

Community-Based Archaeology at *Sii Túupentak* in the San Francisco Bay Area: Integrated Perspectives on Collaborative Research at a Major Protohistoric Native American Settlement

BRIAN F. BYRD

Far Western Anthropological Research Group, Inc, Davis, CA

MONICA V. ARELLANO

Muwekma Ohlone Tribe of the San Francisco Bay Area, Milpitas, CA

LAUREL ENGBRING

Far Western Anthropological Research Group, Inc, Davis, CA

ALAN LEVENTHAL

Muwekma Ohlone Tribe of the San Francisco Bay Area, Milpitas, CA
Department of Anthropology, San Jose State University, San Jose, CA

MICHAEL DARCANGELO

Far Western Anthropological Research Group, Inc, Davis, CA

This paper presents an example of a community-based archaeological study in the southeast San Francisco Bay Area by the Muwekma Ohlone Tribe, joined by an interdisciplinary team of researchers. The nature and breadth of this cooperative effort is presented, highlighting the Tribe's perspective on project goals, the nature of their involvement, and their initiative in addressing ancestral remains and funerary regalia. This includes the questions being asked of the archaeological record, how these interests and goals were operationalized within the context of a CRM-driven development project, and how the results will be contextualized to the broader community. Project insights are summarized, with particular emphasis on the lifeways of Sii Túupentak's ancestral Ohlone inhabitants during the four centuries prior to forced relocation in 1805 due to Spanish colonization. The discussion touches on site setting, age, and structure; the subsistence economy; the lived lives and mortuary practices of the ancestors; sociopolitical implications of regional trade; and the wider implications of the study.

COLLABORATIVE RESEARCH BETWEEN NATIVE American tribes and archaeologists has increased in recent years. This paper presents an example of a community-based archaeological study at *Sii Túupentak* ("Place of the Water Roundhouse Site," CA-ALA-565/H), an ancestral heritage Native American Ohlone village and associated cemetery in the southeast San Francisco Bay Area (Fig. 1). This is a collaborative study by the Muwekma Ohlone Tribe of the San Francisco Bay Area, joined by an interdisciplinary team of archaeological

researchers led by the Far Western Anthropological Research Group. The nature and breadth of this cooperative effort is presented, highlighting the Tribe's perspective on overall project goals, the nature of their involvement throughout the study, and their initiative in addressing ancestral remains and funerary regalia. This includes consideration of the questions being asked of the archaeological record, how these interests and goals were operationalized within the context of a cultural resources management (CRM) driven development project, the key



Figure 1. Regional map showing project location.

role played by the project proponents and the regulatory agency, and how the results are being contextualized to the broader San Francisco Bay Area community.

As requested by the Tribe prior to the start of the project, detailed archaeometric analyses were carried out on the ancestral Ohlone individuals recovered from burial excavations to gain new insights into community trends, social and ideological complexity, and the lives of these individuals. Novel project insights are emphasized, with particular emphasis on the lifeways of *Sii Túupentak's* ancestral Ohlone inhabitants during the four centuries prior to forced relocation in 1805 due to Spanish colonization. The site setting, age, and structure, and its subsistence economy are presented initially. This is followed by consideration of the lived lives and mortuary practices of the ancestors, the sociopolitical implications of regional trade prior to and during Spanish colonization, and the broader implications of the study.

REGIONAL BACKGROUND

California is well-known for being one of the geographical regions of North America with extremely high indigenous cultural and linguistic diversity (Golla 2011; Heizer 1978; Kroeber 1925). In the late 1700s Native Californians spoke more than 78 languages within six major linguistic families (Golla 2011; Hinton 1994). California also supported large pre-colonial populations with the highest population density in North America, owing in large part to its high coastal and terrestrial ecological productivity (Coddling and Jones 2013; Kroeber 1939; Ubelaker 1992).

The San Francisco Bay Area notably had some of the highest regional population densities in California (along with the Lower Sacramento Valley and the Santa Barbara area) at the start of European colonization (Cook 1976). Based on population reconstructions using Spanish Mission baptismal recruitment records, more than 15,000 Native Americans from five distinct language

groups were residing in 45 territorial communities (land-controlling autonomous polities) within 20 kilometers (km.) of the Bay (Byrd et al. 2017, 2018; Milliken 1995, 2010). Native American groups residing in the San Francisco Bay Area included the Ohlone in the southern and central portion; Coast Miwok in the northwest portion; and Bay Miwok, Plains Miwok, Patwin, and Delta Yokuts in the eastern Bay-Delta area (Johnson 1978; Kelly 1978; Kroeber 1925; Levy 1978a, 1978b; Wallace 1978). All lived in villages with well-defined tribal territories that were considerably smaller than the potential daily foraging range, and they interacted and traded widely with nearby settlements (Byrd et al. 2020a).

The site of *Sii Túupentak* is situated near Sunol in the southeast San Francisco Bay Area within the Causen Ohlone territorial community (Milliken 1995, 2006). As such it lies within the unceded lands of the Ohlone, who at the time of Spanish colonization occupied ~4.3 million acres from San Francisco to Monterey and from the coast to the upland edge of the Central Valley. The Ohlone population circa 1770 is estimated to have been at least 16,000 people living in 59 Territorial Communities (Milliken 2010). Between 1770 and 1797, Spanish colonizers situated six California missions in Ohlone territory owing to the high indigenous population density.

Extensive investigation of the San Francisco Bay's numerous archaeological sites has produced a trans-Holocene record, revealing that intensive sedentary or semi-sedentary habitation of complex hunter-gatherers extends back more than 5,000 years (Byrd et al. 2017; Lightfoot 1997; Milliken et al. 2007). Regional population grew over the last 4,000 years, along with increasing social, political, and economic complexity. This resulted in an increasing reliance on more costly-to-acquire foods (including particular species of marine mammals, terrestrial mammals, birds, fish, and plants) indicative of resource intensification (Broughton 1999; Broughton et al. 2015; Whitaker and Byrd 2014; Wohlgenuth 2002). Active landscape management (including prescribed burning), territorial circumscription, and periodic upswings in inter-group violence are also indicated (Lightfoot et al. 2013; Milliken 2006; Schwitalla et al. 2014). It has also been asserted that non-egalitarian social structure and status ascription was widespread in the region (Bellifemine 1997; Hylkema 2002:258–261; Leventhal 1993; Luby 2004; Milliken et al. 2007),

particularly during the Late Period (post-685 calibrated years before present [cal B.P.]), although more nuanced perspectives have also been presented (Byrd and Rosenthal 2016).

Luby (1995) initially recorded and excavated *Sii Túupentak* with a field school in 1993, noting that it was a significant Late Period/Contact-era village that may also include a Native American rancheria associated with the nearby circa-1840s Mexican-era Suñol Adobe complex. It is also probably the Ohlone village described by Fages and Crespí when they traversed the Sunol Valley (which they named Santa Coleta, noting that it was an ideal setting for a mission) on April 2, 1772 Common Era (C.E.; 178 cal B.P.; Crespí 1927:300). More than a decade after Luby's work, plans for large-scale infrastructure construction by the San Francisco Public Utilities Commission (SFPUC) of a public outreach watershed interpretive center within the site boundaries required extensive archaeological investigations to be conducted at this large, ancestral Native American Ohlone settlement (Byrd et al. 2020a). Therefore, the current archaeological study provided the opportunity to better bridge the gap between pre-colonial and post-colonial Ohlone lifeways.

It should also be noted that additional large-scale infrastructure construction by the SFPUC led to the discovery and extensive data recovery of the archaeological site of *Rumney Ta Kuččuwiš Tiprectak* ("Place of the Stream of the Lagoon Site," CA-ALA-704/H) 400 meters to the northeast (Byrd et al. 2020b; Ross et al. 2020). This large, multicomponent settlement included a pre-colonial Indigenous occupation and a subsequent colonial Mexican and Early American period ranch complex (including remnants of the Suñol Adobe) in use from 1839 C.E. to the early 1900s. The Native American component was investigated by the same collaborative team that conducted the excavations and analysis at *Sii Túupentak*, documenting numerous features and burials dating primarily from 2,440 to 1,610 cal B.P. (88% of the dates fall within this time span) along with sparser evidence of occupation between 1610 to 175 cal B.P. (Byrd et al. 2020b).

COLLABORATIVE ARCHAEOLOGY

Community-based or collaborative archeology falls within the broad category of public archaeology. There

is a long history of public archaeology and publications on this topic; in the U.S.A. this orientation took off in the 1960s and 1970s with changes in public interest, laws, and policy regarding the archaeological record (McGimsey 1972). During the last 20 years, engagement with local communities has been an increasingly important focus of public archaeology and archaeology in general, as witnessed by the emergence of topical journals (e.g., the *Journal of Community Archaeology* and *Heritage and Public Archaeology*) and a series of edited books, especially in the last few years (e.g., Gould 2019; Gürsu 2019; Merriman 2004).

This interest in and advocacy for community-engaged archaeology is global in nature (Jameson and Musteață 2019; Okamura and Matsuda 2012). It is also prominent in California, and the investigations of Kent Lightfoot and his colleagues (e.g., Lightfoot and Gonzalez 2018; Lightfoot et al. 2013) and of Tsim Schneider and Lee Panich (e.g., Schneider 2021; Schneider and Panich 2019) are notable examples of community-engaged archaeology, focusing on collaborative research on topics of interest to Native California descendant communities. Indeed, such projects across North America have been wonderfully successful, asking questions descendant communities are interested in, training Native American community members, and helping indigenous scholars to become professional archaeologists (Cowie et al. 2019; Silliman 2008).

Overall, these global archaeological developments have provided much insight into how to design and carry out community-engaged research projects, highlighting how individual projects will vary greatly based upon the descendant community involved (Gürsu 2019; Jameson and Musteață 2019). It has also been noted that in indigenous settings, an important first step is invariably for participants to acknowledge that archaeology has an early historical legacy founded in racism and questionable ethics, and that there is a need to actively work to decolonize its modern practices (Church 2020; Colwell 2016; Murray 2011). It is also important to recognize that most of these praiseworthy community-engaged projects have been done outside of CRM, and very rarely in challenging archaeological situations where modern development cannot or will not avoid impacting archaeological sites (Church 2020). In such contexts, moving from descendant community consultation to

meaningful collaboration is much more challenging, due to time constraints, costs, and reliance on normative CRM protocols. These trends and recent developments were very much on our minds when we embarked on this study, and as outlined here, we hope our experiences contribute meaningfully to the topic.

Similar trends toward community-engaged research are also taking place in related fields, notably in history and biological anthropology (Meloche et al. 2021; Smith 1988; Warren 2017). In biological anthropology, for example, there is now widespread and growing recognition that the ethical study of ancestors must be done with the consent and oversight of the descendant community (Bader and Malhi 2019). It is also important to stress that the perspective of indigenous communities regarding such investigations will vary greatly. Many will not want any study of their ancestors. Other tribes will have considerable interest in reconstructing who their ancestors were in life and will want to ask specific questions that have relevance to their community.

