc., in inventory in contrast to small numbers in the San Luis Rey area on this time plane;

7. Emphasis and stress placed on the use of ceramics, i.e., wide range of forms and several specialized ceramic items such as rattles, bow pipes, effigy forms;
8. Steatite industry;
9. Substantially higher frequency of milling stone elements when compared to San Luis Rey; and
10. Clay lined hearths. (?)

Since True's archaeological investigations, most of the work in the region has consisted of surface reconnaissance conducted by State Park personnel for management purposes. As of June 2006, 580 archaeological sites have been recorded at the Park (Mealey 2007), including the sites identified by True and early researchers. Many of the recent sites that have been recorded are temporary campsites or special use sites (Mealey 2003, 2004, 2007; Mealey at al. 2005). Only limited excavations have occurred since True's work at the park, and those investigations have been focused on reducing impacts to sites that might result in potential damage. Although True gathered considerable information on larger artifacts, primarily at one site, relatively little information exists on subsistence and seasonality.

In 1999, Gamble conducted an intensive archaeological survey, re-recorded CA-SDI-860, and filed a 25-page site record at the South Coastal Information Center and the California Department of Parks and Recreation (DPR). With the help of a field class from San Diego State University, she identified the three different areas that True excavated at the site (Figure 56; True 1970:11): the living area (Locus A), the milling area (Locus B), and the cemetery (Locus C). Bonnie Bruce and the DPR produced Figure 57, the most recent map of the site showing the expanded boundaries.

Donna Beddow also worked with Gamble on True's collection, which is now curated at the Fowler Museum at UCLA. A wide range of artifacts are in the collection, including items that were made locally, as well as those that were imported, such as shell beads from the Gulf of California and from the Chumash region (Beddow and Gamble 2003), obsidian flakes from Obsidian Butte, and Colorado Buffware from the desert. Glass beads, buttons, metal, and other historic-era artifacts are also part of the collection.

THE DRIPPING SPRINGS SITE: CA-SDI-860

True (1970:11) suggested that Dripping Springs was one of the most significant and largest sites in the Kumeyaay region. True (1970:10) proposed that the site was probably the summer village associated with the winter settlement of *Jamatyume* (also known as *Samataguma*) in the Descanso region.

The Dripping Springs site is situated on an open grassy area with a southeastern exposure surrounded by oak woodland at an elevation of about 4,880 feet (True 1970:11). Bedrock milling features are common on the granitic outcroppings at the site. The climate in the area is predominantly Mediterranean with warm, dry summers and cool winters. Most precipitation occurs between November and April, with periodic rain during the summer months (Krofta 1995:7). Snowy and icy conditions are not infrequent during the winter months, especially between December and February.

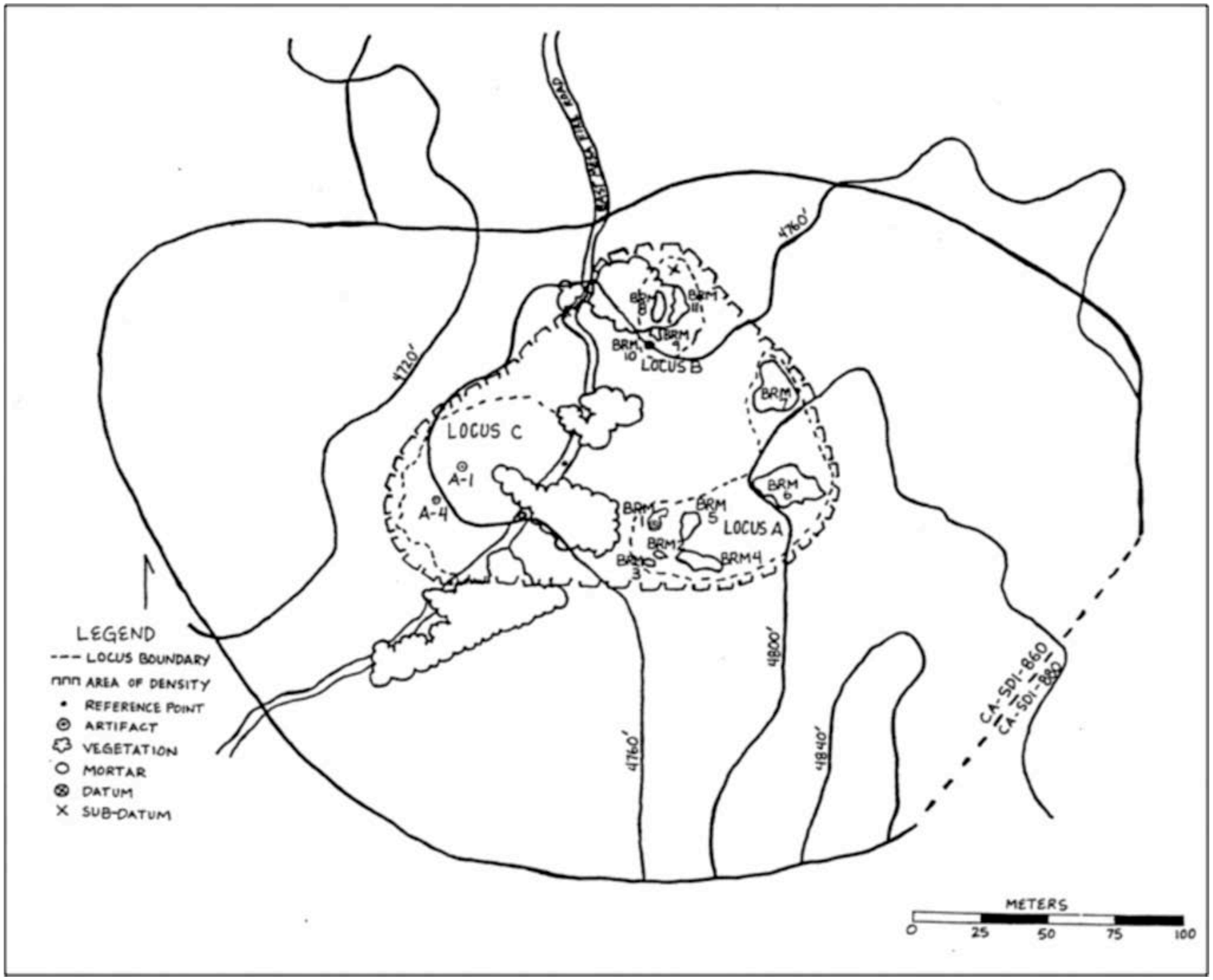
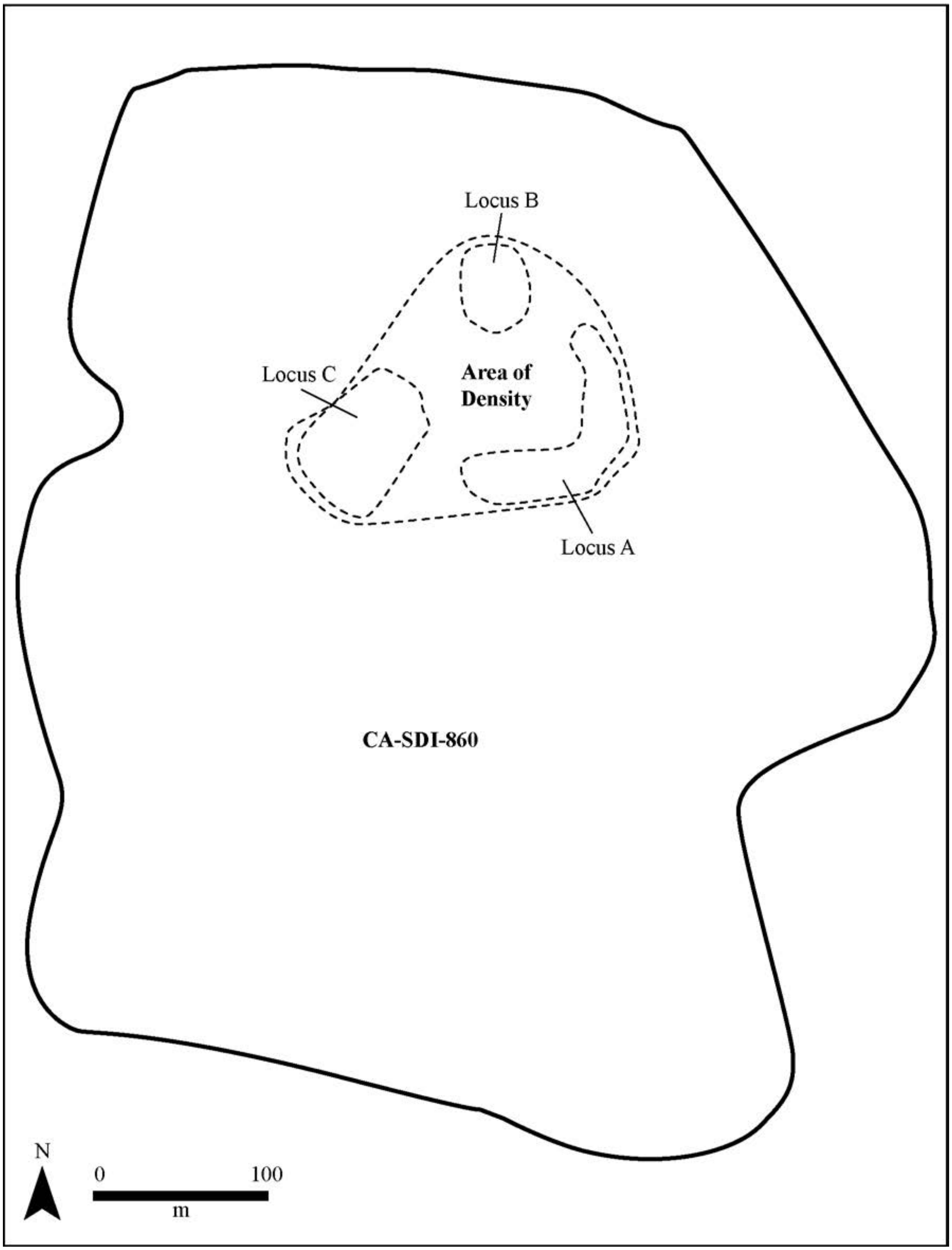


Figure 56. Site Map of Dripping Springs, CA-SDI-860 (Gamble et al. 1999).



Map adapted from California State Parks with Data from San Diego State University Field Class.

Figure 57. Current Boundary of CA-SDI-860.

Open portions of the site support several types of grasses and perennial shrubs, while oak, pine, manzanita, and chaparral shrubs cover the low hills and ridges in the surrounding area. Even after the catastrophic Cedar fire of 2003, a single elderberry tree reported by True in 1970 remains in the grassy area near the center of the site, not far from a year-round spring. Jeannie Gregory identified a number of plants of economic significance to the Kumeyaay that currently grow on or near the site (Table 7).

Prior to the initiation of fieldwork, meetings took place between Sue Wade, the DPR Colorado Desert District Archaeologist, Clinton Linton, a Kumeyaay representative from Red Tail Monitoring & Research, and Carmen Lucas, a Kwaaymii Indian elder. They primarily discussed the scope of the fieldwork, curation, and other related issues. The Native American monitors for the duration of the project included Carmen Lucas and Red Tail representatives Clinton Linton, Gabe Kitchen, Jr., and Brandon Linton. Carmen Lucas suggested that, prior to excavation, a team of Historic Human Remains Detection (HHRD) dogs from the Institute for Canine Forensics visit the site to help determine the location of any human remains so that these areas could be avoided. CA-SDI-860 was a good site to see if the dogs could detect human remains because True had mapped the cemetery portion of the site and in previous field seasons at the site, Gamble had determined the location of the cemetery based on True's maps, photographs, and descriptions. The burials that True excavated were cremations, the common practice of the Kumeyaay during the Late Period (True 1970).

Table 7. Selected Plants of Economic Significance at or near CA-SDI-860.

BOTANICAL NAME	COMMON NAME
Achillea millefolium	Wooly Yarrow
Adenostoma fasciculatum	Chamise
Artemisia dracunculus	Dragon Sagewort
Arctostaphylos sp.	Manzanita
Asclepias eriocarpa	Milkweed
Calandrinia ciliate	Red Maids
Calocedrus decurrens	Incense Cedar
Calochortus sp.	Mariposa Lily
Cardamine californica	Milkmaids
Ceanothus greggii	Desert Lilac
Ceanothus leucodermis	Chaparral Whitethorn
Cercis occidentalis	Western Redbud
Cercocarpus betuloides	Mountain Mahogany
Claytonia perfoliata	Miner's Lettuce
Clarkia purpurea	Wine Cup Clarkia
Corethrogyne filaginifolia	Cudweed Aster
Dichelostemma pulchellum	Blue Dicks

Table 7. Selected Plants of Economic Significance at or near CA-SDI-860.

BOTANICAL NAME	COMMON NAME
Eriogonum fasciculatum	California Buckwheat
Eriogonum wrightii	Wright Buckwheat
Eriophyllum confertiflorum	Golden Yarrow
Erodium cicutarium	Red-stem Filaree
Gnaphalium sp.	Pearly Everlasting
Heteromeles arbutifolia	Toyon, California Holly
Juncus sp.	Juncus
Lonicera subspicata	Chapparral Honeysuckle
Lupinus sp.	Dwarf Lupine
Muhlenbergia rigens	Deer Grass
Nemophila menziesii	Baby Blue Eyes
Opuntia engelmannii?	Prickly Pear
Penstemon sp.	Penstemon
Phacelia distans	Wild Heliotrope
Pinus jeffreyi	Jeffrey Pine
Potentilla glandulosa	Sticky Cinquefoil
Prunus ilicifolia	Holly Leaf Cherry, Islay
Quercus agrifolia	Coast Live Oak
Quercus berberidifolia	Scrub Oak
Quercus kelloggii	Black Oak
Ranunculus californicus	Southern Buttercup
Rhamnus ilicifolia	Hollyleaf Redberry
Rhus trilobata	Three leaved Sumac
Rorippa nasturtium aquaticum	Watercress
Salvia apiana	White sage
Sambucus mexicana	Elderberry
Sidalcea malviflora	Checker Bloom

Notes: Table created by Jeannie Gregory.

RESEARCH QUESTIONS

Limited excavations have been conducted in the Cuyamacas over the past 30 years. Therefore, very few projects have used fine-mesh screening, laboratory sorting, and extensive flotation. Through the use of these techniques, a great deal more information on subsistence and trade can be accessed. In addition, very few radiocarbon dates exist from sites in the region, limiting what we know about the chronology of sites at the Park.

The following research questions are important in understanding the archaeology of the region and also have broader implications:

1. True (1970) proposed that most of the sites at the Park date to the late prehistoric and historic periods. What was the span of occupation at CA-SDI-860?
2. Is there a preceramic component at the site?
3. True (1970:Map 3) identified a locus of the site as the cemetery area. He also suggested that a trait of the Cuyamaca complex is the presence of discrete areas to bury the dead. Is there evidence that there was an area of the site that was used as a cemetery?
4. Are HHRD dogs able to identify evidence of human remains in archaeological sites?
5. A number of scholars (Gifford 1918:172; Luomala 1978; Spier 1923:306) have suggested that the Kumeyaay lived in semi-permanent villages, moving from higher elevations to lower ones in the winter, then returning in the spring or summer. Is there any evidence of seasonal occupation at this site?
6. Is there any archaeological evidence that the site's inhabitants had interactions with the coast or the desert regions?
7. Is there evidence for trade or transhumance acquisition of exotic materials at the site?
8. Is there archaeological evidence to support the reliance on acorns at the site?
9. Did the inhabitants of the site use cultigens or domesticated animals?
10. Were certain types of foods or cultural remains identified at the site that had not been observed before because of the fine-mesh screening and flotation that was employed?
11. Schaefer and Laylander (2007), as well as others (Laylander 1997; Laylander and Christenson 1988), have proposed that there is relatively little obsidian in coastal and mountain archaeological sites in the San Diego region when compared with other material types. Does the data from CA-SDI-860 support this hypothesis?

Methods

FIELD METHODS

Fieldwork began on February 2, 2008, and was completed in May 2008. On the first day, a team of dogs and their handlers from the Institute for Canine Forensics arrived on the site. Others in attendance included John W. Foster, the Supervisor of the Cultural Resource Programs for California State Parks in Sacramento, Sue Wade, and Carmen Lucas. After a brief orientation about the significance of the site, Carmen Lucas conducted a blessing ceremony, in which she encouraged people to behave respectfully and with integrity during the archaeological project. After the blessing, the team of forensic dogs went to work with their handlers. Site records and other detailed site information were not distributed to the class before the first day, so that the students did not inadvertently give any clues to the dogs or their handlers about the location of the cemetery. The team consisted of six dogs and five handlers; two of the dogs were in training and lacked the experience of the other four dogs. I showed the handlers the central part of the site, which was bisected by a dirt road, and included both the living area and the cemetery (see Figure 56). Only one dog with their handler worked in one area of the site at a time and walked without a leash in transects approximately five meters apart. As they proceeded, the dogs smelled the ground. When they encountered what they believed to be human remains, they alerted their trainers by sitting or lying down at the location. Each location was marked after the alert. After each dog completed the task, they moved to the other side of the road. Eventually, all the trained dogs completed their "survey" of the site. The students, who stayed out of the way while the dogs worked, observed or familiarized themselves with the outer parts of the site. At the end, all of the dog alerts were mapped with a Trimble GeoXH handheld GPS.

