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**Title: A Preliminary Investigation of Native Responses to the Russian Mercantile Colony of Ross in Northern California**

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A Preliminary Investigation of Native Responses to the Russian  
Mercantile Colony of Ross in Northern California

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## Abstract

Colony Ross served as the commercial center for the Russian-American Company in California from A.C. 1812 to 1841. The company employed a multi-ethnic workforce of Europeans, Creoles, native Alaskans, and native Californians as administrators, craftsmen, fur hunters, and agricultural laborers. An on-going archaeological investigation is examining local native responses to Russian colonial practices in northern California. We present the results of an archaeological survey of the Fort Ross State Historic Park. These data are employed to address research objectives concerning the acculturation process of native workers in a mercantile colony, and the long-term effects of multi-ethnic interaction and co-habitation as sources of cultural change.

## Introduction

Colony Ross in northern California (Fig. 1) was founded in A.C. 1812 by the Russian-American Company, a mercantile monopoly that represented Russia's interests in the lucrative north Pacific fur trade. Ross was the southernmost company office in a network of commercial outposts that spanned the Kurile Islands, the Aleutian Islands, Kodiak Island, coastal Alaska to California. It served as a staging area for sea otter and fur seal hunts along the coast of California, as an agricultural base for raising crops and livestock for local consumption and shipment to sister colonies in the north Pacific, and as a small shipyard. The Ross office administered a harbor 40 km to the south at Port Ruminantsev (Bodega Bay) and established a permanent artel or hunting camp on the Farallon Islands (Fig. 1). None of these economic ventures proved profitable, especially as sea mammal yields from California plummeted due to over-exploitation. The Ross property was sold to John Sutter in A.C. 1841.

Previous archaeological and ethnohistorical research on Colony Ross has focused almost exclusively on the Russians who resided in the Ross office. There, a stout palisade wall and two blockhouses enclosed the administrative buildings and residences of the colony's managers. In contrast, few studies have been undertaken on the sizeable non-European work force who built, maintained and supported the colony during its three decades of operation. Little is known about the pluralistic population

that lived and worked in the near hinterland of the Ross office.

Since the summer of 1988, the Archaeological Research Facility and Department of Anthropology at the University of California, Berkeley, in close collaboration with scholars from the California Department of Parks and Recreation (DPR), Sonoma State University, and Santa Rosa Junior College, have initiated an extensive survey and excavation program in the hinterland of the Ross stockade complex. This paper will present the results of two seasons of survey work in the Fort Ross State Historic Park. We begin with an historical sketch of the multi-ethnic composition of Colony Ross, introduce the research objectives of the Fort Ross Archaeological Project, and then describe the fieldwork completed to date. Finally, we present the preliminary findings of an analysis that addresses research issues concerning the acculturation process of native workers at Ross.

#### Colony Ross

Ross was one of the earliest pluralistic communities in California comprised of Europeans, native Californians, and other North American natives. A socio-economic hierarchy was employed by the Russian-American Company to define the status, wage, and job classification of its employees. While ethnicity played a significant role in defining the different "estates" (classes) of the hierarchy (see Fedorova 1975:11-17), upward mobility did occur for some individuals who were good workers or who demonstrated specific skills or leadership. The Russian

administrators classified the multi-ethnic workforce of Ross into four major classes: Russians, "Creoles," "Aleuts," and "Indians" (see Wrangell 1969:210-211; Khlebnikov 1990:188-194). The demographic structure of the socio-economic hierarchy was pyramidal in shape: relatively few Russians managed a workforce that was comprised mostly of Native Americans or peoples of mixed European/native ancestry.

1. Russians. Russian workers were divided into three groups (Fedorova 1975:15). At the apex of the hierarchy were the "honorable ones" who served as company administrators and/or military officers. "Semi-honorable ones" (men of lower rank) comprised the next step as clerks, soldiers, navigators, and laborers. The third group was "colonial citizens" made up of lower-class Russian workers who remained in Russian America after they retired from service in the company. The population of Russians permanently stationed at Ross from 1812 to 1841 varied between approximately 20 to 40 people (primarily men) or about 8 to 27% of the total settlement (Farris 1989:489; Lightfoot, Wake and Schiff 1991:10). The latter estimates are inflated since the Russian accounts often do not mention the specific size of the native Californian work force at Ross.

2) Creoles. Children produced from Russian men and native women were classified as members of a separate "estate" known as Creoles. Creoles, who were often not accepted by either the Russian or Native American communities (see Fedorova 1975:13-14), were educated by the Russian-American Company and some served in

important positions as officers on company ships, and as skilled laborers and middle level managers in the Russian colonies. Creoles composed a very small proportion of the Ross population until 1833, when ten men, 15 women and more than sixty children were counted (Lightfoot, Wake and Schiff 1991:10). In 1820, Khlebnikov (1990:63-64) noted that Creole workers were paid less than ethnic Russians for performing the same jobs at Ross.

3) Aleuts. Native Alaskans from the Aleutian Islands, Kodiak Island, and coastal Alaska were classified collectively as "Aleuts." They were stationed at Ross as specialized sea mammal hunters, employing their traditional hunting technology (baidarkas or skin kayaks, bone harpoon points, etc.) to harvest sea otter, fur seal, and sea lion pelts along the coast of California (Ogden 1941). The native hunters were either paid on commission or received daily or yearly salaries in script, a token that could be exchanged for goods in the company store (Tikhmenev 1978:144; Khlebnikov 1990:99,186). In 1822, the price per pelt paid to native hunters was one-fifth that paid to Russian promyshlenniks (hunters) (Khlebnikov 1978:51). Some native Alaskans at Ross also served as skilled laborers (coopers, tanners, blacksmiths) and were compensated accordingly (Khlebnikov 1990:64, 100). The population of native Alaskans at Ross, composed primarily of men, fluctuated between 75 and 123 people (Lightfoot, Wake and Schiff 1991:10).

4) Indians. The Russians actively recruited coast Miwok, Kashaya Pomo, and Southern Pomo peoples from nearby coastal

communities and interior villages to work at Ross. They performed a variety of tasks in the colony -- tending livestock, working in the agricultural fields to harvest wheat and barley crops, and hauling clay for brick production. Russian managers noted that a population of local natives resided near the Ross settlement throughout the year, while others were seasonal laborers used during the peak period of the agricultural season (Wrangell 1969:210-211). The population of native Californians appears to have been greatest during the 1820s and 1830s when intensified agricultural production increased the demands for labor. The number of agricultural workers increased from 100 in 1825, to about 150 in 1833, to 200 in 1835 (Gibson 1976:119). In August 1839, during the height of the harvest, LaPlace reported that "several hundred" native Californians resided in the vicinity of Ross (LaPlace 1986:65). The native Californian workers were paid primarily in kind for their services. They received food, tobacco, clothing, and other goods (Kostromitonov 1976:9; Wrangell 1969:211; Khlebnikov 1990:193-194).

#### Research Objectives of the Fort Ross Archaeological Project

Research on mercantile colonies, like Ross, is critical for understanding the character of early contacts between Euro-Americans and native peoples along the Pacific Rim of North America. Here, beyond the Franciscan missions of California, British, American, and Russian fur companies established a string of trade outposts and rendezvous points in the 18th and 19th

centuries that stretched along the coastline and penetrated deep into the interior along major rivers (see Swagerty 1988; Gibson 1988). These companies competed with each other for access to natural resources (furs) and the opportunity to exploit cheap native labor. One implication of this colonial process is that the first sustained contact of native populations in northwestern North America was with Euro-American businessmen, rather than Spanish priests or American settlers.

The purpose of the Ross study is to examine the nature, extent, and direction of cultural change among native workers in a pluralistic, hierarchically structured, mercantile colony. Current research is addressing two research objectives concerning the acculturation process of native peoples at Colony Ross.