The edited volume *Working With and For the Ancestors* (Meloche et al. 2021) presents a series of collaborative studies where research on ancestors was first approved by the indigenous descendant community and then carried out in a collaborative, sensitive, and appropriate manner (e.g., Bader et al. 2021). The work at *Sii Túupentak*, presented here, is in this vein of collaborative research with the active participation of the descendant community.

***SII TÚUPENTAK* COLLABORATIVE STUDY**

The *Sii Túupentak* collaborative project started well before the current social movement supporting racial justice for underprivileged and minority communities in the U.S., and evolved over more than half a decade. The collaboration involved the SFPUC (the development project proponent), the Muwekma Ohlone Tribe of the San Francisco Bay Area (the descendant community), joined by San Jose State University anthropology students, an archaeological research team led by Far Western and academic scholars from several universities, and the San Francisco Planning Department (the regulatory agency ensuring compliance with city protocols regarding state of California environmental laws and regulations, notably the California Environmental Quality Act).

Former Chairwoman and state-assigned Most Likely Descendent (M.L.D.) representative Rosemary Cambra, current Chairwoman Charlene Nijmeh, Vice Chair and current M.L.D. Monica V. Arellano (who also led the Muwekma’s field team and served as primary monitor), and Tribal Archaeologist Alan Leventhal all played key roles in the project. The project also benefited from the experience gained by the Muwekma Ohlone’s long-term program of historical and archaeological research that has included running their own CRM archaeological projects (e.g., Cambra et al. 1996; Field et al. 1992; Leventhal et al. 1987, 2015) and developing collegial relationships between members of the archaeological community and the Tribe. Many of those initial collaborative projects prominently involved Mark Hylkema while he worked for Caltrans. They included the Tamien Station project (CA-SCL-690), during which Muwekma Tribal members monitored, excavated, and were technicians in training at the Osteology Lab at SJSU, and also wrote their own ethnographic overview chapter (Hylkema 1994, 2007); and 1992 investigations at “Kaphan Umux: The Three Wolves site,” CA-SCL-732, a large, ancestral Native American cemetery site discovered in a San Jose interchange (Cambra et al. 1996), during which Hylkema assisted in certifying the Muwekma Ohlone Tribe and their archaeological firm, *Ohlone Families Consulting Services*, to direct the field work and write the report, despite opposition from the archaeological community.

One of the principal goals of this and prior Muwekma archaeological and historical investigations and collaborations with various scholars has been to shatter the widespread myth that the Muwekma Ohlone people are extinct and/or have no historic or biological claims to their ancestral heritage cemeteries and village sites.

In April 2014, Muwekma Ohlone Tribal leadership was approached by the SFPUC to discuss plans to construct an educational facility—the Alameda Creek Watershed Center—adjacent to the Sunol Water Temple, with a focus on the natural history of the Alameda Creek watershed. The agency intended to include space in the center for the indigenous inhabitants of the region to tell their story. Thus, the Muwekma Ohlone had the rare opportunity to present information to the SFPUC on their tribe’s history and heritage and their relationship to the greater Sunol/Pleasanton/Niles/Livermore region from Spanish contact, through the twentieth century, and into

the present. The Alameda Creek Watershed Center is scheduled to open in 2023.

During these discussions, the Muwekma Ohlone Tribal leadership demonstrated to SFPUC officials (who funded the project) that by employing various records including Spanish Mission marriage, baptismal, and death records:

- their enrolled lineages descend from the California tribes of the greater East and South Bay region and could trace their ancestry back to their aboriginal villages;
- that their direct biological ancestors were missionized into the three Bay Area Spanish missions—San Jose, Santa Clara, and San Francisco;
- their families comprised the historic (after 1906) and previously federally-recognized Verona Band of Alameda County that resided in the Pleasanton (Alisal), Sunol, Livermore (Del Mocho), and Niles (El Molino) rancherias from post-mission secularization to the early twentieth century;
- they served as linguistic and cultural consultants to such notable anthropologists as J. P. Harrington and A. L. Kroeber between 1879 and 1934, when their last fluent speakers passed away;
- they had family members buried at the Ohlone Indian Cemetery in the city of Fremont during the nineteenth and early to mid-twentieth centuries;
- they enrolled with the Bureau of Indian Affairs between 1928 and 1971;
- they went to Indian boarding schools in the 1930s and 1940s; and
- they belonged to the Bay Area California Indian Council in the mid-1940s to 1950s.

All of these details were also published in the project’s ethnohistory chapter, which was written by the tribal leadership and the Language Committee (Arellano et al. 2020).

Muwekma Ohlone families clearly lived for centuries within the greater Sunol region, and parents and grandparents were baptized at Mission San Jose as Indians. For example, co-author Monica V. Arellano’s paternal grandfather Albert Arellano and his mother (her great

grandmother) Mercedes Marine were born on the Alisal Rancheria (1910 Federal Indian Census, “Indian Town” Pleasanton Township). Her father Joel C. Arellano, Sr. and his siblings regularly met and played on the rocks in Niles Canyon as children while visiting other Muwekma Indians living in Niles. Although left as a landless tribe, the Muwekma Ohlone never abandoned their tribal relations or left their aboriginal lands, and Muwekma families have maintained close ties and relationships to Sunol and surrounding areas during the twentieth century (i.e., born on the Sunol Rancheria, baptized, sent to the orphanage, and having funeral services at Mission San Jose) within the San Francisco Bay Area.

A Memorandum of Understanding was then developed so the Muwekma Ohlone could consult on the Watershed Center’s indoor and outdoor Native American cultural exhibits and serve as monitors on the archaeological work for the project. Tribal leadership made recommendations relative to the treatment of the archaeological site (*Sii Túupentak*) that lay within the footprint of the proposed Watershed Center. Furthermore, SFPUC allowed the Tribe to recommend a Cultural Resources Management firm that they felt would be respectful of their input and leadership, and thus one they could trust. Far Western was recommended and accepted, and joined the project in June 2015; subsequently, the team—including the staff of the SFPUC—has collaborated in meaningful ways on this project.

The Muwekma Ohlone involvement in the community-based cultural resources work for the project has included the following:

- naming the archaeological site *Sii Túupentak*, meaning “Place of the Water Roundhouse Site” in their native Chochenyo Ohlone language;
- recommending and approving all archaeological field and lab methods;
- reviewing, providing comments, and approving all of the technical reports (including: Research Design for Archaeological Testing, Archaeological Testing Report, Research Design for Archaeological Data Recovery, and Archaeological Mitigation Report);
- monitoring all fieldwork;
- excavating all ancestral burials;
- writing the ethnohistory chapter in the final reports;

- contributing to manuscripts and news stories published or disseminated about the project, including a peer-reviewed archaeological monograph on the investigations, several articles in professional journals, and articles in newspapers, including the *New York Times*;
- approving the curation plan (non-mortuary items were curated at Sonoma State University’s curation facility) and reburial of ancestors and sacred objects nearby and taking the lead on the reburial process;
- providing substantive input on the Watershed Center’s educational displays and programs that will prominently feature the Tribe’s history and highlight their ancestral heritage site;
- supporting and being active participants in all phases of the archaeological mitigation project documented in the PBS educational film *Time Has Many Voices* aimed at the broader Bay Area community.

The main archaeology field investigations carried out by Far Western and the Muwekma Ohlone involved a multi-stage field effort between 2016-2017 that included test excavations, data recovery investigations, remote sensing (Engbring et al. 2019; Grebenkemper et al. 2021), mechanical and manual archaeological stripping, and the excavation of all features and burials identified. Fieldwork entailed the excavation of 48 units, 10 trenches, and 1,130 liters of sediment floated and fine-mesh wet screened. It also ultimately entailed the stripping (including a substantive portion done manually) of 1,700 cubic meters of sediment covering the full building footprint to ensure that all burials and features were carefully identified and recovered prior to construction. Whenever conflicts or concerns occurred during more than a year of working side by side, the group (including SFPUC officials) sat in a circle under a tree at the site and had meetings. During these, the team talked through the process to ensure everyone was heard, and everyone listened to each other with respect and looked for common ground in what at times was a challenging endeavor, especially when numerous burials were encountered.

Collectively, Muwekma Ohlone tribal members and representatives of the scientific community are looking into the lives and deaths of ancestral people from the past. For the Tribe, this includes a variety of studies (notably

including accurate sex determination) conducted to provide enhanced perspective on the persona of each individual, to gain insight into them as the unique people that they were. Muwekma Ohlone would not survive to this day if it were not for the sacrifice, struggles, and commitment of their families. By retelling some of their history and stories through archaeology, the Tribe members celebrate the lives of their ancestors, and ultimately honor them when they are returned to the *warep* (translated as “the earth” in Chochenyo), where their loved ones originally placed them with affection and respect.

With regard to the study of their ancestors that might be encountered during fieldwork, rigorous state of the art archaeometric studies were requested by the Muwekma Ohlone at the very first archaeological meeting for the project in 2014. At the request of tribal leadership, a presentation to the Tribal Council on proposed methods and research specialties was conducted by Far Western. Approved analyses (using microsamples) for ancestral remains included radiocarbon dating; stable isotopes (carbon, nitrogen, strontium, sulfur) to examine diet, age at weaning, and changes in residence; study of teeth proteins to identify sex, especially of young individuals; paleogenomic DNA analysis to determine sex and ancestry/relatedness; ancient DNA (aDNA) analysis to confirm osteological indications of tuberculosis; dental calculus analysis to identify inhalant compounds, notably tobacco; and a pilot study of dental calculus to explore the oral microbiome aDNA with respect to diet and disease. Several presentations were made to the Tribal Council on emerging results during the project, and a talk on the project was presented at a tribal-wide meeting upon completion of the study. All of these studies were completed and published collectively as part of the overall study of *Sii Tüupentak* as a UC Davis *CARD* monograph (Byrd et al. 2020a). A series of articles on various aspects of the results has also been published (Buonasera et al. 2020, In press; Engbring et al. 2019; Grebenkemper et al. 2021; Scheib et al. 2018; Severson et al. 2002).

HIGHLIGHTING *SII TÜUPENTAK* RESULTS

Setting, Age, and Site Structure

Sii Tüupentak is located on an alluvial floodplain near the confluence of Alameda Creek and Arroyo de la Laguna within the Alameda Creek watershed, the largest in the

southern San Francisco Bay Area. Situated adjacent to a rich riparian setting, the extensive Sunol Valley was an oak savanna with adjacent grasslands, and the nearby hills contained a mixed hardwood forest (Stanford et al. 2013). The site is a large (6.9 acres) sedentary village site consisting of a thick deposit of cultural material along with an associated cemetery (Byrd et al. 2020a). In the middle of the site there is a low (30 cm.) anthropogenic mound (approximately 30 meters in diameter) formed by intensive occupation activity. Archaeological investigation of 6.2% of the site recovered a wide range of cultural remains, including more than 13,000 artifacts, numerous food remains, 36 features, and 66 burials comprising 76 individuals.

