Journal of California and Great Basin Anthropology | Vol. 36, No. 1 (2016) | pp. 5–25

Change and Persistence: Mission Neophyte Foodways at Selected Colonial Alta California Institutions

VIRGINIA S. POPPER
Fiske Center for Archaeological Research
Department of Anthropology
University of Massachusetts Boston
100 Morrissey Boulevard
Boston, MA 02125

Archaeological and historical data on coastal California foodways illustrate the complex interaction between Native Americans and Spanish colonists during the Mission period and reflect adaptations by both groups to new environmental, economic, and social settings. Paleoethnobotanical remains from neophyte (converted Native American) contexts at Mission San Luis Obispo, Mission Vieja de la Purísima, and Mission Santa Cruz and from Spanish contexts at Mission Vieja de la Purísima and the Presidio of San Francisco provide evidence of both continuity and change in aboriginal/neophyte diets, with little adoption of native foodstuffs by the colonists.

In recent years a number of researchers have reexamined the contact between Native Americans and the Spanish colonists in Alta California during the Mission period (e.g., Bouvier 2001; Jackson and Castillo 1995; Lightfoot 2005; Sandos 2004). Using archival, ethnographic, and archaeological data, they illustrate the complexity of this interaction. Complexity should not be surprising given the many sources of variation in this meeting of cultures. To begin with, Alta California was a large geographic area, covering some 700 miles of coastal California and incorporating a variety of topographic and climatic zones. At the time of colonization it contained an estimated 310,000 Indians speaking some 80 to 100 languages, many of which were mutually unintelligible (Cook 1976; Lightfoot 2005; Sandos 2004). These Native Californians were hunter-gatherer-fishers divided into many distinct cultures. In the latter part of the eighteenth century Spain extended its mission system into Alta California as an economic strategy for claiming the territory (Krell 1979:53). Between 1769 and 1823 the Franciscans established 21 missions that were protected by four military presidios (Fig. 1). Native Californians were relocated to the missions in part to "civilize" them but also to provide labor. They became neophytes, new converts to Catholicism. The colonists themselves were a diverse group of missionaries, soldiers, and laborers, most of mixed European, Mexican Indian, and African heritage (Mason 1998). Hence there were many ethnicities, agendas, and lifestyles interacting over the 66-year period before the missions were secularized in 1834–1835, ending the Mission era.

Food provides an excellent means for exploring this meeting of cultures because it is integral to cultural identity and conveys information about personal choices, economic and social status, and ideology (Twiss 2007). Consequently, foodways reflect adaptations by both colonists and the colonized to new environmental, economic, and social settings (Dietler 2007; Lightfoot 2005). This article combines archaeological data (primarily botanical remains) with historical and ethnographic accounts to illuminate how and why neophyte foodways changed or remained stable during the Mission period in coastal central and northern California. I begin with a brief summary of Native Californian and Spanish colonial foodways. Next I present the available documentary information on neophyte foodways, focusing mostly on plant foods,

Figure 1. Alta California missions and presidios (locations of case studies in bold).

and discuss some factors that influenced the ability of the neophytes to maintain their traditional diets. Case studies using archaeobotanical data drawn primarily from two neophyte contexts (Mission San Luis Obispo and Mission Vieja de la Purísima) provide information on the persistence of indigenous foodways along with the adaptation and rejection of colonist foodways. A brief presentation of archaeobotanical data from two Spanish colonial contexts (Mission Vieja de la Purísima and the Presidio of San Francisco) compares the ideal colonial diet with the archaeological evidence and shows how the colonists used foodways, among other things, to distinguish themselves from the neophytes. While these examples do not encompass all responses of indigenous California groups to missionization, they add to our understanding of the diverse paths of indigenous persistence in some regions of colonial Alta California (Panich 2013).

HISTORICAL AND ETHNOGRAPHIC ACCOUNTS OF TRADITIONAL FOODWAYS

Historical and ethnographic accounts of Native Californians provide information on traditional foodways at the time of colonization. Jacknis (2004), Lightfoot (2005), Lightfoot and Parrish (2009), and Gamble (2008) provide useful entries into this literature, which I summarize here, focusing on plant use and on coastal adaptations. While the diversity of hunter-gatherer-fisher groups who lived across a spectrum of environmental zones relied on different foods, in general plant foods came from a seasonal round involving the collection of greens, roots, seeds, fruits, and nuts as they ripened (e.g., see Barrett and Gifford 1933; Bean and Saubel 1972). Native Californians hunted a variety of animals (sea mammals, deer, rabbits, and birds among others), fished, and collected mollusks, some also on a seasonal basis. Most hunter-gatherer-fisher groups were semi-sedentary, congregating in villages at times of the year and splitting up at other times to gather resources. But the coastal Chumash had permanent villages with perhaps up to 1,000 inhabitants, although most probably had about 200 residents (Gamble 2008:110).

Native Californians exploited over 500 species of plants and animals for food, and countless more for other purposes (Barrett 1952; Barrows 1900; Bocek 1984; Chestnut 1902; Lightfoot and Parrish 2009; Sparkman 1908; Timbrook 2007; Zigmond 1981), but acorns (*Quercus* spp.) and small seeds such as grasses, sages (*Salvia* spp.), red maids (*Calandrinia ciliata*), and several varieties of sunflowers comprised the bulk of the plant diet. Although traditionally Native Californian cuisine has been more closely associated with acorns, in some areas seeds were as important, if not more important, than acorns before environmental changes brought on by colonization decreased the availability of small seeds (Farris 2014; Jacknis 2004:12–13; Wohlgemuth 1996); this is discussed in more detail below. Plants were not just dietary staples, medicines, and resources for tools, but were fundamental to the Native Californian cultural fabric. In 1814 a report on neophytes from Mission San Carlos stated, "They speak only of the year as from "acorn to acorn" and from "seed to seed" (Geiger and Meighan 1976:83), and the report from Mission San Francisco noted, "They know spring by the appearance of flowers; they know summer because the grasses dry and the seeds mature; they know fall because wild geese and ducks appear and the acorns ripen" (Geiger and Meighan 1976:84). The succession of seeds and acorns was synonymous with the natural rhythm of the year, embedded in their conception of time.

Scattered references in the historical and ethnographic literature provide glimpses of daily practices associated with food gathering, preparation, and consumption. Jacknis' comprehensive treatise on Native Californian cuisine concludes that most groups typically ate two meals a day, with acorn mush not only a staple, but a necessary component of what constituted a suitable meal (Jacknis 2004:74–75). Acorn mush was usually accompanied by another dish, such as meat, fish, insects, seed meal, or vegetables. Families would congregate for meals, but would spontaneously snack at other times.

All members of a village participated in food procurement, although men and women had different responsibilities. Men hunted and fished, while women, children, and men unable to hunt collected greens, roots, seeds, and berries. Harvesting nuts, however, was a task during which everyone moved to the groves to participate. Acorns ripen over a few short weeks, so it took a large group to collect a year's worth of nuts before insects and other animals ate them. They were dried in the shell and carried back to the village for storage. Native Californians stored large quantities of nuts, seeds, and dried meat and fish to survive during seasons when these foods were not available—especially over the winter months. Stored food also helped even out annual fluctuations in plant productivity. Moreover, some Native Californians took an active role in boosting harvests by burning grasslands and employing other forms of human intervention in the landscape (Anderson 2005).

Although there is little information on specific recipes for traditional foods, many sources describe the methods for preparing them (Jacknis 2004). Women were the primary cooks of plant foods and men frequently cooked the meat (Jacknis 2004:71). Acorns were very time-consuming to prepare. The shells were cracked and removed. Then the nutmeat was pounded in a mortar and the resulting flour was leached to remove tannins. The meal was then either cooked as a thin soup or a thicker mush in a watertight basket using hot rocks, or it could be baked as bread in an earth oven. Small seeds from plants such as grasses were parched in a basket with

hot coals, ground on grinding slabs, and stored as flour or oil-rich cakes. The flour was eaten dry, mixed with water, or boiled with water into a soup or mush. Animals were generally roasted or broiled, but sometimes boiled. Jacknis (2004:68) comments, "Generally, Californian foods were prepared directly and not in combination with other ingredients, although they might be eaten together. Mixtures of plant and animal ingredients seem to have been rare." Small seeds were more likely to be combined in a recipe than acorn and other plants, or plants and meat (Jacknis 2004; Timbrook 2007).

