

CHARCOAL IDENTIFICATION OF SAMPLES FROM SITE CA-LAN-857, CALIFORNIA

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## **INTRODUCTION**

Charcoal from two stone-lined earth ovens at site CA-LAN-857 in southern California were submitted for identification. The earth ovens are part of a series of cooking features recently exposed at the site, believed to be associated with the Tataviam cultural group. Identification of charcoal will provide information concerning woods burned as fuel in these features.

## **METHODS**

The charcoal samples were weighed, then passed through a graduated screen (US Standard Sieve) with a 2-mm opening. The charcoal remaining in the 2-mm sieve was separated from the other sample debris and weighed. A representative sample of these charcoal pieces was broken to expose a fresh cross section and examined under a binocular microscope at a magnification of 70x. The weights of each charcoal type within the representative sample also were recorded.

Macrofloral remains, including charcoal, were identified using manuals (Core, et al. 1976; Martin and Barkley 1961; Panshin and Zeeuw 1980; Petrides and Petrides 1992) and by comparison with modern and archaeological references. Because charcoal and possibly other botanic remains were to be submitted for radiocarbon dating, clean laboratory conditions were used during screening and identification to avoid contamination. All instruments were washed between samples, and samples were protected from contact with modern charcoal.

## **ETHNOBOTANIC REVIEW**

Ethnological (historic) plant uses are important in interpreting certain charred macrofloral remains as possible or even probable subsistence items in prehistoric times. The ethnobotanic literature provides evidence for the exploitation of numerous plants in historic times, both by broad categories and by specific example. Evidence for exploitation from numerous sources can suggest a widespread utilization and strengthens the possibility that the same or similar resources were used in prehistoric times. Ethnographic sources outside the study area have been consulted to permit a more exhaustive review of potential uses for each plant. Ethnographic sources do document that with some plants, the historic use was developed and carried from the past. A plant with medicinal qualities very likely was discovered in prehistoric times and the usage persisted into historic times. There is, however, likely to have been a loss of knowledge concerning the utilization of plant resources as cultures moved from subsistence to agricultural economies and/or were introduced to European foods during the historic period. The ethnobotanic literature serves only as a guide indicating that the potential for utilization existed in prehistoric times--not as conclusive evidence that the resources were used. Pollen and macrofloral remains, when compared with the material culture (artifacts and features) recovered by the archaeologists, can become indicators of use. Plants represented by charred macrofloral remains are discussed in the following paragraphs in order to provide an ethnobotanic background for discussing the remains.

## **Charcoal**

Charcoal recovered from archaeological samples most often represents use of that type of wood as fuel; however, several trees and shrubs had utilitarian and medicinal uses as well. The presence of charcoal indicates that the trees and shrubs represented were present at the time of occupation. If these resources were present and collected as fuel, it also is possible that they were exploited for other purposes as well. The following paragraphs discuss plants represented only by charcoal in the macrofloral record.

### ***Adenostoma* (Chamise, Red shank)**

Species of *Adenostoma* found in California include *A. fasciculatum* (chamise) and *A. sparsifolium* (red shank). These shrubs are found on dry slopes, ridges, flats, and in chaparral. *A. fasciculatum* wood was used to make arrow foreshafts, bows, basketry, torches, as a construction material, and as firewood. Wood coals are noted to have been used by the Cahuilla as a favorite fuel source for roasting. A decoction of the leaves and branches was used to bathe infected, sore, or swollen areas of the body. The seeds of *A. sparsifolium* were eaten as food. Wood and roots were burned as firewood. Wood also was used to make arrowheads and as a building material. Women's skirts were made from the stripped bark. The plant was used to make an external wash for arthritis. Leaves were used to make a beverage for colds, ulcers, and chest ailments. A plant infusion was used to treat colic and as a mouthwash for toothaches. An infusion of twigs was taken as an emetic and laxative for treating stomach ailments and intestinal pain. The twigs also were pulverized, mixed with grease, and used as a salve (Hickman 1993:946; Mead 1972:4; Moerman 1998:49).

### ***Arbutus menziesii* (Pacific Madrone)**

*Aesculus menziesii* (Pacific madrone) is a widely branching tree with exfoliating bark and red to orange berries. The berries were eaten raw, dried, or roasted, although the taste is noted to be somewhat bitter. Both the Costanoans and the Miwok groups used this plant for food. The Costanoans consumed the fruit in small quantities, while the Miwok used the berries as a beverage, crushing them to create a sweet, unfermented cider. The cider was used as an appetizer to stimulate the appetite and as a gastrointestinal aid. The berries also were dried and stored for winter consumption, which were chewed, but never swallowed. The leaves could be chewed for stomachaches and cramps. The leaves and bark were used to make a lotion for treating sores and cuts. *Arbutus menziesii* is found in coniferous, oak forests, wooded slopes and canyons below 1,500 meters. It is often found in the company of Douglas-firs, oaks, and bays (Ebeling 1986:255; Hickman 1993:545; Mead 1972:19; Moerman 1998:83; Westrich 1989:76-77).