Sii Tüupentak dates from 605–111 cal B.P. (1345–1839 C.E.), based on 129 radiocarbon median intercept results from 96 burials and features (Byrd et al. 2020a:83–86). More than 95 percent of the features and burials are concentrated in a narrower time span from 539–145 cal B.P. (1411–1805 C.E.), indicating that *Sii Tüupentak* was primarily occupied for around 400 years. This occupation encompassed the last 100 years of the central California Late 1 Period (full extent of period 685–440 cal B.P.), all of the Late 2 Period (440–180 cal B.P.), and almost 30 years of ‘historical era’ occupation after the arrival of the Spanish (Groza et al. 2011). Thus, the site was founded prior to European contact and continued to be inhabited during early European coastal exploration. This colonial exploration started 408 cal B.P./1542 C.E. and continued through the region’s Spanish colonization, which began locally 173 cal B.P./1777 C.E. with the founding of missions San Francisco Asis (Dolores) and Santa Clara, until most of the inhabitants were forced into the Spanish mission compounds (145 cal B.P./1805 C.E.). The site was also reoccupied in the 1830s C.E. after the Spanish empire lost control of Alta California.

Five site components (Late 1, Late 2a, Late 2b, Late 2c, and Historic) were defined for intra-site analysis, based on the temporal distribution of dated features and burials (Table 1). Notably, the Late 2c component continued until 145 cal B.P. (1805 C.E.) in the “Historic/Mission” period, based on radiocarbon dating evidence of occupation continuity. This is consistent with Spanish mission records that demonstrate that 98 percent of the Ohlone of the Sunol area (the *Causen* tribal community) listed in the Spanish mission registries did not relocate

Table 1

SÍI TÚUPENTAK TEMPORAL COMPONENTS-BASED RADIOCARBON MEDIAN INTERCEPTS OF FEATURES AND BURIALS

Period (Groza et al. 2011)	Site Component	Total Span (cal B.P.)	Total Span (C.E.)	Burial % (n = 70)	Feature % (n = 26)
Historic: 145–50 cal B.P. (1805–1900 C.E.)	Historic	119–112 (9 years)	1831–1838	1%	4%
Late 2: 440–145 cal B.P. (1520–1805 C.E.)	Late 2c	199–145 (54 years)	1744–1805	11%	17%
	Late 2b	312–273 (39 years)	1638–1677	37%	6%
	Late 2a	395–362 (33 years)	1512–1588	23%	26%
Late 1: 685–440 cal B.P. (1265–1520 C.E.)	Late 1	539–441 (98 years)	1411–1509	26%	44%
		605–601 (4 years)	1345–1349	1%	2%

to the missions until 153–146 cal B.P. (1797–1804 C.E.), when nearby Mission San Jose was founded (Milliken 2010). Finally, the historical-era component dates from 119 to 112 cal B.P. (1831 to 1838 C.E.), documenting post-mission use of the site by Native people during the Mexican period presumably associated with the adjacent Suñol ranch complex.

Intra-site analysis revealed strong, temporally-driven spatial patterning during settlement occupation. Features and burials were concentrated in a 65-by-20-meter area, with most from the Late 1 Period in the northwest portion of this concentration, and the vast majority of Late 2 burials and features (and 60% of all burials) within and immediately to the southeast of the low mound (Fig. 2). In contrast, the historic Mexican Period Native American feature and burial were situated much farther to the southeast of this concentration. Generalized site midden deposits were also patterned along this northwest-southeast site axis (from Late 1 to Historic Period in age). Notably, over time, based on generalized site deposit constituents that were spatially associated with the remains from each period, there was increased reliance on imported Napa obsidian for flaked stone tool use, shifting from moderate (45%) in the Late 1 Period to overwhelmingly dominant near the end of the Late 2 Period (up to 83%).

Subsistence Economy

Features were dominated by residential-related fire-affected rock concentrations, ash lenses, and large roasting pits (Fig. 3). In addition to these domestic features, a large formal hearth and a pit feature may have been used in ceremonial activities. Subsistence analysis reveals the inhabitants actively managed the local landscape, and that prescribed burns were undoubtedly undertaken to enhance grasslands

and small-seeded plants (Wohlgemuth 2020; see also Lightfoot and Lopez 2013). Wohlgemuth's (2020) study demonstrates that plant resource processing was strongly associated with domestic features, sometimes represented by plants collected during a single season and sometimes by plants collected during more than one season. In these contexts, small-seed processing (notably farewell to spring, fescue, and hairgrass) was more important than that of nuts. Overall, the site's rich archaeobotanical assemblage included 50 plant genera dominated by small seeds and nuts (primarily acorn and then bay nut). Most are spring-ripening small-seed taxa (46%) and summer small-seed and berry taxa (42%), with fewer fall-ripening nut taxa (12%)—a seasonality distribution consistent with a sedentary village community, given that all key seasons of plant availability are represented. Eurasian cultigens (wheat, barley, and watermelon) and weeds (such as filaree and cheeseweed) and New World domesticated corn are present and were primarily recovered from two Late 2c features and the historical-era Native American feature.

Analysis by Whitaker (2020) reveals that vertebrate faunal remains from features and elsewhere include both large and small mammalian fauna (notably deer, rabbits, hares, various carnivores, and rodents), with many fewer birds and other remains. Domestic dog is also present, based on aDNA results by Brian Kemp (Whitaker 2020:251). Fish were also important, mainly represented by freshwater fishes (especially Sacramento sucker), along with a moderate quantity of salmonids, pike minnow, and surfperch (Gobalet 2020). Estuarine fish and shellfish taxa were uncommon, and the former declined over time. The results reveal a consistent and sustained pattern of procurement throughout the sequence with an absence of large mammal resource depression.

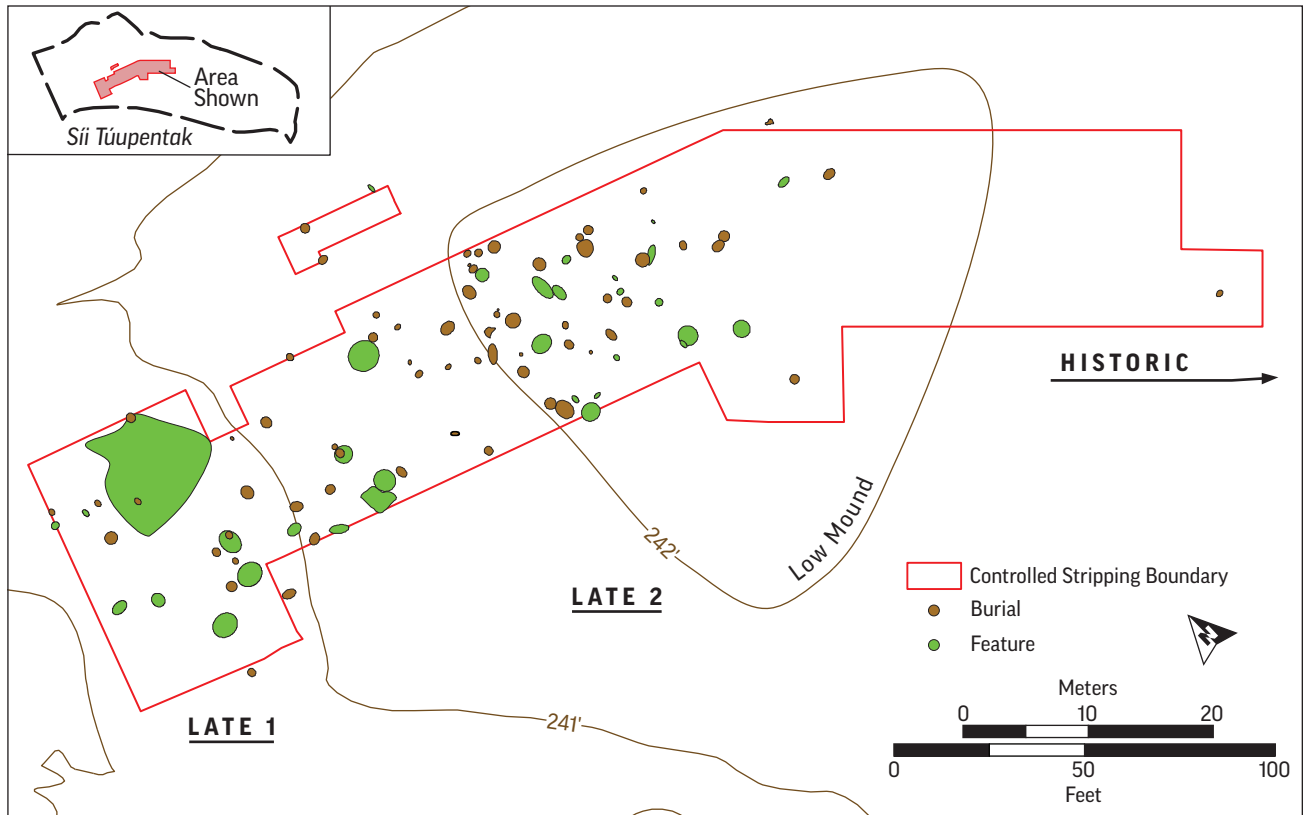


Figure 2. Map showing distribution of burials and features by period, and location of low anthropogenic mound.



Figure 3. Roasting pit Feature 10.

Instead, a healthy U-shaped artiodactyl population (with younger and older adults dominating the assemblage) persisted despite hunting throughout the year, particularly in the fall and winter, based upon a dental increment seasonality analysis by Jaffke and Peabody (Whitaker 2020:229–230). Eurasian domesticates are not present in protohistoric features, a trend consistent with prior investigations of sites of this age in the Bay Area (Byrd et al. 2018). The lone 1830s historical-era feature includes cattle, goat, and domestic cat, a shift consistent with Native American's access to domesticated resources while working on the adjacent Suñol Rancho.

LIVED LIVES

As requested by the Muwekma Ohlone, detailed archaeometric analyses of the 76 individuals recovered from burial excavations yielded new insights into the lives of these unique individuals, as well as community trends and insights into social and ideological complexity. Multi-factor sexing of adults and younger individuals—combining the results of osteological, ancient DNA (aDNA), and amelogenin protein from teeth—allowed for comprehensive sexing of a burial population for the first time in indigenous California, and the ability to differentiate between health, diet, and mortuary trends in females and males of all ages (Buonasera et al. 2020; DiGiuseppe and Grant 2020; Malhi et al. 2020; Parker et al. 2020). Based on the analyses, the biological sex of the indigenous ancestors included 32 females, 34 males, and 10 of indeterminate sex.

Nuclear genome aDNA analysis by Malhi and colleagues provided new insights into broader Native American lineages and early migration patterns in the peopling of the New World (Malhi et al. 2020; Scheib et al. 2018). Notably, Severson et al. (2022), in a study of 12 ancestors from *Sii Túupentak* and nearby *Rummye Ta Kučučwiš Tiprectak* and eight present-day members of the Muwekma Ohlone, demonstrated that these pre-contact individuals shared a distinct ancestry from other groups, as well as an element of continuity over time with living Muwekma Ohlone tribal members. As Severson et al. (2022:7) noted, “the shared ancestry components provide support for genetic continuity between the individuals from the *Rummye Ta Kučučwiš Tiprectak* and *Sii Túupentak* archaeological sites and between the two sites

and the present-day Muwekma Ohlone.” The results indicate that the Ohlone arrived in the Bay Area at least 500–1,000 years earlier than the 1,500–1,000 cal B.P. time frame typically suggested (Fagan 2004; Golla 2011; Levy 1978a). Mitochondrial genomic aDNA analysis revealed that the population of *Sii Túupentak* was primarily composed of individuals from haplogroup D, with lesser representation by haplogroups C and B. This differs markedly from the results from most other nearby sites (Byrd et al. 2020a:Fig. 201; Monroe 2014, 2019), probably due to long-term differences in mating interactions between territorial communities.