Besides providing for daily needs, collecting and eating food was integral to the social and ceremonial realms of Native Californians (Landberg 1965; Swezey 2004). Jacknis (2004:92) remarks, "the identity of a Native Californian was defined by what, how, and with whom he or she ate." These categories included age, life stages, and gender, and were often expressed through eating taboos. While most meals were eaten in family units, men or honored guests were sometimes served first. Larger groups periodically gathered for feasts to celebrate the first fruits, large hunts, and social occasions such as weddings and burials. Headmen, ceremonial leaders, or shamans played a major role in organizing these events. For example, they decided where and when the village could harvest acorns. They made offerings before the harvest and before eating the first fruits to ensure success in future harvests. Since groves of trees and hunting grounds were the property of particular groups, these leaders were also responsible for negotiating the rights for one group to collect or hunt in another's territory. Food choices also reinforced the cultural identity of different groups; not all potential foods were equally valued. For example, the Chumash ate acorns from most locally available oak species, but preferred coast live oak (*Quercus agrifolia*; Timbrook 1990:247). In contrast, the Luiseño preferred California black oak (*Q. kelloggii*; Sparkman 1908:193). Similarly, the Chumash and Luiseño favored *chia* (*Salvia columbariae*) seeds (Sparkman 1908:229; Timbrook 1990:251), whereas the Gabrielino favored those of black sage (*S. mellifera*; Harrington 1933:193).

While providing only a cursory summary of traditional foodways in California, this discussion sets the scene for the role of plant and animal foods at the time of the colonial incursion. We envisage that Native Californians exploited a huge variety of plants and animals, each of which had practical, social, and ritual significance. Daily meals and group feasts reinforced social values and traditions. Native groups closely monitored and sometimes managed food resources and structured the year around their renewal.

SPANISH COLONIAL FOODWAYS

The first colonists of Alta California were a diverse group that came primarily from the area now called Mexico. They included some Spaniards, but most were of mixed heritage, such as Mexican Indians and African Mexicans. Consequently, the foodways they brought with them were those of mainland Mexico and Baja California. Father Crespí, who documented the 1769–1770 Portolá expedition to Alta California, noted that they carried a mix of dried legumes (chickpeas, beans and lentils) and flour to make griddle cakes as their dietary staples, but also brought some chocolate, ham, meat jerky, dried shrimp, salt, spices, dried figs, loaf sugar, lard, cheese, chili peppers, and garlic—all foods that traveled well (Brown 2001). Chocolate was used to make their morning hot drink, and they also started off with some wine and brandy (Brown 2001:50–51). The travelers supplemented these rations with local game, fish, and shellfish, and as their provisions ran out, added increasing amounts of foods provided by the Native Californians. They welcomed these wild foods, and since many of the Indian dishes were similar to Mexican dishes, Crespí used Nahuatl-derived Spanish terms for them (Brown 2001:66–67): *pinole* was a flour made from toasted ground wild seeds rather than maize, and *atole* was acorn mush rather than the porridge or gruel of maize, wheat, or barley meal.

When the colonists settled in the missions, pueblos, and presidios, they at first received their supplies from Mexico, but the missions were quickly supposed to be self sufficient and provide excess food for the presidios and the missions founded after them. The following discussion provides a general picture of mission economies and Colonial foodways in Alta California, but there was considerable variation in economic activities and agricultural productivity between the missions (Costello 1989). Records of shipments from San Blas, Mexico to the presidios show that maize, rice, beans,

lentils, chickpeas, lard, brown sugar, chocolate, and chili peppers were the colonists' staples, but they also imported noodles, spices, candy, nuts, dried fruit, candied fruits, and wine (Perissinotto 1998). The missions raised sheep, pigs, chickens, and cows, which provided milk and cheese. There are also reports of a variety of crops being grown at the missions, including maize, wheat, barley, beans, olives, grapes, peaches, figs, pomegranates, citrus, squash, melons, potatoes, onions, and cabbages. But the shipments came only once a year, and when harvests were poor, there were few staples to go around. There are accounts of missionaries and travelers relying on native foods when they were starving. Overall, however, the documents show that the missions incorporated few native plants in their diet.

We have few accounts of the colonists' daily life in Alta California. One of the most detailed comes from José María Amador, who was born in the Presidio of San Francisco in 1794, served as a soldier there, and also worked at the San Francisco Solano, San José, and Santa Clara missions (Mora-Torres 2005). He describes the dining routine of the missionaries at Mission San José, adding that the routine was similar at other missions (Mora-Torres 2005:209–213). According to Amador, the mission priest got up at 6 A.M., and after saying mass, would have hot chocolate and toasted bread. At 11 A.M. he would have a glass of aguardiente with some sweet breads and cheese. For the midday meal he ate soup (noodle, rice, or bread), meat (lamb or beef), and vegetables. Beans might be served on the side, but were generally included in stews. For desert the priest ate fresh or dried fruit, fruit preserves, and cheese. This was accompanied by a glass of wine. In the evening the priest was served a roasted pigeon or something comparable, and hot chocolate.

Although we do not know who cooked at Mission San José, in general women from Baja California or Mexico trained and supervised Native Californian men and women as cooks for the priests and the mission Indians and made special dishes for the missionaries (Bouvier 2001:89; Reyes 2009).

Amador describes a similar schedule and menu for his own meals as a child in the home of a wealthy soldier at the Presidio (Mora-Torres 2005:141). The family ate a light breakfast of hot chocolate or sweetened *atole de pinole* (gruel of ground maize) made with milk at 6 A.M., followed by a heavier breakfast of cooked beef and Mexican-style beans with bread or corn tortillas an hour later. The midday meal consisted of rice or noodle soup, a beef with vegetable stew, and beans. Dessert would be cheese or sweet breads. Wine accompanied the meal and afterwards the men drank a glass of aguardiente. Then at 8 P.M. they ate beans and beef cooked in a chili pepper sauce accompanied by wine.

Poor colonist families, as portrayed by Amador, had a simpler diet (Mora-Torres 2005:143, 241). Breakfast consisted of *pinole*, pumpkin cooked in milk, or roasted immature corn mixed with milk. Midday they ate meat, milk, beans, tortillas, and boiled corn or wheat seasoned with lard, salt, and chili peppers, followed by cheese (or for those who could afford it) *asaderas* with *panocha* (whipped cheese with brown sugar). The evening meal was meat, beans, corn *atole*, or *migas* (fried bits of bread or tortilla). They could not afford wine or aguardiente.

In addition to their recipes and ingredients, the colonists brought all the paraphernalia that accompanied dining: pots, pans, ceramic dishes, and basalt manos and metates (Perissinotto 1998). These also reflected social and economic status differences within the colonial population. Amador pointed out that while richer colonists ate at tables and used metal utensils, poor people sat on the floor or on boxes and used pieces of tortilla to scoop up food served on their locally-made ceramic plates (Mora-Torres 2005:143). Rich or poor, the colonial cuisine differed significantly from the Native Californian in ingredients (e.g., dairy products and spicy chili peppers), preparation (stews mixing meat and vegetables), and presentation (e.g., ceramics, metal utensils, and eating a sequence of courses). In addition, once the missions produced enough food to sustain them, it seems that the colonists avoided foods associated with the Native Californians.