The remainder of the semester was spent mapping, surveying, and excavating the site under the direction of Gamble and San Diego State University Anthropology graduate student Michael Garnsey. Groups of students spent considerable time on surface reconnaissance. Diagnostic artifacts such as points and beads, tools, painted or unusual potsherds, other uncommon artifacts, and features were mapped using a Trimble GeoXH handheld GPS or the Topcon GTS-239W Total Station. Some of the boundaries of the site were also mapped. This latter task was especially difficult because there was a scatter of artifacts near the exterior perimeter of the site that merged with the perimeter of adjacent sites. A grid was established for the site that tied into True's primary datum, which was a small hole drilled in Bedrock Milling Feature 1 (Gamble et al. 1999). A secondary datum was established in Locus B, and a third datum in Locus C (the cemetery area). An intensive surface survey was conducted in the cemetery and the living areas of the site in a number of 15-meter-square grids that were subdivided into 5-meter squares. Project participants crawled on the ground counting the number of artifacts for each 5-meter-square so that comparisons could be made between the different areas of the site. Six 5-meter squares were surveyed in this manner in the living area and 21 in the cemetery area.

Three 1.0-x-0.5-meter units were excavated at CA-SDI-860. In placing the units, care was taken to avoid the areas where True excavated in 1962. This was accomplished by using True's maps, photographs, and primary datum. The units were also placed outside the cemetery area by avoiding the areas where the dogs alerted and the cemetery area as mapped by True. An attempt was made to place the units in portions of the site where the midden deposits were well developed. A probe was used to determine the depth of bedrock; units were excavated in areas where the deposits were deepest. Trowels were used in the upper levels and shovels in the deeper levels, starting at about 60 centimeters. Unit 1 was excavated to a depth of 110 centimeters, Unit 2 to 80 centimeters, and Unit 3 to 120 centimeters. A small shovel test pit (STP) was excavated in Unit 3 from 120 to 141 centimeters, where bedrock was encountered. Stratigraphic profile drawings were completed for each unit when excavations were completed. More than 35 charcoal samples were taken, 33 of which were mapped in stratigraphic profiles or plan views. Of these, nine samples were submitted to Beta Analytic for radiocarbon dating. Prior to their submission, Dr. Virginia Popper of the Fiske Center for Archaeological Research at the University of Massachusetts, Boston analyzed the samples to determine whether they were wood and, when possible, identified them by species. Artifacts and charcoal samples that were mapped on vertical section profiles or on plan views were given individual numbers that correspond with their mapped numbers (associated with the unit and depth of discovery).

All of the soil samples from CA-SDI-860 were measured in a one-liter glass measuring cup, floated using one of two devices, and then screened through a 1/16-inch screen. A record was kept of which machine was used for each flotation sample. The first device was from San Diego State University and was constructed from a large cylindrical barrel with an integrated spillway. The water entered the flotation device through a PVC pipe near the bottom of the barrel and flowed to a T-shaped PVC nozzle that had small holes in it that allowed the water to spray directly upwards toward the sample. The second flotation device was loaned to San Diego State University by ASM Affiliates in Carlsbad, California. It was made of welded aluminum sheet metal with an integrated spillway. This flotation device had an added heavy-duty metal screen that was placed beneath the screen with the heavy fraction so that the heavy fraction did not fall into the body of the machine if soil was added at too rapid a pace. Both devices used a 1/16-inch fiberglass window screen for the heavy fraction, while the light fraction was caught in a piece of chiffon.

LABORATORY METHODS

All of the screened materials were sorted. Although this was primarily done in the lab, when the crew was in the field, a field lab was set up next to the water-screening area to sort materials on-site. All materials, whether lab- or field-sorted, went through the same scrutiny: before cataloguing, everything was closely checked either by Gamble or others with experience. Some of the collection was catalogued at San Diego State University, while the remainder was catalogued in the Anthropology Department at University of California, Santa Barbara under the direction of Gamble. Analyses of the faunal and floral remains was completed by specialists.

Results

This section presents the results of the archaeological field and lab work at CA-SDI-860, as well as a discussion of the outcome of using dogs to identify human remains.

Historic Human Remains Detection Dogs

The use of forensic dogs for the identification of human remains, including cremated individuals, was a particularly important aspect of the project. Dogs have been used in forensics for many years, but are less commonly used for the identification of human remains in archaeological contexts. The Institute for Canine Forensics has had some success in the identification of human remains in archaeological contexts (Imwalle 2008; http://www.hhrdd.org/). Because we had identified the location of the cemetery, the use of the HHRD dogs for this project served as an excellent opportunity to test the dogs' ability to detect the presence and location of human remains at an archaeological site (Figure 58). Moreover, since the Kumeyaay cremated their dead, this project also served as a special case test to see if the dogs are able to identify cremated human remains.

The dogs were highly successful in the identification of the cemetery area that True excavated. All of their alerts were mapped and can be seen in Figure 59. The majority of their alerts were either within the boundaries of the cemetery area as defined by True or immediately adjacent to the cemetery. In several cases, different dogs alerted in the exact same places. Only four alerts occurred some distance from the cemetery, and of these, three were made by the less experienced dogs. The success of HHRD dogs is especially impressive since the Kumeyaay cremated their dead.

Surface Reconnaissance

GPS points were taken of many of the artifacts, bones, and other items observed on the surface of the site. Items mapped included seven metate fragments, two mano fragments, a pestle fragment, 21 projectile points and point fragments, two miniature pots (one just the base of a pot), a small pottery disc, four *Laevicardium* sp. shells (probably altered), and three beads (one shell, one stone, and one glass). The beads, the metate fragments, and the two miniature pots were all observed in the cemetery area.

One of the most significant patterns that resulted from the surface grid analysis of cultural remains at CA-SDI-860 was the much higher prevalence of cremated bone in the cemetery area (n=48) compared with the number found in the living area (n=1). This patterning is significant even when considering that 21 surface grids were examined in the cemetery area and only six in the living area.

Left to right: Lynn Gamble, Gabe Kitchen, Eva Cecil & Ness, Carmen Lucas, Adela Morris & Eros, Tom Pomeroy & Shiloh, David Halverstadt & Emma, Ann Anderson & Jack.

Figure 58. Dog Team at CA-SDI-860.

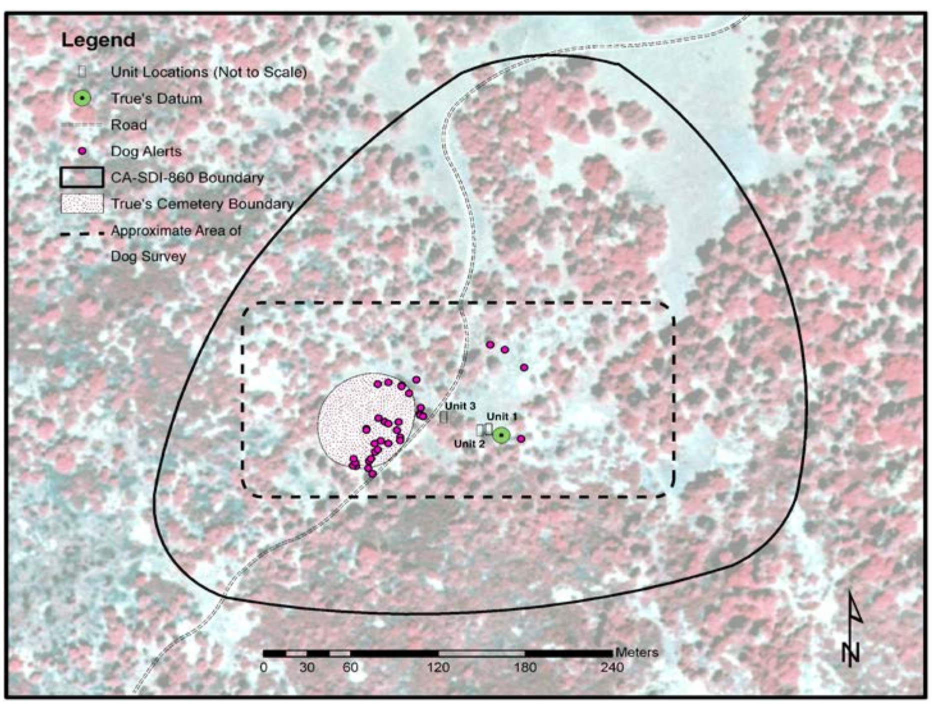


Figure 59. Location of Cemetery and HHRD Dog Alerts at CA-SDI-860.

Field Excavations

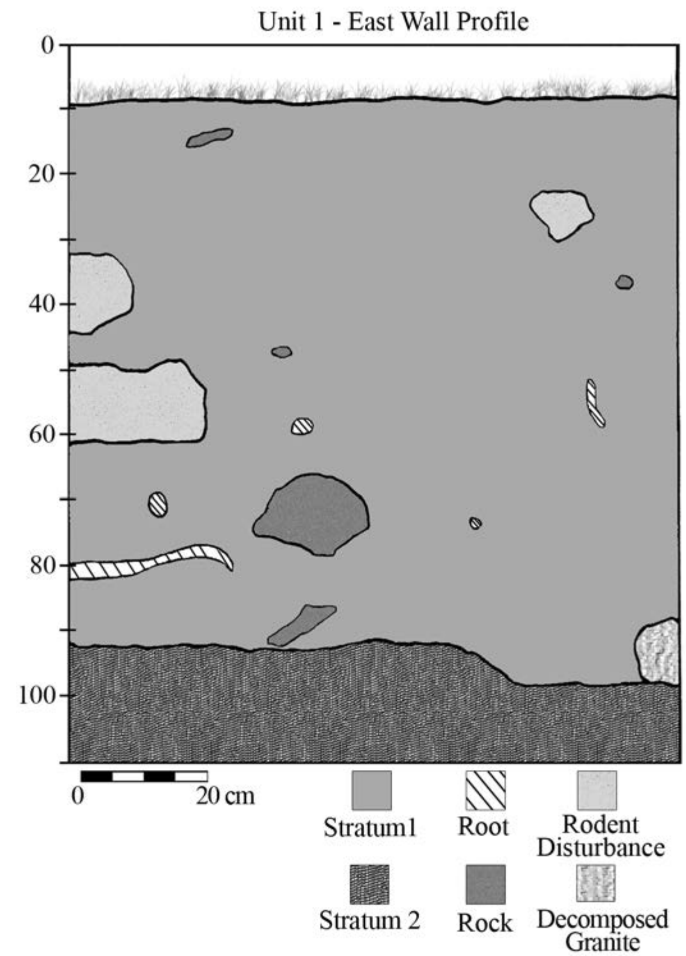
Each unit had similar stratigraphy (Figure 61 through Figure 63), with a very dark brown loamy friable soil in the upper levels underlain by soil with slightly higher clay content. The cultural remains that were discovered in the units are presented in Table 8 through Table 19. All three units had evidence of gopher disturbance. On a couple of occasions, the units were partially filled with gopher dirt after one week.

One major objective of the work at CA-SDI-860 was to determine if there was considerable occupation at the site prior to the use of pottery. True has suggested that most of the occupation in the Cuyamacas post-dated the use of pottery. Table 8 and Table 9 and Figure 66 through Figure 68 show the frequency and weight of pot sherds in comparison with debitage and bone. All three categories are less common in the lower levels of the site, however the drop off in frequencies and weights of pottery in the lower levels compared with bone and debitage and the early radiocarbon date may indicate a pre-ceramic occupation of the site.

Unit 1

Unit 1 (Figure 61) presented wet soil at about 80 centimeters below the datum, indicating that the water table was near this depth. At 110 centimeters below datum, standing water was apparent across the floor and excavation was discontinued (Figure 60). Although no features were found in this unit, there were clusters of artifacts found *in situ* in the southern half of the unit between about 25 and 38 centimeters below datum. These artifacts included a large incised rim sherd (Figure 70, #761), another incised sherd (Figure 70, #779), six unmodified sherds, a plain rim sherd, two projectile points (Figure 71, #469), a mano fragment, and obsidian debitage. There was also a milled piece of wood nearby and a green glass bead in the 20-30-centimeter level. Altogether, seven projectile points and one blank were found in this unit (Table 14). Two of the temporally diagnostic points were Desert Side-Notched (Figure 71, #469) and two were Cottonwood points. There was very little fire-altered rock in this unit (Figure 64).

Figure 60. Unit 1, East Wall, 110 centimeters below Datum, Water Table, CA-SDI-860.



Stratum 1: Very dark brown, friable loam with some clay, Munsell 5Y, 2.5/2. Stratum 2: Very dark brown friable loam with more clay than Stratum 1, Munsell 5Y, 2.5/2. DG: Decomposing Granite

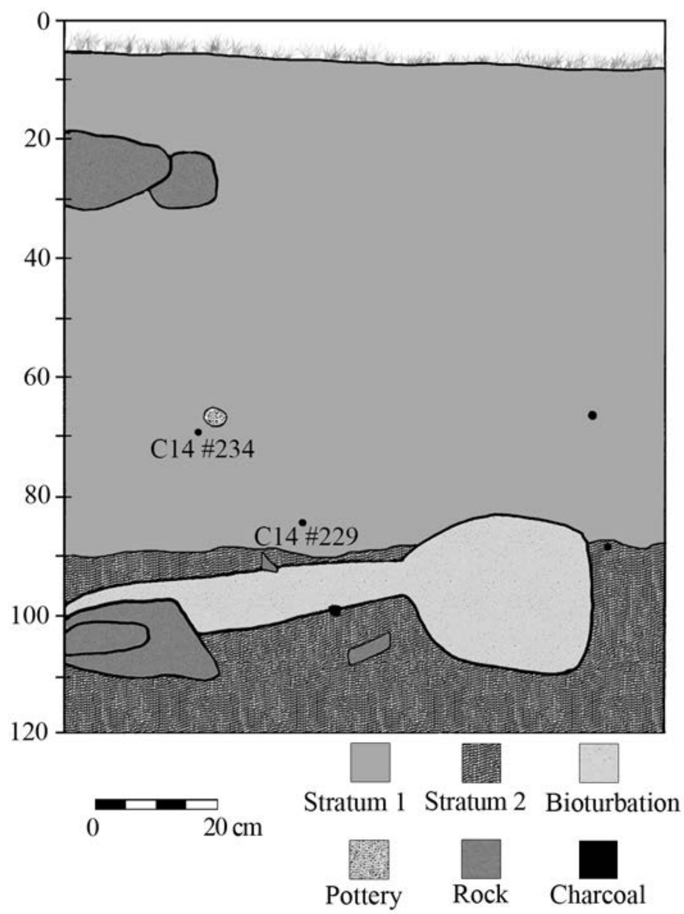
Figure 61. Unit 1, East Wall Stratigraphic Profile, CA-SDI-860.

Unit 2

Unit 2 was only excavated to 80 centimeters because at that level large granitic rocks were encountered throughout the unit. This was interpreted as the top of the bedrock. The majority of the soil was similar to Stratum I in Unit 1. Very little fire-altered rock was found in this unit (Figure 64), and no features were noted. Only two projectile points and point fragments were found in this unit (Table 14 and Figure 71, #576), and the only temporally diagnostic item was an obsidian Desert Side-Notched point with a concave base.

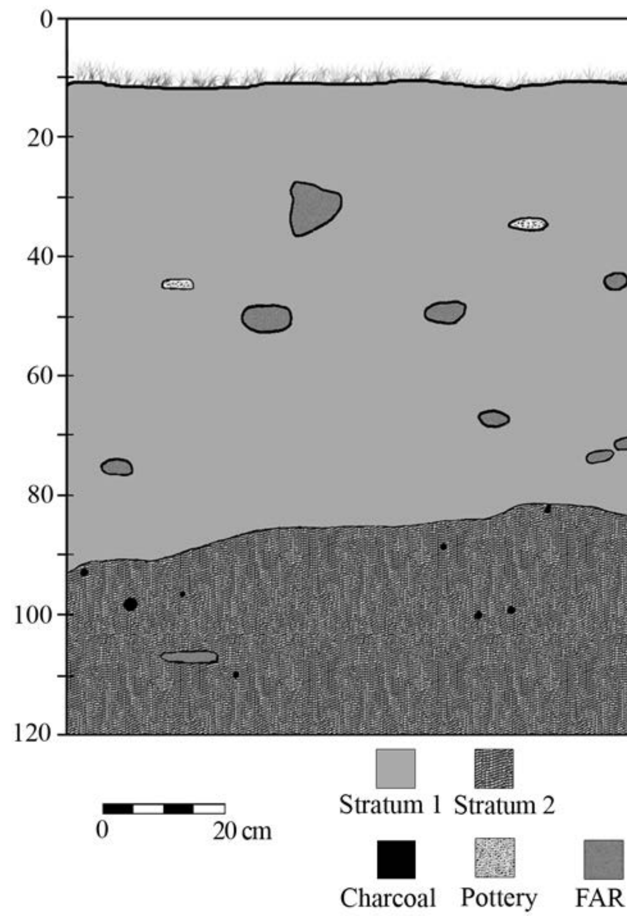
Unit 3

The stratigraphy in Unit 3 was similar to that in Units 1 and 2 (Figure 62 and Figure 63). However, this unit differed in that it had a higher density of artifacts and other cultural remains, especially of fire-altered rock and bone (Figure 64, Table 8, and Table 9). Although fire-altered rocks were particularly common in the 30-40-centimeter level of this unit, it is not clear if there was a feature such as a hearth or rock oven because the rocks were somewhat dispersed throughout the unit (Figure 65). There was approximately six times the quantity of bone in this unit compared with the other two units (Table 8, and Table 9). In addition, more projectile points, point fragments, and point blanks were found in this unit (n=12; Table 14) compared with Unit 1 (n=8) and Unit 2 (n=2). Unit 3 was excavated to 120 centimeters below datum when bedrock was first encountered, and then a hand auger was used that took the unit to 141 centimeters below datum before the unit was abandoned.



Stratum 1: Very dark brown, friable loam with some clay, Munsell 5Y, 2.5/2.
Stratum 2: Very dark brown friable loam with more clay than Stratum 1, Munsell 5Y, 2.5/2.

Figure 62. Unit 3, West Wall Stratigraphic Profile, CA-SDI-860.



Stratum 1: Very dark brown, friable loam with some clay, Munsell 5Y, 2.5/2.
Stratum 2: Very dark brown friable loam with more clay than Stratum 1, Munsell 5Y, 2.5/2.