The first research objective is to examine native responses to the mercantile activities that provided them with new sources of nonlocal goods. Beginning in the 19th century, the Russian-American Company hired independent American merchants to stock their colonies with manufactured goods and luxury foods. Many of the manufactured commodities were earmarked primarily for native consumption (Gibson 1976:172). Company records indicate a diverse range of Russian, British, American and Chinese merchandise (ceramics, textiles, metal tools, glass items, etc.) was shipped to the Ross Office for trade in California (see Khlebnikov 1990: 70-74). Since native Alaskan and native Californian workers were paid in script or in kind, they may have exchanged their labor for these goods or European foods (wheat,

beef) from the company store. Unfortunately, known ethnohistorical sources shed little light on the specific quantities and kinds of goods exchanged to Ross workers. Did local native peoples respond to the Russian mercantile system by accumulating nonlocal merchandise and foreign foods? How did these new sources of material goods affect traditional lifeways? We will address the archaeological evidence for such economic transactions at Ross.

The other research objective is to evaluate the degree to which inter-ethnic interaction and co-habitation in pluralistic mercantile colonies served as sources of cultural change. Ethnic diversity was very common in most commercial outposts along the North Pacific Rim. Fur companies commonly transferred native workers from over-hunted areas to newly established bases of operation. By the early 19th century, American, British and Russian companies were recruiting native labor from former outposts across the continent to work at new colonies. For example, Eastern Woodland Indians, primarily Iroquois, made up one-third of the British workforce in the Columbia River by 1821, and about 300 Hawaiians served as deck hands, freighters and general laborers (Swagerty 1988:365). Considerable social interaction took place between ethnic groups in mercantile colonies, and inter-ethnic marriages and co-habitation were common (Swagerty 1988:371; Prager 1985:389). In fact, while the Russian Orthodox Church opposed the "illicit" relationships, the Russian-American Company actually supported inter-ethnic

relationships as a means of increasing their labor pool of Creoles in Russian-America (Fedorova 1973:206; 1975:11).

Census figures indicate that inter-ethnic couples comprised the dominant type of two-person or larger households at Ross. Ivan Kuskov's census of 1820 lists 68 couples: one Creole family; eight native Alaskan households; five native Alaskan men co-habiting with women whose ethnicity are unknown; and 53 inter-ethnic households (Fedorova 1975:12). The socio-economic hierarchy at Ross appears to have been an important factor in structuring the composition of inter-ethnic relationships. Most women were co-habiting with men either of their own or next higher rank. Of the 42 native Californian women involved in inter-ethnic relationships, 36 were living with men of the next higher rank (native Alaskan), while five co-habited with Russian men, and one with a Creole man. Of the fourteen native Alaskan women, twelve were living with men of their own rank or the next higher rank (Creole), while two lived with Russian men. Finally, of the six Creole women listed, one lived with a man of her own rank, while four were living with men of the next higher rank (Russians). Only one woman, a Creole, was associated with a man below her rank.

The census data suggest that native Californians interacted most closely with native Alaskans, and more distantly with higher ranking Creoles and Russians. This finding is supported by linguistic information. A study of loanwords in the Kashaya Pomo language suggests that they commonly borrowed Eskimo origin words

(Kari 1983:1-3). Oswalt's (1957:245-247) analysis of Russian loanwords in the Kashaya language suggests that some words were learned from Aleutians or Eskimos who learned Russian as a second language (e.g., kalikak for book or letter).

We view the close interaction of different ethnic groups from different homelands as potentially fertile ground for the stimulation of cultural exchange of architectural styles, material goods, methods of craft production, subsistence practices, diet, dress, and ceremonial practices. Inter-ethnic transfers of information and material culture may have taken place at Ross, especially between people of adjacent socio-economic ranks, such as the native Alaskan and native Californian populations. We know that some native Californian women were involved in the production of native Alaskan material culture. In September 1818, Fedor Lutke a Russian sailor on the Kamchatka who visited Ross and nearby Port Rumiantsev recorded the following observation:

Some of the promyshlenniks (Russian workers) and Aleuts have married these Indian women. Our interpreter, whose wife is one of these people, told us that she had learned his language very quickly and well, and that she had also learned Aleut handicrafts, such as sewing the whale gut kamleika [waterproof outer garment] and other things (Lutke 1989:278).

We will address whether the inter-ethnic interaction and co-habitation that functioned within a well defined socio-economic hierarchy at Ross served as significant sources of cultural change. For example, what is the long-term impact of inter-

ethnic relationships in a mercantile colony? Is there archaeological evidence that Aleutian and Koniag Eskimo crafts and sophisticated maritime technology (baidarka construction, bone harpoon points, deep sea fishing) were adopted by local coastal California peoples?

#### Archaeological Fieldwork at Colony Ross

The study of cultural change, by its very definition, requires a broad-scale, diachronic approach. Evaluation of the consequences of the Euro-American world-system on native peoples requires that both prehistoric and historical archaeology be undertaken. Prehistoric archaeology is necessary to establish the baseline from which to measure changes taking place after European contact. As Trigger (1981:12-13) notes, without this prehistoric baseline it is impossible to determine the magnitude of change involved.

The first stage of our fieldwork, completed in the summers of 1988 and 1989, was to survey the Fort Ross State Historic Park, date sites using various chronological measures, and compare the size, layout and archaeological constituents of pre-contact and post-contact native settlements.

A pedestrian surface survey was employed to detect archaeological remains within the boundaries of the 2.8 sq km state park. We divided the park into 12 survey blocks in the hinterland of the Russian palisade complex. A 100% survey of each block was then undertaken. Survey crew members, spaced ten

meters apart, walked transects back and forth across each block. Sites were recorded on the California Archaeological Site Record Form, mapped, and surface collected. A site datum was established in a central location from which segmented collection transects, divided into one by two m units, were laid out in the four cardinal directions. Segmented collection transects usually extended from the site datum to the outer edge of the site. Some materials were point provenienced outside collection units.

We analyzed lithic materials using the artifact classes published by the California Office of Historic Preservation (Jackson et al. 1988). We identified faunal remains to the most discrete taxon and element possible, and made counts of the Minimum Number of Individuals (MNIs). The calculation of mollusk MNIs is based on diagnostic elements [mussel umbos (hinges), chiton plates, abalone whorls, snail apertures, limpet caps] (see Waselkov 1987:154-161). We recognize that faunal counts from surface assemblages are greatly influenced by taphonomic processes such as trampling and differential preservation. We view the results as tentative until more refined data from subsurface deposits can be obtained.

Survey sites are dated primarily by hydration band measurements of obsidian artifacts that are ubiquitous on most Native American sites. Other chronological information is employed as well, including historical maps and the presence of temporally sensitive projectile points and historic artifacts. Considerable research has been undertaken by the Obsidian

Hydration Laboratory, Sonoma State University on the hydration rates of four local obsidian sources (Fig. 1): Annadel near Santa Rosa, Borax Lake and Mt. Konocti near Clear Lake, and Glass Mountain in Napa Valley (Fredrickson 1987, 1989; Tremaine and Fredrickson 1988; Tremaine 1989; Origer 1987; Origer and Wickstrom 1982). We used Tremaine's (1989:70) comparison constants derived from accelerated obsidian hydration experiments to compare the hydration band measurements of obsidians from the four sources. Hydration band measurements were calibrated to the hydration rate of the Annadel flow by multiplying Napa Valley and Mt. Konocti readings by .77, and Borax Lake measurements by .62. Then, using Origer's (1987:55-56) regression equation for Annadel obsidian based on associated radiocarbon dates, the obsidian readings are ordinally placed into temporal periods as defined by Fredrickson (1974:49, 1984:485)(see Table 1). A total of 329 obsidian artifacts from Ross sites have been analyzed by the Obsidian Hydration Laboratory, Sonoma State University.