HISTORICAL EVIDENCE OF PERSISTENCE AND CHANGE IN NEOPHYTE FOODWAYS

The Franciscans built 21 missions in Alta California between 1769 and 1823, drawing in Native Californians from the surrounding territory. Opinions differ as to why the Indians joined the missions, but many neophytes seem to have been drawn there by gifts of glass beads and other European goods (Hoover 1989; Johnson 1989;

Milliken 1995; Weber 1992). Later on, some neophytes may have moved to the mission when food was scarce while others may have been coerced. After they were baptized, the neophytes were not allowed to depart without permission, although some did desert (Jackson and Castillo 1995).

Historical accounts report that the California mission Indians were fed three meals a day of maize, wheat, beans, legumes, fresh vegetables, and meat (Webb 1952). (Given that the missionaries wrote these accounts, some may have overstated the amount of food provided.) Sometimes these were communal meals prepared in the mission kitchen, and in some cases the ingredients were given to the neophytes to prepare their own meals. But the neophytes also continued eating traditional foods. In 1813–1815, the California missionaries answered a questionnaire about the neophytes that provides much of our information on their lives (Geiger and Meighan 1976). For Mission San Luis Obispo they stated:

> There are three meals a day for the Indians. In the morning they receive *atole.* At noon they have *pozole*, which is composed of wheat, corn, beans, or horse-beans, and rationed meat for each one. In addition they have countless kinds of wild seeds which they prepare in their private homes. At night again they have *atole* [Geiger and Meighan 1976:86].

Pozole, a thick soup, and *atole* were typical Mexican dishes, which the neophytes perhaps accepted because the recipes used different ingredients but methods of preparation similar to traditional ones. Father Arroyo de la Cuesta from Mission San Juan Bautista reported, "they prefer watermelons, sugar melons, pumpkins, spices and Indian corn" (Geiger and Meighan 1976:110–111). Still "they do not despise the *pinole* and seeds which they are accustomed to use in their pagan state and many even prefer them" (Mission San Fernando; Geiger and Meighan 1976:85). So neophytes added preferred introduced foods to their traditional cuisine.

Descriptions from several missions confirm that the distinction between communal meals of colonial foods and the private consumption of traditional foods was the norm (Geiger and Meighan 1976). Even so, an account from Mission Santa Cruz by Lorenzo Asisara, an Ohlone, noted that some people ate colonial foods using traditional utensils (baskets and shells) and etiquette (eating thick dishes with fingers).

> The Indians…had their meal altogether of boiled barley, which was served out to them from two large cauldrons, by means of a copper ladle. This full was the ration to each in a *cora* (a small kind of basket), from which they ate with a shell or the fingers [Harrison 1892:47 in Jackson and Castillo 1995:32].

While the mission neophytes supplemented the mission meals with traditional foods, we cannot calculate from historical sources precisely how much food they received from the missionaries and how nutritious the total neophyte diet was (Jackson and Castillo 1995). At Mission San Buenaventura:

> The neophytes in their houses have plenty of fresh and dried meat. In addition in their homes they have quantities of acorns, *chia* and other seeds, fruits, edible plants and other nutritious plants which they do not forget and of which they are very fond. They also eat fish, mussels, ducks, wild geese, cranes, quail, hares, squirrels, rats, and other animals which exist in abundance. Owing to the variety of eatables which they keep in their homes and being children who eat at all hours it is not easy to compute the amount they daily consume [Geiger and Meighan 1976:86].

Some scholars estimate that traditional foods constituted only 1% to 10% of the diet or were only luxuries (Jackson and Castillo 1995; Lightfoot 2005:79).

Regardless of the caloric significance of these foods, it is clear that they served to maintain social, economic, and ceremonial traditions among the neophytes. Sharing food was intrinsic to Native Californian social relations (Jacknis 2004), and this tradition continued at the missions. "To everyone who enters the cabin of an Indian food is offered without obligation" (San Luis Obispo; Geiger and Meighan 1976:107). When asked about lending agreements, several missionaries responded that wild seeds were among the items exchanged (Geiger and Meighan 1976:107). In addition, some missionaries acknowledged that rituals involving foods continued, generally surreptitiously or in private. For example, seeds were included with burials at Mission San Luis Rey "when the fathers are not looking" (Geiger and Meighan 1976:119). Food offerings to ensure good harvests or health also continued outside the missions. At Mission Santa Cruz, the missionaries reported that men performed dances supposedly to protect them from the devil:

> We are informed that at night, only the men gather together in the field or the forest. In their midst they raise a long stick crowned by a bundle of tobacco

> leaves or branches of trees or some other plant. At the base of this they place their food and even their colored beads [Geiger and Meighan 1976:50].

It seems likely that many other rituals and social practices related to food continued unobserved or unnoticed by the missionaries.

These examples illustrate that the mission neophytes adopted some aspects of colonial cuisine while continuing their various Native Californian traditions. The extent of these changes varied by mission and over time. Below I discuss some of the factors that influenced the ability of the neophytes to continue their traditional foodways, including their access to wild resources, the structure of mission life, and the high death rate of neophytes.

A crucial issue affecting the quantity of traditional foods neophytes could obtain was how much time the missions allotted them for collecting and hunting. For this information, we again largely rely on missionary accounts, which may be biased. Reports indicate that at Mission Santa Barbara, one-fifth of the neophytes were released every Sunday for a week or two, and at Mission La Purísima neophytes spent almost half of the year away (Landberg 1965; Sandos 2004:199). An alternate view provided by Fr. Francis Guest (1979:11) concluded that multiple visits totaling five to six weeks was the norm. The lower end of this range might not be enough time to travel to distant resources, such as pine and oak groves, and complete the labor-intensive collection of nuts. However, the amount of time off probably varied by year and by mission. Extra time was allowed when crops failed due to blight or low rainfall and the padres needed the neophytes to provide more of their own food (Farris 2014). In 1803, Father Gregorio Fernández from Mission La Purísima wrote, "The harvests of this mission are not sufficient to give two rations of *atole* and one of *pozole* daily to 1060 neophytes which the Mission has; wherefore it is necessary to support them on the wild grain, which the goodness of God has furnished on their native soil" (Farris 1999:179). It also seems likely that the missions that were having trouble keeping their Indian labor from running off were less prone to give time off (Landberg 1965). Also, some missionaries were more lenient than others.

But exactly when the neophytes were allowed to leave was equally important, given the seasonal availability of traditional foods. Timing of agricultural tasks varied according to a mission's climate, but in general two crops were planted—one in fall and a second in spring. Not every neophyte was employed in agricultural work, but according to Father Estevan Tapis, no one could leave Mission Santa Barbara during the month-long harvest (Landberg 1965). Traditional plant foods that ripened at that time could be missed. The neophyte description of the seasons at San Gabriel Mission shows the potential for conflicting schedules: "Winter is the season when they finish gathering the acorns and plant their wheat. Summer is the season when the maguey plant is cut… and when they plant corn. Summer is also the season when the pine nuts mature and when wheat is threshed" (Geiger and Meighan 1976:81). Moreover, limiting the movement of neophytes potentially restricted their monitoring of the abundance and maturity of resources, an important part of determining where and when to gather particular plants.

Changes in the local landscape also affected traditional patterns of food collecting (Allen 2010; West 1989). The missions destroyed native grasslands to create agricultural plots and changed the local hydrology to irrigate fields. They altered the composition of the local vegetation with grazing animals, the introduction of non-native plants, and fire suppression (Farris 2014). In 1803, Father Gregorio Fernández from Mission La Purísima complained that due to the effect of livestock, the nearest harvesting sites for wild seeds were already about 39 to 52 miles (15 or 20 leagues) away (Farris 1999). Milliken (1995) argues that as agricultural lands and livestock ranges expanded, traditional resources were eventually wiped out and the Indians had no alternative but to join the missions.