Figure 63. Unit 3, East Wall Stratigraphic Profile, CA-SDI-860.

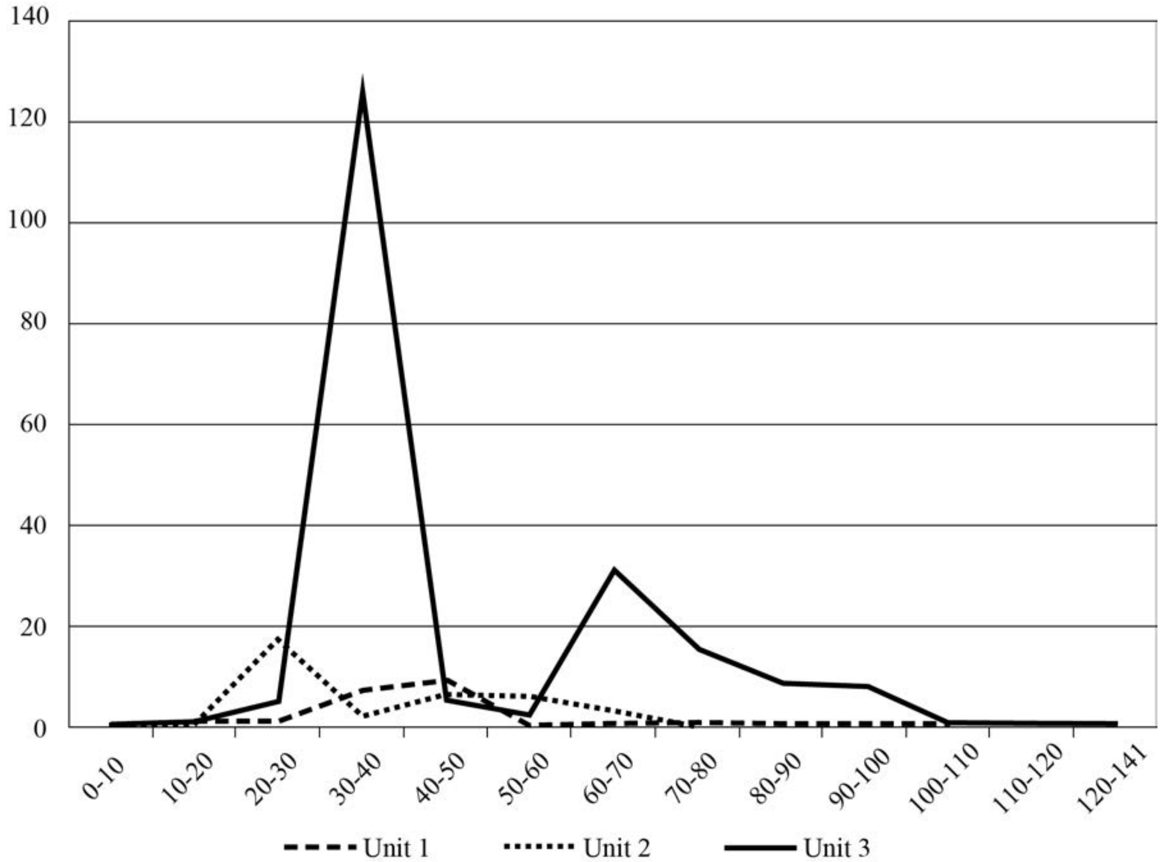


Figure 64. Frequency of Fire-altered Rocks by Unit and Level, CA-SDI-860.

Photo by Ryan Anderson.

Figure 65. Burned Rock in Unit 3, 30-40 centimeters below Datum, CA-SDI-860.

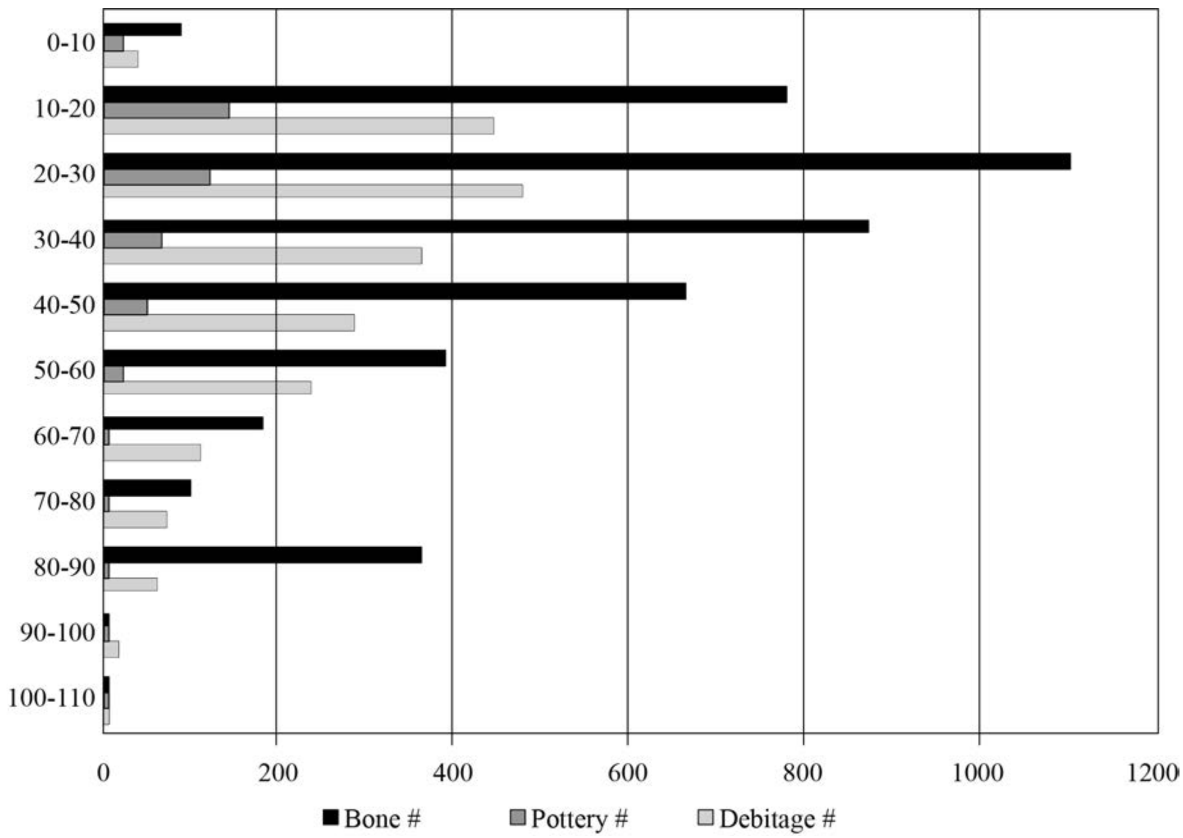


Figure 66. Unit 1, Number of Bones, Pot Sherds, and Debitage by Level, CA-SDI-860.

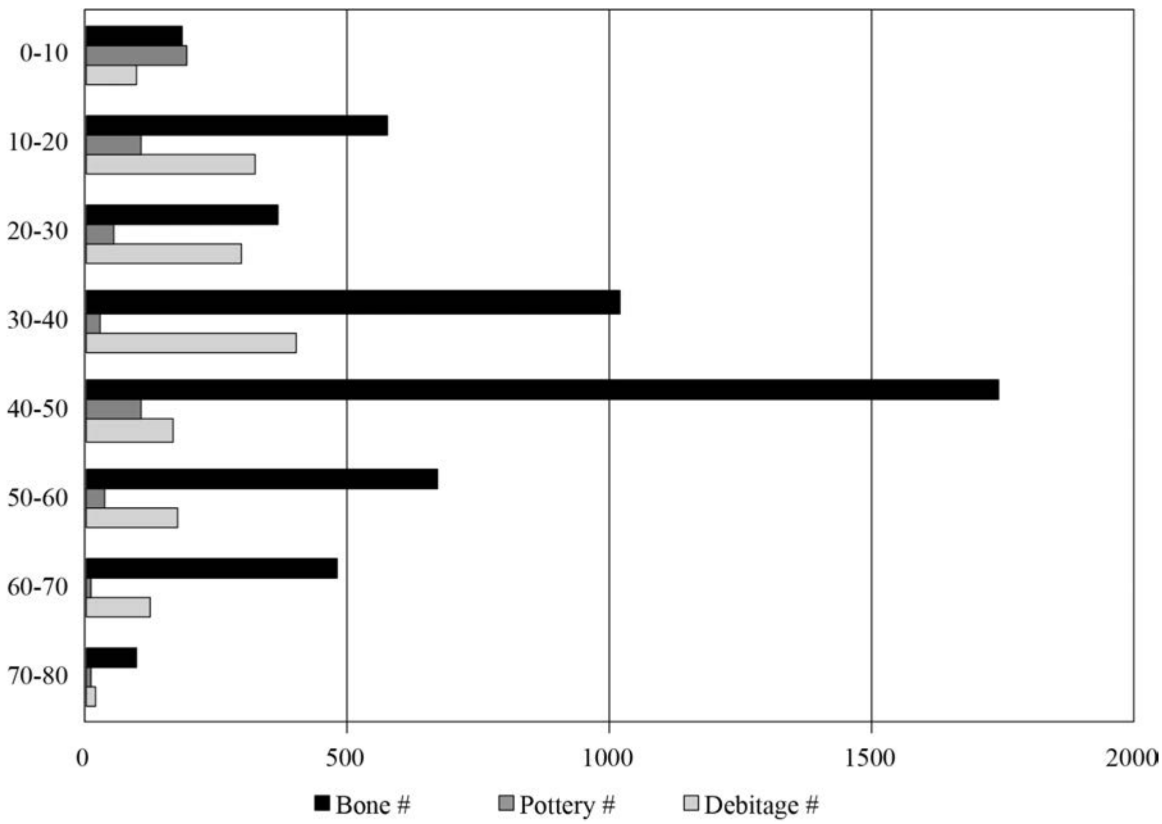


Figure 67. Unit 2, Number of Bones, Pot Sherds, and Debitage by Level, CA-SDI-860.

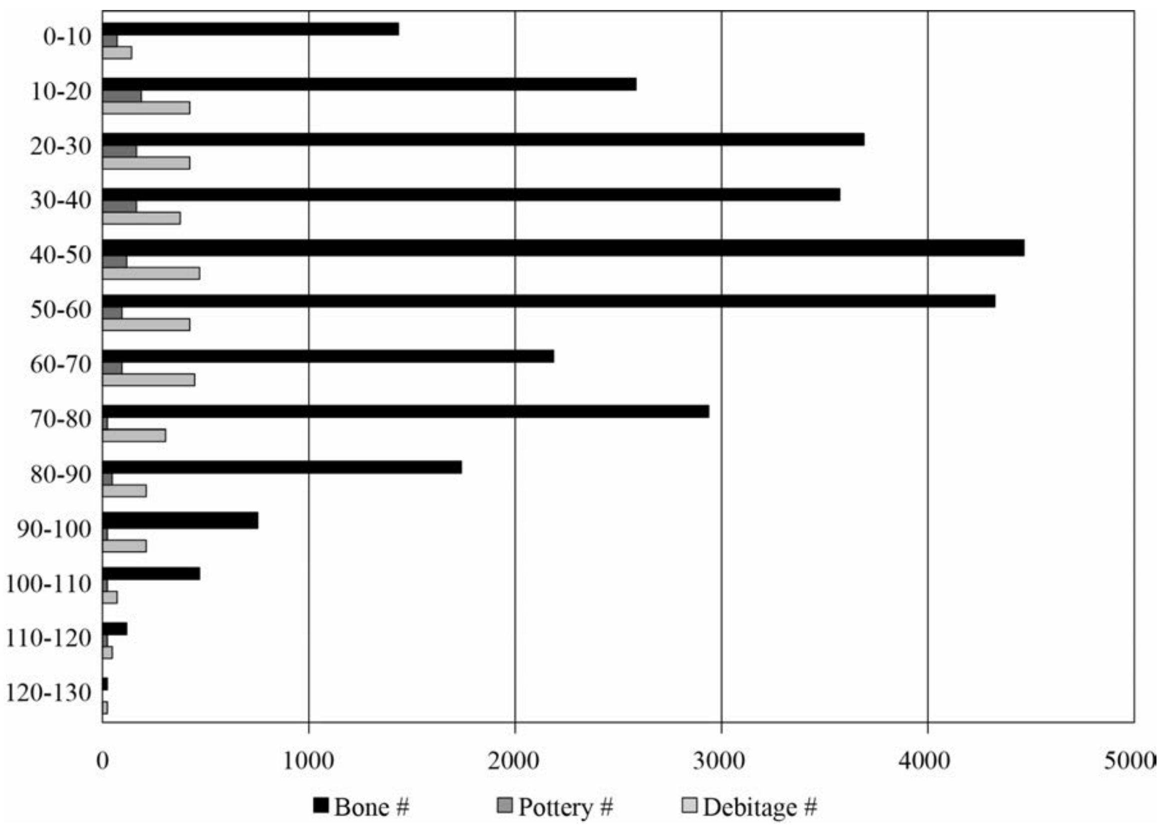


Figure 68. Unit 3, Number of Bones, Pot Sherds, and Debitage by Level, CA-SDI-860.

Table 8. Number of Debitage, Pot Sherds, and Bones by Unit and Level from CA-SDI-860.

UNIT	DEPTH (CM)	DEBITAGE #	POTTERY #	BONE #
1	0-10	38	26	90
1	10-20	446	145	784
1	20-30	479	121	1,104
1	30-40	363	66	876
1	40-50	286	51	668
1	50-60	237	21	391
1	60-70	111	6	183
1	70-80	71	4	101
1	80-90	62	3	362
1	90-100	19	1	4
1	100-110	7	1	3
	Subtotal	**2,119**	**445**	**4,566**
2	0-10	98	200	191
2	10-20	326	112	578
2	20-30	304	58	370
2	30-40	406	27	1,030
2	40-50	168	112	1,758
2	50-60	177	41	681
2	60-70	124	3	488
2	70-80	22	3	98
	Subtotal	**1,625**	**556**	**5,194**
3	0-10	146	60	1,428
3	10-20	424	171	2,599
3	20-30	423	150	3,706
3	30-40	376	155	3,593
3	40-50	460	121	4,475
3	50-60	427	83	4,350
3	60-70	451	82	2,199
3	70-80	306	7	2,950
3	80-90	199	36	1746
3	90-100	197	8	751
3	100-110	59	14	456
3	110-120	37	1	115
3	120-141	1	0	28
	Subtotal	**3,506**	**888**	**28,396**

Table 9. Weight of Debitage, Pot Sherds, and Bones by Unit and Level from CA-SDI-860.

UNIT	DEPTH (CM)	DEBITAGE (G)	POTTERY (G)	BONE (G)
1	0-10	5.04	20.9	1.01
1	10-20	62.97	202.1	11.59
1	20-30	91.48	284.0	16.46
1	30-40	41.74	172.0	12.67
1	40-50	30.37	161.1	9.80
1	50-60	33.17	91.6	5.57
1	60-70	13.82	10.5	2.84
1	70-80	9.38	15.1	1.48
1	80-90	78.41	2.4	2.05
1	90-100	4.08	13.4	0.12
1	100-110	0.48	0.8	0.01
	Subtotal	**370.94**	**973.7**	**63.60**
2	0-10	20.52	407.02	2.78
2	10-20	74.69	143.29	7.62
2	20-30	44.34	74.78	6.60
2	30-40	66.31	46.18	16.01
2	40-50	29.49	328.79	4.96
2	50-60	12.34	98.24	7.03
2	60-70	11.71	15.78	4.91
2	70-80	2.78	4.97	0.87
	Subtotal	**262.18**	**1,119.05**	**177.98**
3	0-10	19.89	94.15	17.07
3	10-20	79.72	307.63	34.84
3	20-30	32.97	377.19	1,109.78
3	30-40	42.3	363.95	38.85
3	40-50	51.56	254.07	47.50
3	50-60	47.59	171.12	45.28
3	60-70	92.09	121.05	34.87
3	70-80	32.33	77.94	35.57
3	80-90	30.31	33.11	20.17
3	90-100	99.89	14.20	10.99
3	100-110	38.57	24.31	7.05
3	110-120	26.86	0.04	1.67
3	120-141	0.01	0.00	1.14
	Subtotal	**594.09**	**1,932.91**	**1,760.74**

CHRONOLOGY

Radiocarbon Dates

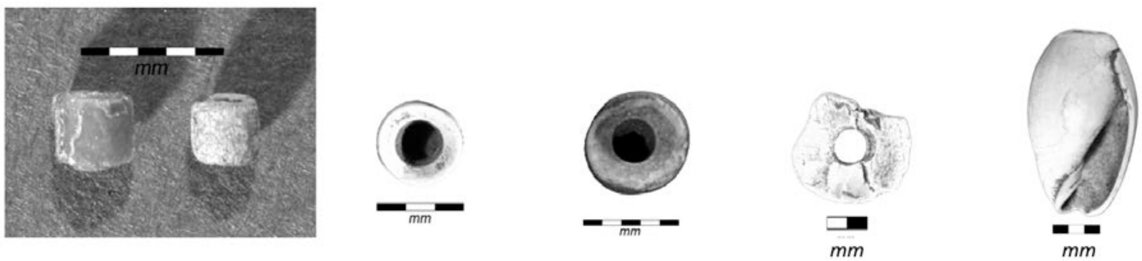
Dr. Virginia Popper of Beta Analytic identified and dated all nine wood charcoal samples (Table 10) using accelerator mass spectrometry (AMS). With the exception of one sample, all of them have calibrated dates after AD 1100 that confirm the site was occupied during the late prehistoric period, as True hypothesized. The sample yielding the exception (a much older date of 1920 ± 40 BP) came from a burned piece of wood that Popper identified as probable *Quercus* sp., which was found in the lower deposits of Unit 1 (see Figure 61) but still clearly in the cultural deposits. It is possible that this date was older than the cultural event it was associated with because of the "old wood" problem (Schiffer 1986).