### Survey Results

Thirty sites were recorded or relocated (from previous surveys) in the Fort Ross State Historic Park (Fig. 2). The following three sites are defined as Euro-American. The entire stockade complex was previously assigned the California trinomial number, CA-SON-190. The second site, CA-SON-1891H, is the foundation of a potato warehouse that was constructed south of the stockade prior to A.C. 1859. The third, CA-SON-1446H, is

the remains of a brick foundation or chimney near the old Russian Orchard. The site may represent the location of a four-room house and adjoining kitchen built by the Russians (see Farris 1984).

The remaining 27 sites appear to have been used primarily by native Alaskans and/or native Californians. Chronological data are not available for four of these sites. The latter include two petroglyphs (cupule rocks) (CA-SON-1879, 1887), a small chert lithic scatter (CA-SON-1451), and a small shell-deposit (CA-SON-1882). The remaining sites are outlined in the diachronic summary below. For a more detailed description of the sites, the obsidian hydration readings, and the associated surface assemblages, the reader should refer to Lightfoot, Wake and Schiff (1991).

### Early Prehistory

Lithic scatters on the coastal terrace are the earliest dated remains in the Ross hinterland. These scatters (CA-SON-228, CA-SON-1453, CA-SON-1454/H) tend to be broadly dispersed, low-density manifestations that contain a low diversity of lithic artifact classes consisting of flakes (some with edge-modified surfaces), cores, shatter and a few biface fragments. No sites of Paleo-Indian age have yet been recorded. Two obsidian artifacts (hydration readings of 6.7-6.2 microns) are assigned to the Lower Archaic Period (6000 B.C.-3000 B.C.), although most date to the Upper Archaic (1000 B.C.-A.C. 500) and early Lower

Emergent (A.C. 500-A.C. 1000) Periods. The long use-durations of the sites, beginning as early as 8000 years ago, coincide with significant changes taking place in the coastal morphology of the Ross area due to post-Pleistocene sea level rise, coastal erosion and tectonic movements. We recognize that geomorphological changes of the coastal landscape may have destroyed early coastal sites, and that what we see today is probably a biased picture of early coastal settlement patterns.

We believe that much of the coastal terrace can be characterized as a non-site manifestation (Thomas 1975). This early manifestation appears to underlie many of the later settlements associated with Colony Ross, including the stockade complex (CA-SON-190). The bluff upon which the Ross stockade was built has been used sporadically by native peoples since the Middle Archaic Period. Non-site manifestations are often produced by foraging and hunting ventures over an extensive resource area in which tools are lost and/or discarded. Simons, Layton, and Knudson (1985:266) suggest the earliest use of the coastal terrace in northern California may have involved the hunting of terrestrial mammals, such as Roosevelt elk. The early lithic scatters at Ross may have resulted from such hunts and related lithic maintenance activities, as well as the exploitation of other available plant and animal resources.

#### Late Prehistory

Current chronological evidence suggests that the intensive

occupation of the Ross hinterland did not take place until 1000 years ago. Twelve sites appear to have been occupied sometime from the middle Lower Emergent (A.C. 1000-A.C. 1500) to the Upper Emergent (A.C. 1500- A.C. 1812) Periods. Sites are characterized by obsidian hydration readings that range from 2.2 to 0.9 microns. One of the lithic scatters described above, CA-SON-1454/H, continued to be used through the early Upper Emergent Period as well. It was during the Upper Emergent or Protohistoric Period that Spanish (Cabrillo in A.C. 1542) and English (Drake in A.C. 1579) explorers first made contact with native populations in the greater San Francisco Bay area.

Elsewhere (Lightfoot in press; Lightfoot, Wake and Schiff 1991) we have suggested that the settlement pattern supports some aspects of the central-based village model initially proposed by Stewart (1943). Stewart undertook both ethnographic research among the Kashaya Pomo and archaeological reconnaissance in the broader Ross region in 1935. He recorded a number of large sites that contained one or more "house" features (surface depressions measuring several meters in diameter), diverse artifact inventories, and rich midden deposits containing shellfish and other faunal remains. Stewart (1943:50), in consultation with Kashaya elders, interpreted these large sites as relatively permanent villages that were established on the first ridge system (about 1.5 to 5 km) east of the coast. He argued that these villages were optimally located in a central position for exploiting coastal resources, as well as riverine

(South Fork of the Gualala River) and valley floors located less than 5 km to the east of the first ridge.

In our survey of the Fort Ross State Historic Park, we identified two sites (CA-SON-1883, 1884) that correspond to the ridge top "villages" described by Stewart. The two sites are large (8247 and 3044 sq m, respectively), contain a diverse range of artifact types and mollusk species, and are spatially organized into discrete midden deposits and broad lithic scatters. Historic logging activities have impacted the surfaces of both sites, and no surface features were recorded. However, fired daub collected at CA-SON-1883 suggests the presence of subterranean architectural features. Both sites are located on the upper ridge slope at elevations of 207 and 268 meters (respectively) above sea level, near freshwater springs, with spectacular views of the coast. The sites are situated above the cool fog and wind belt that marks the coastal terrace microclimate throughout most of the year. CA-SON-1883 may be somewhat earlier in age, dating from the end of the Lower Emergent through the Upper Emergent Periods (one standard deviation of the 16 obsidian hydration readings is 2.0-1.0 microns). The earliest occupation of CA-SON-1884 may overlap the latest occupation of the other site, and then extend to the beginning of the Historic Period. However, the chronology is tentative since it is based on only three obsidian hydration readings (one standard deviation is 1.2-0.8 microns).

The other sites that appear to date primarily to the Lower

Emergent and Upper Emergent Periods are located along the lower slope of the first ridge and along the coastal terrace (Fig. 2).

They include a small lithic scatter (CA-SON-1894), and nine small shell-bearing deposits (CA-SON-1455, 1881, 1885, 1886/H, 1888 1889, 1890, 1892, 1895/H). Obsidian hydration readings from these sites range from 2.8 to 0.9 microns. The single exception is CA-SON-1455 which continued to be used into the Historic Period (one standard deviation is 1.7-0.7 microns, presence of a white glass bead). Two other sites, CA-SON-1886/H and 1895/H may be characterized by extensive use durations that extend into historic times given the presence of European artifacts.

Analyses of the assemblages from the shell-bearing deposits suggests that they were used primarily as seafood processing stations where rocky reef and inter-tidal mollusks (limpets, turban snails, barnacles, chitons and abalone), along with other coastal resources, were collected and processed (Farris 1986, Lightfoot, Wake and Schiff 1991). Some of the sites (CA-SON-1886/H, 1889, 1892, 1895/H) may also have served as small residential bases.

We interpret the Lower Emergent and Upper Emergent Period settlement patterns as that of village communities or small tribelets distributed along the rocky coastline and mountainous interior of the Ross region. Principal residential bases were established along the ridge system overlooking the ocean. The spatial pattern of the "village" sites located by Stewart and others indicate that they are distributed relatively evenly along

the ridge, about .5 to 2.5 km apart (Lightfoot in press). The village communities may have been organized into east/west slices that included sections of the coast, the first ridge, the South Fork of the Gualala River, and interior mountain habitats (Stewart 1943:55). In this scenario, the shell-bearing deposits would be task specific sites associated with the residential bases. Future work will evaluate this model, and provide more specific information on the seasonality, use life, and functions of the Ross sites.

#### Historic Period

Eight of the 27 native sites have components that date primarily to the Russian occupation of Ross (1812-1841) or to the later Mexican/American ranches (1841-1868) that continued to employ the Kashaya Pomo as agricultural laborers. These sites include CA-SON-174, 175, 670, 1878, 1880, 1896, 1897/H and 1898/H. Obsidian hydration readings are less than 0.9 microns, and/or glass beads and intentionally "chipped" glass and European or Chinese ceramic sherds are present.

The results of archaeological field work and archival research to date suggest that the spatial structure of Colony Ross was organized into four discrete ethnic residential compounds or neighborhoods (Fig. 3).