Concurrent with the missionaries' restrictions (whether intended or not) on the availability of traditional foods, their efforts to "civilize" the neophytes by imposing a new world view, or cultural rules, impacted native foodways. For example, Bouvier (2001:162) notes, "The priests' efforts to establish a dietary regime of three meals a day and a restricted menu at the mission were related in part to their desire to restructure indigenous notions of time." Missions structured the day around prayer, work, meals, and sleep, so some missionaries objected to the frequent snacking of the neophytes as a lack of discipline. Father Juan Amorós from Mission San Carlos reported, "As pagans they ate whenever they

desired; now as Christians they are given three meals. However, they are free to eat in their huts and so they eat day and night nor is there any way of making them use moderation" (Geiger and Meighan 1976:87).

Some missionaries also believed a lack of discipline explained why even though many neophytes worked in the mission fields, orchards, and vegetable gardens, few cultivated their own gardens to supplement their diets. Some assumed that hunting and gathering were preferred because they were easier. "It is rare that any Indian takes interest in cultivating his own little plot…. The pagans…prefer to live in idleness and on what the countryside supplies them without any efforts on their part" (Mission San Juan Bautista; Geiger and Meighan 1976:110–111). Researchers suggest neophytes may have avoided gardening because Indian cultures had no concept of individual private property or that the avoidance may have been a form of resistance to colonial control (Bouvier 2001:164). The latter seems more likely, since Native Californian groups held the rights to hunt or collect in defined territories, even though they did not own lands, and they invested labor in improving harvests within those territories by burning and other activities.

Mission life also brought changes in gender roles, including the shift from women as procurers of plant foods and men as hunters to men as the primary agricultural laborers. Women were still responsible for most domestic activities, including the cooking in both the communal kitchens and in their own houses. But Bouvier (2001:105) suggests that "[t]his shift in patterns of food production may have affected female status as the acorn shifted to a less prominent place in the menu than it had held in pre-mission days." Men's status was also affected as they were forced to labor in the fields. To some, this work was reminiscent of women's gathering and was therefore demeaning (Jackson and Castillo 1995).

There were many pressures on the neophytes to give up traditional foodways, stemming from both within the mission and from their resource base. The persistence of forays to hunt and gather foods preserved traditional knowledge (Landberg 1965), but over time some practices were abandoned or forgotten. Father Juan Amorós reported in 1814 that rituals offering flour, seeds, and tobacco smoke ended "because the old people who practiced them have died." (Mission San Carlos; Geiger and Meighan 1976:59). Some estimate that, on average, new recruits lived only 10 to 12 years after baptism in the missions (Johnson 1989:372), especially after 1800 when severe epidemics began to decimate the neophyte population, affecting women, children, and the elderly in particular (Bouvier 2001:98). But this calamity may have strengthened traditional knowledge since the ongoing recruitment and capture of Indians to work at the missions brought in people still familiar with indigenous practices (Jackson and Castillo 1995).

In sum, the historical accounts of life in the missions depict the mixed success of mission attempts to alter indigenous practices and beliefs, including those related to food. They record variations in neophyte foodways both within and between the missions. In public neophytes ate the Hispanic cuisine and in private traditional foods. I have mentioned some of the many impediments to maintaining Native Californian traditions, but the neophytes took an active role in deciding how to adapt to these new conditions and how to meld them with their individual and group identities. Below I address these issues further, using two case studies from neophyte contexts and comparing them with two case studies from colonial contexts. I end with a brief discussion of how these data fit with the patterns seen at other Mission-era sites.

CASE STUDIES

Mission San Luis Obispo de Tolosa: Neophyte Midden

San Luis Obispo Mission was founded in 1772 in an area historically occupied by Obispeño Chumash. A hunting party sent by the starving missionaries of missions Carmel and San Antonio returned from a spacious valley with bear meat and twenty-five loads of edible seeds obtained through exchange with the Chumash (Krell 1979). Later Father Cavaller, five soldiers, and two neophytes established a new mission in the valley, bringing with them farm implements, "fifty pounds of flour, some chocolate, three pecks of wheat for sowing, and a box of brown sugar to trade to the savages for seeds" (Krell 1979:128). By 1803 the mission had a neophyte population of 919, and soon all the "native villages in the area were abandoned" (Nettles 2006:53). When completed the mission had a church, storerooms, a gristmill, granaries, and living quarters for priests, single women, soldiers, and neophytes. The mission was

Table 1

IDENTIFIED CULTIGENS FROM MISSION-ERA NEOPHYTE CONTEXTS IN CALIFORNIA

Mission San Luis Obispo ca.1772–1800	Mission La Purísima 1787–1812	Mission San Fernando ca. 1800–1833	Mission Santa Cruz ca. 1800–1834	Mission Santa Clara post 1800	Mission San Antonio founded 1771	Mission San Juan Bautista founded 1797
wheat	wheat	wheat	wheat	wheat	peach	wheat
maize	maize	maize	maize	maize	cherry	barley
peas	barley	peach	barley	barley		fava bean
		olive	fava bean	peach		
		grape	common bean			
			peas			
			peach			
			cherry/plum/apricot			
			olive			
			watermelon			
			almond			
			walnut			
			squash/pumpkin			
			gourd			

Sources: Allen 1998; Allen et al. 2009; Hoover 1980; Lightfoot 2005; Popper 2004, 2006, 2009.

supported by rich agricultural lands, including a large vineyard and a grove of olive trees. But the missionaries reported in 1814 that the mission neophytes "for a long time maintained…the founders of this mission, by means of wild seeds which they had secured for their own use," and continued to eat wild plants (Geiger and Meighan 1976:44, 86).

Excavations by Applied EarthWorks, Inc. of a neophyte midden that would have been outside the mission walls recovered artifacts that date the deposit from around the founding of the mission to soon after 1800 (Nettles 2006:261). Because the first record of house construction for neophytes was in 1800, it is likely that this midden comes from the activities of resettled Chumash living in traditional houses. Nettles (2006) reports that while many of the artifacts recovered indicate a continuation of Native Californian practices—stone projectile points, other lithic tools, a millingstone fragment, a steatite bowl or comal fragment, shell and stone beads, and a bone awl—the midden also included regionally produced and imported ceramics and glass beads. The faunal remains consisted of cow (60%), marine fish (33%), shellfish, and smaller amounts of sheep, goat, pig, and wild animals, including deer, rabbit, ground squirrel, and birds (Gust 2006). These show that the neophytes continued to hunt, but calculating the meat weight of the remains shows that over 99% was beef (Nettles 2006:263). The meat probably came from their weekly allotment. José María Amador recalled that at Mission San José, "Each Saturday, 100 to 120 head of cattle were slaughtered at the mission to provide the people with their meat rations. The Indians themselves would kill them and quarter them under the direction of the foreman, who would distribute the rations" (Mora-Torres 2005:203). Lightfoot (2005:97) notes that most cow and sheep bones from mission neophyte contexts show evidence of Hispanic butchering practices.

The macrobotanical analysis of the midden recovered 31 taxa of plants (Popper 2006), but only three (wheat, maize and peas) were cultigens (Table 1). Of these only wheat was common, recovered from 47% of the flotation samples (Table 2). Cereal rachis fragments (the stem that connects the grain to the stalk) could indicate some processing of grains in the area or their use for another purpose. Maize remains were rare and peas even rarer. Because these crops are processed in different ways before consumption, one cannot infer their relative importance in the neophyte diet. San Luis Obispo seems to have had excellent fuel sources, so corncobs may not have been burned and few

Table 2

UBIQUITY OF THE TOP 10 OR 11 RECOVERED PLANT REMAINS FROM MISSION SAN LUIS OBISPO, MISSION VIEJA DE LA PURÍSIMA, AND THE PRESIDIO OF SAN FRANCISCO[a]