Table 10. Radiocarbon Dates from CA-SDI-860.

BETA #	CAT #	UNIT	DEPTH (CM)	MEASURED AGE	CONVENTIONAL AGE	2 SIGMA CALIBRATION	MATERIAL
264056	214	1	53	370 ± 40 BP	390 ± 40 BP	cal AD 1440 to 1540 (cal BP 510 to 420)/ cal AD 1540 to 1630 (cal BP 400 to 320)	*Pinus* sp.
264057	215	1	69	400 ± 40 BP	440 ± 40 BP	cal AD 1420 to 1490 (cal BP 530 to 460)	Unknown
276973	222	1	87	1920 ± 40 BP	1940 ± 40 BP	cal BC 30 to AD 130 (cal BP 1980 to 1820)	*Quercus* sp.
264053	211	2	58	400 ± 40 BP	390 ± 40 BP	cal AD 1440 to 1540 (cal BP 510 to 420)/ cal AD 1540 to 1630 (cal BP 400 to 320)	*Yucca* sp. cf.
276972	223	2	64	720 ± 40 BP	730 ± 40 BP	cal AD 1230 to 1300 (cal BP 720 to 650)	*Quercus* sp.
264055	213	3	39	560 ± 40 BP	560 ± 40 BP	cal AD 1300 to 1370 (cal BP 650 to 580)/ cal AD 1380 to 1430 (cal BP 570 to 520)	*Quercus* sp.
276974	234	3	68	480 ± 40 BP	520 ± 40 BP	cal AD 1320 to 1350 (cal BP 630 to 600)/ cal AD 1390 to 1440 (cal BP 560 to 510)	*Juniperus* sp. cf.
276975	229	3	84	480 ± 40 BP	490 ± 40 BP	cal AD 1400 to 1450 (cal BP 550 to 500)	*Quercus* sp.
264054	212	3	110	830 ± 40 BP	810 ± 40 BP	cal AD 1160 to 1280 (cal BP 790 to 670)	*Quercus* sp.

Beads

Eight glass or shell beads and one fragment were recovered from CA-SDI-860 (Table 11 and Figure 69). Additionally, a stone ornament and a stone bead were observed on the surface and are described under *Ground Stone* on page 106.



From left to right: Glass Beads, #490 and 1309; Olivella biplicata Cupped Bead, #1313; Olivella biplicata Large Cupped Bead, #1312; Olivella biplicata disc bead, #1314; Olivella biplicata Spire Ground, #1311.

Figure 69. Beads from CA-SDI-860.

Two green glass beads (#490 and 1309) were found in the upper deposits of the site; one is highly patinated. They are clearly indicators of the historic period (Figure 69).

The six remaining beads were made from *Olivella biplicata* shell. One of these, #1314 is a wall disc or saucer bead (Table 11 and Figure 69). Wall discs are similar to saucer beads; Gibson (1992:30) suggests that beads with hole diameters of 1.6 millimeters or smaller can be classified as wall discs. Both are found in the Middle and Late Periods in southern California (Bennyhoff and Hughes 1987:132; Gibson 1992; King 1990). Two cupped beads made from *Olivella biplicata* shell were found in Unit 3 between 40 and 60 centimeters below datum. The first is a larger cupped bead (Figure 69, #1312), which is more commonly found in southern California between AD 1150 and 1500 (Gibson 1992:28). The second cupped bead has a smaller diameter and is more typical of the period between AD 1500 and 1782 (Gibson 1992:29). The three *Olivella biplicata* spire-ground beads were all found in Unit 3. One of these, #1310, has a facet on its side indicating it may have been strung side by side. *Olivella biplicata* spire-ground beads can occur in the Early, Middle, Late, and Historic Periods. Gamble and King (2011:168) note that during the Late Period, small- to medium-sized *Olivella biplicata* shells from the coasts of Orange and San Diego counties were used to manufacture woven beadwork, in which shells were strung side by side in a fashion similar to Southwestern beadwork with *Olivella dama* shells. While none of the shell beads from this phase of the fieldwork were from Gulf of California shells, True's collection contains beads made from *Olivella dama*, a Gulf of California species (Gamble and King 2011). Although no *Olivella biplicata* rough disc beads were recovered in the 2008 excavations, 12 were found in True's excavations at CA-SDI-860 (Gamble and King 2011:Table 1). These were manufactured after historic contact with the Spanish, probably starting in about 1780 and continuing until approximately 1840.

ARTIFACTS

Pottery

Most of the pottery found at CA-SDI-860 were broken sherds from vessels and were brown, although buff-colored sherds were also part of the collection. A total of 1,890 pottery sherds weighing 3,934.27 grams was recovered from CA-SDI-860 in the excavations. Of these, 129 (6.8%) were rim sherds. The most common type of alteration found on the

Table 11. Beads from CA-SDI-860.

Cat #	Unit	Level (cm)	Type	Material	D	L	H	T	W	Comment
490	1	20-30	Glass	Glass	2.70	-	1.8	2.35	-	Unburned, green
617	3	60-70	Spire Ground	*Olivella* sp.	-	-	-	-	-	Unburned spire ground bead fragment
1308	3	70-80	Spire Ground	*Olivella biplicata*	-	7.47	1.6	-	4.44	Slightly diagonally ground
1309	3	20-30	Glass	Glass	2.19	-	1.1	2.49	-	Green, heavily patinated, possibly burned
1310	3	50-60	Spire Ground	*Olivella biplicata*	-	7.33	1.9	-	5.05	Whole unburned bead, facet on side and basal grinding, diagonally ground
1311	3	20-30	Spire Ground	*Olivella biplicata*	-	11.32	1.85	-	7.03	Unburned
1312	3	40-50	Cupped, Large K1	*Olivella biplicata*	5.11	-	1.3	2.68	-	Burned, conical shaped hole, possible dorsal and ventral grinding, drilled from ventral surface
1313	3	50-60	Cupped K1	*Olivella biplicata*	3.10	-	1.4	1.81	-	Unburned, drilled from ventral surface
1314	3	100-110	Wall disc G2a or J1	*Olivella biplicata*	5.50	-	1.6	0.6	-	Broken in two pieces, unburned, eroded and uneven edges, drilled from ventral surface

Notes: Measurements in mm: D – Diameter; L – Length; H – Hole; T – Thickness; W – Width.

pottery was incising (n=17), and six of those exhibited incised rims. Two incised sherds from the excavations are presented in Figure 70 (#761 and 779). Sherd #761, found *in situ* in Unit 1 at 28 centimeters below datum, was one of the largest sherds recovered from CA-SDI-860. It is a rim sherd with a wide aperture, indicating it was part of a large pot. A different sherd had plant impressions on it, and five others had possible finger impressions. Only one sherd had evidence of drilling. There were three very small fragments of pottery that may have been parts of smoking pipes, but were too small to determine with accuracy. There were five small spherical pottery balls, one of which was broken in half.

The pottery on the surface was more varied. Although none of the pottery on the surface was collected, many unusual sherds were photographed. Four sherds were painted with red paint, three of which are shown in Figure 70 (#9898, 27, and 58). These are similar to the types made by the Colorado River tribes. One sherd found on the surface had straight lines impressed in it (Figure 70, #9859). Numerous incised sherds were observed on the surface, five of which are shown in Figure 70 (#220, 9809, 60, 57, and 9873). One of the most interesting sherds found on the surface at CA-SDI-860 is one that had basketry impressions on the interior (Figure 70, #9844), indicating that the clay pot had been formed around a basket. Two miniature pots (Figure 70, #25 and 9867), one of which was fragmentary, were observed on the surface in the cemetery area. True (1970) has suggested that these miniature vessels were intended for mortuary contexts and are typical of the Cuyamaca complex. DuBois (1901:625-628) noted that small ollas were put around the neck of images as part of the Image burning ceremony.

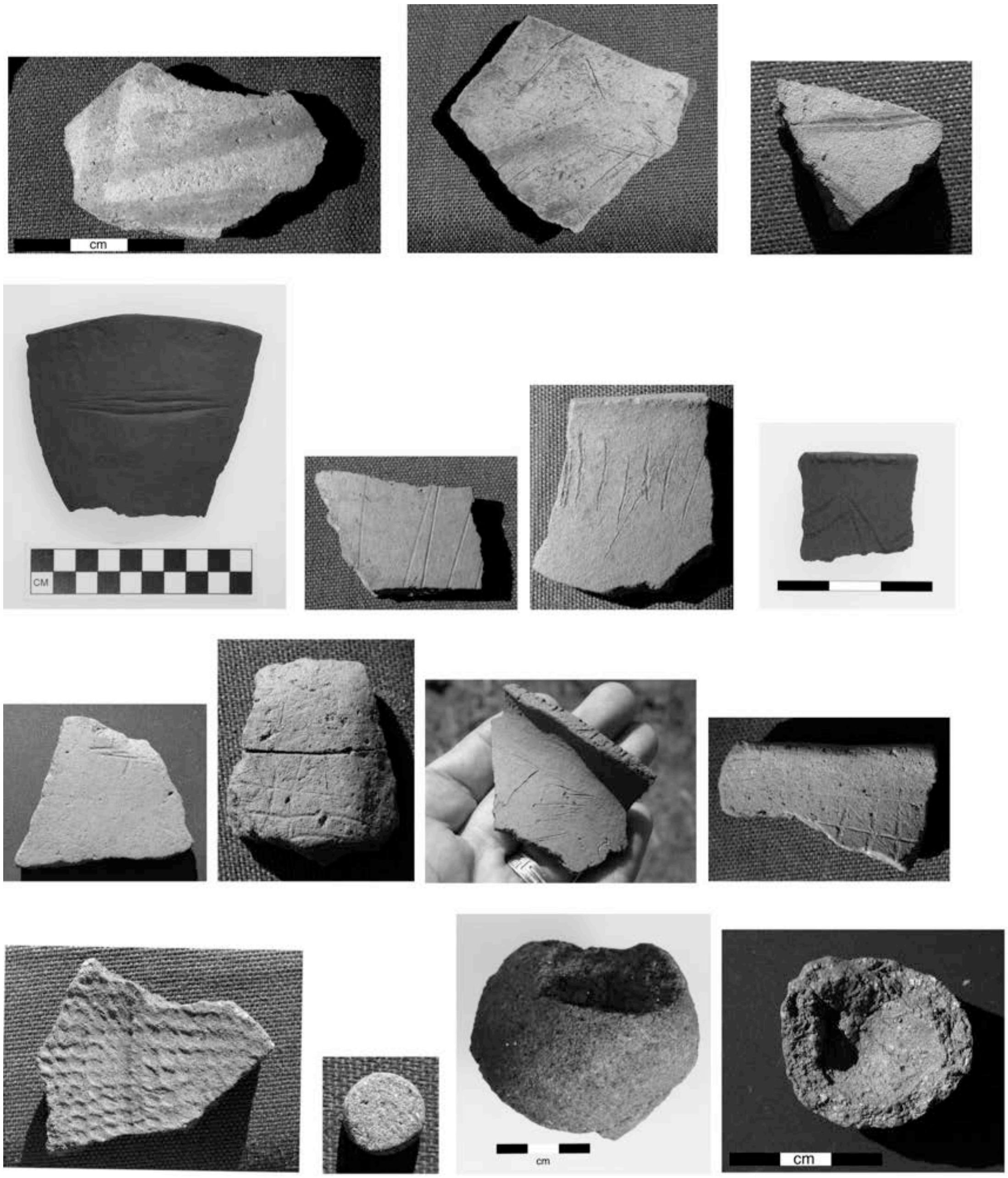


Photo and/or catalogue numbers from left to right.
Top row: #9898, 27, 58; Second row: #0761, 9859, 220, 0779;
Third row: #9809, 60, 57, 9873; Fourth row: #844, 9899, 25, 9867.

Figure 70. Pottery from CA-SDI-860.

Chipped Stone

The CA-SDI-860 chipped stone assemblage is comprised of 10,684 pieces of debitage, flakes, tools, and projectile points, weighing 1,846.53 grams without hammerstones. A brief analysis of the projectile points and tools is presented below after a short discussion of the most common material types for the entire chipped stone assemblage (Table 12).

Table 12. Chipped Stone Material Types from CA-SDI-860.

MATERIAL	DESCRIPTION
Basalt	Basalt is an igneous rock that lacks quartz inclusions that can be seen with the naked eye. Basalts are commonly dense and black (Hamblin and Howard 1989:31).
Obsidian	Obsidian is an igneous rock that is volcanic glass. The closest obsidian source to CA-SDI-860 in the San Diego area is Obsidian Butte located near the Salton Sea in Imperial County.
Metavolcanic	Metavolcanic rocks were formed as a result of metamorphic action on volcanic rocks. Metavolcanic rock is often fined-grained and can have a waxy cortex. Metavolcanic material is very common in the San Diego area, but the quality of rock varies depending on the quarry location.
Quartzite	Quartzite is a "non-foliated metamorphic rock composed principally of quartz," and the grain size varies from fine to coarse (Hamblin and Howard 1989:57).
Chert	Chert is a sedimentary rock with a non-clastic texture. According to Hamblin and Howard (1989:15), chert is a "light-colored variety of crypto crystalline quartz."
Quartz/ Milky Quartz	Quartz is a common material type in the San Diego area. Quartz is a difficult material to work with; however, it is a good material for stone tool manufacturing because of its hardness. Quartz is typically colorless and Milky Quartz is typically white in color.
Chalcedony	Chalcedony has the same chemical composition as quartz, silicon dioxide (SiO2), and chalcedony includes jasper, carnelian, agate, and onyx.
Jasper	Jasper is a type of chalcedony that has some inclusions. The commonly red color of Jasper is caused by hematite inclusions (Hamblin and Howard 1989:15).
Glass	The differentiation between colorless glass and colorless quartz was difficult to determine. The two materials were distinguished by their measured hardness; quartz has a hardness of seven and glass has a hardness of five to six.
Wonderstone	Wonderstone is a silicified material that contains colored banding, often in reds, oranges, and purples. A quarry site with wonderstone has been identified at Rainbow Rock at the southeastern end of the Santa Rosa Mountains in Imperial County, California. It is less than a half a mile from the high (40-foot) Lake Cahuilla shoreline (Pigniolo 1995).

Projectile Points

Forty-two points and point fragments were found at CA-SDI-860 during this project. In addition, one projectile point blank made from metavolcanic rock was identified. Twenty-two of the points, point fragments, and point blanks were found in the three excavation units (Table 14). An additional 21 projectile points and point fragments were found on the surface of the site (Table 15). Although none of the points from the surface was collected, most were photographed and their locations were documented with GPS. The points that could be identified by type (n=31) were classified according to True's (1970) typology and then placed in categories of Desert Side-Notched or Cottonwood (Table 13; see Pigniolo 2004 for concordance of True's types); the majority were Desert Side-Notched points (62%).

One of the points, found on the site boundary and the lower density portion of the site, appeared to be a fragment of a large spear point and may be earlier than the other points at the site (Figure 72, #1063). It is quite similar to Diablo Canyon Side-Notched points that date between about 6000 and 3500/2500 BC (Justice 2002:181-192). It is also similar to Descanso Notched points (Pigniolo and Michelini 2009) found in northern Baja California and the San Diego region, but it is too fragmentary to say with confidence. Descanso Notched points date to about 7,000 years ago.

The most common materials used to make points were metavolcanic, milky quartz, obsidian, and chert (Table 16). One of the Desert Side-Notched points was made from glass, clearly placing it in the post-contact era. Most of the obsidian appeared to be from the Obsidian Butte source.

Table 13. Projectile Point Typology Based on True (1970) and Pigniolo (2004).

TYPE	DESCRIPTION
Type 1 (n=6) Cottonwood/ Concave Base	True's Type 1 (T-1) projectile points are small and triangular with no side-notches and a concave base (True 1970). Several variations of this type are seen in the chipped stone assemblage at CA-SDI-860 (Figure 71 and Figure 72), including short angular or long and narrow configurations, rounded or "U" shaped basal notches and straight sides.
Type 2 (n=4) Cottonwood/ Straight Base	True's Type 2 (T-2) projectile points are small and triangular with no side-notches and a straight base (True 1970). Several variations of this type are in the assemblage at CA-SDI-860, including ones with straight sides and long narrow configurations (Figure 71 and Figure 72).
Type 3 (n=1) Cottonwood/ Convex Base	This type of point is similar to Types 1 and 2 but has a convex base. True (1970:25) noted that this type is relatively rare. The one point in this category had a slightly convex base (Figure 71).
Type 5 (n=12) Desert Side-Notched/ Concave Base	True's Type 5 (T-5) projectile points are small and triangular with side-notches and a concave base (True 1970). Some have rounded "U" shaped basal notches, straight sides and short angular configurations. These were the most common types of points from the site (Figure 71 and Figure 72).
Type 7 (n=4) Desert Side-Notched/ Convex Base	True's Type 7 (T-7) projectile points are small and triangular with side-notches with a straight base (True 1970). Several variations of this type are seen in the chipped stone assemblage at CA-SDI-860, including ones with straight sides and short angular or long and narrow configurations (Figure 71 and Figure 72).
Type 8 (n=3) Desert Side-Notched/ Concave Notched Base	Type 8 (T-8) projectile points are small and triangular with side-notches and a concave base with a small central notch within the base concavity (Figure 71 and Figure 72).
Type 10 (n=1) Cottonwood/ Notched Base	Type 10 projectile points are similar to Types 1 and 2, small and triangular with no side-notches but with "U" shaped basal notches.
Non-diagnostic (n=12)	Approximately half of the chipped stone points were non-diagnostic and therefore could not be categorized by type. These were either missing a base or too fragmentary to classify using True's typology. Some of these have serrated edges (Figure 72).

Table 14. Projectile Points and Blanks Recovered During Excavation from CA-SDI-860.