- 1) The Stockade Complex (CA-SON-190). The nucleus of the Ross community consisted of the palisade that enclosed various administrative and residential structures. It was here that the

"honorary" Russian administrators and military officers lived and worked, along with some unmarried Russian men. The buildings reflected the elite status of the residents, containing accouterments such as window glass and other exotic goods not found in the rest of California (Bancroft 1886:630; Duhaut-Cilly 1946:10). This area has received considerable archaeological attention since the early 1950s, and good areal samples have been excavated from the official's barracks, the chief manager's living quarters, the fur warehouse, the kitchen, and the chapel (see Farris 1989:490-492, O'Connor 1984:11-13 for summaries).

2) The Russian Village (CA-SON-174). This neighborhood, composed of residential structures, gardens, and orchards, in the architectural style of Siberian villages, is depicted in period illustrations and by eyewitness observations (Duhaut-Cilly 1946:4; Wrangell 1969:207; Blomkvist 1972:105-107). We believe that these were the residences of "semi-honorable" Russian employees, "colonial citizens," and Creoles. Inter-ethnic households were probably common. Little archaeological work has taken place here. One site, CA-SON-174, has been mapped and surface collected, and subsurface testing took place to mitigate the effects of a leach line. The material remains recovered, including glass beads, glass projectile points, obsidian and chert flakes, and an 1854 U.S. dime with a hole drilled in one edge, appear to relate to a later Indian village that dates to the 1840s or 1850s (Farris 1986:20-21, personal communication).

3) Native Alaskan Neighborhood (CA-SON-1897/H, 1898/H).

Prior to our fieldwork in 1988 and 1989, no archaeological work had specifically focused on the native Alaskan population at Ross. We recorded two native Alaskan sites, CA-SON-1897/H (the Native Alaskan Village Site) and CA-SON-1898/H (the Fort Ross Beach Site).

CA-SON-1897/H is located about 30 meters south of the southern portal of the stockade complex. It is identified on the 1817 Russian map of Ross as the location of "14 Aleut Yurts made of planks" (Fedorova 1973:359). Some accounts suggest that Russian-style plank houses were constructed out of redwood (Blomkvist 1972:107), although other observations suggest that a few traditional semi-subterranean barabaras (sod houses) or "flattened cabins of 80 Kodiaks" were also built (Tikhmenev 1978:134; Duhaut-Cilly 1946:10). We suspect that inter-ethnic households of native Alaskan men and Kashaya Pomo/Coast Miwok women resided in some of the structures. It is also possible that other kin relations of the native California women also resided here. In 1820, Khlebnikov (1990:102) observed that many Indians lived under the same roof with native Alaskans in very crowded conditions. A barrack was built near the "Aleuts' huts" that could accommodate 50 native Californians during the winter months.

Surface collection of CA-SON-1897/H yielded glass beads, ceramics, projectile points, flakes, and worked bone artifacts over a 200 by 40 meter area. Fourteen shallow surface depressions, ranging in size from 3 to 6 meters in diameter, were

also mapped.

CA-SON-1898/H extends along a 30 meter long cliff face directly below the Native Alaskan Village site. Extensive subsurface testing of the erosional face in the 1988 and 1989 field seasons produced a diverse range of faunal remains, including domesticated mammals (horse, cow, pig, sheep), terrestrial mammals (deer, rabbit), sea mammals (harbor seal, sea otter, sea lion, whale), fishes and birds, as well as abalone, mussel, limpet, chiton and turban snail shells. A number of historic ceramics, lithics, glass beads, glass beverage container fragments, bone artifacts and debitage from bone tool production have also been recovered. Two bone harpoon points, several fragments of bone harpoon points, and one part of a composite bone fish hook are diagnostic of Aleut or Koniag Eskimo material culture. Our investigation to date suggests that the site was formed primarily from refuse discarded over the cliff from the Native Alaskan Village, as well as from some activities that took place in situ at the base of the cliff. A full report of our ongoing investigation of the native Alaskan sites is forthcoming (Lightfoot and Wake in prep.).

4) Native Californian Neighborhood (CA-SON-175, 670, 1878, 1880, 1896). The majority of the historic native Californian sites are found to the north and northeast of the stockade complex within a 1 to 2 km radius. These are interpreted as residential bases where the Indian workers lived at Colony Ross at least during the agricultural growing season. Eyewitness

accounts contrast the "cone shaped huts" of these residences to the "pretty little houses" of the Russian village, or the "flattened cabins" of the native Alaskan neighborhood (Duhaut-Cilly 1946:10-11). Some sites, such as CA-SON-175, may also postdate the Russian occupation. Glenn Farris (1986:16) notes that this site is marked as an Indian Rancheria in the 1859 Plat map of the Muniz Rancho.

#### Native Responses to Colony Ross

A comparison of the late prehistoric settlement pattern with the historic native Californian neighborhood indicates the Russians were successful in recruiting local native peoples into the greater Ross community. While the Russians appear to have relied primarily upon economic inducements (food and goods) to recruit local native laborers, they occasionally employed coercive tactics in rounding up natives from outlying areas (70 km distance) during the agricultural season (see Wrangell 1969:210-211). Interpretations of the survey data suggest that some ridge top "villages," such as CA-SON-1883 and 1884, were abandoned as people aggregated into residential units north of the Ross stockade. However, there are some indications that entire village units may not have been brought into the Ross community, but rather that individual households and small groups may have responded differentially to Russian recruitment efforts.

Our current interpretation is that the historic native neighborhood north of the stockade was composed of small,

multiple residential compounds. Compared to the late prehistoric ridge top sites described above, the historic sites we recorded in the summers of 1988 and 1989 tend to be much smaller: CA-SON-670 (2747 sq m), CA-SON-1878 (2107 sq m), CA-SON-1896 (400 sq m), CA-SON-174 (346 sq m), and CA-SON-1895/H (203 sq m). (The size of CA-SON-174 is probably underestimated since it does not include the leach line area excavated by Glenn Farris). The number of households in these compounds probably varied. Some, such as CA-SON-175, which we have not yet mapped or re-recorded, may have consisted of ten to 15 households, a figure based on the number of "housepits" that Gifford (1967:9) counted in 1950. Others, such as CA-SON-1896 that was recently excavated by DPR archaeologists, may have been comprised of only one or two households (Parkman 1990).

A comparison of the archaeological assemblages from late prehistoric ridge sites with the historic compounds in the native Californian neighborhood indicates both continuity and change in material culture. This interpretation is based on a comparison of the two historic sites (CA-SON-1878, 1880) with the largest artifact assemblages to the two late prehistoric sites (CA-SON-1883, 1884). Table 2 lists the percentage of lithic artifact classes defined for each site. The density of lithics (number collected per sq m) is similar for all four sites (1878=.20, 1880=.65, 1883=.46, 1884=.67). Most lithic classes, such as edge-modified flakes, interior flakes, cores, biface thinning flakes, bifaces, primary cortical flakes, secondary cortical

flakes, and shatter, are well represented on both late prehistoric and historic sites. The major exception is the greater percentage of fire-cracked/ground stone fragments found on late prehistoric sites. Most of the pieces appear to have been fired at high temperatures and then quickly cooled (probably in water), producing fire-cracked rocks. We suspect that some may be broken fragments of handstones or millingstones that were recycled as cooking stones.

It appears that a similar range of activities involving lithic materials was taking place on late prehistoric and historic sites. There is good evidence that lithic production at residential sites continued in historic times. Continuity existed in the traditional methods of plant food processing involving handstones and millingstones. Of course, the plant foods being processed may have changed. The cooking method involving the emersion of hot rocks into water (presumably in water tight baskets) continued into historic times, although the number of fire-cracked rocks decreased significantly. This finding may indicate that other methods of cooking stews and gruels (traditional foods of the coastal Pomo) were being adopted, such as boiling foods directly over the fire using metal cooking wares introduced by the Russians. It may also indicate that other kinds of foods were being consumed that were not cooked as stews.