### ***Arctostaphylos* (Manzanita)**

*Arctostaphylos* (manzanita) is an evergreen shrub or small tree with purple or dark red bark and red or brown berries. The dry berries were eaten raw, cooked, dried and ground into a meal, or dried whole for future use. The seeds were parched and also ground into flour. Seeds and fruits were soaked in water to make a drink. Dried *Arctostaphylos* leaves and bark, especially *A. uva-ursi* (kinnickinnick), were mixed with tobacco (*Nicotiana*) leaves and smoked. Leaves also were brewed into a medicinal tea that is reported to be good for kidneys, or boiled into a solution that was used on cuts and burns. The wood was used in building houses and to make a variety of utensils. The several species of manzanita are often found in dry habitats. *A. glauca* (bigberry manzanita) is

noted to have been common throughout the southern California coastal regions (Angell 1981:68-70; Barrows 1900:36, 64; Bean 1978:576-578; Bean and Shipek 1978:552; Hedges and Beresford 1986:15; Kirk 1975:53; Luomala 1978:600; Mead 1972:20-24).

### ***Juniperus* (Juniper)**

*Juniperus* (juniper) berries were a commonly exploited resource for both food and medicine. Juniper berries are an abundant crop and available throughout the year. The berries were eaten fresh, with piki bread, cooked in stew, boiled, roasted, or used to season meat. Dried berries were stored for winter use, when they might have been ground into meal and used to make mush, cakes, or a beverage. Fresh berries also were pounded to make a liquid drink. Juniper seeds were strung together as beads. Juniper was used medicinally by many groups to cure various ills. The leaves or twigs are high in vitamins E and C and were used to make an "all purpose" medicinal tea, commonly used to treat coughs and colds. Juniper trees had utilitarian uses as well. Ashes from green needles were added to water and used as a mordant when dying. The bark, berries, and needles were used to obtain a brown, orange-tan, or yellow-tan dye. Juniper bark was used for a variety of purposes. It was used as a tinder, to line babies' cradleboards, and to line pits where dried fruits were stored. Juniper bark also was used to weave clothes and sandals. Juniper wood often was used as fuel and construction material. Bows and arrows can be made from juniper wood, and juniper pitch was used to fasten feathers to the arrow shafts (Angell 1981:96; Bryan and Young 1978:17, 39; Elmore 1944:18; Mead 1972:111-113; Moerman 1998; Westrich 1989:71-72).

### ***Platanus racemosa* (California sycamore)**

*Platanus racemosa* (California sycamore, western sycamore) is a tree that generally grows about 40-50 feet high but can attain a height of 80 feet. Native groups used the inner bark for food, while a plant infusion served as a general medicinal remedy. The leaves of the plant were used as a cooking tool to wrap bread as it baked. *Platanus racemosa* is found along stream sides and in canyons (Hickman 1993:822; Moerman 1998:419; Peattie 1953:491-496; Petrides and Petrides 1992:165-166).

### **Rhamnaceae (Buckthorn Family)**

Woody members of the Rhamnaceae (buckthorn family) noted in Los Angeles County include *Ceanothus* (ceanothus, California-lilac, buckbrush), species of *Frangula* (buckthorn) formerly included with *Rhamnus*, and *Rhamnus* (buckthorn).

#### ***Ceanothus* (Buck Brush, Deer Brush)**

*Ceanothus* (buck brush) are shrubs or small trees, growing between 2 feet and 20 feet in height, that yield white through blue to lavender blossoms and edible seeds. The blossoms create a fine lather when rubbed briskly on the skin. Leaves can be used as a tobacco. Rods can be used to make load baskets and fish dams, as well as being used to make fire drill and needles. The wood burns hot and long and can be used as fuel and for lighting. A drinkable tea can be made from the leaves and flowers. An astringent and tonic are made from bark and roots. A red dye is also made from the red roots. Medicinal properties of this plant are recognized today, as *Ceanothus* contains chemicals used as a blood coagulant, as a remedy for coughing and tonsillitis, and as a stimulant for mucous membranes. It is also noted for use

overcoming indigestion and for acute inflammation of the liver and spleen (Kirk 1975:113; Moerman 1998:144-146; Sweet 1976:19).