CAT #	TRUE TYPE	DESCRIPTION	UNIT	LEVEL (CM)	MATERIAL	COLOR	WHOLE/ FRAGMENT
462	Point blank	Bifacially flaked projectile point blank, triangular with no side-notches and a straight base	1	30-40	Meta volcanic	Dark Brown	Whole
474	T-1	Cottonwood/Concave Base: Small bifacially flaked triangular projectile point with concave base, "U" shaped basal notch and no side-notches, short angular configuration, all edges are rounded and the sides are straight	3	0-10	Milky Quartz	White	Whole
464	T-1	Cottonwood/Concave Base: Bifacially worked, triangular with concave base, "U" shaped basal notch and no side-notches, all edges are rounded, sides are straight	3	100-110	Milky Quartz	White	Whole
468	T-1	Cottonwood/Concave Base: Bifacially worked, long narrow triangular configuration with a concave base, "U" shaped basal notch and no side-notches, all edges are sharp, the sides are straight, burned or fire altered	3	20-30	Chert	White/ Grey	Whole
463	T-1	Cottonwood/Concave Base: Small bifacially flaked, triangular with no side-notches and a slightly concave base, one face minimally flaked, broken on that side	3	70-80	Obsidian	Black	Mostly whole
451	T-2	Cottonwood/Straight Base: Bifacially flaked, triangular with straight base and no side-notches	1	20-30	Chert	Tan w/brown mottling	Whole
467	T-3	Cottonwood/Convex Base: Bifacially flaked, small, triangular, no side notching	3	40-50	Milky Quartz	White	Whole
469	T-5	Desert Side-Notched/Concave Base: Small bifacially flaked, triangular, side-notched with a "U" shaped concave base	1	20-30	Milky Quartz	White	Whole
576	T-5	Desert Side-Notched/Concave Base: Large bifacially flaked point base, side-notched with a "U" shaped concave base	2	50-60	Obsidian	Black	Base

Table 14. Projectile Points and Blanks Recovered During Excavation from CA-SDI-860.

CAT #	TRUE TYPE	DESCRIPTION	UNIT	LEVEL (CM)	MATERIAL	COLOR	WHOLE/ FRAGMENT
730	T-5	Desert Side-Notched/Concave Base: Small bifacially flaked, triangular, side-notched with a "U" shaped concave base, the sides are straight, small portion of the basal tang is missing	3	50-60	Silty Chert	Reddish Brown	Mostly whole
1575	T-7	Desert Side-Notched/Convex Base: Small bifacially flaked projectile point base, side notched w convex base	1	20	Obsidian	Black	Base
653	T-7	Desert Side-Notched/Convex Base: Bifacially flaked projectile point base, side-notched with convex base	3	10-20	Obsidian	Black	Base
729	T-7?	Desert Side-Notched/Convex Base: Small bifacially flaked, side-notched with a possible straight base, a portion of the base and basal tang is missing, probably a True's Type 7	3	50-60	Milky Quartz	White	Mostly whole, part of base and side broken
449	T-8	Desert Side-Notched/Concave Notched Base: Bifacially flaked, long, narrow, and triangular with side-notches and a concave base with a small central notch within the base concavity, possibly made from basalt	3	50-60	Basalt?/ Volcanic	Black	Whole
735	T-8	Desert Side-Notched/Concave Notched Base: Bifacially flaked point base with partial mid-section, triangular with side-notches and a concave base with a small central notch	3	50-60	Chert	Very Dark Brown	Base
471	T-10	Cottonwood/ Notched Base: Bifacially worked, triangular with concave base, "U" shaped basal notch and no side-notches, tip missing	1	20-30	Unknown	Grey/Black banded	Mostly whole, tip missing
466	Unk	Bifacially flaked probable point fragment	1	20-30	Obsidian	Black	?
473	Unk	Bifacially flaked point partial base fragment	1	20-30	Milky Quartz	Colorless	Base

Table 14. Projectile Points and Blanks Recovered During Excavation from CA-SDI-860.

CAT #	TRUE TYPE	DESCRIPTION	UNIT	LEVEL (CM)	MATERIAL	COLOR	WHOLE/ FRAGMENT
1315	Unk	Small bifacially flaked projectile point tip fragment	1	50-60	Obsidian	Black	Tip
461	Unk	Small bifacially flaked projectile point midsection	2	60-70	Meta volcanic	Brown	Midsection
465	Unk	Bifacially flaked projectile point midsection fragment, possibly made of Monterey Chert	3	60-70	Chert	Black	Midsection
0574	Unk	Small bifacially flaked projectile point midsection	3	60-70	Obsidian	Black	Midsection

Notes: Unk – Unknown.

Table 15. Points Found on the Surface of CA-SDI-860 (photographed, but not collected).

CAT #	TRUE TYPE	DESCRIPTION	MATERIAL TYPE	COLOR	WHOLE/ FRAGMENT
9877	T-1	Cottonwood/Concave Base: Bifacially flaked, triangular with no side-notches and a concave base, non serrated	Quartz	Clear	Whole
209	T-1	Cottonwood/Concave Base: Bifacially flaked, triangular with no side-notches and a concave base, non serrated	Obsidian	Clear	Whole
9884	T-2	Cottonwood/Straight Base: Bifacially flaked with tip missing, triangular with no side-notches and a straight base, sides straight and non serrated	Metavolcanic	Greenish Blue	Base and Midsection
9850	T-2	Cottonwood/Straight Base: Bifacially flaked triangular, with no side-notches and a straight base, sides are straight and non serrated	Metavolcanic	Green	Whole
9889	T-2	Cottonwood/Straight Base: Bifacially flaked with missing tip, triangular with straight base and no side-notches	Chert	Red	Base and Midsection
18	T-5	Desert Side-Notched/Concave Base: Small bifacially flaked, triangular with side-notches and a concave base	Glass	Green	Whole
24	T-5	Desert Side-Notched/Concave Base: Bifacially flaked with missing tip, triangular with side-notches and a concave base	Metavolcanic	Black	Base and Midsection
217	T-5	Desert Side-Notched/Concave Base: Bifacially flaked base, triangular with side-notches and a concave base	Metavolcanic	Green	Base

Table 15. Points Found on the Surface of CA-SDI-860 (photographed, but not collected).

CAT #	TRUE TYPE	DESCRIPTION	MATERIAL TYPE	COLOR	WHOLE/ FRAGMENT
41	T-5	Desert Side-Notched/Concave Base: Bifacially flaked base, triangular with side-notches and a concave base	Metavolcanic	Green	Base
9883	T-5	Desert Side-Notched/Concave Base: Small bifacially flaked, triangular side-notched with slightly concave base	Milky Quartz	White	Whole
28	T-5	Desert Side-Notched/Concave Base: Bifacially flaked with missing tip, one basal tang is missing	Metavolcanic	Greenish Brown	Base and Midsection
48	T-5	Desert Side-Notched/Concave Base: Small bifacially flaked, triangular side-notched with concave base	Milky Quartz	White	Whole
9821	T-5	Desert Side-Notched/Concave Base: Small bifacially flaked, triangular side-notched with concave base, base and midsection fragment only, tip and basal tang are missing	Quartzite	Greenish Brown	Base and Midsection
9815	T-5	Desert Side-Notched/Concave Base: Small bifacially flaked, triangular side-notched with a concave base, small portion of the basal tang is missing	Quartzite	Dark Grey	Whole
9800	T-7	Desert Side-Notched/Convex Base: Bifacially flaked point, possible blank, slightly convex base and side notches	Metavolcanic	Dark Grey	Almost whole, tip missing
9830	T-8	Desert Side-Notched/Concave Notched Base: Bifacially flaked, long, narrow, and triangular with side-notches and a concave base with a small central notch within the base concavity, broken at neck and base and midsection were refitted for photo	Obsidian	Black	Whole; Broken & Refitted
9819	Unk	Small bifacially flaked projectile point tip fragment	Milky Quartz	White	Tip
9841	Unk	Bifacially flaked projectile point tip fragment, made from Butte Obsidian	Obsidian	Black	Tip
37	Unk	Bifacially flaked projectile point tip fragment	Metavolcanic	Greenish Brown	Tip
9776	Unk	Bifacially flaked projectile point tip and midsection fragment, sides are serrated	Chert or Quartz	Greenish Brown	Tip and Midsection
1063	Unk	Large bifacially flaked point base, sides are serrated; possible spear point	Metavolcanic	Dark Grey Green	Base

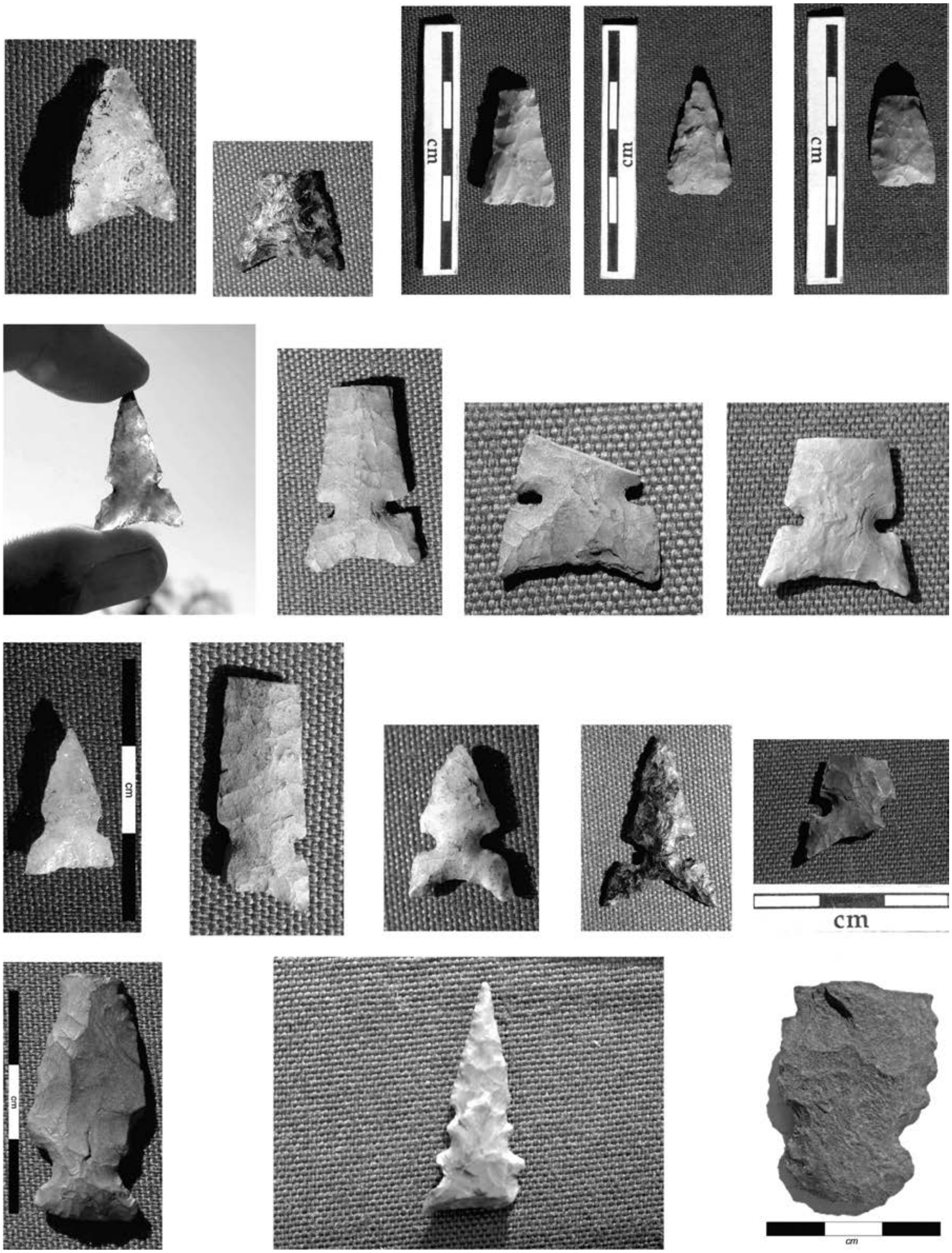
Notes: Unk – Unknown.

Table 16. Number of Projectile Points Types by Material at CA-SDI-860.

Material Type	Cottonwood	Desert Side-Notched	Unknown Type	Total
Chert	3	2	2	7
Glass	0	1	0	1
Metavolcanic	2	6	4	12
Milky Quartz/Quartz	4	4	2	10
Obsidian	2	4	4	10
Quartzite	0	2	0	2
Unknown	1	0	0	1
Total	12	19	12	43

From left to right. Top row: #467, 653, and 729; Second row: #468, 474, 464, and 463; Third row: #735, 449, 469, 730, and 576.

Figure 71. Projectile Points Recovered during 2009 Excavations.



From left to right. Top row: #9877, 209, 9884, 9850, and 9889; Second row: #18, 24, 217, and 41; Third row: #9883, 28, 48, 9830, and 9821; Fourth row: #980, 9815, and 1063.

Figure 72. Points Found on the Surface at CA-SDI-860.

Tools

A total of 20 tools, possible tools, and cores were recovered from CA-SDI-860. These include tools with unifacial (Figure 73, #1229) and/or bifacial (Figure 73, #1079) use wear or retouch, hammerstones, cores, and possible burins (Table 17). Metavolcanic/ volcanic rocks were the most common material type for tools, followed by obsidian. Tools were also made from basalt, chert, and quartzite. In addition, there was a hammerstone made from slate (Figure 73, #1254). A more thorough analysis of the tools and possible tools is warranted.

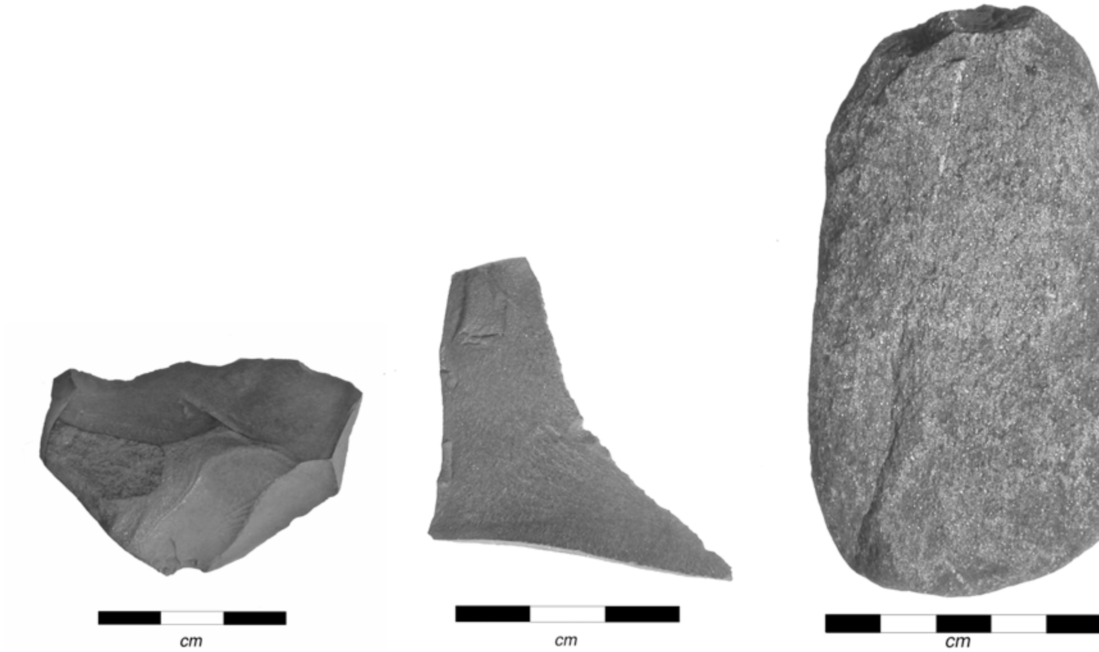
Debitage

More than 7,000 flakes or pieces of debitage were recovered from CA-SDI-860 (Table 18), all of which was screened through 1/2-, 1/4-, 1/8-, and 1/16-inch mesh screens. The frequency of debitage by unit and depth is depicted in Figure 74. More debitage occurred in the deeper levels of Unit 3 than in the other two units.

Table 17. Tools and Possible Tools at CA-SDI-860.

CAT #	TYPE	UNIT	DEPTH (CM)	MATERIAL	COMMENT
1072	Tool	Surface	-	FG Metavolcanic	Unifacially retouched and used tool
442	Tool	1	20-30	Obsidian	Tool fragment; bifacial use wear
516	Tool	1	20-30	Volcanic	Possible burin
1133	Hammerstone	1	30-40	Volcanic	Fire affected
1489	Tool	1	40-50	Volcanic	Possible tool
1229	Tool	1	60-70	Basalt	Unifacial Tool
1505	Tool	2	0-20	Obsidian	Possible burin
1507	Tool	2	0-20	Obsidian	Possible burin
1359	Tool	2	10-30	Chert	Retouch flake; bifacial use wear
1148	Hammerstone?	2	40-50	Quartzite	Possible hammerstone
1164	Hammerstone/ Core	2	40-50	Volcanic	-
1450	Tool	2	50-60	Volcanic	Bifacial use wear
1474	Tool	2	70-80	Volcanic	Possible tool; unifacial use wear
636	Tool	3	10-20	Volcanic	Unifacial retouch and use wear
1138	Hammerstone	3	10-20	Volcanic	Cobble hammerstone
1079	Tool	3	30-40	FG Metavolcanic	Bifacial tool
1184	Core	3	30-40	Volcanic	Fire affected, possible hammerstone
1254	Tool	3	30-40	Slate	Battered on edges; possible hammerstone
988	Tool	3	100-110	Volcanic	Unifacial and bifacial use wear; engraving end
998	Tool	3	100-110	Volcanic	Unifacial retouch and use wear

Notes: FG – Fine-grained.



From left to right: #1079, 1229, and 1254.

Figure 73. Chipped Stone Tools from CA-SDI-860.