Few identifiable faunal remains were recovered at either CA-SON-1878 or CA-SON-1884. For CA-SON-1880 (historic) and CA-

SON-1883 (late prehistoric), the density of mollusk MNIs (MNI counts per sq m) is greater at the former (.65) than the latter (.02). The percentage of mollusk MNIs calculated for the two sites is listed in Table 3. While almost half the mollusk specimens are black turban snails at CA-SON-1880, and limpets dominate the mollusk assemblage at CA-SON-1883, a wide range of inter-tidal mollusks are represented at both sites (abalone, barnacle, chiton, mussels, and hooked slipper shells). The spatial pattern of these coastal sites suggests that some changes may have been taking place in the exploitation of mollusk resources. Only three (CA-SON-1455, 1886/H, 1895/H) of the nine seafood processing locations utilized in late prehistoric times exhibit evidence of use after the colonization of Ross (Fig. 3). It is possible that population aggregation in residential compounds near the ocean may have altered late prehistoric strategies for exploiting marine resources, such as mollusks. Instead of processing seafoods first at coastal locations prior to their transportation to ridge top villages, marine foods may have been carried directly to the nearby native compounds for processing and consumption. It is also possible that the paucity of historic seafood processing sites may reflect a decline in use of these resources as new sources of food were integrated into local native workers' diets.

Identifiable animal bones from CA-SON-1880 include one Cuneiform, one mandible, and one astragalus of mule deer, and the second lower premolar of elk. The surface collection also

yielded six long bone fragments of large mammals, two vertebra fragments of large mammals, one unidentified element of a large mammal, and a scapula fragment of a medium-sized animal. None of the skeletal elements exhibit evidence of cut marks, and most exhibit weathering patterns commonly found on surface collected faunal remains. Only one long bone fragment of a large mammal was recovered from the surface collection of CA-SON-1883.

European/Asian material culture recovered at CA-SON-1878 includes sherds from three moldblown glass containers, two of which exhibit evidence of retouch and use, and ceramic sherds from a porcelain bowl, a Chinese porcellaneous stoneware bowl, and a creamware hollow ware. European/Asian materials from CA-SON-1880 include an opaque white glass bead, sherds from two olive-green glass alcoholic beverage containers, one of which exhibits evidence of retouch and use, and sherds from a porcelain ware and a white-bodied earthenware cup or bowl.

#### Native Acculturation at Colony Ross

We close this paper with a preliminary evaluation of the two research objectives concerning native access to nonlocal goods and inter-ethnic interaction and co-habitation. Current survey data provide little evidence that the native Californians were amassing large quantities of nonlocal goods in the residential compounds. Sherds of a few glass and ceramic vessels were recovered from the surface of these sites. It is not clear whether whole vessels were being used as containers in the native residences, or whether glass and ceramic pieces were being

scavanged from Ross for use as new raw materials in the production of traditional native tools. The worked glass artifacts tentatively support the latter interpretation, although a full evaluation awaits excavation data. Archaeological evidence for evaluating the degree to which natives consumed European foods received as payment for work is rather ambiguous given the very limited faunal data from the surface survey. However, the decline in the number of cooking stones, and the apparent abandonment of coastal processing sites indicate that some changes in the processing, cooking and consumption of foods may have been taking place. Again, a full evaluation of this question will await more detailed excavation.

The survey results yielded little evidence of inter-ethnic transfers of material culture to native Californian workers in the residential compounds. Although some native Californian women were taught native Alaskan crafts, no archaeological evidence of definitively native Alaskan material culture has yet been observed from any sites in the native Californian neighborhood. Furthermore, no evidence has yet been documented to suggest that the sophisticated native Alaskan technology (baidarkas, harpoon darts, composite fish hooks) for exploiting open water maritime resources was adopted by local Californians. Ethnographic studies undertaken in the late 19th and early 20th centuries argue that the coastal Pomo never used any kind of ocean-going vessels, and that their maritime subsistence practices involving fishing from nearshore rocks and the

collection of mollusks and plant foods from inter-tidal zones, remained relatively unchanged through much of the 19th and early 20th centuries (Loeb 1926:163-176; Gifford 1967:16,19; Kniffen 1939:383-387).

In summary, an analysis of the surface assemblages of Ross sites does not suggest that the native Californian workers who lived north of the stockade complex were implementing strategies that involved the acquisition of European/Asian goods and the adoption of native Alaskan material culture. The surface assemblages from late prehistoric and historic residential sites are very comparable, containing similar kinds of lithic artifacts and faunal remains. For example, similar kinds of activities involving the production, use and discard of lithics continued after the colonization of Ross. While some European objects are found on historic native sites, they appear to have been employed primarily as raw materials, such as glass, for the production of traditional native tools.

Eyewitness accounts and later ethnographies of the Kashaya Pomo tend to support the archaeological findings. Kostromitonov (1974), LaPlace (1986), and other Russian-American Company employees and visitors to Ross were amazed at how conservative the native Californian workers were in adopting European customs. Kostromitonov, a company manager at Ross in the 1830s, succinctly summarizes the ambivalence the local natives exhibited towards European technology:

"Their inattention and indifference to everything goes to extremes. They look at our watches, burning-glasses, and mirrors, or listen to our music without attention and do not ask to know how and why all this is produced. Only such objects as might frighten them make some impression, but that probably more because of their timidity than thirst for knowledge" (Kostromitonov 1974:13, translated by Fred Stross and Robert Heizer).

The Europeans were also amazed at the fluid movement of European/Asian goods within the native Californian population. Almost every European who made observations about the native California workers described their propensity to gamble away the food, tobacco, and merchandise exchanged to them by the Russians (see Lutke 1989:278; Golovnin 1979:168-69; Kotzebue 1830:126-27; Wrangell 1974:3; Kostromitonov 1974:12; LaPlace 1986:70-71). While some native workers may have been accumulating a surplus of goods that resulted from these games, they were not identified by European observers. For example, LaPlace in 1839 made the following observation at Ross:

"So that this description would have some interest for the reader, it would be necessary for me to render all the vivid and lively (sudden) emotions which, on the mobile features of these children of nature; the cries, the gesticulations, the laughter of those who won; the cold impassive air of those who, losing often in a single stroke the fruit of

many months of work, became again poorer than they had been before. In every case they suffer the bad fortune with a philosophy, or to be more accurate, a dignified indifference like the ancient stoics; and this savage who came to the game bedecked with glass trinkets, or other ornaments, from head to foot, who had found means in order to make himself more attractive to cover himself with four or five shirts, as well as pants and vests superimposed one over the other, returned to his hut gay as a finch and naked as a worm" (LaPlace 1986:70-71, translated by Glenn Farris).

In 1839, Rotchev (the last manager of the Ross office) observed: "Hardly have they obtained it, than they cover themselves with necklaces, pants, shirts, vests, and consider themselves in this ridiculous attire as being very attractive, the happiest people on earth. But the next day one encounters them as bereft of the ornaments and clothing as they were the day before. It is even common that the tribe to which they belong, and to which each member has been not generously paid, are found, when they return to Ross toward the end of the bad season, as poor, as denuded of everything with which they were well provided a few months before" (quoted in LaPlace 1974:69, translated by Glenn Farris).

LaPlace, in his conversation with Rotchev, continued to muse about this problem:

"What has become of these often considerable quantities of varied merchandise which they had in their possession? We don't know yet. Were they sold, given to their compatriots who live in the forest all year? This is not likely. One is struck with the realization that giving in to the passion for play, which among these miserable savages is pushed to a point unknown, perhaps, to the peoples of the old world, they have seen their riches pass to the hands of players more clever or more lucky than they" (LaPlace 1974:69-70, translated by Glenn Farris).