Neophyte				Colonial		
San Luis Obispo		Mission La Purísima		Mission La Purísima	Presidio of San Francisco	
Type	Ubiquity N=15	Type	Ubiquity N=15	N=1	Type	Ubiquity N=35
Cheeseweed (*Malva* sp.)	73	Legume family (Fabaceae)	53	Cereal Rachis	Cultivated cereal frag.	71
Grass family (Poaceae)	67	Oak (*Quercus* sp.) nutshell	53	Wheat (*Triticum* sp.)	Pulse frag.	66
Manzanita (*Arctostaphylos* sp.)	60	Wheat (*Triticum* sp.)	53	Bluegrass (*Poa* sp.)	Wheat (*Triticum* sp.)	66
Legume family (Fabaceae)	60	Grass family (Poaceae)	47	Cultivated cereal frag.	Bluegrass (*Poa* sp.)	37
Oak (*Quercus* sp.) nutshell	60	Manzanita (*Arctostaphylos* sp.)	40	Barley (*Hordeum vulgare*)	Filaree (*Erodium* sp.)	34
Cultivated cereal frag.	53	Cheeseweed (*Malva* sp.)	40		Cheeseweed (*Malva* sp.)	31
Tarweed (*Madia* sp.)	47	Cereal Rachis	33		Grass family (Poaceae)	26
Wheat (*Triticum* sp.)	47	Filaree (*Erodium* sp.)	33		Catchfly (*Silene* sp.)	26
Cereal rachis	33	Maize (*Zea mays*)	33		Pea (*Pisum* sp.)	20
Filaree (*Erodium* sp.)	33	Mustard (*Brassica* sp. cf.)	27		Maize (*Zea mays*)	20
Mint family (Lamiaceae)	33					

[a]Ubiquity measures how frequently a taxon occurs in a group of samples. In this case, it is the percentage of all the samples from the midden that contained the taxon (Popper 1988). Ubiquity was not calculated for the Colonial midden at La Purísima because there was only one sample.

Table 3

IDENTIFIED CULTIGENS FROM MISSION ERA COLONIAL CONTEXTS IN CALIFORNIA

Presidio of San Francisco 1776–1826	Presidio of Santa Barbara 1782–1830s	Presidio of Santa Barbara (Cruz lot) Mission Period	Mission Vieja de la Purísima 1787–1812	Santa Inés Mission ca. 1804–1824
wheat	wheat	wheat	wheat	wheat
maize	maize	maize	maize	maize
common bean	common bean	common bean	barley	common bean
barley	peach	gourd/squash	pulse	peach
fava bean	olive	peach		olive
peas	fig	olive		chile pepper
	grape	oat		

Sources: Honeysett 1989; Imwalle and Panichi 1990; Popper 2002, 2003, 2004; Popper and Martin 2000.

cupules would preserve. Cooking methods also influence preservation. Wheat was toasted before grinding to make *atole*, which offered more opportunities for burning than maize and peas. Moreover, if maize was soaked before grinding or boiled as *pozole*, this would eliminate any chances of preservation. In any case, this study shows that some staples were distributed to the mission Indians, given that cultigens were found in the neophyte midden.

We found no evidence of barley, oats, grapes, figs, gourds, or the large-seeded crops (such as olives or peaches) which have been recovered from other nearby Mission era sites (Tables 1 and 3). First, in part this reflects agricultural practices at Mission San Luis Obispo. Not all missions grew identical suites of crops or crops in similar proportions, and some crops, like maize, required irrigation for successful harvests. San Luis Obispo mission records show that wheat production far outweighed maize production by 1790; barley harvests were not recorded until 1804, postdating the midden; records of pea harvests were intermittent until 1808; and

Table 4

FREQUENCY OF CULTIGENS AND WILD SEEDS AND NUTS

	Neophyte			Colonial	
	Mission San Luis Obispo	Mission Vieja de la Purísima	Mission Santa Cruz	Mission Vieja de la Purísima	Presidio San Francisco
% Cultigen	8	16	83	41 (76[a])	34
% Non-domesticate	92	84	17	59 (24[a])	66
% Major wild plant	*Malva* 19	*Erodium* 8		*Poa* 18	*Poa* 61

[a] Includes cereal rachis fragments.

beans were generally much more productive than peas until 1807 (Engelhardt 1933:158). Grapes were important at San Luis Obispo for making wine, but perhaps other fruits such as peaches were rare or absent, and therefore unlikely to be recovered. In addition, the olive grove seems to be a later (around 1810) addition to the San Luis Obispo gardens, again postdating the midden.

Second, foods prepared and eaten in the mission's communal kitchen would leave no remains in the neophyte midden. This is particularly true for seeds that are ground or boiled, and fruits with pits that are discarded during processing or eating. Amador recalled that at Mission San José, besides receiving meals at the communal kitchen, grain was distributed to the neophytes on Saturday, which could explain their abundance in the neophyte refuse (Mora-Torres 2005:203). Third, the neophyte population may not have had access to the full variety of crops grown at the mission. There are few references to neophytes receiving fruit as part of their rations, and only one of the few records of crops grown by Native Californians indicates that they planted fruit trees (1816 Mission Dolores; Hoover 1989:401). But it is also possible that they did not plant some crops because they chose not to include them in their diet.

This Mission-era midden provides evidence that acorns, manzanita berries, and small seeds continued to be important components of the neophyte diet. Over 90% of the seeds and fruits were non-domesticated plants (Table 4). Some reflect neophyte plant collection while others, such as cheeseweed (*Malva parviflora*) and filaree (*Erodium* sp.), are probably accidental inclusions from plants that grow in disturbed places. Longinos Martínez remarked while travelling near San Diego in 1792 that mallow, a common name for *Malva*, "grows so vigorously that in the immediate vicinity of the missions and in the grain fields one cannot force a way through it" (Simpson 1961:47). Neophyte plant collection focused on grasslands and the grassland-savanna.[1] The most ubiquitous small seeds—grasses, wild legumes, and tarweed—ripen in late spring and summer. The seeds may have burned while being parched in preparation for grinding and cooking as *pinole*.

Given the large numbers of grassland seeds in the midden and the importance of livestock at the mission, one must consider whether the grassland seeds reflect neophyte plant use or the remains of animal dung burned as fuel. Filaree seeds come from introduced weeds that grew in grassland, fields, or disturbed areas. The Chumash ate the seeds and boiled the plant to produce a medicine (Timbrook 2007:85). Some filaree was planted as a forage crop, and Honeysett (1982) recovered many seeds, some contained in sheep dung, from the Ontiveros Adobe site. But Hendry and Kelly (1925; Hendry 1931) found filaree seeds in adobe bricks from California, some dating to the Spanish period, indicating how common the weeds were around settlements of this period. Only 33% of the mission samples contain filaree seeds, and they are not particularly abundant. Consequently, although some of the seeds may have come from animal dung, most of them probably were collected from the same stands as other gathered seeds.

The neophytes also gathered plants that generally grow in chaparral or woodlands. Manzanita fruits ripen in early summer and provide edible flour and a beverage. Acorns were collected in the fall and were stored in the shell until they were needed. After processing to make acorn flour, the dense shells were probably thrown in hearths as fuel. Oak was the most common (57% ubiquity), although not always the most abundant, charcoal in these samples. The Chumash valued this good

firewood and placed hot coals of oak in baskets with small seeds to parch them (Timbrook 2007:161).

The riparian forest along San Luis Obispo Creek contained ample Western sycamore (*Platanus racemosa*), the second most common charcoal (47% ubiquity). Sycamore was considered an excellent fuel source, and was commonly used in construction, for tools and utensils, and as a medicine. We also recovered seeds of elderberry (*Sambucus* sp.), a shrub that grows in moist habitats, such as stream banks. Its berries ripen in the summer and were cooked or dried before they were eaten, but according to Timbrook (2007:195–198), the Chumash valued it more for its wood, which they used for bows, flutes, and other items, and its flowers, from which they made several medicinal cures.

This brief description of the most common species recovered at the site confirms that the neophytes at Mission San Luis Obispo chose to continue gathering and had the time to go out and collect traditional foods at least from spring through the fall. While in some years poor harvests may have necessitated supplementing provisioned foods with gathered resources, historical records do not indicate that this was a regular occurrence. In addition, the neophytes selected particular foods from a range of available plants.