### **Rhamnus (Buckthorn) and Frangula (Buckthorn – previously included in Rhamnus)**

The species of *Rhamnus* (buckthorn, coffeeberry, cascara) can be upright, small trees or low, spreading shrubs with red or black berries. The red berries of *R. crocea* (buckthorn, redberry) can be eaten raw or cooked. *Rhamnus* berries and bark have a laxative effect. *R. californica* (coffeeberry) and *R. purshiana* (Cascara Sagrada) bark was boiled in water to make a decoction used as a laxative and for a variety of other ailments. The bark also was soaked in water to make a tonic that was drunk to improve the appetite or restore general health. The bark was boiled with salt and applied to poison oak rashes. *Rhamnus* are found in a variety of habitats, including coastal-sage scrub, chaparral, woodlands, forests, sagebrush-steppe, and montane forests (Hedges and Beresford 1986:37; Hickman 1993:940-942; Kirk 1975:265-266; Moerman 1986:470; Sweet 1976:19; Tilford 1997:26; Westrich 1989:31-32).

*Frangula* are shrubs to small trees with red, black or green berries occurring in a variety of environments from dry rocky coastal areas to moist high elevation areas. Medicinal properties include use of a decoction of the leaves as an antidote to poison particularly poison oak, berries and inner bark as a laxative, crushed berries as a hemostat, decoction of bark used to treat mania among other uses. Berries are considered edible as fresh, jellies and dried among some groups and are considered poisonous by other groups (Moerman 1998:236-237; Munz and Keck 1973:972-973).

## **DISCUSSION**

Site CA-LAN-857, also known as the Rowher Flat No. 2, is located in the foothills of the Castaic Mountains five miles northwest of Vasquez Rocks County Park, Los Angeles County, southern California. Local vegetation is characteristic of a foothill chaparral community and includes chemise (*Adenostoma fasciculatum*), toyon (*Heteromeles arbutifolia*), California buckthorn (*Rhamnus californica*), redberry buckthorn (*Rhamnus crocea*), scrub live oak (*Quercus dumosa*), live oak (*Quercus agrifolia*), mahogany (*Cercocarpus betuloides*), yucca (*Yucca whipplei*), California flannelbush (*Fremontodendron californicum*), hollyleaf cherry (*Prunus ilicifolia*), ceanothus (*Ceanothus* sp.), manzanita (*Arctostaphylos* sp.), woolly bluecurls (*Trichostema lanatum*), buckwheat (*Eriogonum fasciculatum*), matilija poppy (*Romneya trichacalyx*), chia (*Salvia* sp.), sycamore (*Platanus racemosa*), willow (*Salix* sp.), poison oak (*Toxicodendron diversilobum*), and mule fat (*Baccharis salicifolia*) (Milburn 2009; Smith 1974). The site encompasses twenty-six acres, and it is believed to have been associated with the Native Californian Tataviam cultural group. Cupule pit rock art boulders, lithic flakes and cores, gravers, projectile points, groundstone, and rock alignments and clusters have been found at the site, as well as human skeletal remains associated with shell tube beads that date the site's occupation back to approximately 6000 to 2400 BC. Charcoal recovered from two of the heated rock clusters thought to represent stone-lined earth ovens were submitted for identification.

## Feature 1

Charcoal samples 104 and 121 were collected from the fill of Feature 1. A radiocarbon date of  $4340 \pm 40$  BP (Beta-262301), with a two-sigma calibrated age range of 5030-5010 and 4980-4840 CAL yr. BP, was previously obtained on charred material recovered from this feature. Sample 104 was taken from a depth of 12 cmbd within heated rocks that might represent a cooking platform in Feature 1 (Table 1). This sample contained four small fragments of a hardwood charcoal too vitrified for further identification (Tables 2 and 3). Vitrified charcoal has a shiny, glassy appearance due to fusion by heat. Two items submitted as possible live oak acorn caps are curved dirt/sand casts.

Sample 121 consists of charcoal from the firing zone above a central stone firing platform at a depth of approximately 30-40 cmbd. This sample was dominated by *Arctostaphylos* fragments, most of which were vitrified. Local manzanita wood appears to have been burned as fuel. In addition, a piece of *Platanus racemosa*-type charcoal was present, suggesting that California sycamore wood also was burned.