A notable osteological observation on health and disease was also confirmed by an aDNA analysis conducted by Anne Stone, who demonstrated that at least four individuals from *Sii Túupentak* were suffering from tuberculosis, generally considered to be a disease introduced to North America by Europeans (DiGiuseppe and Grant 2020:276). All were males, including three juveniles and one infant, with median age intercepts from 478–312 cal B.P. (1472–1638 C.E.) and all but one dating to 382–290 cal B.P. (1568–1638 C.E.). These results indicate that early European explorers (who landed at nearby Monterey or along the Mendocino/Marin coasts following established trade networks) may have first introduced the disease to the region, rather than its original introduction coinciding with Spanish colonization in the late 1700s.

Variations in diet and survivorship were observed both between males and females, and between adults and younger individuals. In terms of dietary patterns, a stable carbon, nitrogen, and sulfur isotope analysis by Eerkens et al. (2020a) revealed that males consistently consumed higher trophic-level foods than females (both among adults and children), and that there was an overall steady temporal trend towards a reduction in diet breadth and an intensification in the use of regional resources. In terms of childhood diet, Eerkens et al.'s (2020b) study (based on serial nitrogen and carbon isotope samples from teeth) revealed that males were weaned on average almost a year earlier than females (2.3 versus 3.2 years). As detailed by Buonasera et al. (In press), male infants (five years or younger) were also less likely to live to adulthood, dying almost twice as often as female infants, and there appears to be a positive correlation between isotopic dietary signals and an individual's survivorship

into adulthood. This is likely the result of a biological survival advantage in female infants (e.g., Zarulli et al. 2018), combined with such extrinsic factors as disease, nutrition, and engendered enculturation.

Other differences between male and female adults were also discerned. Strontium isotope analysis of molars and bone by Harold (2020) revealed trends in residential marriage patterns, with more females than males immigrating around the age of puberty, indicating a preference for patrilocal. General migration frequency also decreased over time, indicating that fewer people immigrated from farther afield. This may suggest a reduction in the need for exogamy over time, likely due to a growing local population with more potential marriage partners.

A liquid chromatography-mass spectrometry analysis of dental calculus by Tushingham et al. (2020) showed that there were also differences between males and females in the use of psychoactive plant inhalants. Compared to males, a higher proportion of women of varied ages tested positive for nicotine use. Moreover, there are patterned differences in the location of nicotine on teeth—among men, it is found primarily on the front teeth, which is indicative of smoking, while among women it is located primary on the back teeth, which is indicative of tobacco chewing. These results contradict ethnographic reports that mention only tobacco smoking, and state that males of all ages were the predominate users, with only occasional older women and female shamans smoking tobacco (Harrington 1932; Tushingham et al. 2020:357; Winter 2000a).

MORTUARY PRACTICES

Investigations of mortuary practices revealed a series of patterns, the most notable of which are highlighted here (Byrd and Engbring 2020). Some 79% of the 76 ancestors documented were present as inhumations and 21% were cremations. There was a shift from uniform mortuary treatment in the Late 1 Period (exclusively primary inhumations, typically loosely flexed on their back or right side) to highly varied and more complex interment practices in the Late 2 Period that included cremations (26%) and secondary inhumations (6%) for the first time. The earliest cremation is dated to 387 cal B.P. (1563 C.E.) during the Late 2a component, and relative cremation

frequencies rise in later components. Cremations mainly involve adults (94%; and 39% of all Late 2 adults), and cremated males (mainly young or middle-aged adults) are twice as common as females. All were secondary burials (i.e., were cremated elsewhere), and two-thirds were interred in two adjacent clusters of five individuals each, interred over a considerable period of time. One cluster was centered on a large formal hearth; the other cluster had stone cairns with mortars overlying each individual.

Another significant Late 2 mortuary development was the ritual use of red pigment on human bone and on select artifacts (lipped type E shell beads, bone whistles, and a mortar). Red pigment, dated to the Late 2b and 2c components (296–183 cal B.P./1654–1767 C.E.), occurs with 21% of the burials. Most is bright reddish-orange cinnabar (mercury sulfide) pigment, along with some hematite, distinguished by X-ray fluorescence (XRF) analysis (Martindale Johnson 2020a). Cinnabar pigment occurs with 30% of adults from these components—typically males (71%) and especially cremated individuals. In contrast, only a single younger individual has associated cinnabar pigment. Cinnabar was also used by the Ohlone in historical times as a paint for a variety of ceremonial and ritual purposes, including as body paint, for pictographs, and for wall painting at the Mission Santa Clara church (Coombs 1999; Hylkema 2010; Jones 2015).

With respect to mortuary items, a diverse range of offerings and combinations of non-perishable items were interred with burials, highlighting the uniqueness of individuals. *Olivella* shell beads dominated the list of mortuary items (Eubanks 2020; more than 90% of the almost 4,500 items recovered), along with a fair number of abalone shell ornaments, projectile points, mortars, pestles, and whistles, with lesser quantities of 20 other types of items, including smoking pipes (Figs. 4 and 5). Most individuals had mortuary offerings (83%), typically involving just a few items, but some had many items. Individuals with numerous mortuary offerings were from varied temporal components, locations in the site, and DNA-based matrilineages; they also included inhumations and cremations, men and women, and diverse ages (including a fetus).

Four ancestors are highlighted here with respect to mortuary offerings to illustrate variations in practice. Each lived a unique life, and they were mourned by



Figure 4. Select *Sii Túupentak* artifacts including thin rectangles (Class M) *Olivella* beads, banjo abalone pendants, projectile points, very large incised bird bone, bone whistles, and composite smoking pipe.



Figure 5. Select *Sii Túupentak* artifacts including two flower-pot/show mortars and a pestle.

family and friends after their passing, as evidenced by their careful and sometimes lavish interments. Late 1 Period Individual 66 was born around 1429 C.E. (521 cal B.P.) at a different settlement (i.e., outside of the *Sii Túupentak* strontium isotope range) and lived to the age of 35–40 years. She was buried with more funerary objects (n=1,154) than any other individual. Most (97%) were rectangular M-series *Olivella* sequin shell beads,

often overlapping (see Fig. 4), which were likely stitched onto a garment or blanket, along with 25 abalone shell ornaments, two bone whistles, a bone tool, one flower-pot/show mortar (see Fig. 5), four pestles, and another ground stone item. The whistles were placed on her neck and cheek, and the imported flower-pot/show mortar was ritually broken along its rim. Large, finely-made volcanic mortars from *Sii Túupentak* and elsewhere were

undoubtedly used in special ceremonies, such as feasting or food-related ritual events associated with the (re) distribution of food resources, and their deposition with selected individuals likely implies that these individuals occupied an elevated social rank within the local community (Bellifemine 1997; Buonasera 2013:205–206; Leventhal 1993:222–225, 261–263; Martindale Johnson and Byrd 2020:474–480).

Late 1 Individual 36 was born at *Sii Túupentak* more than a half century later, around 1473 C.E. (477 cal B.P.) and died some 17 to 20 years later. Although the number of total associated mortuary items was relatively low and notably no shell beads were present, there was a high diversity of offerings. She was accompanied by five bone whistles, and she had a pestle on her outstretched right arm, two whistles behind her neck, and two bone tools elsewhere (see Fig. 4). She was also interred with the only two banjo abalone ornaments documented at *Sii Túupentak* (both probably suspended as a necklace; see Fig. 4). They are notable, since they have been suggested as identifying Kuksú ceremonial system big head dancers and possibly indicating membership in the Kuksú religion (Hedges 2019; Hylkema 2002; Leventhal 1993; Milliken et al. 2007).

Individual 62 was a female *in utero* neonate aged 36–40 weeks in component Late 2b (1646 C.E./304 cal B.P.). She was interred with 239 *Olivella* shell beads (primarily spire-lopped Type A), two projectile points, and a very large, elaborately incised bird bone tube (see Fig. 4). This individual is noteworthy for several reasons: she was the only fetus with mortuary items not interred with an adult, she had more associated items than all but eight individuals in the mortuary population, and is the only individual buried with an incised bone tube.

Finally, Late 2b Burial 49 is a double interment of cremated adult males dated to 1662 C.E. (283 cal B.P.). One man was in his 20s, with more than 200 (mostly E-Series lipped) *Olivella* beads and two Stockton Serrated obsidian arrow points. The other individual lived to 35–40 years of age and was interred with 21 mostly obsidian projectile points of varied types (see Fig. 4, including three non-local point types; several of the points were embedded in his body), 21 mostly spire-lopped *Olivella* shell beads, a large pestle (see Fig.5), two obsidian bifaces, and assorted obsidian flakes and a flake tool. A substantial overturned bowl mortar was situated next to both individuals.

Considerable attention has been placed on mortuary practices as a way of gaining insight into socio-political complexity and identifying elites in northern California and elsewhere (e.g., Atchley 1994; Bellifemine 1997; Byrd et al. 2017:12-1–12-4; Gamble 2008; King 1974; Leventhal 1993). There has also been greater recognition of the fact that there is not always a simple 1:1 relationship between mortuary offerings and status or wealth, since mortuary events are public occasions where shared social meanings and memories are constructed, social order is reinforced, group cohesion is promoted, and community-wide identities are crafted (e.g., Reddy 2015). This highlights the need to explore social identity, agency, and interaction with respect to a wider range of social categories (including age, sex, and group affiliation) when considering mortuary practices (Byrd and Rosenthal 2016; Gardner 2013; Leventhal 1993; Luby 2004).

Overall, several factors may have contributed to variations in mortuary offerings: achieved status, intra-community membership/lineage, and the loss felt by surviving family members. There is no unequivocal mortuary evidence of either hereditary elites (where, for example, families of individuals of both sexes and all ages have many more mortuary offerings, were buried in close proximity to each other, and/or were buried in a distinctive and elaborate manner) or an extremely poor segment of the community. Instead, in the Late 2 Period, there is an increasing divergence in mortuary offerings, with adult cremations having a mean and median 10 times greater than adult inhumations. Cremated adults also have greater shell bead ubiquity, many more non-shell bead items, and consumed more foods of a higher trophic level, an indication that their diets were richer in meat (Eerkens et al. 2020a). Interestingly, Late 2 Period adult inhumations also have 50 percent fewer mortuary items on average than Late 2 younger individuals, with older adults having the least associated items. These differences in mortuary behavior and offerings between Late 2 adult cremations and inhumations may signify more broad-scale, intra-community social differences in mortuary treatment. At the end of the sequence (Late 2c, post-199 cal B.P./1744 C.E.), there is an uptick in median mortuary items, the diversity of total items, the ubiquity of shell beads, and the quantities of non-shell bead items, despite the lowest mean in mortuary items. Both internal and possibly external factors (such as disruptions in

long-standing trade networks) may have influenced these Late 2c mortuary trends toward more varied and evenly distributed mortuary offerings within the population. These trends highlight changes in the complexity of mortuary practices, especially in the latter half of the occupation span.