Interestingly, the most common small seeds were not those traditionally thought of as Chumash staples (*chia* [*Saliva columbariae*] and red maids [*Calandrinia ciliata*]). Only one of each of these was recovered in the samples. Red maids in particular had great ritual significance in Chumash culture (Timbrook 1982:174). These foods are not missing due to scheduling conflicts. If the neophytes were required to work in the fields during late spring and early summer when *chia* and red maids ripen, they probably would also miss the opportunity to gather many of the grasses we recovered. Instead, one explanation could be that the vegetation around the mission was different from the Santa Barbara area where most of the historical information and archaeological data on Chumash plant use come from. Today *chia* grows in coastal sage scrub, but in the past it probably was much more common in grasslands (Timbrook 1986). It is possible that the inland location of Mission San Luis Obispo de Tolosa on the northern fringe of the Chumash territory meant that other grassland resources were more easily available and abundant.

A second explanation could be that the mission economy and fire suppression altered the local vegetation so that these traditional resources were no longer as abundant. Both *chia* and red maids grow in large quantities after fires, and prescribed burning was an important means of increasing their productivity (Timbrook 1982). The Spaniards began to curtail this burning in 1793. Although some grasses, and tarweed, also benefit from burning, it is possible that the types we recovered were more resistant to the degradation of the native grasslands.

This sample of archaeobotanical remains dating to the first thirty years of the mission suggests that the neophytes brought few colonial plant foods back to their houses. Other than beef, they seem to have gotten their fill of Hispanic food when eating at the communal mission kitchens. They prepared food using millingstones, steatite vessels, and ceramics, and may well have used baskets that left no trace in the midden. Although these remains show a continued use of Chumash resources, it is possible that the neophytes changed the types as well as the quantities of these traditional foods after they moved to San Luis Obispo Mission.

Mission Vieja de la Purísima: Neophyte Contexts

Mission Vieja de la Purísima was founded in 1787 in a fertile valley occupied by the Purisímeño Chumash. The missionaries and neophytes soon built a quadrangle, with the church, living quarters, granaries and shops. A neophyte village with traditional Chumash thatch dwellings sat outside the quadrangle, as did the gardens and other structures (Fig. 2). By 1804, the mission had 1,520 neophytes (Jackson and Castillo 1995:33). But in 1812 an earthquake, followed by rains and flooding, destroyed the mission, and it was rebuilt four miles away. Consequently the first mission is called the Mission Vieja de La Purísima and its deposits are restricted to the 25 years between 1787 and 1812.

In the beginning the mission was supplied with animals, food, and crop seeds from other missions, but it soon became self-sufficient. Crop-yield data from the early years show that wheat was generally more productive than maize and beans, and barley was rare; sheep outnumbered cattle, with fewer horses, pigs, and mules (Gust 2004). Excess produce was sold to the Santa Barbara Presidio. In 1800 the Franciscan padres replied

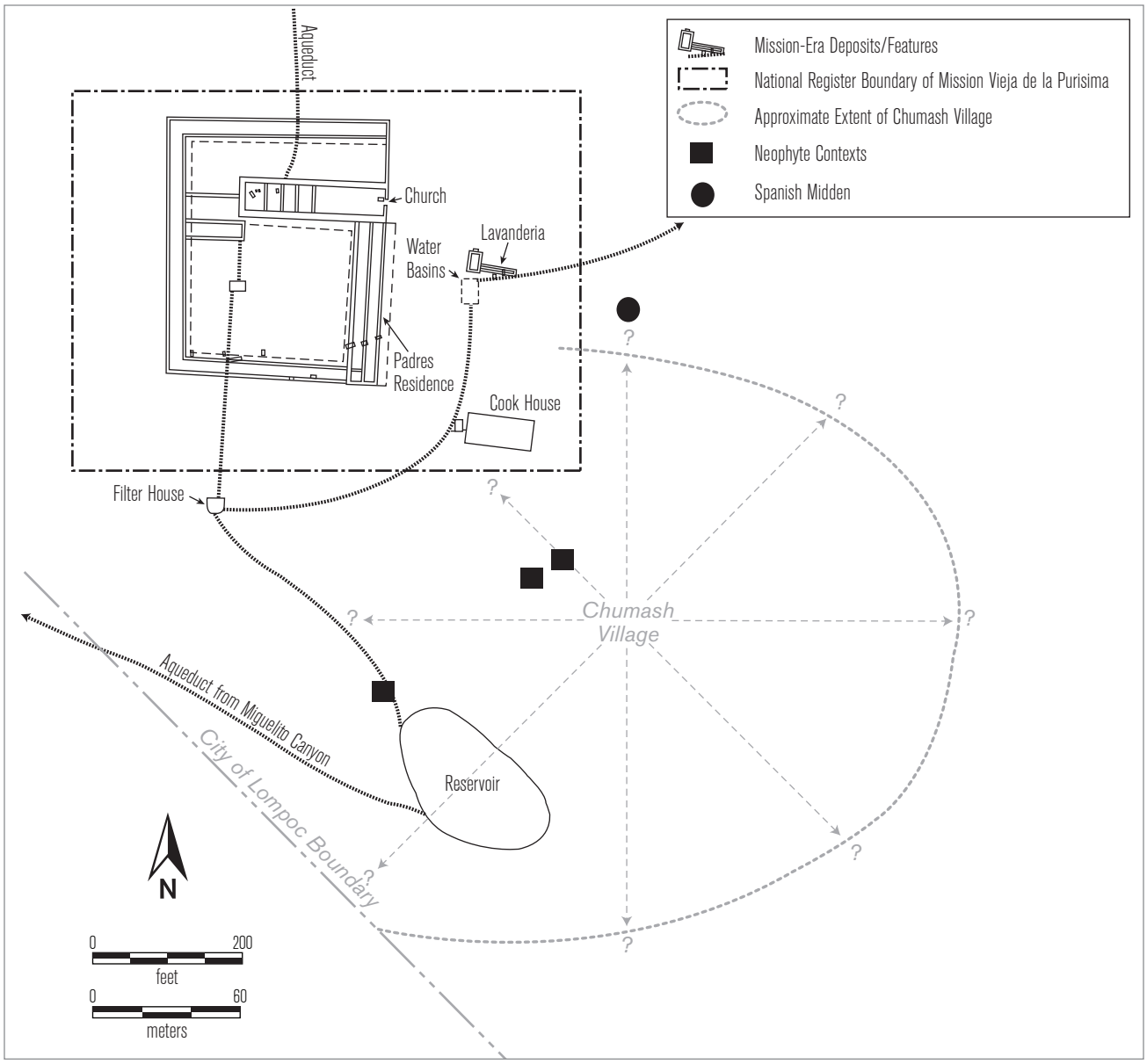

Figure 2. Location of the neophyte and colonial archaeobotanical samples from Mission Vieja de la Purísima (adapted from Hamilton and Abdo-Hintzman 2004).

to an allegation that they were mistreating the neophytes. They responded that the neophytes lived in traditional houses and that the missionaries supplied them with three daily meals (*atole* or *pozole*) and additional rations of wheat (Hageman et al. 1991:245). The padres stated that the neophytes were permitted to leave and gather food in all seasons, totaling almost half of the year (Hageman et al. 1991:246).

Excavations by Applied EarthWorks, Inc. outside the mission walls and within the neophyte area uncovered deposits showing the continued use of Native Californian flaked stone tools and debitage, grinding implements, and shell beads (Hamilton and Abdo-Hintzman 2004). But the remains also included introduced items such as glass beads, tile fragments, and small amounts of locally-produced and imported ceramic fragments. Gust (2004) analyzed the faunal assemblage and reported that it was diverse and dominated by large quantities of mammal fragments (mainly cow) and fish, with some bird and shellfish. Traditional fishing and cooking methods are

indicated by the prevalence of small fish that would have been caught in nets and charred squirrel bones that indicate that the animals were roasted on a spit.