Debitage by material type and size is reported in Table 18 from the three excavated units. This does not include possible flakes or chipped stone found in the gopher fill. Metavolcanic was the most common material type, comprising about 37% of the flake assemblage, followed by obsidian at 25%, then milky quartz at 21% of collection. Materials that occurred less frequently include chert (14%), quartzite (1.5%), quartz (1%), and wonderstone (.5%). Several flakes were made from more rare materials and are not included in Table 18, including Piedra lumbre, siltstone, chalcedony, and jasper. Only 52 flakes were not identifiable by material type. None of these are in Table 18. Most of the obsidian debitage appeared to be bifacial thinning flakes.

The majority of flakes (4,351 out of 7,176) were caught in the 1/16-inch mesh screen for each material type except for quartzite (Figure 75, Figure 76, and Table 19). Most of these small flakes were probably a result of either point making or point retouching, as well as tool sharpening.

Ground Stone

One significant characteristic of CA-SDI-860 is the variety and abundance of bedrock milling features. In 1999, with assistance of a field class from San Diego State University, also under Gamble's supervision, 11 separate bedrock milling features were recorded. Each of these contained multiple mortars, slicks, Cuyamaca ovals, or cupules on them (Table 20; Figure 77 through Figure 84; Gamble et al. 1999). Milling slicks are the most common type of bedrock milling surfaces at the site, followed by saucer mortars and cupules. No Cuyamaca ovals were observed at the site, although there was a possible one (Figure 82) that does not quite fit the definition as defined by Hector et al. (2006).

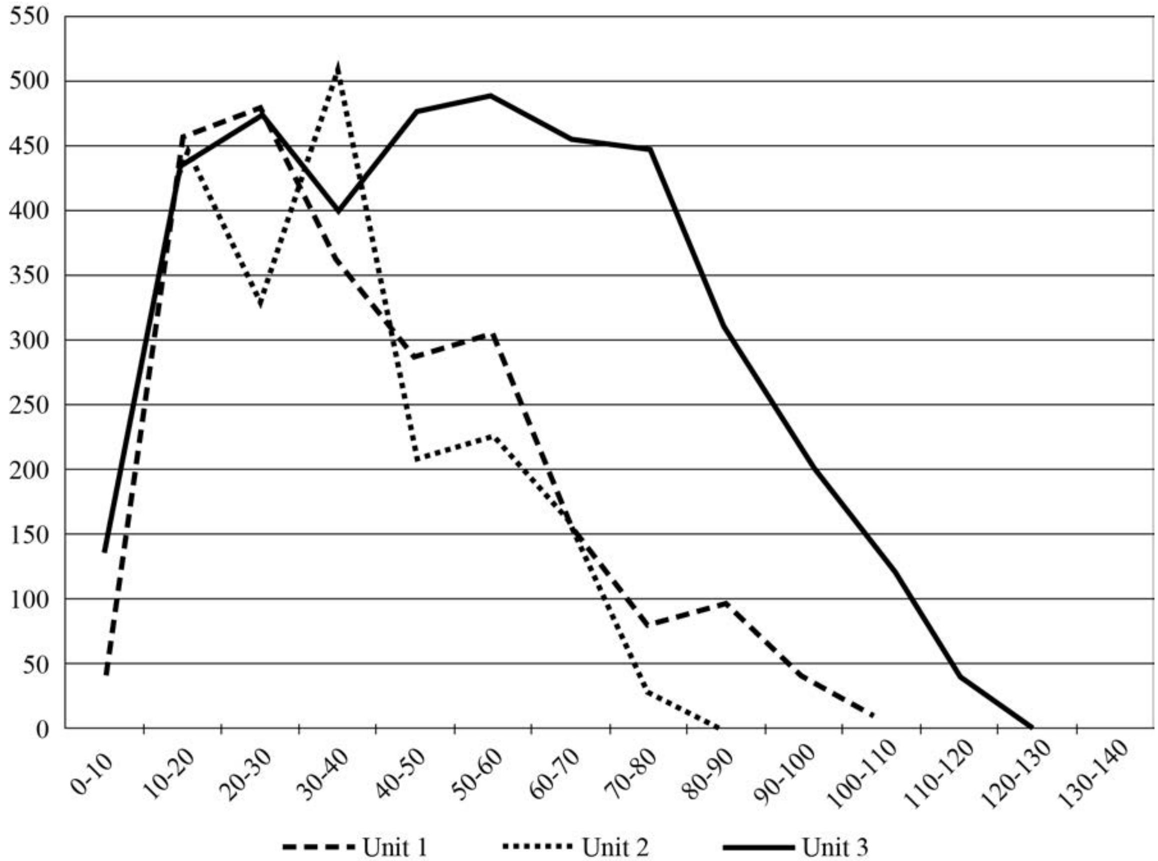


Figure 74. Frequency of Debitage by Unit and Depth at CA-SDI-860.

Table 18. Debitage by Material and Mesh Size in each Unit from CA-SDI-860.

Material	**Unit 1** Screen Size (-inch)					**Unit 2** Screen Size (-inch)					**Unit 3** Screen Size (-inch)					**Total**
	1/16	**1/8**	**1/4**	**1/2**		**1/16**	**1/8**	**1/4**	**1/2**		**1/16**	**1/8**	**1/4**	**1/2**		
Chert	139	70	21	3	233	91	40	14	1	146	390	169	36	3	598	977
Wonderstone	0	1	0	0	1	1	1	0	0	2	10	13	4	0	27	30
Obsidian	175	256	15	1	447	485	180	3	5	673	459	190	18	15	682	1,802
Metavolcanic	483	236	78	15	812	388	142	58	11	599	753	330	121	42	1,246	2,657
Quartz	0	6	1	0	7	0	1	0	0	1	64	24	0	0	88	96
Milky Quartz	391	119	41	13	564	0	116	45	9	170	492	205	62	13	772	1,506
Quartzite	8	20	11	9	48	5	8	7	4	24	17	11	7	1	36	108
Total	1,196	708	167	41	2,112	970	488	127	30	1,615	2,185	942	248	74	3,449	7,176

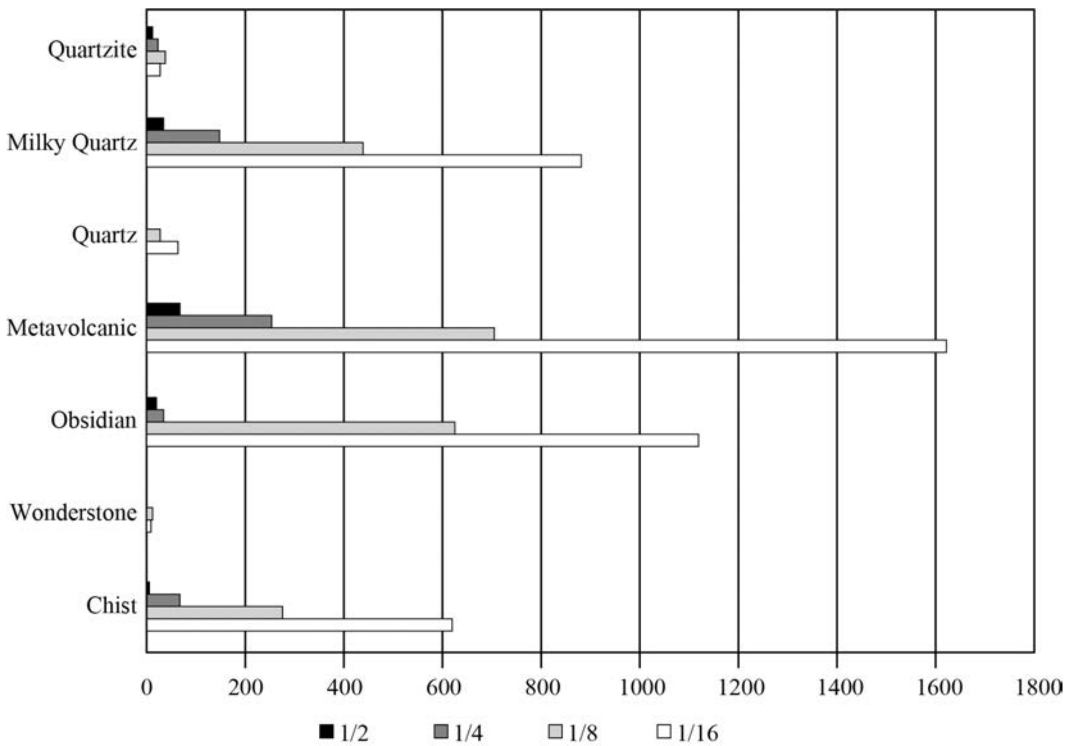


Figure 75. Frequency of Debitage by Material Type and Mesh Size at CA-SDI-860.

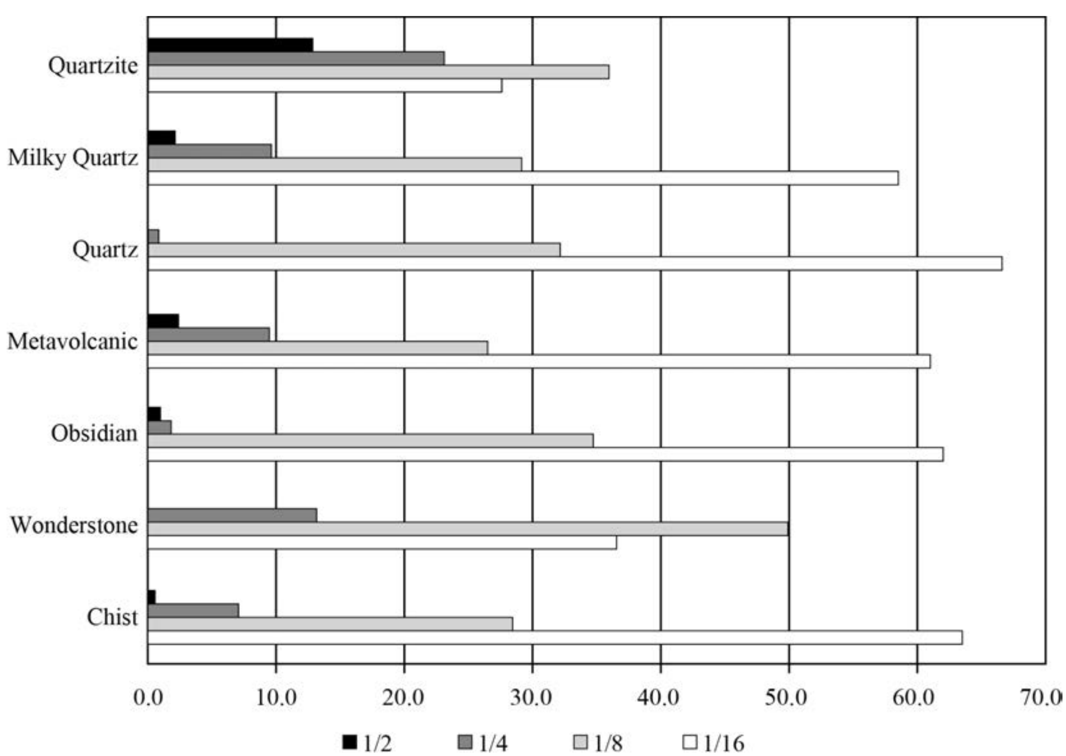


Figure 76. Percentage of Debitage by Material and Mesh Size at CA-SDI-860.

Table 19. Debitage by Material and Mesh Size from CA-SDI-860.

Mesh (-inch)	Chert	Wonder-stone	Obsidian	Meta-volcanic	Quartz	Milky Quartz	Quartzite	Total
1/16	620	11	1,119	1,624	64	883	30	4,351
1/8	279	15	626	708	31	440	39	2,138
1/4	71	4	36	257	1	148	25	542
1/2	7	0	21	68	0	35	14	145
Total	977	30	1,802	2,657	96	1,506	108	7,176

Table 20. Type of Milling on Bedrock Milling Features at CA-SDI-860.

BRM#	Conical mortar	Oval mortar	Saucer mortar	Possible mortar	Milling slick	Basin milling	Cupule	Total
1	2	6	0	0	20	1	1	30
2	2	0	17	2	2	0	0	23
3	7	0	1	0	0	0	0	8
4	4	0	0	0	0	0	0	4
5	0	0	2	0	9	0	0	11
6	0	0	0	0	21	0	0	21
7	0	0	1	0	6	0	0	7
8	0	0	10	0	3	0	0	13
9	0	0	2	0	2	0	0	4
10	0	0	4	0	0	0	0	4
11	0	0	4	0	2	0	39	45
Total	15	6	41	2	65	1	40	170

In addition to the bedrock milling features, 12 ground stone artifacts were recovered during excavation. The majority of these were mano fragments (n=7), followed by metate fragments (n=3; Figure 83 and Figure 84). Two other specimens were identified as ground stone, but were too small to be classified into a tool category. All 12 ground stone artifacts were fragmentary and all but one were fire affected.

Two ground stone objects were observed on the surface in the cemetery area of the site (Figure 85 and Figure 86). The object in Figure 85 appears to be a pendant and is made from a light colored schist (also known as soapstone). It is much too small to be a warming stone (Parkman 1983). It may be from the soapstone sources at the Park reported by Parkman (1983). One of these sources is on the eastern flank of Stonewall Peak and the other is near the southern shore of Cuyamaca Reservoir. The other object, also made from soapstone, is green in color. It may also be from one of the soapstone sources at the Park.

Figure 77. Bedrock Milling Feature #1, Looking NE, CA-SDI-860.

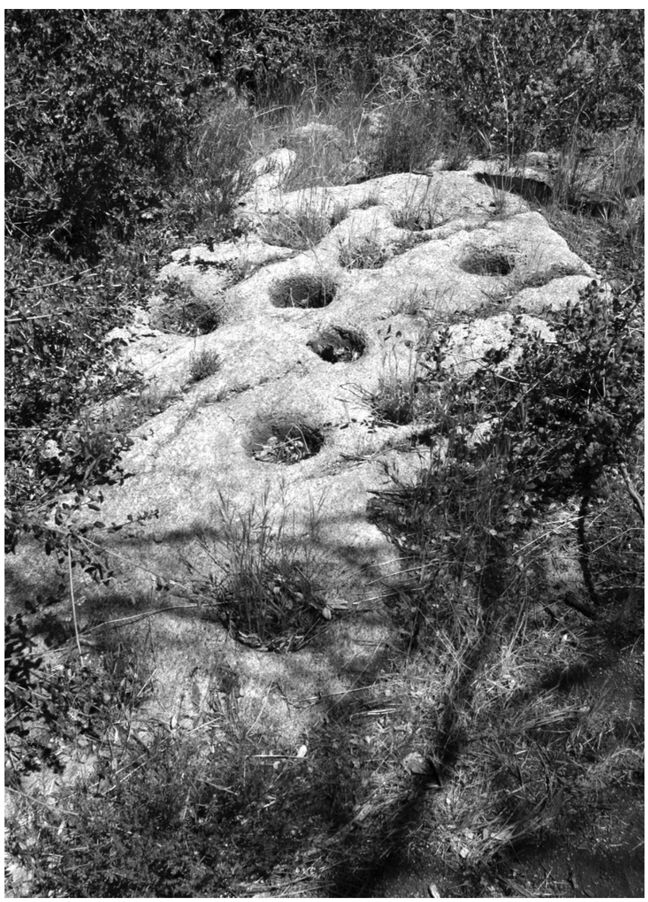


Figure 78. Bedrock Milling Feature #2, Looking SE, CA-SDI-860.

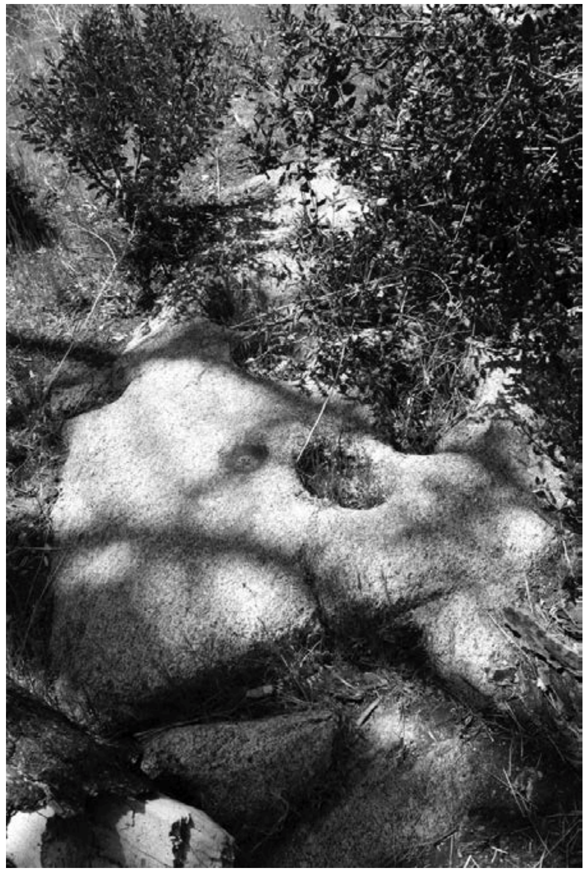


Figure 79. Bedrock Milling Feature #3, Looking W/NW, CA-SDI-860.