SOCIOPOLITICAL IMPLICATIONS OF TRADE AND EXCHANGE

Fine craftsmanship is exhibited in the elaborately made and abundant non-perishable material goods of the *Sii Túupentak* community. Many items were made with locally available products—elaborate bone awls, whistles, and the incised tube, as well as ground stone pestles and bowl mortars made of local greywacke (Galindo Arias 2020; Martindale Johnson 2020b). A considerable number of items, including the three most common mortuary offerings, however, were non-local trade goods. Although trade details are unknown, acquisition of these items was most likely via trade and exchange (and typically as finished items), since direct source acquisition would have required traveling through the territories of three or more tribes, and at times having to cross into the territory of non-Ohlone-speaking Bay Area groups (Fig. 6).

Olivella shell beads and abalone pendants were imported primarily from along the central California coast, a distance of at least 50 km. A nearby prominent hematite source is 30 km. to the northwest, while the only source of cinnabar is the Pooyi/Almaden Mine area of Mount Umunhum 45 km. to the south, where the Ohlone had active mining tunnels in 150 cal B.P. (1800 C.E.) if not earlier (Coombs 1999; Heizer and Treganza 1972:302, 311–312). Flowerpot/show mortars (all four of which were recovered from mortuary contexts) were XRF sourced to a volcanic outcrop at Mount Diablo 35 km. to the north (Martindale Johnson 2020b: 141–146; see also Bennyhoff 1977). These very large (at least two times the largest bowl mortars), well-finished and unique mortars were likely acquired as finished products via trade with the Bay Miwok that resided near Mount Diablo. Obsidian (the dominant flaked-stone raw material for both debitage and tools, despite the presence of local cherts) was imported from the Napa and Annadel sources in Wappo territory, a distance of 110 km., with seven tribes, the Bay, and two language groups in between.

The widespread extent of this active system of trade and exchange involving these luxury goods testifies to the wealth of the community and the settlement's importance in central California. It also provides insight into the structure and organization of regional inter-territorial community interaction and alliance maintenance, reinforcing the importance of well-developed rules of political, social, and religious interaction mediated by community leaders (Bean and Lawton 1973; Gardner 2013; Leventhal 1993). The nature and extent of these interactions appear to have varied across this region, suggesting overlapping spheres of social interaction reinforced by trade and the exchange of finished goods, raw materials, mates, food resources, and other material attributes of these socio-political, economic, and symbolic interactions. Notably, widely traded emblematic objects reflect a community of practice that was contingent on shared beliefs and ideas grounded in ceremonial and socio-political interaction (Wenger 1998).

In the eastern Bay area, flower-pot/show mortars and banjo abalone ornaments are both present, with mortars more frequent in the north and the pendants much more ubiquitous in the south (Byrd et al. 2020a:469–486). Clam shell disk beads, on the other hand, are absent or very rare south of the Sacramento River, and only a single one was recovered from *Sii Túupentak* (Eubanks 2020; Rosenthal 2011). Finally, high-volume trade of Napa obsidian was concentrated in the inland east Bay Area valleys and extended only as far south as *Sii Túupentak*. Napa obsidian is present at Native American settlements within the tribal territories in the east Bay margins, northern Santa Clara Valley, and the San Francisco Peninsula, but it is not the dominant raw material used (Byrd et al. 2020a:472–473). These overlapping interaction spheres cross-cut linguistic and territorial community boundaries in much more varied and complex ways than has thus far been appreciated.

FORCED ABANDONMENT AND PERSEVERANCE

Spanish Mission Santa Clara and the San Jose Pueblo were founded in 1777 C.E. (173 cal B.P.) only 30 km. to the southwest (Milliken 1995). Despite being situated relatively close by, *Sii Túupentak* was somewhat buffered by the presence of other Ohlone territorial communities

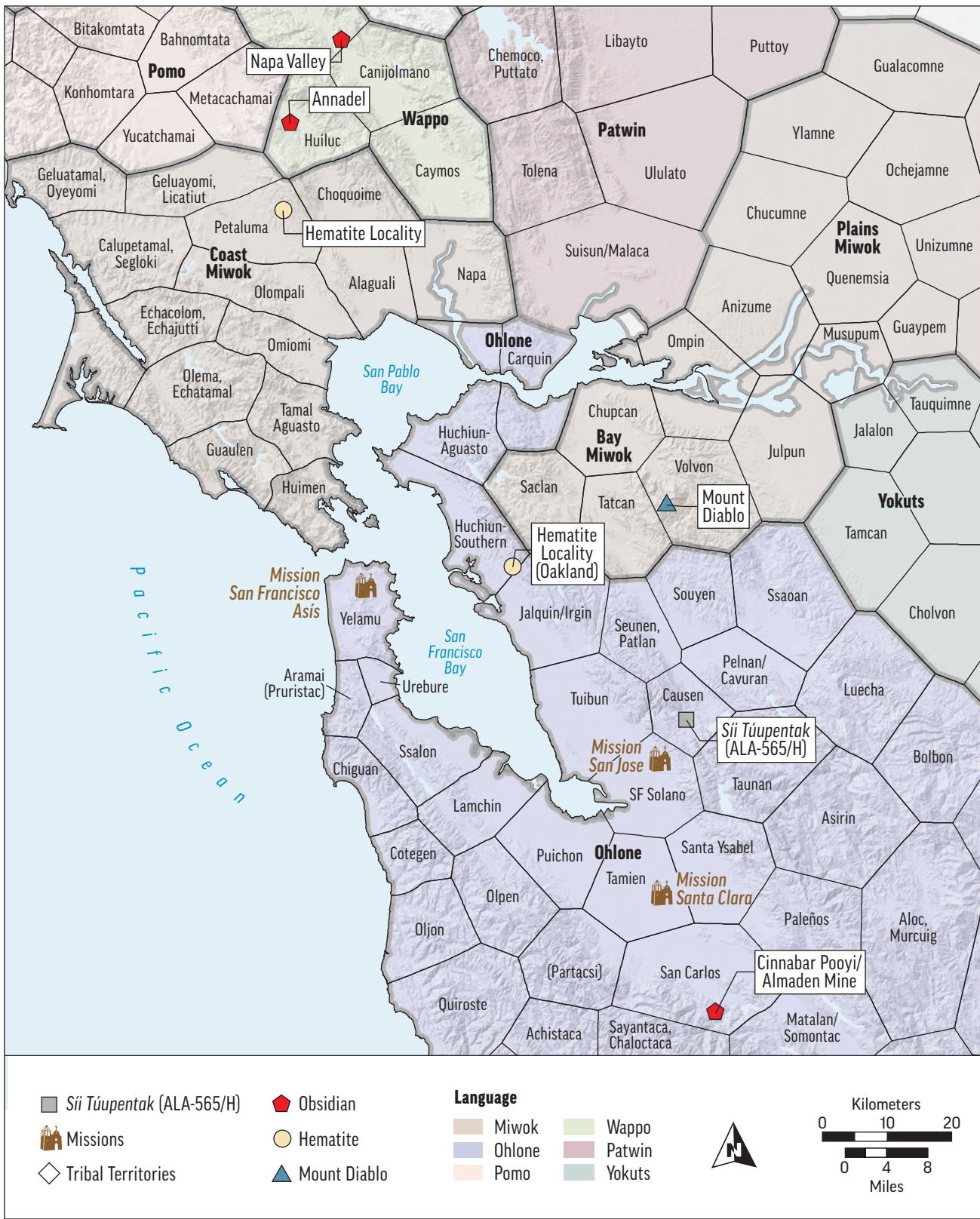


Figure 6. Prominent raw material source localities in relationship to *Sii Túupentak* and tribal community territories.

(Tamien, Santa Ysabel, and SF Solono) between them and the newly arrived colonizers at Mission Santa Clara and Pueblo de San Jose (see Fig. 6). During the several decades of regional co-existence, there is limited material evidence of interaction with the Spanish—a few glass trade beads, and two features with introduced domestic food remains, including watermelon, grain (probably wheat or barley), and corn as well as filaree, a non-local weed. This is consistent with the low-level integration of colonial items at indigenous settlements in the Bay Area during the Spanish colonial period (Byrd et al. 2018), and the conservative incorporation of newly introduced foods into the indigenous diet noted elsewhere in California (Reddy 2015).

Historical records reveal that external events that took place less than a decade before *Sii Túupentak* was abandoned circa 1804 had a profound impact. Mission San Jose was founded on June 11, 1797 C.E. (153 cal B.P.), just 6.5 km. to the southwest of the Ohlone settlement (Milliken 1995, 2008). This was immediately followed by a violent summer of concerted efforts by Spanish soldiers to exert their control over the lands near their new mission, to capture Ohlone and Bay Miwok runaways from missions San Francisco and Santa Clara, and to punish the Native Americans still living in independent villages in the southeast Bay region that had given them refuge (Milliken 1995, 2008). Was *Sii Túupentak* visited during these military raids? That is unknown, but it is likely, since this was the closest substantial indigenous settlement to the new Spanish outpost. Certainly, the inhabitants knew their options had just become more limited, and their lives were about to change significantly.

On September 7, 1797, a few days after the first baptism at the mission, the first Ohlone from the *Sii Túupentak* area came to Mission San Jose and were baptized—five children aged 2–8 were brought by an elderly native man (Milliken 2010). By the end of the year, two-thirds of the newly baptized people at the mission were from the *Sii Túupentak* area. The archaeological dating evidence from *Sii Túupentak* is consistent with the mission baptismal records, which confirm that during the next eight years, until 1804 C.E. (146 cal B.P.), 209 Ohlone from the *Sii Túupentak* area relocated to the mission (and only one did so afterwards, in 1807). They helped build its now famous church, worked the mission agricultural lands where Ohlone College stands today, and

undoubtedly planted and tended the mission's orchards and fields, as well as the incipient herds of cattle. This was, however, a harsh and foreign setting for them, and life expectancy at this colonial outpost was on average only eight years, based upon an analysis of the digital mission records (Milliken et al. 2006). As a result, only four people from the *Sii Túupentak* area survived until the Spanish colonial effort collapsed in 1833 C.E. (117 cal BP). One of those survivors was Moychol (MSJ-B 6) from “de la Lameda” (Alameda Creek), a two-year-old boy who was part of the first group from *Sii Túupentak* to be baptized at the new mission.