#### Conclusion

The interpretation of survey data from the Fort Ross State Historic Park suggests that the population aggregation of local native Californians took place in the nearby hinterland of the stockade complex sometime after A.C. 1812. It appears that the neighborhood was composed of small, multiple, residential compounds. This finding may suggest that the decision-making process concerning participation in Ross mercantile activities took place at the level of individual families and small groups of native Californians. It does not appear that entire village units moved intact to the Russian colony. Some local native peoples continued to reside in the outlying hinterland beyond the

residential compounds of the native workers. However, we remain uncertain as to how many of these outlying groups were forcibly rounded up by the Russians and coerced to work during the agricultural season.

A socio-economic hierarchy based largely on ethnicity was employed by the Russians to integrate the native workers into the Ross community. We argue that inter-ethnic interaction and co-habitation tended to take place between peoples of the same or adjacent classes. Our analysis of the survey data indicate that the acculturation of native Californian workers who interacted primarily with native Alaskan hunters was relatively modest. Surface assemblages of late prehistoric and historic residential sites are quite comparable, containing similar kinds of lithic artifacts and faunal remains. While some changes in food processing and diet were probably taking place, many aspects of native Californian material culture appear to have been quite resilient and conservative to change (see also Lightfoot, Wake, and Schiff 1991). There is little archaeological evidence that native Californians were attempting to accumulate European/Asian goods in their residential compounds or were adopting native Alaskan material culture. It appears that inter-ethnic interaction and co-habitation with native Alaskans, and to a lesser extent with Creoles and Russians, did not have much of a long-term impact on Kashaya Pomo material culture.

We recognize that the above findings are quite tentative given the limitations of using only survey data to evaluate the

above stated research objectives. The kinds of material remains that can be recovered in surface contexts, and hence subjected to a diverse range of taphonomic processes, are highly biased. We view the results of our 1988 and 1989 survey work as a first step in our study of Colony Ross. Future fieldwork will involve an excavation program specifically designed to address the acculturation process of native workers at Ross. We suspect that the inter-ethnic households of the Native Alaskan Village site (CA-SON-1897/H) may be characterized by very different rates of acculturation than native Californian households who resided north of the stockade complex. We propose to evaluate this question at the household scale of analysis. Subsurface testing is now being undertaken to locate and evaluate the context of house structures in the native Alaskan and native Californian neighborhood. A sample of house structures will then be selected for full scale, areal excavation.

Future fieldwork will also examine the broader hinterland of Ross. Survey will take place in a new 8.7 sq km acquisition to the Fort Ross State Historic Park that contains several of Steward's (1943) ridge top "villages." The expanded survey universe will allow us to evaluate whether additional native residential compounds are distributed to the north of the stockade, as well as to document other kinds of prehistoric and historic sites in the outlying hinterland of Ross.

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## Bibliography

Bancroft, Hubert Howe

- 1886 The Works of Hubert Howe Bancroft, History of California, Vol. 19. San Francisco: The History Company.

Blomkvist, E.E.

- 1972 "A Russian Scientific Expedition to California and Alaska, 1839-1849," Oregon Historical Quarterly June, 1972, pp. 101-170. Article translated by Basil Dmytryshyn and E.A.P. Crownhart-Vaughan.

Duhaut-Cilly, Auguste Bernard

- 1946 An Episode from the Narrative of Auguste Bernard Duhaut-Cilly. Translation of 1828 account by Charles F. Carter. Bohemian Grove, California: Silverado Press.

Farris, Glenn J.

- 1984 Descriptions of the Russian Orchard at Fort Ross from the Spanish and French Language Inventories, report of file, Cultural Heritage Section, Archaeology Laboratory, California Department of Parks and Recreation, Sacramento, California.
- 1986 Cultural Resource Survey at the Fort Ross Campground, Sonoma County, California, report on file, Cultural Heritage Section, Archaeology Laboratory, California Department of Parks and Recreation,

Sacramento, California.

- 1989 "The Russian Imprint on the Colonization of California," in David Hurst Thomas, ed., Columbian Consequences, Vol. 1. Washington D.C.: Smithsonian Institution Press, 481-497.

Fedorova, Svetlana G.

- 1973 The Russian Population in Alaska and California Late 18th Century - 1867. Translated and edited by Richard A. Pierce and Alton S. Donnelly. Kingston, Ontario: Limestone Press.
- 1975 Ethnic Processes in Russian America. Occasional Papers 1. Anchorage: Anchorage Historical and Fine Arts Museum.

Fredrickson, David

- 1974 "Cultural Diversity in Early Central California: A View From the North Coast Ranges," Journal of California Anthropology 1:41-54.
- 1984 "The North Coastal Region," in Michael Moratto, California Archaeology. Orlando: Academic Press, 471-528.
- 1987 "The Use of Borax Lake Obsidian Through Time and Space," paper presented at the Annual Meeting of the Society for California Archaeology, Fresno, California.
- 1989 "Spatial and Temporal Patterning of Obsidian Materials in the Gevers Region," in Richard Hughes, ed, Current

Directions in California Obsidian Studies.  
Contributions of the University of California  
Archaeological Research Facility 48. Berkeley:  
University of California, 95-110.

Gibson, James R.

1976 Imperial Russia in Frontier America: The Changing  
Geography of Supply of Russian America, 1784-1867.  
New York: Oxford University Press.

1988 "The Maritime Trade of the North Pacific Coast," in  
Wilcomb E. Washburn, ed., Handbook of North American  
Indians, History of Indian-White Relations, Vol. 4,  
Washington D.C.: Smithsonian Institution, 375-390.

Gifford, E.W.

1967 "Ethnographic Notes on the Southwestern Pomo,"  
Anthropological Records 25:1-48.

Golovnin, Vasilii M.

1979 Around the World on the Kamchatka 1817-1819.  
Translation and editing of the original 1822 edition  
(Part 1) by Ella L. Wiswell. Honolulu: The Hawaiian  
Historical Society and The University Press of Hawaii.

Jackson, Robert, Michael Boynton, William Olsen and R. Weaver

1988 California Archaeological Resource Identification  
and Data Acquisition Program: Sparse Lithic Scatters.  
Sacramento: Office of Historic Preservation.

Kari, James

- 1983 "Kalifornsky, the Californian from Cook Inlet,"  
Alaska in Perspective 5:1-11.

Khlebnikov, Kyrill

- 1976 Colonial Russian America: Kyrill T. Khlebnikov's Reports, 1817-1832. Translation and editing of original 1861 publication by Basil Dmytryshyn and E.A.P. Crownhart-Vaughan. Portland: Oregon Historical Society.
- 1990 The Khlebnikov Archive, Unpublished Journal (1800-1837) and Travel Notes (1820, 1822, and 1824). Translation and editing of original notes by Leonid Shur and John Bisk. Fairbanks: University of Alaska Press.

Kniffen, Fred

- 1939 Pomo Geography. University of California Publications in American Archaeology and Ethnology. 36 (no. 6). Berkeley: University of California.

Kostromitonov, P.

- 1974 "Notes on the Indians in Upper California," in Fred Stross and Robert Heizer, translators and editors, Ethnographic Observations on the Coast Miwok and Pomo by Contre-Admiral F.P. Von Wrangell and P.Kostromitonov of the Russian Colony Ross, 1839. Berkeley: Archaeological Research Facility, University of California, 7-18.

Kotzebue, Otto Von

1830 A New Voyage Round the World, in the Years 1823, 24, 25, and 26. Volumes 1 and 2. London: Henry Colburn and Richard Bentley.

LaPlace, Cyrille

1986 "Description of a Visit to an Indian Village Adjacent to Fort Ross by Cyrille LaPlace, 1839," translation and editing of 1854 publication by Glenn Farris, Appendix B in Cultural Resource Survey at the Fort Ross Campground, Sonoma County, California. Report on file, Cultural Heritage Section, Archaeology Laboratory, California Department of Parks and Recreation, Sacramento, California, 65-80.