The macrobotanical analysis recovered a mix of cultivated and gathered plants, totaling over 34 taxa (Popper 2004). Wheat was found in 53% of the samples, but was never abundant, and maize (mainly cupules) and barley remains were less common (Table 2). Maize cupules suggest that neophytes may have used the shelled cob as fuel. These remains confirm that some staples were distributed to the mission Indians.

However, the majority of the plants in the midden reflects the persistence of Native Californian practices. Over 80% of the seeds and fruits were non-domesticated plants (Table 4), with a fairly consistent presence of acorns and small seeds such as wild legumes and grasses. These resources grow in a variety of habitats, but most of the small seeds could have been collected from grasslands in the late spring or summer. As at Mission San Luis Obispo, they suggest that seeds were parched in preparation for storage or cooking. At La Purísima Mission we recovered no *chia*, and small numbers of red maids. Two fruits could have been collected from moist habitats or encouraged in gardens: elderberries and blackberries (*Rubus* sp.), which generally ripen in summer and early fall. Both could be stored dried or cooked. Acorns were gathered from the oak woodlands in the fall. The mustard (*Brassica* sp.), filaree, and cheeseweed seeds probably represent introduced weeds that thrived in grasslands or disturbed areas around the neophyte village. Timbrook (2007) notes that the Chumash ate mustard greens. However, it is possible that the seeds were harvested along with the more desired grasses or accidentally blew into the site. It seems less likely that they came from burned animal dung, since firewood was not scarce.

The fuel sources were quite diverse, with at least 10 types recovered, but the consistent presence and higher quantities of box elder (*Acer* sp. cf.; 93% ubiquity) and poplar/willow (*Populus/Salix* sp.; 80% ubiquity) indicate that plenty of fuel was available from the nearby riparian forests. And although equally ubiquitous, less fuel was oak (93%), gathered from the chaparral or oak woodlands. While firewood was used for a variety of purposes, including direct cooking and the heating of rocks for cooking in baskets, it may also have served to create cooking coals from bark. Overall, these deposits contained more amorphous material than charcoal. The term 'amorphous' refers to botanical material that is very porous, possesses minimal vessel structure, and lacks a distinctive shape; some of it looks like bark. As mentioned above, the Chumash used hot coals when parching seeds, so this may indicate extensive traditional seed processing.

In sum, archaeological research confirms that the neophytes at Mission San Luis Obispo de Tolosa and Mission Vieja de la Purísima maintained traditional foodways in the context of a changing landscape. In some years, when crop harvests were poor, these foods may have supplied essential nutrients, but they also provided variety to the neophyte diet and reinforced Native Californian social, economic, and spiritual relations. Meals made from agricultural produce were prepared in the mission kitchens, so few remains were recovered in the neophyte middens. Charred wheat grains suggest they were parched before grinding, prepared in a traditional manner, and appropriated into traditional recipes. We cannot determine how much of the neophyte diet came from introduced crops and how much from traditional foods. Differences in the types and proportions of seeds and charcoal from these two sites probably reflect differences in the local vegetation. Sample size and densities diverge somewhat (Table 5). But the similar range of foods shows that collecting native seeds and fruits was widespread during the early occupation of these California missions. Both of these neophyte contexts provide distinct evidence of foodways distinct from Spanish-colonial contexts at the Mission Vieja de la Purísima and the Santa Barbara Presidio.

Mission Vieja de la Purísima: Colonial Context

Excavations by Applied EarthWorks, Inc. outside the Mission Vieja de la Purísima quadrangle and near the soldier's quarters revealed a dense midden containing abundant construction debris (tile and adobe fragments) and subsistence remains (Fig. 2; Hamilton and Abdo-Hintzman 2004:27). The ceramics and glass beads date the deposit to the early mission occupation (1787–1812). Most of the faunal remains were cow bones, with only a small amount of chicken, fish, and other animals (Gust 2004). Although we only have one flotation sample from the Spanish midden at Mission Vieja de la Purísima, it contrasts starkly with the neophyte deposits (Table 5).

Table 5

SAMPLE SIZE, AND SEED AND CHARCOAL DENSITIES FROM MISSION SAN LUIS OBISPO, MISSION VIEJA DE LA PURÍSIMA, AND THE PRESIDIO OF SAN FRANCISCO

	Neophyte		Colonial	
	Mission San Luis Obispo	Mission La Purísima	Mission La Purísima	Presidio San Francisco
Soil volume (l.)	25.0[a]	33.7[a]	2.5	358.25[a]
Seed density[b] (count per l.)	35.8	16.1	46.0 (97.6[c])	27.80
Charcoal density (g. per 10 l.)	1.41	2.01	0.32	5.21

[a]Calculated using an estimated volume for water screened samples.

[b]Includes unidentifiable seeds and fragments.

[c]Includes cereal rachis fragments.

The colonial midden has a fairly low variety of plants (around 15 taxa) and a much higher proportion of cultigens (41%), including maize, barley, pulses (not recovered from the neophyte deposit), and (mainly) wheat (Tables 3 and 4; Popper 2004). It also contained a large number of cereal rachis fragments. If you add in these non-seed remains, the cultigens make up about 76% of the non-wood assemblage. Refuse with rachis fragments could indicate grain processing in the area or the use of grains and chaff for fodder or making adobe. The most abundant non-domesticated plants, bluegrass (*Poa* sp.), filaree, and cheeseweed, probably represent weeds growing in disturbed soils around the occupation, which entered the midden accidentally or in animal dung or adobe. No acorn remains were recovered. The midden had one blackberry seed, a fruit familiar to the colonists. Only two types of charcoal were recovered, most of it box elder and a little oak. This could indicate a more selective use of fuel by the colonists than by the neophytes, perhaps because others provided it or because the Spanish soldiers or settlers had fewer occasions for opportunistic collecting. Amador recalled that "[t]he officers and soldiers of the presidial companies would devote themselves to gathering firewood and other things…whenever they were not performing their military service" (Mora-Torres 205:221). Although the macrobotanical sample is small, the narrow resource range confirms that the neophytes and colonists used plants in very different ways. Voss's more expansive study of the Presidio of San Francisco explains why.

The Presidio of San Francisco

The Presidio of San Francisco provides another comparison to the neophyte contexts. Founded in 1776, it served as a military fort and the administrative center for the region until 1835. From 1776 to 1835, the colonial population ranged from the low 100's to the low 200's (Voss 2008:72). There is little information on the Native Californian population associated with the Presidio. Records indicate that in the 1780's at least 5 to 20 men worked at the Presidio, and in the 1790's and 1800's, some 70 to 100 laborers worked there (Voss 2008:82). Barbara Voss's (2008) book on ethnogenesis at the Presidio describes how the material culture remains reflect the formation of a new, shared *Californio* identity by the multiracial and multiethnic settlers. The style and size of the ceramics show that most dishes were liquid-based (e.g., stews, porridges) and that most cooking took place in households (Voss 2008:246). The faunal remains were dominated by cow bones, but also included a considerable number of chicken, wild mammal, wild bird, and fish bones.

Archaeobotanical data collected from the Building 13 midden, which dates from 1776 to around 1800, and the occupation and floor deposits of an adobe apartment dating to sometime between 1815 and 1826, illustrate how the Presidio soldiers and their families adapted their foodways in this colonial setting (Popper 2002; Popper and Martin 2000). The most ubiquitous remains in the Presidio samples were cultivated plants (wheat, corn, barley, beans, peas, and fava beans): these dietary staples comprise 34% of the assemblage (Tables 3 and 4). Historical accounts, mentioned above, tell us that the colonial diet for poorer settlers included milk, *atole,* beans, and cheese, while wealthier colonists had a more varied diet, including rice or noodle soup and baked goods. There are reports of truck gardens attached to the Presidio settlement, but we don't find the fleshy

vegetables like onions and cabbages that contributed to the diet but do not leave carbonized remains. We found only a couple of blackberry seeds and a few hazelnut (*Corylus cornuta* var. *californica*) fragments in these deposits, revealing that almost no native plants were eaten. Again these nuts and berries were already part of the traditional Spanish-colonial cuisine.