The Ohlone narrative did not end there—*Sii Túupentak* also has a modest 1830s Mexican period component, complete with a feature and burial, revealing post-Spanish-era use of the site by Ohlone that returned to this persistent place (Byrd et al. 2020a; Luby 1995). Some were undoubtedly among the Native American laborers documented as having worked at the Mexican period *Rancho El Valle de San José*, which was centered on the Sunol area, and the 1845 Suñol Adobe (situated within the pre-contact Ohlone settlement of *Rummy Ta Kuččuwiš Tiprectak*) was located 400 meters away (Arellano et al. 2020; Byrd et al. 2020b; Ross et al. 2020). The subsequent American period presented new challenges for the survivors of missions San Jose, Santa Clara, and San Francisco, but their descendants persisted nearby, living in Niles Canyon to the west, and near Verona station at the Alisal Rancheria to the northeast (Arellano et al. 2020). They continued to work in the local area, and the descendants from the historic, federally recognized Verona Band of Alameda County are thriving today as the Muwekma Ohlone Tribe of the San Francisco Bay Area, who collaborated on and actively participated in the design, implementation, and fieldwork at *Sii Túupentak*. They are also active stewards of their ancestral sites and a vital part of the Bay Area community.

CONCLUSIONS

This study has provided fresh insights into indigenous lifeways during a 400-year period, from just prior to early European exploration, through Spanish colonization and the forced relocation of many Native Californians into the missions in central California—a period of significant change in the lives of native people. Overall, the evidence

demonstrates that *Sii Túupentak* was a substantial, sedentary village, undoubtedly the most important village within the Causen Ohlone territory. This community was also an important node in central California inter-regional social interactions, interactions that were deeply meaningful and demonstrative of a set of shared beliefs and ideas. These complex inter- and intra-community dynamics entailed diverse elements, some of which were expressed in the form and patterning of material culture, while others were expressed in the life histories of the individuals that comprised these communities. These patterns were nuanced and filtered by social conventions tied to local community size, families, and lineages, and the social agency of the individuals within them. These ritualized practices helped to bond these distinctive territorial communities together into a rich tapestry of shared beliefs, practices, and obligations that reinforced social order and promoted regional cohesion within this densely populated area of central California.

This was also a substantial collaborative, community-engaged research project, with agency representatives, tribal members, and archaeologists working together during more than a year of fieldwork and research, resulting in a tremendous co-generation of knowledge of benefit to the descendent community. This paper has attempted to share our experience doing collaborative archaeology in a CRM mitigation context, as well as demonstrate that archaeological investigations centered on the co-production of information are both necessary and possible. It is also important to emphasize that the Muwekma Ohlone “Indianized” the collaborative process, which included reciprocity, mutual benefits between the scientific community, SFPUC, and the tribe, and mutual respect, acknowledging the tribe’s history, heritage, and intellectual property.

Despite the challenges of a large, fast-paced excavation and the breadth of the discoveries, it was a collectively enriching and rewarding experience. Given that archaeological findings can be unpredictable, collaborative endeavors also require periodic recalibration to ensure goals and methods are in sync for everyone, and if needed, new approaches and solutions can be implemented. Our experiences underscore the importance of research and methodological flexibility even while fieldwork is ongoing, which can be difficult due to a number of factors, including financial considerations.

One of the most important lessons learned was that a community-based project like this can only succeed with the effective and willing involvement and in partnership with the project proponent and the regulatory agency. These keystones of the CRM process are generally underappreciated (especially in CEQA-only projects), and much more support and recognition of outstanding regulatory practitioners is crucial, as is a willingness to call out those that are failing in their regulatory responsibilities. More graduate training is also needed to prepare students to succeed in such roles. In the case of this project we wholeheartedly acknowledge the efforts and support of our key partners on the staff of the SFPUC and the San Francisco Planning Department.

Of course, in hindsight there are aspects of the project that could have been done better or differently. More involvement of Muwekma Ohlone excavating units and features (and not just burials) would have been beneficial to all parties. Similarly, a better integration of the descendant community into the laboratory phase would have increased inclusivity at every stage of knowledge production and provided long-lasting dividends for everyone.

Working so closely together during this project resulted in the creation of strong relationships of mutual respect within this “new ecology of learning” (Warren 2017). It also facilitated several key goals, including empowering Muwekma tribal participants, refining cross-disciplinary approaches that enabled archaeologists to relate ethically and effectively with the descendant community, and the repatriation of knowledge to aid in the rediscovery of historical details and the creation of new narratives (e.g., Barnes 2017; Warren 2017). An important Muwekma Ohlone objective was to move away from the abstract and impersonal ways that academics have described their ancestors. Instead, they wanted to honor and celebrate the perseverance and tenacity of their ancestors as individuals, by respectfully telling the story of their lived lives. We believe this study successfully accomplished this and several other key objectives.

ACKNOWLEDGMENTS

We thank the Muwekma Ohlone Tribe of the San Francisco Bay Area for allowing us to conduct the analyses of their *Sii Túupentak* ancestors and for supporting this research. This multi-year project was only possible due to the collaborative

efforts of an expansive multi-disciplinary group (notably the dedicated and hardworking field and lab participants) led by the San Francisco Public Utilities Commission that was supportive, flexible, and considerate of the significance of *Sii Tüupentak*. It includes Kimberly Stern Liddell, Bryan Deassaure, Susannah Melville, Carrie Dovzak, Deborah Craven-Green, and Carla Schultheis. We also thank Adrian Praetzelis, Sally Morgan, and Allison Vanderslice, who played key leadership roles during the project for the Environmental Planning Division of the San Francisco Planning Department. We also appreciate the contracting support of Melinda Bury at Baseline Environmental Consulting, Tait Elder at ICF, and Alisa Moore at ESA.

REFERENCES

- Arellano, Monica V., Alan Leventhal, Charlene Nijmeh, Shelia Guzman Schmidt, and Gloria Arellano Gomez
2020 Ethnohistory, Historic Ties, and Tribal Stewardship of Sunol/Pleasanton, Santa Clara Valley, and Adjacent Areas. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Tüupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds., pp. 17–56. [Center for Archaeological Research at Davis Publications 20.] Davis, California.
- Atchley, Sara M.
1994 *A Burial Analysis of the Hotchkiss Site (CA-CCO-138)*. Master's thesis, Sonoma State University, Rohnert Park, California.
- Bader, Alyssa C., and Ripan S. Malhi
2019 How Subjectivity Strengthens Research: Developing an Integrative Approach to Investigating Human Diet in the Pacific Northwest Coast. *American Anthropologist* 121:476–478.
- Bader, Alyssa C., Aimee E. Carbaugh, Jessica Bardill, Ripan S. Malhi, Barbara Petzelt, and Joycelynn Mitchel
2021 Building Relationships to Shift Accountability: Doing Paleogenomic Research with Indigenous Nations and Ancestors. In *Working with and for the Ancestors: Collaboration in the Care and Study of Ancestral Remains*, Chelsea H., Meloche, Laure Spake, and Katherine L. Nichols, eds., pp. 166–177. New York: Routledge Press.
- Barnes, Benjamin J.
2017 Becoming Our Own Story Tellers: Tribal Nations Engaging with Academia. In *The Eastern Shawnee Tribe of Oklahoma: Resilience through Adversity*, Stephen Warren, ed., pp. 217–227. Norman: University of Oklahoma Press.
- Bean, L. J., and H. W. Lawton
1973 Some Explanations for the Rise of Cultural Complexity in Native California with Comments on Proto-Agriculture and Agriculture. In *Native Californians: A Theoretical Retrospective*, L. J. Bean and T. C. Blackburn, eds., pp. 19–48. Menlo Park, California: Ballena Press.
- Bellifemine V.
1997 *Mortuary Variability in Prehistoric Central California: A Statistical Study of the Yukisma Site, CA-SCL-38*. Master's thesis, San Jose State University, San Jose, California.
- Bennyhoff, James A.
1977 *Ethnogeography of the Plains Miwok*. [Center for Archaeological Research at Davis Publications 5]. Davis: University of California, Davis.
- Broughton, J. M.
1999 *Resource Depression and Intensification during the Late Holocene, San Francisco Bay: Evidence from the Emeryville Shellmound Vertebrate Fauna*. Berkeley: University of California Press.
- Broughton, J. M., E. R. Martin, B. McEneaney, T. Wake, and D. D. Simons
2015 Late Holocene Anthropogenic Depression of Sturgeon in San Francisco Bay, California. *Journal of California and Great Basin Anthropology* 35:3–27.
- Buonasera, Tammy Y.
2013 More than Acorns and Small Seeds: A Diachronic Analysis of Mortuary Associated Ground Stone from the South San Francisco Bay Area. *Journal of Anthropological Archaeology* 32:190–211.
- Buonasera, Tammy, Jelmer Eerkens, Brian Byrd, Laurel Engbring, Monica Arellano, Alan Leventhal, and Glendon Parker
In press Sex-Biased Differences in Infant Mortality and Life Expectancy at a Protohistoric Native American Village in Central California. *Human Biology*.
- Buonasera, Tammy, Jelmer Eerkens, Alida de Flamingh, Laurel Engbring, Julia Yip, Hongjie Li, Randall Haas, Diane DiGiuseppe, Dave Grant, Michelle Salemi, Charlene Nijmeh, Monica Arellano, Alan Leventhal, Brett Phinney, Brian F. Byrd, Ripan S. Malhi, and Glendon Parker
2020 A Comparison of Proteomic, Genomic, and Osteological Methods of Archaeological Sex Estimation. *Science Reports, Nature*. <https://doi.org/10.1038/s41598-020-68550-w>.
- Byrd, Brian F., and Laurel Engbring
2020 Mortuary Practices. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Tüupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds., pp. 359–412. [Center for Archaeological Research at Davis Publications 20]. Davis, California.
- Byrd, Brian F., and Jeffrey Rosenthal
2016 Celebrating the Dead: Placing Prehistoric Mortuary Practices in Broader Social Context. In *Archaeological Variability and Interpretation in Global Perspective*, Alan P. Sullivan III and Deborah Irene Olszewski, eds., pp. 233–265. Boulder: University of Colorado Press.