Lightfoot, Kent G.

in press "Coastal Hunter-Gatherer Settlement Systems in the Southern North Coast Ranges, California," in Terry Jones, ed., Archaeological Currents Along the California Coast. Center for Archaeological Research at Davis 10. Davis: University of California.

Lightfoot, Kent G., Thomas A. Wake and Ann M. Schiff

1991 Introduction to the Fort Ross Archaeological Project. The Archaeology and Ethnohistory of Fort Ross, California, Vol. 1. Contributions of the University of California Archaeological Research Facility 50. Berkeley: University of California.

Lightfoot, Kent G. and Thomas A. Wake (editors)

in prep. Native Alaskan Hunters at Colony Ross.

The Archaeology and Ethnohistory of Fort Ross,  
California, Vol. 2. Contributions of the University  
of California Archaeological Research Facility 53.  
Berkeley: University of California.

Lutke, Fedor P.

1989 "September 4-28, 1818. From the Diary of Fedor P.  
Lutke during his Circumnavigation Aboard the Sloop  
Kamchatka, 1817-1819: Observations on California," in  
Basil Dmytryshyn, E.A.P. Crownhart-Vaughan, and T.  
Vaughan, ed., The Russian American Colonies Three  
Centuries of Russian Eastward Expansion 1798-1867,  
Vol. 3, A Documentary Record. Portland: Oregon  
Historical Society Press, 257-285.

Loeb, Edwin

1926 Pomo Folkways. University of California Publications  
in American Archaeology and Ethnology 19 (no. 2).  
Berkeley: University of California.

O'Connor, Denise M.

1984 "Trade and Tableware: A Historical and Distributional  
Analysis of the Ceramics from Fort Ross, California,"  
unpublished M.A. thesis, California State University,  
Sacramento.

Ogden, Adele

- 1941 The California Sea Otter Trade, 1784-1848.  
Berkeley: University of California Press.

Oswalt, Robert L.

- 1957 "Russian Loanwords in Southwestern Pomo,"  
International Journal of American Linguistics 23:245-  
247.

Origer, Thomas M.

- 1987 Temporal Contral in the Southern North Coastal Ranges  
of California: The Application of Obsidian Hydration  
Analysis. Papers in Northern California Anthropology  
1. Berkeley: Northern California Anthropological  
Group.

Origer, Thomas M. and Brian Wickstrom

- 1982 "The Use of Hydration Measurements to Date Obsidian  
Materials from Sonoma County, California," Journal of  
California and Great Basin Anthropology 4:123-131.

Parkman, E. Breck

- 1990 Excavation of CA-SON-1896. Report on file, Northern  
Region Headquarters, California Department of Parks  
and Recreation, Santa Rosa, California.

Prager, Gabriella

- 1985 "A Comparison of Social Structure in North West  
Company and the Hudson's Bay Company," in Marc  
Thompson, M.T. Garcia, and F.J. Kense, ed., Status,  
Structure and Stratification. Alberta: University of

Calgary, 387-392.

Simons, Dwight D., Thomas N. Layton, and Ruthann Knudson

- 1985 "A Fluted Point from the Mendocino County Coast, California," Journal of California and Great Basin Anthropology 7:260-269.

Stewart, Omer

- 1943 Notes on Pomo Ethnogeography. University of California Publications in American Archaeology and Ethnology 40 (no. 2). Berkeley: University of California.

Swagerty, William R.

- 1988 "Indian Trade in Trans-Mississippi West to 1870," in Wilcomb E. Washburn, ed., Handbook of North American Indians History of Indian-White Relations, Vol. 4. Washington D.C.: Smithsonian Institution, 351-374.

Thomas, David Hurst

- 1975 "Nonsite Sampling in Archaeology: Up the Creek Without a Site?" in James Mueller, ed., Sampling in Archaeology. Tucson: University of Arizona Press, 61-81.

Tikhmenev, P.A.

- 1978 A History of the Russian-American Company. Translation and editing of original 1861-63 publications by Richard A. Pierce and A. S. Donnelly. Seattle: University of Washington Press.

Tremaine, Kim

- 1989 "Obsidian as a Time Keeper: An Investigation in Absolute and Relative Dating," unpublished M.A. thesis, Sonoma State University, Rohnert Park, California.

Tremaine, Kim and David Fredrickson

- 1988 "Induced Obsidian Hydration Experiments: An Investigation in Relative Dating," Materials Research Society Symposium Proceedings 123:271-278.

Trigger, Bruce G.

- 1981 "Archaeology and the Ethnographic Present," Anthropologica 23:3-17.

Waselkov, Gregory A.

- 1987 "Shellfish Gathering and Shell Midden Archaeology," in Michael Schiffer, ed., Advances in Archaeological Method and Theory, Vol. 10. Orlando: Academic Press, 93-210.

Wrangell, F. P. Von

- 1969 "Russia in California, 1833, Report of Governor Wrangel," Pacific Northwest Quarterly 60:205-215. Translation and editing of original 1833 report by James R. Gibson.
- 1974 "Some Remarks on the Savages on the Northwest Coast of America. The Indians in Upper California," in Fred Stross and Robert Heizer, translators and editors, Ethnographic Observations on

the Coast Miwok and Pomo by Contre-Admiral F. P. Von  
Wrangell and P. Kostromitonov of the Russian Colony  
Ross, 1839. Berkeley: Archaeological Research  
Facility, University of California, 1-6.

### Figure Captions

Figure 1. Colony Ross and Local Obsidian Sources in Northern California.

Figure 2. Sites in the Fort Ross State Historic Park.

Figure 3. The Spatial Organization of Residential Neighborhoods at Colony Ross.

Table 1. The Ross Chronology

Period	Date	Annadel Hydration Readings (in microns)
Paleo-Indian	10,000 B.C.-6,000 B.C.	8.1-6.7
Lower Archaic	6,000 B.C.-3,000 B.C.	6.6-5.3
Middle Archaic	3,000 B.C.-1,000 B.C.	5.2-4.1
Upper Archaic	1,000 B.C.-A.C. 500	4.0-2.9
Lower Emergent	A.C. 500 -A.C. 1500	2.8-1.7
Upper Emergent	A.C. 1500 -A.C. 1812	1.6-1.0
Historic	A.C. 1812 -	0.9 or less

Table 2. Percentage of Lithic Classes for Late Prehistoric and Historic Ross Sites.

Site	BC	BI	BT	CO	EM	FC/GF	HA	HM	IF	HS	NW	PC	PE	PP	SC	SH	SM	UN	T
1878	0	8	8	8	22	5	3	0	10	5	0	10	0	5	3	10	3	0	39
1880	0	3	15	9	12	22	0	0	12	9	0	3	0	0	6	6	3	0	33
1883	0	3	3	6	5	52	1	0	9	5	0	2	1	1	3	8	1	0	569
1884	0	1	2	5	6	59	1	0	6	0	1	3	0	2	2	12	0	0	99

Key: BC = % battered cobble  
 BI = % biface  
 BT = % biface thinning flake  
 CO = % core  
 EM = % edge modified flake  
 FC/GS = % fire-cracked/  
 ground stone fragment  
 HA = % hammerstone  
 HM = % hopper mortar  
 IF = % interior flake  
 T = number of artifacts

HS = % handstone  
 NW = % net weight  
 PC = % primary cortical flake  
 PE = % pestle  
 PP = % projectile point  
 SC = % secondary cortical  
 flake  
 SH = % shatter  
 SM = % slab millingstone  
 UN = % uniface

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Table 3. Percentage of Mollusk MNIs for Late Prehistoric and Historic Ross Sites.