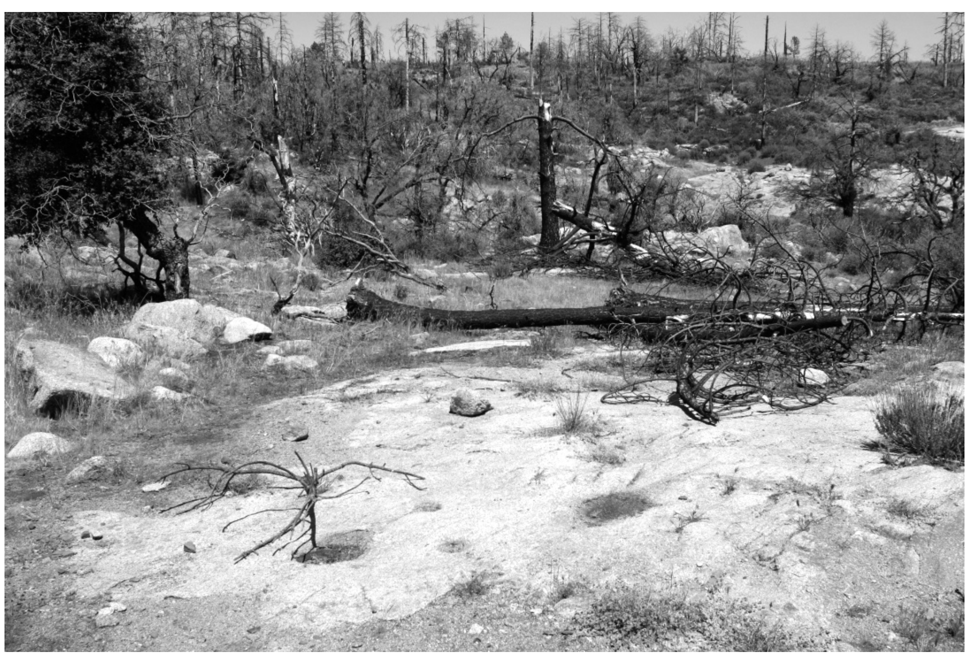


Figure 80. Bedrock Milling Feature #4, Looking E/NE, CA-SDI-860.

Figure 81. Bedrock Milling Feature #11, Cupules, CA-SDI-860.

Figure 82. Mortars, Slicks, and Possible Cuyamaca Oval, CA-SDI-860.

Figure 83. Metate Fragment, #1123, CA-SDI-860.

Figure 84. Mano Fragment, #1179, CA-SDI-860.

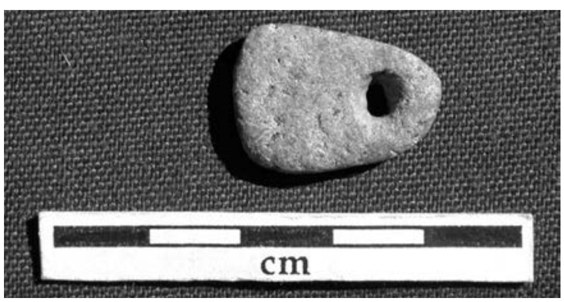


Figure 85. Ground Stone Schist Pendant on Surface, CA-SDI-860.

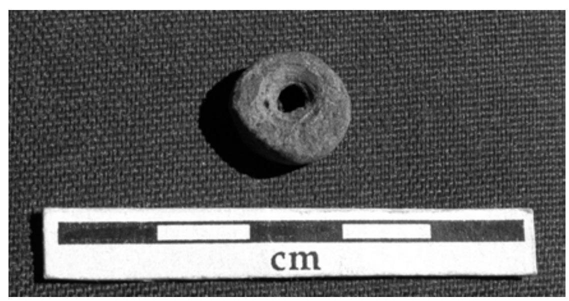


Figure 86. Ground Stone Schist Bead on Surface, CA-SDI-860.

Faunal Remains

Dr. Thomas Wake of the Cotsen Institute of Archaeology at UCLA identified and analyzed the faunal remains. A brief synopsis of his findings (Appendix D) are presented below, along with a few additions.

Vertebrates

The frequency of bone at CA-SDI-860 was greater than any other cultural constituents at the site (see Table 8 and Figure 66 through Figure 68). As the bone was highly fragmented, however, the weight of the bone did not always exceed the weight of other cultural constituents (see Table 9). Approximately 27% of the bone was identified as burned (Appendix D).

Mammal bones dominate the archaeofaunal assemblage at the site. Reptiles, fish, amphibians, and birds are also represented in the collection, but are much less common. Of the mammals, rodents were the most common remains found at the site and include ground squirrels, wood rats, gophers, and mice. There were very few mice bones and most of the gopher bones were unburned; therefore these remains probably represent animals that died naturally at the site and were not eaten by the inhabitants. Rabbits were the next most common mammal order at the site. Most of these were identified as cottontail rabbits, followed by jackrabbits. Artiodactyls were the most common mammal bones by weight, but not by count. These are most likely black-tailed deer or bighorn sheep (because they are currently found in San Diego), but could not be identified to the species level. Only four small carnivore bones were identified at the site. One was a bobcat, and the other three were either coyote, dog, or fox (Appendix D).

The fish remains identified at the site are particularly interesting because they are dominated by small schooling marine species including anchovies, sardines, herrings, mackerel, and white croaker. Most of them are marine fishes and include anchovies and sardines, herrings, white croaker, and mackerel. There were also fresh water species in the collection, probably Santa Ana suckers and Arroyo chub (Appendix D). In addition, there were approximately 16 fish scales at the site, all of which were in Unit 3 between 60 and 110 centimeters below datum. These were not identified by species.

Other fauna represented in the bone collection from the site include reptiles, amphibians, and birds. The most common reptiles in the assemblage are snakes, including rattlesnakes, gopher snakes, and racers among others. In addition there are lizards and a few bones of western pond turtles. The only amphibian identified was a toad (*Bufo* sp.). Only 10 bird specimens were identified at CA-SDI-860 (Appendix D).

Shell

Except for one large fragment of mussel (*Mytilus californianus*) shell, the remaining 115 pieces of unworked shell were highly fragmented and most were too small to identify by species. There were two small fragments of *Laevicardium* sp. found during excavations, but these may have been worked. In addition, a larger *Laevicardium* sp. shell that was probably worked was found on the surface of the site (Figure 87). The weight of shell by unit and level indicates that shell was more common in Unit 3 than the other two units (Figure 88).

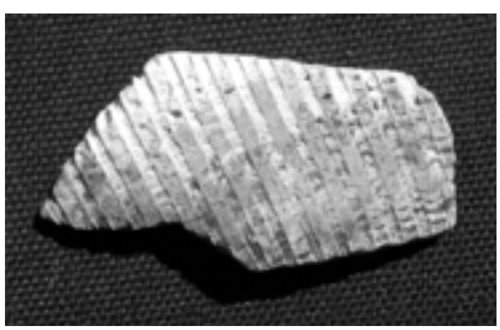


Figure 87. Burned *Laevicardium* sp. on Surface at CA-SDI-860.

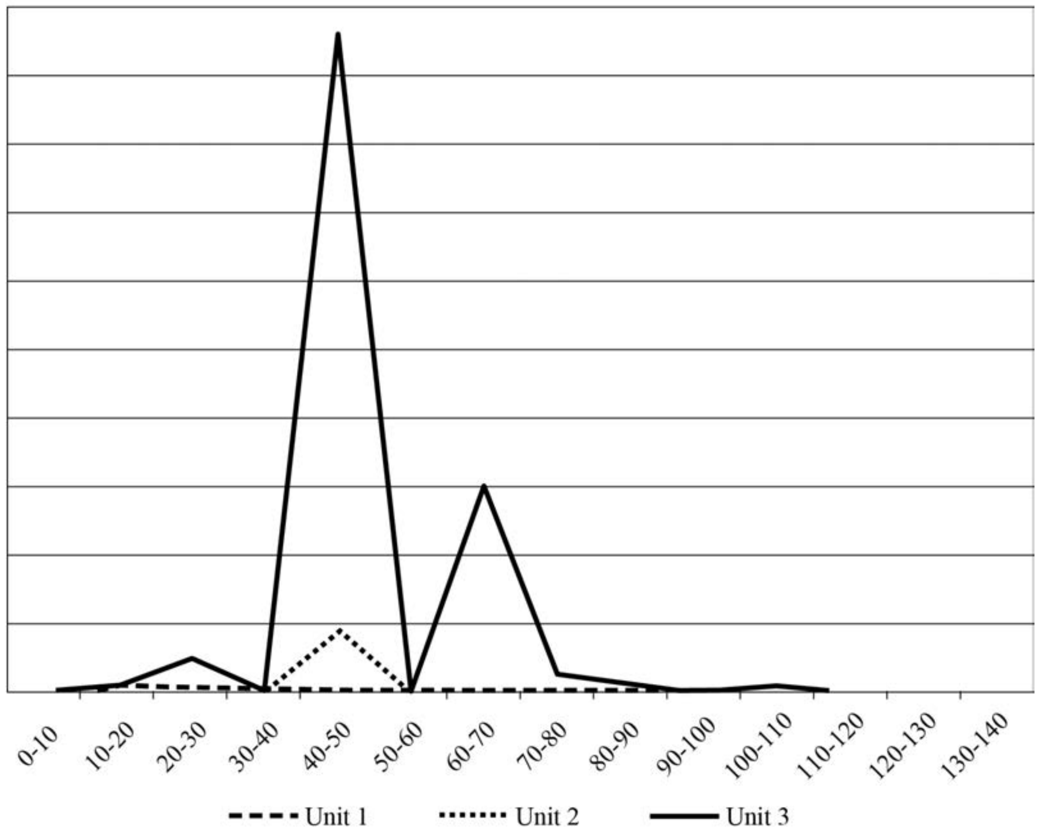


Figure 88. Unworked Shell Weight by Unit and Level at CA-SDI-860.

Macrobotanical Remains

Dr. Virginia Popper of the Fiske Center for Archaeological Research at the University of Massachusetts, Boston analyzed the macrobotanical remains. A brief summary of her findings (Appendix E) are provided below with a few additional remarks.

Most of the ethnobotanical remains from CA-SDI-860 are carbonized wood, followed by fragments of nutshell, nutmeat, attachments, and other plant parts of oak (*Quercus* sp.), which dominate the plant assemblage, and pine (*Pinus* sp.). In addition, a considerable diversity of seeds was recovered from the site. Popper noted that it is impossible to determine which plant remains from the site are old in contrast to more recent remains resulting from natural fires, unless the remains were radiocarbon dated. Of the nine samples that were AMS dated, eight were identified to the genus taxonomic rank and all nine date prior to AD 1630 (see Table 10). Therefore, we know that the *Quercus* sp. and *Pinus* sp. remains, and probably also those of *Yucca* sp. and *Juniperus* sp., were not a result of recent fires, but instead were most likely used by the Kumeyaay at CA-SDI-860. Most samples Popper analyzed were in levels deeper than 40 centimeters (Appendix E:Table 1), and it is likely that many of these specimens were old and not intrusive.

Acorns were a significant staple among the Kumeyaay, as they were among many California Indian groups, and three species of oaks occur on or near the site: they are coast live oak (*Quercus agrifolia*), scrub oak (*Quercus berberidifolia*), and black oak (*Quercus* *kelloggii*). In higher altitudes of the San Diego region (such as on East Mesa), acorns were harvested from September to November (Luomala 1978:599). The Kumeyaay of the Santa Ysabel Reservation (also known as Northern Diegueño), which is approximately 32 kilometers north/northwest of the site, preferred acorns from black oak, followed by acorns from coast live oak (Hedges 1986:5). They used scrub oak acorns only when others were not available. Similarly, Wilken's Baja California Kumeyaay consultants also mentioned that acorns from scrub oaks would be consumed if other types of acorns were not readily available, but that they were not the preferred species; in this region, acorns were gathered intensively in November and December (Wilken 2012). It is therefore likely that the acorns of coast live oak and black oak were also harvested and eaten by the inhabitants of CA-SDI-860.

The species of pine that grows on the site is *Pinus jeffreyi*. Although this species has edible nuts, they are small (Gamble and Mattingly 2012) and were not eaten by the Santa Ysabel Kumeyaay (Hedges 1986:30).

Discussion

Although only three 1.0-x-0.5-meter units for a total of 1.65 cubic meters (compared with 31.19 cubic meters excavated by True) were excavated, a tremendous number of artifacts and cultural remains were recovered because of the use of fine-mesh screening and lab sorting. The intensive surface survey of the site added to the range of rare artifacts, such as points and beads. In this section, the research questions posed in the beginning of this report are supplemented with additional comments.

1. True (1970) proposed that most of the sites at the Park date to the late prehistoric and historic periods. What was the span of occupation at CA-SDI-860?

Foster (1981:45) noted that most of the sites in the Park are late prehistoric, protohistoric, or historic. Eight out of nine of the radiocarbon dates from the site have calibrated dates between AD 1160 and 1630, suggesting an occupation during the late prehistoric and protohistoric periods.

One of the dates, however, is much earlier: a fragment of burned oak wood was found at 69 centimeters below datum in Unit 1 and returned a calibrated date range between 30 BC and AD 130 (see Table 10). It is possible that the burned wood is older than the cultural event with which it was associated (because of the "old wood" problem; Schiffer 1986), or that the wood was not part of a cultural event but a natural event. The wall disc bead (#1314, see Table 11 and Figure 69) may date to the Middle Period or as late as the Protohistoric Period, also possibly indicating an earlier site occupation. In addition, the spear point fragment found on the surface of the site (#1063, see Figure 72) is very different than the small arrow points at CA-SDI-860 (see Figure 71 and Figure 72) that may be from an earlier era, possibly 7,000 years ago based on the known time period these point types (Side-Notched Series) were used.

When the village site at Dripping Springs was abandoned is another question. Based on the archaeological finds at the site, we know that there were artifacts from the Spanish, including glass projectile points, glass beads, a point made out of probable blue willow ware china, and a Phoenix button. True found the latter two objects during his investigations at the site. Phoenix buttons have been found at many missions, presidios, and historic village sites in California and elsewhere in the United States and Canada, including the Northwest Coast and Hawaii (Sprague 1998; Strong 1975). It is believed that Phoenix buttons were produced for Haitian uniforms between 1811 and 1820 during the reign of Christophe I and that after his suicide in 1820, the surplus buttons were traded to Hawaii, California, and the Northwest Coast (Sprague 1998:56). Strong (1975:74) suggested that these became popular trade items around 1830. The one from CA-SDI-860 is a I1b4 type from the regiment of Prince Royal. It was found by True in the cemetery area of the site and it is in good condition (True 1970:Plate 5:25). Other artifacts from the historic era include the two glass points. One was found by True and is described as being made from green bottle glass. The other was also made from green glass and was observed during the 2008 intensive survey (#18, see Figure 72). It is a whole desert side-notched arrow point. Other artifacts that date to the historic period, but were produced by California Indians, are the 12 *Olivella biplicata* rough disk beads found by True. These were probably made between 1780 and 1840 (Gamble and King 2011).

Given all of the chronological information, there is a possibility of human activity at the site about 2,000 years ago, possibly up to 7,000 years ago. However, most of the data suggests that humans occupied the site between about AD 1150 and 1830-1840.

2. Is there a preceramic component at the site?

This question is closely related to the first question. Based on chronological information, it appears that occupation mostly occurred after the introduction of ceramics to the region. Figure 66 through Figure 68 and Table 8 and Table 9 illustrate pottery data in relation to other cultural remains. The drop-off of pottery in the lower levels of the units compared with bone and debitage may indicate a possible preceramic occupation at the site. This trend is also supported by the early radiocarbon date (see Table 10) and the spear point fragment (see Figure 72). Considerable bioturbation was documented at the site and confounds any conclusions about earlier occupation.

3. True (1970:Map 3) identified a locus of the site as the cemetery area. He also suggested that a trait of the Cuyamaca complex is the presence of discrete areas to bury the dead. Is there evidence that there was an area of the site that was used as a cemetery?

Several lines of evidence support the locus identified by True as the cemetery.

The HHRD dogs produced a preponderance of alerts in the cemetery area, including many multiple alerts (see Figure 59). Except for four alerts made by less experienced dogs, the alerts were all in or immediately adjacent to the area True identified as the cemetery.

A number of artifact types have been associated with burials among the western Yuman groups that lived in the San Diego region. These include metates, some of which are broken or inverted (Davis 1919:97; Heye 1919:16). Ed Davis also noted that broken metates were used as markers and would be inverted over burials in the San Diego region. According to Heye (1919), other artifact types that were placed in funerary ollas include pottery pipes, shell beads and ornaments, arrow points, and miniature pots. The distribution of some of these artifact types at CA-SDI-860 supports the idea that the area identified as the cemetery was in fact used as such. Of the 52 shell beads and ornaments that True found at the site, 38 were found in the cemetery, compared with 11 in the living area and three in unknown areas of the site. Numerous examples of shell beads, especially burned ones, exist in the San Diego area in association with cremations (Gamble and Zepeda 2002; Gamble and King 2011; Zepeda 1999). True also noted that the Phoenix button was found in the cemetery (again, this may have been associated with an individual buried in that area of the site). A metate fragment was recorded in the cemetery area in 1999, and most fragments observed on the surface in 2008 were also found in the cemetery area, including two pipe fragments and two miniature pots.

A very similar pattern was revealed by analysis of True's catalogue of artifacts from CA-SDI-860. Of the 68 pipe and pipe fragments that True recorded, 55 were from the cemetery area, eight from the milling area, and five from the living area. Some of these had a slip on them, or were incised or burnished. Miniature pottery vessels had an even more clear association with the cemetery area: all nine that True catalogued from the site were in the cemetery area. Metate fragments were also found in a much higher frequency in the cemetery, with 18 in the cemetery area compared with just one in the milling area. It is also interesting to note that the single milling-area metate fragment was also fire-altered, compared to only two of the 18 in the cemetery area. (All of the metate fragments found in the 2008 excavations were fire-altered and discovered in the living area.)

All four categories of artifacts discussed above—beads and ornaments, pipes, miniature vessels, and portable metates—have been associated with burial grounds in the San Diego area. This patterning is particularly significant given that True excavated more volume from the living and milling areas combined (12.74 cubic meters) than from the cemetery area (12.04 cubic meters; True 1970:14).

Laylander (2011) has questioned whether some of these areas were "locations of intentional deposition or were accidental by-products of the cremation burning process" (Laylander 2011:170). The data presented in this volume, the preponderance of dog alerts in the cemetery area, and the prevalence of artifact types in the cemetery area often associated with cremations all point to multiple lines of evidence suggesting that True correctly identified the location of a cemetery. The fact that the site has a discrete cemetery does not preclude the notion that this portion of the site may have been used as a living area prior to its use as a cemetery. In Chumash sites in the Santa Barbara Channel region, numerous sites have both discrete cemeteries and middens; it is presumed that over time, activity areas at sites may change.