## Feature 2

Feature 2 is the second stone-lined earth oven. A radiocarbon date of  $3990 \pm 40$  BP (Beta-262302), with a two-sigma calibrated age range of 4530-4410 CAL yr. BP, was previously obtained on charred material recovered from this feature. Sample 145 represents additional charcoal from the firing zone above a multiple rock slab firing platform in Units A and C of the stone-lined earth oven taken from a depth of approximately 20-30 cmbd. This sample contained a variety of charcoal types. Several fragments of *Arbutus menziesii*, *Arctostaphylos*, and *Platanus racemosa* charcoal indicate use of Pacific madrone, manzanita, and California sycamore wood as fuel. Smaller amounts of *Adenostoma*, *Juniperus*, and Rhamnaceae charcoal also note burning wood from chamise, juniper, and a woody member of the buckthorn family. Several fragments of hardwood charcoal were too vitrified for further identification. Two charred monocot stem fragments might reflect use of monocots, such as grasses or sedges, as tinder or in a buffering vegetation layer when cooking foods. A piece of charred vitrified tissue might reflect charcoal or other charred plant tissue too vitrified for identification.

## **SUMMARY AND CONCLUSIONS**

Charcoal samples were identified from two stone-lined earth ovens at site CA-LAN-857 in southern California. Several large chunks of vitrified manzanita charcoal were recovered from Feature 1. A few pieces of non-vitrified manzanita charcoal, California sycamore-type charcoal, and unidentified hardwood charcoal too vitrified for further identification also were noted. A variety of woods appear to have been burned in Feature 2, including Pacific madrone, manzanita, California sycamore, juniper, chamise, and a woody member of the buckthorn family. Unidentified hardwood charcoal in this sample was too vitrified for identification and might reflect one of the identified hardwoods from this sample or another type of hardwood. Charred monocot stem fragments might reflect use of monocots as tinder or in a buffering vegetation layer.

TABLE 1  
 PROVENIENCE DATA FOR SAMPLES FROM SITE CA-LAN-857, CALIFORNIA

Sample No.	Feature No.	Unit	Depth (cmbd)	Provenience/ Description	Analysis
104	1	A	12	Charcoal from between heated rocks (cooking platform) of small, stone-lined earth oven	Charcoal ID
121	1	A	30-40	Charcoal from firing zone above the central single stone firing platform of small, stone-lined earth oven	Charcoal ID
145	2	A, C	20-30	Charcoal from firing zone above a multiple rock slab firing platform in stone-lined earth oven	Charcoal ID

TABLE 2  
IDENTIFICATION OF CHARCOAL FROM SITE CA-LAN-857, CALIFORNIA

Sample No.	Identification	Part	Charred		Uncharred		Weights/ Comments
			W	F	W	F	
104	Total sample weight:						0.06 g
Feature 1 12 cmbd	CHARCOAL/WOOD:						
	Unidentified hardwood - vitrified	Charcoal		4			0.025 g
	OTHER:						
	Dirt cast					2	0.041 g
121	Total sample weight:						20.36 g
Feature 1 30-40 cmbd	CHARCOAL/WOOD:						
	Charcoal $\geq$ 2 mm						18.40 g
	<i>Arctostaphylos</i>	Charcoal		2			0.07 g
	<i>Arctostaphylos</i> - vitrified	Charcoal		36			4.57 g
	<i>Platanus</i> -type - vitrified	Charcoal		1			0.30 g
145	Total sample weight:						2.67 g
Feature 2	FLORAL REMAINS:						
	Vitrified tissue			1			0.06 g
	CHARCOAL/WOOD:						
	Charcoal $\geq$ 2 mm						2.31 g
	<i>Adenostoma</i>	Charcoal		1			0.08 g
	<i>Arbutus menziesii</i>	Charcoal		8			0.15 g
	<i>Arctostaphylos</i> - vitrified	Charcoal		9			0.16 g
	<i>Juniperus</i>	Charcoal		2			0.02 g
	Monocot stem	Charcoal		2			0.3 g
	<i>Platanus racemosa</i>	Charcoal		6			0.11 g
	Rhamnaceae	Charcoal		1			0.02 g
Unidentified hardwood - vitrified	Charcoal		10			0.72 g	

W = Whole  
F = Fragment  
X = Presence noted in sample  
g = grams



TABLE 3  
INDEX OF MACROFLORAL REMAINS RECOVERED FROM SITE CA-LAN-857, CALIFORNIA

Scientific Name	Common Name
FLORAL REMAINS:	
Vitrified tissue	Charred material with a shiny, glassy appearance due to fusion by heat
CHARCOAL/WOOD:	
<i>Adenostoma</i>	Chamise
<i>Arctostaphylos</i>	Manzanita, Bearberry, Kinnickinnick
<i>Arbutus menziesii</i>	Pacific madrone
<i>Juniperus</i>	Juniper
Monocot	A member of the Monocotyledonae class of Angiosperms, which include grasses, sedges, lilies, and palms
<i>Platanus racemosa</i>	California sycamore
Rhamnaceae	Buckthorn family
Unidentified hardwood - vitrified	Wood from a broad-leaved flowering tree or shrub, exhibiting a shiny, glassy appearance due to fusion by heat

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