Site	AB	BA	CH	LI	TU	DO	OL	MU	PE	HS	T
1880	3	3	3	17	51	0	0	20	0	3	30
1883	4	4	8	44	12	0	0	24	0	4	25

Key: AB = % abalone                      BA = % barnacle                      CH = % chiton  
 LI = % limpet                              TU = % turban                      DO = % dogwinkle  
 OL = % Olivella                            MU = % mussel                      PE = % periwinkle  
 HS = % hooked slipper shell                      T = MNI counts

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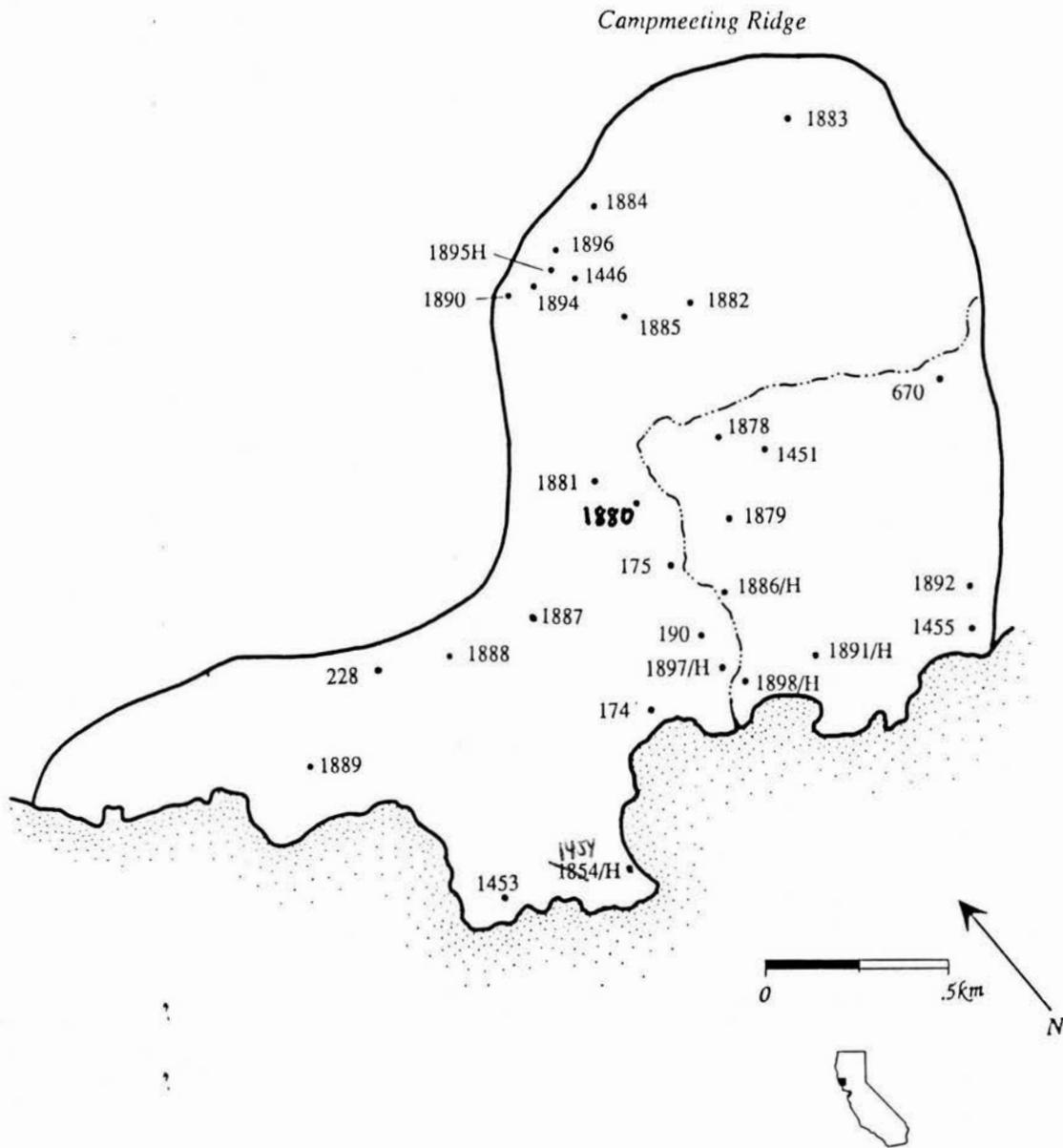


Figure 2.

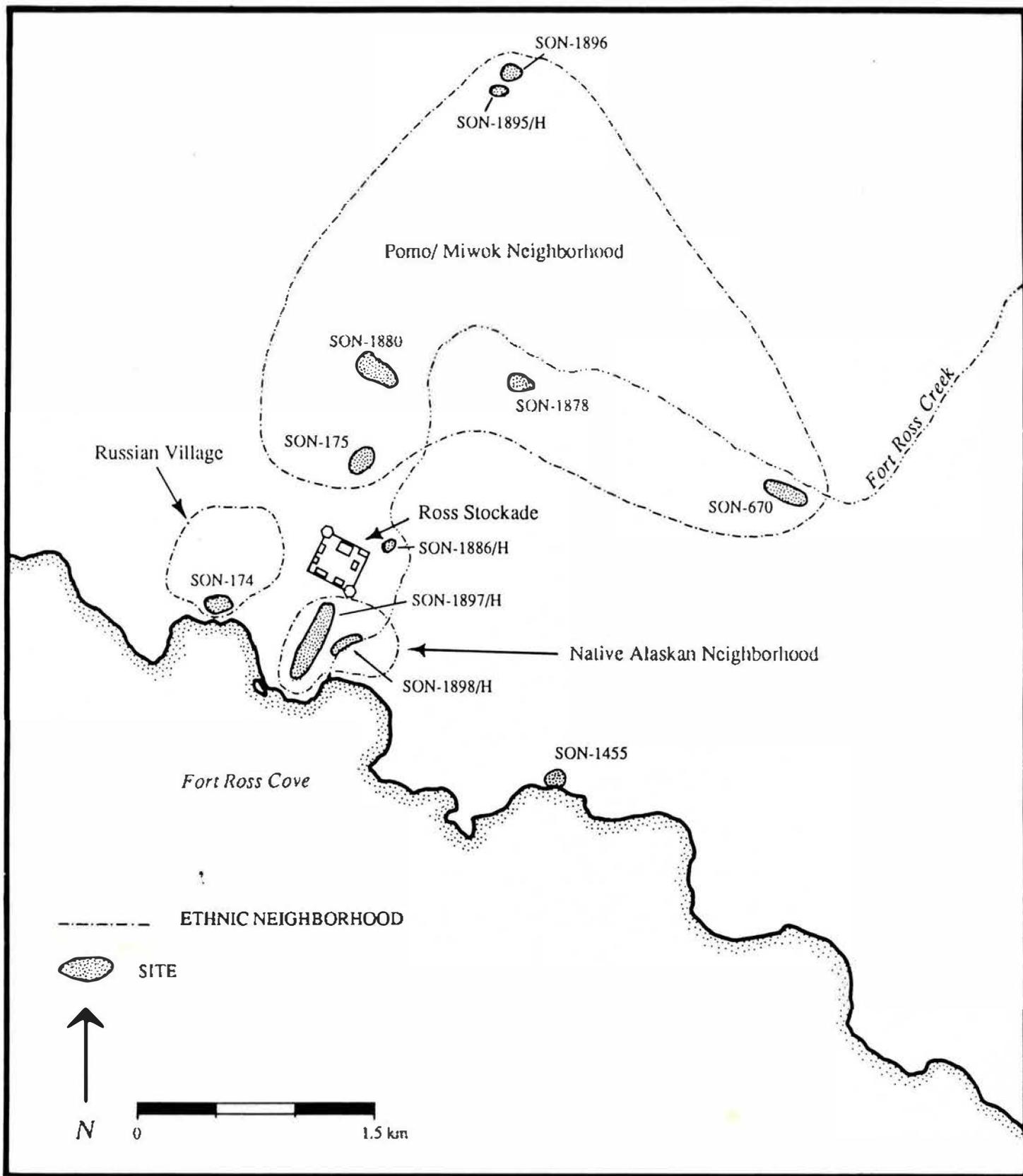


Figure 3.