4. Are HHRD dogs able to identify evidence of human remains in archaeological sites?

This case study suggests that the HHRD dogs were able to identify the portion of the site where cremated human remains were buried. Site CA-SDI-860 was a good test case for the dogs because a portion of the site had already been identified as a cemetery. As shown in Figure 59, most of the dog alerts, including all of the multiple alerts, occurred in or immediately adjacent to the cemetery area. This attests to the dogs' ability to detect the presence of human remains in archaeological sites, as well as cremated human bone. It is unclear how the dogs would have fared at a far older site. Therefore, this technique is one that archaeologists should both seriously consider and further test.

The successful use of HHRD dogs for detecting human remains has significant ramifications for cultural resource management practices because archaeologists and planners try to avoid human remains whenever feasible. Remote sensing of cemeteries and human remains can be expensive and is often inadequate. As such, it is important to develop and use accurate and low-cost techniques to identify areas where there is a high potential for the presence of human remains. Hopefully the success at this site will encourage others involved in cultural resource management to use dogs in cemetery detection.

5. A number of scholars (Gifford 1918:172; Luomala 1978; Spier 1923:306) have suggested that the Kumeyaay lived in semi-permanent villages, moving from higher elevations to lower ones in the winter, then returning in the spring or summer. Is there any evidence of seasonal occupation at this site?

Detecting seasonality at a site is a difficult process for a number of reasons. While one may be able to determine what season an item was collected or captured, this does not necessarily correlate to the season a site is occupied. Food storage is one complicating factor, as are natural processes that can introduce food resources into a site. With these caveats in mind, the question of seasonality is addressed by noting when foods may have been captured or collected at CA-SDI-860.

Dr. Popper's report provides details on the plants and seasons they were collected. Acorns and other plant parts from oaks were very common at the site. Acorns were collected in the fall, anywhere from late September to December in the area. A number of seeds of economic significance to the Kumeyaay were identified from the site, including sage. Seeds, such as those from the sage plant, were usually collected in the summer and fall. Other plant resources from the site that were used by the Kumeyaay and collected in the summer include choke cherry, manzanita berries, and elderberries. Many grasses, too, are gathered in the late spring and summer. Greens could be gathered in the early spring. The plants that were identified at the site may have provided food, then, from early spring to late fall. If some of these foods were stored, they could have been present throughout the winter.

The vertebrate taxa identified from CA-SDI-860 do not provide clear information about the seasonality at the site. Most of the fauna could have been captured throughout the year. Wake does note, however, that "the presence of and variance in relative abundances of vertebrate taxa might provide evidence for a long residential occupation rather than a short term specialized camp" (Appendix D:10). It is worth adding, however, that sardines were often captured in the fall and winter months along the coast (Noah 1998).

In summary, there is some evidence that foods were collected from late spring to late fall or early winter. The evidence for seasonality is equivocal, however, so very little can be said about whether or not the site was occupied only during certain seasons.

6. Is there any archaeological evidence that the site's inhabitants had interactions with the coast or the desert regions?

There is clear evidence that the inhabitants of CA-SDI-860 had interactions with the coast and the desert regions. Evidence for interaction with the coast includes the presence of shellfish and marine fish. Most of the 116 shell fragments were too small for identification. One large fragment of *Mytilus californianus* was at the site. *Mytilus* live on rocky shorelines; the presence of this shell indicates that the site inhabitants either visited a rocky shoreline on the coast and brought the shell back, or traded with people who had access to rocky shorelines. Three pieces of *Laevicardium* sp. were found in 2008, one of which was probably worked (see Figure 87). The *Laevicardium* was not identified by species. There were also shell beads from the Pacific coast of California made from *Olivella biplicata*. In addition, shell beads made from *Olivella dama*, a Gulf of California species, were found in True's excavations. There were also beads and ornaments made from *Pecten* sp. *Saxidomus*, sp., and *Haliotis* sp. found by True (Gamble and King 2011).

The most striking evidence of subsistence remains from the coast are the fish remains recovered in the 2008 excavations. Of the 89 fish specimens found at the site, most are Clupeiform (anchovies and sardines, n=77), which are marine fish. Other marine fish from the site include Pacific herring, white croaker, and chub mackerel (Appendix D). Clupeiform fish can readily be sun dried, transported, and stored. The presence of these marine fish provides strong evidence that the inhabitants of CA-SDI-860 were probably either trading with people on the coast or visiting the coast and bringing back dried fish. Many of these fish were probably captured with fishnets.

There is also ample evidence of cultural remains from the desert and other areas east of the site. Some of the painted and slipped potsherds, including the possible Colorado River wares illustrated in Figure 70, came from the east. The shells used to make *Olivella dama* beads recovered in True's excavations are from the Gulf of California. The most prevalent material from the east, however, is obsidian. Obsidian is the second most common chipped stone material at the site (25%), with metavolcanics the most common (37%; see Table 18, Figure 75, and Figure 76). Most of the obsidian visually appears to be from Obsidian Butte near the Salton Sea. Obsidian from Obsidian Butte is somewhat distinctive because it is less translucent than other types of obsidian in California and sometimes has an almost milky appearance. In 2000, Steven Shackley, from the Archaeological XRF laboratory at the Hearst Museum at University of California, Berkeley, conducted source analysis on ten flakes from another late prehistoric and historic village site at the Park, CA-SDI-945, *Hual-cu-cuish*. The source for all ten of these was identified as Obsidian Butte (Gamble 2004), which is the closest source of obsidian to CA-SDI-860 and was most likely the source for much of the obsidian from the site.

In summary, there is evidence that the inhabitants of the site had interactions with the coast and desert regions. Marine shellfish and fish document a connection with the coast; obsidian, *Olivella dama* beads, and painted pottery indicate interactions with areas to the east.

7. Is there evidence for trade or transhumance acquisition of exotic materials at the site?

The best evidence for trade or acquisition of exotic materials at the site is the presence of obsidian and certain types of shell beads at CA-SDI-860. Most of the obsidian is probably from Obsidian Butte, approximately 100 kilometers east, northeast from the site. The *Olivella biplicata* shell disc beads, cupped beads, and lipped found in the 2008 excavations and True's excavations at the site were most likely produced in the Santa Barbara Channel region (Gamble and King 2011; Gamble and Zepeda 2002; Zepeda 1999). The *Olivella dama* spire ground beads indicate interactions with the area around the Gulf of California. It is not surprising that the Kumeyaay living at the site imported exotic items to CA-SDI-860, as exchange and transhumance transport of beads, stone, and food was common throughout California and the greater Southwest (Gamble and King 2011; Hughes 2011).

8. Is there archaeological evidence to support the reliance on acorns at the site?

In the ethnobotanical study completed by Virginia Popper (Appendix E), oak remains dominate the sample. These remains include nut meats from oaks and their attachments. It is likely that many of these remains resulted from the indigenous reliance on acorns at the site.

9. Did the inhabitants of the site use cultigens or domesticated animals?

Popper found no evidence for the use of cultigens at the site (Appendix E), nor did Wake find evidence of domesticated animals (Appendix D). This is interesting, as the site was occupied well after Europeans had settled in California. It fits well with at least one ethnographic source: that of Tom Lucas of the Kwaaymii Laguna Band of Mission Indians (considered part of the Kumeyaay). Lucas noted that the Kwaaymii, who were closely tied to the Cuyamacas, did not practice agriculture in the area until about 1860 (Cline 1979:52). Nineteenth-century accounts support the idea that the growing of crops did not occur until the latter part of that century (Parkman 1981:14). Other items from the Spanish, however, were found in both the Gamble's and True's investigations at the site. These include metal tools, glass projectile points, ceramic projectile points, a Phoenix button, and glass beads (True 1970). The presence of some items from the Spanish, but not food remains, is testament to the active choices that California Indians were making after the Spanish arrived (Gamble 2008, 2010). In this case, the Kumeyaay chose to continue eating traditional foods, yet acquired Spanish goods that were of interest to them.

10. Were certain types of foods or cultural remains identified at the site that had not been observed before because of the fine mesh screening and flotation that was employed?

Numerous food and cultural remains were found at the site as a result of the fine-mesh screening and flotation. Many economic plants that have been ethnographically documented as important to the Kumeyaay for foods, medicines, and technology, were recovered in the flotation samples (Appendix E), including acorns, seeds such as sage and grass seeds, elderberries, manzanita berries, and numerous other plant resources. In addition, small shell beads were recovered, although True had also recovered some shell beads during his excavations.

The most notable find as a result of the use of fine-mesh screens and lab sorting was the collection of small obsidian flakes. Of the 1,802 obsidian flakes in the 2008 collection, 1,119 (62.1%) were recovered from the 1/16-inch mesh screen size, 626 were recovered from the 1/8-inch mesh, and only 57 (3.2%) from the 1/4- and 1/2-inch mesh screens. True only mentioned tools, points, and point blanks in his report on CA-SDI-860, not debitage, and his catalogue of artifacts also show no reference to debitage, including obsidian debitage. The preponderance of chert, obsidian, metavolcanic, and milky quartz flakes found in the 1/8-inch or smaller screens indicates that the inhabitants were probably not only retouching tools and points, but also making these implements at the site. It is probable that they traded for or brought blanks or partially processed chipped stone materials as raw materials. For example, True documented 80 obsidian points and point fragments in his excavations at the site, in addition to five point blanks (Table 21), but only 16 obsidian tools and tool fragments. Probably many of the small obsidian flakes, especially those found in the 1/16-inch mesh screens, were a by-product of point making at the site, as were the chert, metavolcanic and volcanic, and milky quartz non-utilized flakes.

Table 21. Point Blanks by Material Type in True's Collection from CA-SDI-860.

MATERIAL	NUMBER
Chert	8
Metavolcanic and Volcanic	22
Obsidian	5
Quartz and Milky Quartz	7
Total	42

11. Schaefer and Laylander (2007), as well as others (Laylander 1997; Laylander and Christenson 1988), have proposed that there is relatively little obsidian in coastal and mountain archaeological sites in the San Diego region when compared with other material types. Does the data from CA-SDI-860 support this hypothesis?

In one of the more recent references to the subject of the significance of obsidian in the San Diego region, Schaefer and Laylander (2007:251) make the following statement: "Even at the zenith of its use, obsidian represented no more than a supplementary toolstone, rarely accounting for as much as 10% of the debitage in assemblages from montane and coastal southern California (Rensch and True 1985; Laylander and Christenson 1988; Schaefer 1988)." As seen in the discussion of Issue #10, the chipped stone data from CA-SDI-860 does not support the hypothesis that obsidian occurred in fairly low percentages. In fact, obsidian is the second most common material at the site, comprising 25% of the debitage by material. This pattern is not unique to CA-SDI-860, as a similar pattern is exhibited at the late prehistoric and historic village site of *Hual-Cu-Cuish*, CA-SDI-945, where obsidian was the second most common raw material of debitage, comprising 28% of the collection (Guerrero 2001:Table 2). One of the main reasons that the percentage of obsidian is greater at these two sites compared with other sites in the San Diego region probably has to do with the methods that have been commonly used in archaeology in the San Diego region, especially in the past. Excavations at both CA-SDI-860 and CA-SDI-945 used fine-mesh screens (1/16-inch mesh at CA-SDI-860 and 1/8-inch at CA-SDI-945) and all samples were sorted in the lab, greatly improving the recovery of small items. In their analysis of obsidian use in the San Diego region, Laylander and Christenson (1988) examine the presence of obsidian at approximately 40 sites in the region and find that it occurs infrequently, comprising less than 10% of the material types. At three sites, however, obsidian makes up 11.0%, 11.9%, and 10.7% of the debitage material types. Laylander and Christenson do not specify what size mesh or what types of sorting procedures were used at any of the sites, including the sites they focus on at Corral Canyon. It seems likely that 1/4-inch mesh and larger was used at some (if not most) of the sites they examined. For example, in Table 22, CA-SDI-860 debitage larger than 1/4-inch mesh is compared with the flakes smaller than 1/4-inch mesh. If only 1/4-inch meshes had been used, there would have been a very different pattern at CA-SDI-860, with only 8.3% of the debitage identified as obsidian. This pattern is more typical of the one that Laylander and Christenson (1988) observed and suggests that fine-mesh screening and lab sorting greatly improve the recovery of certain material types, such as obsidian.

Table 22. Number and Percentage of Debitage by Material and Size at CA-SDI-860.

Mesh (-inch)	Chert		Wonder stone		Obsidian		Meta-volcanic/ Volcanic		Quartz		Milky Quartz		Quartzite	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
1/4 & 1/2	78	11.4	4	.6	57	8.3	325	47.3	1	.2	183	26.6	39	5.7
1/8 & 1/16	899	13.9	26	.4	1745	26.9	2332	36.0	95	1.5	1323	20.4	69	1.1

Several other observations deserve additional discussion. True (1970:18) mentioned that a high quantity of burned rock was found across the site at 12-18 inches (30-46 centimeters). In Unit 3, an abundance of fire-altered rocks were found at 30-40 centimeters, but not in the other units (see Figure 64). It is possible that this was a dispersed feature and may be part of a cooking feature. On the other hand, it could be similar to the pattern True noted in many of the units he excavated.

When considering subsistence, the relatively high prevalence of projectile points (12.72 points and point fragments per cubic meter) might suggest an emphasis on the capture of large mammals such as deer. The analysis of faunal remains, however, indicates that large mammals were not well represented in the collection. In comparison, small mammals, such as rabbits, were very common. This may indicate that the hunting of large mammals was not an important activity at the site, despite the abundance of projectile points at the site. It may also be a result of fragmentation due to intensive processing of bone. This process has been noted throughout the La Jolla occupational period by a number of scholars (see Warren 2012 for a discussion). True (1970:57) noted that "large animal bone is rare in all San Diego County upland sites." There is also the possibility that dogs or wild animals carried off some of the bones or chewed them. It should also be considered that some of the projectile points may have been used in ritual contexts, a suggestion True (1970:57) proposed based on the large number found in cremations and the elaborate and delicate nature of some of the points (see also True's trait #4 of the Cuyamaca complex). The points and point fragments that were found in the 2008 excavations, however, were not associated with cremations. It is also possible that at least some of these were used for defensive purposes. Many early accounts note that the Indians of the San Diego region often carried bows and arrows. For example, Father Juan Crespí made the following statement when the Portola expedition marched in the San Diego Harbor region in 1769: "they all go about very much armed, with their quivers, bows, and arrows ever in their hands, and many of them carry very fearsome war clubs" (Crespí in Brown 2001:253).

Conclusions

Site CA-SDI-860 is a large significant village site in the Cuyamacas that has a defined cemetery area, living area, and extensive milling features. The site was most intensively occupied during the late prehistoric period through the early historic period, from about AD 1150 to between 1830 and 1840. Although not as apparent, there also seems to be an earlier occupation of the site that may date back to 5,000-7,000 years ago. It is possible that in the main part of the site there was a preceramic occupation, but this still needs more investigation to substantiate with any certainty.

Many of True's observations about CA-SDI-860 and the Cuyamaca Complex have been confirmed in this recent study. Although San Diego State University excavations were very limited in scope (only 1.65 cubic meters were dug compared with 31.19 cubic meters excavated by True), an impressive amount of information was gleaned from the site by using fine-mesh screens, lab sorting, intensive surface reconnaissance, and the use of Historic Human Remains Detection dogs. As a result of these combined methods, this study supports True's observations that the Kumeyaay had defined cemetery areas apart from living areas, had special mortuary offerings such as miniature vessels, used specialized ceramic items such as bow pipes, had a high frequency of milling stone elements, and had a preference for Desert Side-Notched points.

The inhabitants of the CA-SDI-860 used a wide range of milling features, including a variety of mortars, slicks, manos and metates. A high prevalence of broken metates in the cemetery area suggests that some may have been used in mortuary ceremonies. In addition, cupules were present at the site. These have been interpreted by Hector (2009) as a means of access to spiritual power among the California Indians of southern California, and certainly, the many cupules at the site may have served such a purpose.

Several discoveries deserve highlighting. The HHRD dogs performed exceptionally well in the identification of the cemetery as defined by True (see Figure 59). With more systematic case studies such as this one, we can determine if this innovative technique is effective in the discovery of human remains that occur in different settings and time periods. There should be no hesitation on the part of the archaeological community to test the ability of these dogs under various conditions.

Another significant finding as a result of this project was the identification of large quantities of small flakes that shifts the understanding of the late prehistoric San Diego region. It had been determined by a number of scholars that obsidian was not a common material type found in the mountains and coastal areas of southern California. As a result of fine-mesh screening and lab sorting, however, it has been shown that obsidian was actually a significant material type, comprising 25% of the chipped stone material types at the site. Most of these were very small pressure flakes that resulted from the final production stages of point making at CA-SDI-860. Most of the points at the site were made of metavolcanics/volcanics, followed by obsidian and milky quartz/quartz, and then by chert. One of the major activities identified at the site as a result of these excavations was point making and maintenance. It is doubtful that obsidian points came into the site in finished form. Instead, it appears that obsidian was traded or brought in as blanks or preforms then finished on site. A more detailed analysis of the debitage needs to be undertaken to separate pressure flakes from shatter; however, a cursory visual inspection of the obsidian indicates many of the small flakes were pressure flakes.

The presence of marine fish remains, including sardines, in addition to freshwater fish remains, adds a new dimension to understanding the diet of the inhabitants. Although the fish remains do not comprise a large part of the collection, their very presence is significant, especially as the recognition of fish even at coastal sites has not been common (Noah 1998). Certainly, fine-mesh screening, lab sorting, and flotation are labor intensive, using these more modern approaches in California archaeology allows archaeologists to recover significant findings and data that would otherwise be lost.

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