- Byrd, Brian F., Adrian R. Whitaker, Patricia J. Mikkelsen, and Jeffrey S. Rosenthal
2017 *San Francisco Bay-Delta Regional Context and Research Design for Native American Archaeological Resources, Caltrans District 4*. Report on file Northwest Coast Information Center, Sonoma State University. <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/ser/sf-bay-delta-research-design-2017-a11y.pdf>
- Byrd, Brian F., Shannon DeArmond, and Laurel Engbring
2018 Re-visualizing Indigenous Persistence during Colonization from the Perspective of Traditional Settlements in the San Francisco Bay-Delta Area. *Journal of California and Great Basin Anthropology* 38(2):163–190.
- Byrd, Brian F., Laurel Engbring, Michael Darcangelo, and Allika Ruby
2020a *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Túupentak (CA-ALA-565/H) in the San Francisco Bay Area*. [Center for Archaeological Research at Davis Publications 20.] Davis, California.
- Byrd, Brian F., Laurel Engbring, and Michael Darcangelo
2020b *Archaeological Data Recovery at Rummey Ta Kuččuwiš Tiprectak (CA-ALA-704/H), Sunol Long-term Improvements Project, Alameda County, California. Volume 1: Project Summary and Native American Archaeology*. Report on file at Northwest Information Center, Sonoma State University.
- Cambra, Rosemary, Alan Leventhal, Laura Jones, J. Hammett, Les Field, and N. Sanchez
1996 *Archaeological Investigations at Kaphan Umux (Three Wolves) Site, CA-SCL-732: A Middle Period Prehistoric Cemetery on Coyote Creek in Southern San Jose, Santa Clara County, California*. MS on file at Northwest Information Center, Sonoma State University.
- Church, Minette C.
2020 Review of “Collaborative Archaeology at the Stewart Indian School by Sara E. Cowie, Diane L. Teeman, and Christopher C. LeBlanc, 2019.” *Western Historical Quarterly* 2020:465–466.
- Codding, B. F., and T. L. Jones
2013 Environmental Productivity Predicts Migration, Demographic, and Linguistic Patterns in Prehistoric California. *Proceedings of the National Academy of Sciences* 110(36):14569–14573.
- Colwell, Chip
2016 Collaborative Archaeologies and Descendant Communities. *Annual Review of Anthropology* 45:113–127.
- Cook, S. F.
1976 *The Population of the California Indians, 1769–1970*. Berkeley: University of California Press.
- Coombs, Mary L.
1999 *From Pooyi to the New Almaden Mercury Mine: Cinnabar, Economics, and Culture in California to 1920*. Ph.D. dissertation, University of Michigan, Ann Arbor.
- Crespi, Juan, O. F. M.
1927 *Fray Juan Crespi: Missionary Explorer on the Pacific Coast 1769–1774*. Berkeley: University of California Press.
- Cowie, Sarah E., Diane L. Teeman, and Christopher C. LeBlanc
2019 *Collaborative Archaeology at the Stewart Indian School*. Reno: University of Nevada Press.
- DiGiuseppe, Diane, and Dave Grant
2020 Osteological Analysis. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Túupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds., pp. 221–284. [Center for Archaeological Research at Davis Publications 20.] Davis, California.
- Eerkens, Jelmer W., Davis Watkins, and Lucia Diaz
2020a Isotopic Perspectives on Dietary Emphasis from Bone Collagen. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Túupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds., pp. 295–310. [Center for Archaeological Research at Davis Publications 20.] Davis, California.
- Eerkens, Jelmer W., Davis Watkins, Samantha Cramer, and Christopher Beckman
2020b Stable Isotope Measures from First and Third Molar Serial Samples. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Túupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds., pp. 311–330. [Center for Archaeological Research at Davis Publications 20.] Davis, California.
- Engbring, Laurel, Brian F. Byrd, John Grebenkemper, Adela Morris, Monica V. Arellano, and Alan Leventhal
2019 Assessing Canine Forensic Results with Archaeological Excavations at Protohistoric Site Sii Túupentak (CA-ALA-565/H) in the San Francisco Bay Area. *Proceedings of the Society for California Archaeology* 33:239–245.
- Eubanks, Jill
2020 Modified Shell. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Túupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds., pp. 170–179. [Center for Archaeological Research at Davis Publications 20.] Davis, California.
- Fagan, Brian M.
2004 *Before California: An Archaeologist Looks at Our Earliest Inhabitants*. Lanham, Maryland: Altamira Press.

- Field, Les, Alan Leventhal, Dolores Sanchez, and Rosemary Cambra
1999 A Contemporary Ohlone Tribal Revitalization Movement: A Perspective from the Muwekma Ohlone Indians of the San Francisco Bay. *California History: Indians of California* Vol. LXXI (3) Fall. San Francisco: California Historical Society.
- Galindo Arias, Patty
2020 Modified Bone. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Túupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds., pp. 163–169. [*Center for Archaeological Research at Davis Publications* 20]. Davis, California.
- Gamble, L. H.
2008 *The Chumash World at European Contact*. Berkeley: University of California Press.
- Gardner, Karen Smith
2013 *Diet and Identity among the Ancestral Ohlone: Integrating Stable Isotope Analysis and Mortuary Context at the Yukisma Mound (CA-SCL-38)*. Master's thesis, Chico State University, Chico, California
- Gobalet, Kenneth
2020 Fish Bone. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Túupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds., pp. 230–237. [*Center for Archaeological Research at Davis Publications* 20]. Davis, California.
- Golla, Victor
2011 *California Indian Languages*. Berkeley: University of California Press.
- Gould, Peter
2019 Review of “Public Archaeology: Theoretical Approaches and Current Practices. Edited by Işilay Gürsu.” *Public Archaeology* 17:214–216.
- Grebenkemper, John, Adela Morris, Brian F. Byrd, and Laurel Engbring
2021 Applying Canine Detection in Support of Collaborative Archaeology. *Advances in Archaeological Practice* 9:226–237.
- Groza, Randall, Jeffrey Rosenthal, John Southon, and Randall Milliken
2011 A Refined Shell Bead Chronology for Late Holocene Central California. *Journal of California and Great Basin Anthropology* 31(2):13–32.
- Gürsu, Işilay (ed.)
2019 *Public Archaeology: Theoretical Approaches and Current Practices. Monograph* 52. London: British Institute at Ankara, and Oxford: Oxbow Books.
- Harrington, J. P.
1932 *Tobacco among the Karuk Indians of California*. Washington, D.C.: Smithsonian Institution, Bureau of American Ethnology.
- Harold, Laura
2020 Strontium Isotope Analysis of Residential Patterns. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Túupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds., pp. 331–334. [*Center for Archaeological Research at Davis Publications* 20]. Davis, California.
- Hedges, A. A.
2019 *Recognition Through Remembrance: A Consideration of Muwekma Ohlone Oral Histories With Kuksu-Associated Material Culture to Infer Precolonial Connections to Place*. Master's thesis, San Jose State University, San Jose, California.
- Heizer R. F. (ed.)
1978 *Handbook of North American Indians, Vol. 8: California*. Washington, D.C.: Smithsonian Institution.
- Heizer, Robert F., and Adan E. Treganza
1944 Mines and Quarries of the Indians of California. *California Journal of Mines and Geology* 40(3):291–359.
- Hinton, L.
1994 *Flutes of Fire: Essays on California Indian Languages*. Berkeley: Heyday Books.
- Hylkema, Mark G.
1994 The Tamien Station Archaeological Project. In *The Ohlone: Past and Present: Native Americans of the San Francisco Bay Region*, Lowell John Bean, ed., pp. 249–269. Menlo Park, California: Ballena Press.
2002 Tidal Marsh, Oak Woodlands, and Cultural Florescence in the Southern San Francisco Bay Region. In *Catalysts to Complexity: Late Holocene Societies of the California Coast*, Jon M. Erlandson and Terry L. Jones, eds., pp. 205–232. [*Perspectives in California Archaeology* 6]. Los Angeles: Cotsen Institute of Archaeology, University of California, Los Angeles.
2007 *Santa Clara Valley Prehistory: Archaeological Investigations at CA-SCL-690, Tamien Station*. [*Center for Archaeological Research at Davis (CARD) Publications* 15]. Davis.
2010 *Archaeological Survey Report (ASR), A Finding of No Effect: Mount Umunhum Remediation Project, Santa Clara County, California*. Report on file at Northwest Coast Information Center, Sonoma State University.
- Jameson, John H., and Sergiu Musteață
2019 *Transforming Heritage Practice in the 21st Century: Contributions from Community Archaeology*. Cham, Switzerland: Springer.
- Johnson, Patti J.
1978 Patwin. In *Handbook of North American Indians, Vol. 8, California*, R. F. Heizer, ed., pp. 350–360. Washington, D.C.: Smithsonian Institution.
- Jones, Douglas A.
2015 *Ritual and Religion in the Ohlone Cultural Area of Central California*. Master's thesis, San Jose State University, San Jose, California.

- Kelly, Isabel T.
1978 Coast Miwok. In *Handbook of North American Indians, Vol. 8, California*, R. F. Heizer, ed., pp. 414–425. Washington, D.C.: Smithsonian Institution.
- King, Thomas F.
1974 The Evolution of Status Ascription around San Francisco Bay. In *Antap: California Indian Political and Social Organization*, Lowell John Bean and Thomas F. King, eds., pp. 35–54. [Ballena Press Anthropological Papers 2]. Menlo Park, California: Ballena Press.
- Kroeber A. L.
1925 Handbook of the Indians of California. *Bureau of American Ethnology Bulletin* 78. Washington, D.C.: Smithsonian Institution.
1939 Cultural and Natural Areas of Native North America. *University of California Publications in American Archaeology and Ethnology* 38. Berkeley.
- Leventhal, Alan M.
1993 *A Reinterpretation of Some Bay Area Shellmound Sites: A View from the Mortuary Complex at CA-ALA-329, the Ryan Mound*. Master's thesis, San Jose State University, San Jose, California.
- Leventhal, Alan M., Rosemary Cambra, and Norma Sanchez
1987 *Final Report on the Human Skeletal Remains Recovered from Prehistoric Site CA-SMA-273, Coyote Point Marina, San Mateo, Ca.* Report on file at Northwest Archaeological Information Center, Sonoma State University.
- Leventhal, Alan, Emily McDaniel, Melynda Atwood, Diane DiGiuseppe, David Grant, Colin Jaramillo, Rosemary Cambra, Charlene Nijmeh, Monica V. Arellano, Sheila Guzman-Schmidt, Gloria E. Arellano Gomez, Dr. Les Field, Dottie Galvan Lameira, Hank Alvarez, Jessica Veikune and Norma Sanchez
2015 *Final Report on the Burial and Archaeological Data Recovery Program Conducted on a portion of Thámien Rúmmeytak [Guadalupe River Site], (CA-SCL-128/Hyatt Place Hotel) Located in Downtown San Jose, Santa Clara County, California*. MS on file at Northwest Archaeological Information Center, Sonoma State University.
- Levy, Richard S.
1978a Costanoan. In *Handbook of North American Indians, Volume 8: California*, R. F. Heizer, ed., pp. 485–495. Washington, D.C.: Smithsonian Institution.
1978b Eastern Miwok. In *Handbook of North American Indians, Volume 8: California*, R. F. Heizer, ed., pp. 398–413. Washington, D.C.: Smithsonian Institution.
- Lightfoot, Kent G.
1997 Cultural Construction of Coastal Landscapes: A Middle Holocene Perspective from San Francisco Bay. In *Archaeology of the California Coast during the Middle Holocene*, Jon M. Erlandson and Michael A. Glassow, eds., pp. 129–142. [Perspectives in California Archaeology 4]. Los Angeles: Cotsen Institute of Archaeology, University of California, Los Angeles.
- Lightfoot, Kent G., and Sara L. Gonzalez
2018 *Metini Village: An Archaeological Study of Sustained Colonialism in Northern California*. [Contributions of the Archaeological Research Facility 69.] University of California, Berkeley.
- Lightfoot, Kent G., and V. Lopez
2013 The Study of Indigenous Management Practices in California: An Introduction. *California Archaeology* 5(2):209–219.
- Lightfoot, Kent G., Rob Q. Cuthrell, Chuck J. Striplen, and Mark G. Hylkema
2013 Rethinking the Study of Landscape Management Practices Among Hunter-Gatherers in North America. *American Antiquity* 78:285–301.
- Luby, Edward M.
1995 Preliminary Report on Archaeological Investigations in the Sunol Valley, Alameda County, California. *Proceedings of the Society for California Archaeology* 8:167–174.
2004 Shell Mounds and Mortuary Behavior in the San Francisco Bay Area. *North American Archaeologist* 25:1–33.
- Malhi, Ripan S., Hongjie Li, Amanda C. Owings, Elizabeth Mallott, and Alyssa C. Bader
2020 Paleogenomic Analysis of Burials. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Túupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds., pp. 285–294. [Center for Archaeological Research at Davis Publications 20]. Davis, California.
- Martindale Johnson, Lucas
2020a Appendix H: Red Pigment Testing Results. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Túupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds. [Center for Archaeological Research at Davis Publications 20]. Davis, California.
2020b Ground Stone Artifacts. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Túupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds., pp. 139–162. [Center for Archaeological Research at Davis Publications 20]. Davis, California.
- Martindale Johnson, Lucas, and Brian F. Byrd
2020 Regional Considerations for Flower-pot or “Show” Mortars. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Túupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds., pp. 447–480. [Center for Archaeological Research at Davis Publications 20]. Davis, California.