Besides the cultigens, we recovered around 27 other taxa. The most abundant taxon in the deposits was bluegrass, comprising over 90% of the non-domesticated seeds. I have suggested that bluegrass may have been used as kindling or that the seeds were in animal dung used as fuel. The rest of the non-domesticates make up only 5% of the assemblage, and many may also have been from dung burned for fuel. The nearby chaparral and riparian valleys provided most of the firewood, including dogwood (*Cornus* sp.), California lilac (*Ceanothus* sp.), and oak. All three were recorded growing at the Presidio in 1816, but by 1859 most of the scrub oak had been cut from around the Presidio for fuel (Langelier and Rosen 1992; Thompson and Woodbridge 1992:53). The later apartment samples have a much higher density of seeds and a much lower charcoal density, which suggests a greater reliance on dung fuel and less on firewood. In addition, the types of fuel shift slightly, which may indicate that overexploitation of local fuel sources necessitated collection from more distant locations. Colonists also had to adapt to the Presidio's effect on the local landscape. Overall, these findings are consistent with the results of the artifact analysis, which indicate that the colonial population did not adopt Native Californian material culture, thereby distinguishing themselves from the Indians and reinforcing their *Californio* identity (Voss 2008).

DISCUSSION

Plant remains from these archaeological sites reflect food choices made by Native Californians and colonists living under new geographic, economic, and social conditions. In general they mirror the few other published mission and presidio studies (Tables 1 and 3). The largest and best-preserved assemblage comes from a neophyte housepit, a traditional round structure, and associated features at Mission Santa Clara postdating 1800–1810. Artifacts show a mix of indigenous and colonial technology such as ceramics, metal, local and imported groundstone, shell and glass beads, and fire-cracked rock. Meat came mainly from cows, but also from sheep, pigs, chickens, and some wild animals. The neophytes gathered a wide range of nuts and seeds. Cultigens (including maize cupules and wheat rachis fragments) totaled 4%, 6%, 31%, and 41% of the remains at different locations (Allen et al. 2009). Even under these excellent conditions for preservation only wheat, maize, barley, and peach were recovered, confirming that if the neophytes had access to most of the foods recorded growing at the California missions they did not use them in their houses.

One interesting exception comes from a neophyte context excavated at Mission Santa Cruz, which has the greatest variety of cultigens from any Mission-era site (Table 1). These samples come from adobe structures built as neophyte housing beginning in 1809, and probably occupied by Ohlone and Yokuts Indians. Based on the published seed counts, 53% of the identified seeds are wheat (Allen 1998) and 83% are cultigens, a frequency surpassing the colonial contexts (Table 3). These neophytes ate not only the cereals and legumes we see at other sites, but also non-native vegetables, fruits, and nuts. The few Native Californian plant foods were hazelnuts, catclaw (*Acacia* sp.), wild grape (*Vitis* sp.), and California bay (*Umbellularia californica*). One reason these neophyte remains diverge from assemblages at other sites is that they were not collected by flotation, so we probably are missing some of the small seeds so important to Native Californians. In addition, the missionaries reported that they supplied seeds, oxen, and plows for neophytes to use in their fields, so unlike at many other communities the neophytes at Mission Santa Cruz grew some of their own food (Geiger and Meighan 1976:88, 111).

Finally, only a small percentage of neophytes were provided with adobe housing at most missions, and these could have been the most acculturated individuals (Allen 1998:51). Colonial artifacts included metal implements and imported ceramics, and their meat came primarily from cattle and sheep. Nonetheless, the presence of abundant shellfish and fishbones along with fishhooks, net weights, pestles, mortars, and fire-cracked rock demonstrates that some traditional foods were still important and some ingredients were obtained and cooked using Indian techniques (Allen 1998).

These descriptions of food remains from both colonist and neophyte contexts demonstrate a range of responses to colonization in Alta California and the transformation of these cultures over the 66 years from the founding of the California missions to their secularization. The diversity of ecological zones, indigenous groups, colonial populations, economic systems, and other conditions set the parameters for individual and group choices about what to eat, where to obtain foods, how to prepare meals, and other dining options. The colonists controlled mission life and were determined to "civilize" the Indians, using food as one avenue for changing Native Californian beliefs. Paul Farnsworth argues that the degree of acculturation differed according to the size of the mission, where larger neophyte populations received less instruction from the fathers (Jackson and Castillo 1995:33). Archaeobotanical evidence confirms that the neophytes ate introduced crops along with traditional gathered plants. Their meat came mainly from cattle and sheep, but some groups continued to fish, gather shellfish, and hunt wild animals. The colonists had a more restricted diet of Hispanic food, especially those of lower status, but incorporated few native foods. Both groups had to adapt to rapid changes in the local vegetation.

Mission life was radically different from the traditional Native Californian lifeway, but Lightfoot (2005:182) asks an essential question about neophyte enculturation, which is "whether padres were successful in transforming the majority of neophytes from *indios* to Hispanic peasants." He argues that the missions were not successful; instead, the neophytes created new Indian identities in the "underground world of neophyte villages," maintaining many Native Californian traditions (Lightfoot 2005:183). Food practices were an essential element of these changing identities. One avenue was the "selective appropriation and indigenization" of colonial foodways by the mission neophytes (Dietler 2007:225). While they ate Mexican foods in public kitchens, they ate traditional foods in their homes. The neophytes readily adopted preferred foods such as beef and—according to historical accounts—selected fruits and vegetables. Some cultigens were cooked in Native Californian recipes, such as wheat that was toasted and ground. In addition, traditional cooking methods persisted, as evidenced by fire-cracked rocks and coals. Historical accounts record changes in social relations as men became farmers and sometimes cooks. But in the neophyte houses, women were still in charge of domestic activities. The neophytes also rejected some attempts to alter their lifestyles. Men and women worked in the mission fields, but few tended their own gardens. Even while employed as farmers, herders, craftsmen, and domestic workers, the neophytes kept their connections with the plant world, collecting and using food, medicine, fuel, and other raw material that maintained native knowledge and cultural traditions.

Panich (2013:118) convincingly argues that archaeological studies of indigenous persistence provide a more nuanced understanding of "instances where indigenous cultural practices and ethnic identities were simultaneously perpetuated as they were transformed." Archaeological and historical data on Mission-era foodways presented here show a variety of responses to colonialism. Viewed through the lens of persistence, these data reinforce the conclusion that indigenous identities were not static, so these changes and consistencies in native foodways reflect "the long-term cultural trajectories of indigenous groups, as well as the small-scale negotiations of colonialism that take place through daily practice" (Panich 2013:118). These data provide glimpses of the disparate effects of colonialism on Native Californian foodways and identity at different missions and at different phases of the Mission era. But our sample is relatively small, so we need evidence of Mission-era foodways from other sites to flesh out the diverse paths of indigenous persistence in colonial Alta California.

NOTES

[1]The following discussion of the identified remains draws on habitat, seasonality, and use data drawn from several sources (Ebeling 1986; Hickman 1993; King and Rudolph 1991; Munz 1974; Strike 1994; Timbrook 1984,1990, 2007).

ACKNOWLEDGEMENTS

I am grateful to Colleen Hamilton, Wendy Nettles, and Barbara Voss for the opportunity to work on these projects. I am also indebted to the many staff, students, and volunteers who participated in these excavations and laboratory research programs. My thanks go to Melody Henkel for preparing the figures and to Rebecca Allen for providing data on the remains from Mission Santa Cruz. In addition, I greatly appreciate the useful comments and corrections provided by the reviewers. Funding for this research was provided by the City of Lompoc, the City of San Luis Obispo, Applied EarthWorks, Inc., the

National Park Service, the Presidio Trust, the University of California, Berkeley, Vice Chancellor for Research Fund, and the Berkeley Humanities Grant.

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