- McGimsey, Charles R.
1972 *Public Archaeology*. New York and London: Seminar Press.
- Meloche, Chelsea H., Laure Spake, and Katherine L. Nichols
2021 *Working With and For the Ancestors: Collaboration in the Care and Study of Ancestral Remains*. New York: Routledge Press.
- Merriman, N. (ed.)
2004 *Public Archaeology*. London and New York: Routledge.
- Milliken, R.
1995 *A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area, 1769–1810*. Menlo Park, California: Ballena Press.
2006 *The Central California Ethnographic Community Distribution Model, Version 2.0, with Special Attention to the San Francisco Bay Area: Cultural Resources Inventory of Caltrans District 4 Rural Conventional Highways*. Report on file at Northwest Information Center, Sonoma State University.
2008 *Native Americans at Mission San Jose*. Banning: Malki-Ballena Press.
2010 *The Contact-Period Native California Community Distribution Model: A Dynamic Digital Atlas and Wiki Encyclopedia*. Report on file at Northwest Information Center, Sonoma State University.
- Milliken, Randall, Richard T. Fitzgerald, Mark G. Hylkema, Randy Groza, Tom Origer, David G. Bieling, Alan Leventhal, Randy S. Wiberg, Andrew Gottsfield, Donna Gillette, Viviana Bellifemine, Eric Strother, Robert Cartier, and David A. Fredrickson
2007 Punctuated Culture Change in the San Francisco Bay Area. In *California Prehistory: Colonization, Culture and Complexity*, Terry L. Jones and Kathryn A. Klar, eds, pp. 99–124. Lanham, Maryland: AltaMira Press.
- Milliken, Randall, John R. Johnson, David Earle, Norval Smith, Patricia Mikkelsen, Paul Brandy, and Jerome King
2006 *Contact-Period Native California Community Distribution Model: A Dynamic Digital Atlas and Wiki Encyclopedia, with Special Attention to the San Francisco Bay Area*. Report on file at Far Western Anthropological Research Group, Inc., Davis, California.
- Monroe, C. R.
2014 *Correlating Biological Relationships, Social Inequality, and Population Movement among Prehistoric California Foragers: Ancient Human DNA Analysis from CA-SCL-38 (Yukisma Site)*. Ph.D. dissertation, University of California, Santa Barbara.
2019 DNA Analysis of Human Remains From CA-SCL-919. In *Holocene Landscape Evolution and Human Occupation in the Lower Penitencia Creek Watershed: Archaeological Investigations for Phase I of the Silicon Valley BART Extension Project, Fremont, Milpitas, and San Jose, California*, Phillip Kajankoski and Jeffrey S. Rosenthal, eds., pp. 246–254. Report on file at Northwest Coast Information Center, Sonoma State University.
- Murray, Tim
2011 Archaeologists and Indigenous People: A Maturing Relationship? *Annual Review of Anthropology* 40:363–78.
- Okamura, K., and A. Matsuda (eds.)
2012 *New Perspectives in Global Public Archaeology*. New York: Springer.
- Parker, Glendon J., Tammy Y. Buonasera, Julia Yip, and Jelmer W. Eerkens
2020 Estimation of Sex for 39 Individuals by Analysis of Amelogenin Protein Fragments in Enamel. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Tüupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engring, Michael Darcangelo, and Allika Ruby, eds., pp. 243–249. [Center for Archaeological Research at Davis Publications 20]. Davis, California.
- Reddy, Seetha N.
2015 Feeding Family and Ancestors: Persistence of Traditional Native American Lifeways during the Mission Period in Coastal Southern California. *Journal of Anthropological Archaeology* 37:48–66.
- Rosenthal, Jeffrey
2011 The Function of Shell Bead Exchange in Central California. In *Perspectives on Prehistoric Trade and Exchange in California and the Great Basin*, Richard E. Hughes, ed., pp. 83–113. Salt Lake City: University of Utah Press.
- Ross, Douglas, Cristie Boone, Lindsley Britton, Ryan Phillip, Christina Spellman, and Stella D’Oro
2020 *Archaeological Data Recovery at Rummey Ta Kuččuwiš Tiprectak (CA-ALA-704/H), Sunol Longterm Improvements Project, Alameda County, California—Volume 2: Archaeology of Historic-Era Features*. MS on file at Northwest Coast Information Center, Sonoma State University.
- Scheib, C. L., Hongjie Li, Tariq Desai, Vivian Link, Christopher Kendall, Genevieve Dewar, Peter William Griffith, Alexander Mörseburg, John R. Johnson, Amiee Potter, Susan L. Kerr, Phillip Endicott, John Lindo, Marc Haber, YaliXue, Chris Tyler-Smith, Manjinder S. Sandhu, Joseph G. Lorenz, Tori D. Randall, Zuzana Faltyskova, Luca Pagani, Petr Danecek, Tamsin C. O’Connell, Patricia Martz, Alan S. Boraas, Brian F. Byrd, Alan Leventhal, Rosemary Cambra, Ronald Williamson, Louis Lesage, Brian Holguin, Ernestine Ygnacio-De Soto, John Tommy Rosas, Mait Metspalu, Jay T. Stock, Andrea Manica, Aylwyn Scally, Daniel Wegmann, Ripan S. Malhi, and Toomas Kivisild
2018 Ancient human parallel lineages within North America contributed to a coastal expansion. *Science* 360(6392):1024–1027.
- Schneider, Tsim D.
2021 *The Archaeology of Refuge and Recourse: Coast Miwok Resilience and Indigenous Hinterlands in Colonial California*. Tucson: University of Arizona Press.

- Schneider, Tsim D., and Lee M. Panich
2019 Landscapes of Refuge and Resiliency: Native Californian Persistence at Tomales Bay, California, 1770s–1870s. *Ethnohistory* 66(1):21–47.
- Schwitalla, A. W., T. L. Jones, M. A. Pilloud, B. F. Coddling, and R. S. Wiberg
2014 Violence among Foragers: The Bioarchaeological Record from Central California. *Journal of Anthropological Archaeology* 33:66–83.
- Severson, Alissa L., Brian F. Byrd, Elizabeth K. Mallott, Amanda C. Owings, Michael DeGiorgio, Alida de Flamingh, Charlene Nijmeh, Monica Arellano, Alan Leventhal, Noah A. Rosenberg, and Ripan S. Malhi
2022 Ancient and Modern Genomics of the Ohlone Indigenous Population of California. *Proceedings of the National Academy of Sciences* 119(13):e211153311.
- Silliman, S. W. (ed.)
2008 *Collaborating at the Trowel's Edge: Teaching and Learning in Indigenous Archaeology*. Tucson, Arizona: University of Arizona Press.
- Smith, Linda Tuhiwai
1988 *Decolonizing Methodologies: Research and Indigenous Peoples*. London and New York: Zed Books.
- Stanford, B., R. M. Grossinger, J. Beagle, R. A. Askevold, R. A. Leidy, E. E. Beller, M. Salomon, C. Striplen, and A. A. Whipple
2013 *Alameda Creek Watershed Historical Ecology Study*. [San Francisco Estuary Institute Publications 679]. Richmond, California: San Francisco Estuary Institute.
- Tushingam, Shannon, Jelmer W. Eerkens, Anna Berim, Corey J. Brownstein, and David R. Gang
2020 Age and Gender Dynamics of Tobacco Use: Residue Analysis of Dental Calculus and Archaeological Pipes. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Tüupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds., pp. 345–358. [Center for Archaeological Research at Davis Publications 20]. Davis, California.
- Ubelaker, D. H.
1992 North American Indian population size: changing perspectives. In *Disease and Demography in the Americas*, J. W. Verano and D. H. Ubelaker, eds., pp. 169–176. Washington, D.C.: Smithsonian Institution.
- Wallace, William J.
1978 Northern Valley Yokuts. In *Handbook of North American Indians, Volume 8, California*, Robert F. Heizer, ed., pp. 462–470. Washington, D.C.: Smithsonian Institution.
- Warren, Stephen
2017 Introduction: The Eastern Shawnee and the Repatriation of Their History. In *The Eastern Shawnee Tribe of Oklahoma: Resilience through Adversity*, Stephen Warren, ed., pp. 3–12. Norman: University of Oklahoma Press.
- Wenger, E.
1998 *Communities of Practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press.
- Whitaker, Adrian R.
2020 Faunal Remains. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Tüupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds., pp. 219–240. [Center for Archaeological Research at Davis Publications 20]. Davis, California.
- Whitaker, Adrian R., and Brian F. Byrd
2014 Social Circumscription, Territoriality, and the Late Holocene Intensification of Small-Bodied Shellfish along the California Coast. *Journal of Island & Coastal Archaeology* 9:150–168.
- Winter, Joseph C.
2000 Traditional Use of Tobacco by Native Americans. In *Tobacco Use by Native North Americans: Sacred Smoke and Silent Killer*, J. Winter, ed., pp. 9–58. Norman: University of Oklahoma Press.
- Wohlgemuth, Eric
2002 Late Prehistoric Plant Resource Intensification in the Eastern San Francisco Bay Area: Plant Remains from ALA-42 and ALA-555, Pleasanton, California. In *Hunter-Gatherer Archaeobotany: Perspectives from the Northern Temperate Zone*, S. L. R. Mason and J. G. Hather, eds., pp. 28–43. London: Institute of Archaeology, University College, London.
- 2020 Marcobotanical Remains. In *Protohistoric Village Organization and Territorial Maintenance: The Archaeology of Sii Tüupentak (CA-ALA-565/H) in the San Francisco Bay Area*, Brian F. Byrd, Laurel Engbring, Michael Darcangelo, and Allika Ruby, eds., pp. 187–218. [Center for Archaeological Research at Davis Publications 20]. Davis, California.
- Zarulli, V., J. A. Barthold Jones, A. Oksuzyan, R. Lindahl-Jacobsen, K. Christensen, and J. W. Vaupel
2018 Women live longer than men even during severe famines and epidemics. *Proceedings of the National Academy of Sciences U.S.* 115:E832–E840. <https://doi.org/10.1073/pnas.1701535115>.

