Contemporary California Indians, Oaks, and Sudden Oak Death (*Phytophthora ramorum*)[1]

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Abstract

This paper begins with a survey of contemporary California Indian utilization of acorns for food, including an examination of: (1) familial, community and cultural contexts in which acorn is shared and eaten; (2) new and old acorn processing techniques in use today and the foods that result; (3) the symbolic context of the foods in terms of ecological and social relationships that connect people to place, each other, cultural heritage and sacred time; and (4) ancestral burning and pruning techniques used to manage oaks and other species. Next comes a detailed summary of contemporary uses by California Indians of plant species affected by Sudden Oak Death (*Phytophthora ramorum*). An overview follows of the impact that Sudden Oak Death (SOD) has had in disrupting, limiting, and sometimes severing the eons-old relationships that California Indians had with the affected species. The paper concludes with a synopsis of how California Indians are responding to this threat to cultural continuance.

Keywords: Acorn, California Indians, land management, oak, tanoak, Sudden Oak Death.

Introduction

Hundreds of publications, both scholarly and popular, have described and otherwise discussed the use of acorns for foods by California Indians, but most people remain unaware of the continuing importance of these foods for contemporary California Indians culturally, socially, and spiritually. This paper will contextualize that use, elaborating on the tangible contexts (present-day processing techniques) and intangible contexts (social and spiritual) that inspire its making. It will also contextualize the use of fire and pruning by California Indians to manage oaks and other plant species past to present.

While the use of "acorn" for food has survived more than 200 years of severe cultural disruption, upheaval, dislocation, and suffering as a result of non-Indian intrusion, it now faces a new threat—Sudden Oak Death (*Phytophthora ramorum*), or SOD. As of September 11, 2006, 23 native plant species and one genera have been designated as regulated hosts for SOD, and 18 other associated native plant species may soon follow. This paper will end with an examination of contemporary California Indian uses of these species, including the most important acorn-producing species for food statewide, as well as numerous other species used today for food, medicine, ceremony, fishing, hunting, cooking implements, and more; and the response of California Indians to the spread of SOD.

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Methods

The information about contemporary California Indian plant uses elaborated in this paper is the result of 30 years of qualitative, anthropological field research conducted in collaboration with hundreds of California Indians statewide in both private and public settings.

Emphasis is placed on plant uses in those areas currently affected by SOD, although uses in other areas have been included, given the widespread importance of acorns as food, as well as the fact that contemporary California Indians may gather from plants growing anywhere that is available to them, not solely within their tribal territory.

The goal of this paper is to broaden awareness of the continuing importance of woodland and other natural resources for contemporary California Indians and to provide another framework through which to consider the impacts of SOD and how to respond to it.

Karuk cultural consultant Kathy McCovey aptly encapsulated the cultural importance of oaks and other species when she explained in 1998, "The Spirit People told us...how we were supposed to behave and what we were supposed to do... It's a holistic way of looking at things [without] a beginning and end... It's gathering acorns, gathering mushrooms, gathering pepperwood nuts, gathering basket materials all year long... It's a process that we keep going through.

"People need to know about our lifestyle, the plants we use, and that the Indian culture is alive and well and thriving, and getting stronger every day."

Or, put another way by Kathy in 2003, "We subsist upon the forest. The forest is us, and we are the forest and the animals within."

The Use of Acorns for Food Today[3]

As for countless generations, California Indians continue to utilize acorns for food today. Strong memories remain of acorn processing techniques used by a respected elder relative, a grandmother, mother, aunt, or someone else. These memories continue to inspire. People eat "acorn," as they commonly call the resultant foods today, when alone. They share it during family meals, give it as gifts when visiting friends, and prepare it for special occasions, such as reunions and "big times," large gatherings that feature ceremonies, feasts, and gambling tournaments.

While some people still make acorn with the old techniques, most people lack the necessary baskets and wooden implements. Instead, they use new methods that creatively blend past and present in an astonishing diversity of methods, the nuances of which vary from group to group, family to family, cook to cook.

Burlap sacks, plastic-mesh sacks, and cardboard boxes have replaced the burden baskets[4] of old among contemporary gatherers. They load these into cars and trucks for the trip home.

[3] Unless otherwise indicated, all information about acorn use is derived from field research conducted from 1976 to present. Some of this information has been published by the author in the following: Ortiz 1989, 1990, 1991, 1991b, 1991c, 1996/97, 2000, 2000a, and 2004.

[4] California Indians used such cone-shaped baskets to carry loads. They suspended the baskets against their backs in nets. The nets had a cordage strap that wrapped across the forehead.

To prevent mold, people dry acorns on cloth, cots, and specially built, wire-mesh "tables," and in boxes, often placed near or beneath wood-burning stoves and heaters—whatever will work. Once dried, they commonly store acorns in boxes, sacks and jars; again, whatever will work. Stones and hammers are widely used to shell acorns. Instead of using winnowing baskets, people use knives to scrape away the red skins that adhere to some species' nutmeats, or rub the kernels between their hands.

Such alternatives have evolved over decades, some dating to the 1800s. Hand-crank grinders began to replace pounding rocks early on. These were adapted to run on gas, then electricity. Blenders, coffee grinders and food mills have more recently replaced the pounding rocks (mortars and pestles) of old, supplemented when needed by wire-mesh flour sifters in lieu of sifting baskets to separate the coarse particles of acorn from the fine.

For leaching the bitterness (tannic acid) from the acorn flour, people have long placed loosely woven, cotton cloths atop outdoor sand leaching basins. At times, these cloth-covered basins have been modernized still further by being placed atop a wire-mesh screen attached to a wooden framework and supported a few feet above the ground. Pine needles and leaves sometimes substitute for sand. Indoors, contemporary leaching methods include placing acorn flour atop a cloth-covered winnowing basket, imported basket, colander or strainer perched in the kitchen sink below the faucet. People sometimes also wrap acorn flour in loose-weave, cotton cloth and tie this to a kitchen faucet so water can drip through the flour during the night.

For cooking, stainless steel pots on stovetops have largely replaced baskets and heated stones. The use of cooking baskets and stones has increased in recent years, as has the weaving of the baskets, although African-made coiled baskets are sometimes substituted. When baking acorn bread in pit ovens, a rarity compared to the multiplicity of soups and mushes made today, the older method of wrapping the bread with particular species of leaves and fronds is combined with the newer method of wrapping it in wet cloth.

At times, California Indians store acorn flour, unleached or leached, in refrigerators and freezers, cooking it later. Once cooked, soups and mushes may be stored in refrigerators and freezers, or canned.

Whatever the method chosen, old or new, the food remains to provide sustenance, enjoyment, memories, and an important expression of heritage.

Symbolic Content of the Food

"Woodland areas are alive. The plants, the animals, insects, everything has a living spirit, and we need to respect those things."

--Eric Wilder (Kashaya Pomo) 2006

The logistics of creating food from acorns masks a much deeper cultural significance to the food, which continues to inspire its making, despite lack of necessity. It is harder to obtain acorns today than in the past. Many gathering places "owned" by individuals, families, or groups for as long as anyone can remember are now off limits because of private property restrictions and modern laws. Treasured oaks and tanoaks have also been cut down to make way for developments.

Even with the difficulties, many California Indians still find a way to gather, knowing that the interaction between themselves and the trees is an important one in which both are nourished. As Julia Parker (Kashaya Pomo/Coast Miwok) learned from Yosemite Miwok/Paiute people, "The elders told me when it comes get out and pick and gather, even if it's one basketful, so the acorn spirit will know you're happy for the acorn, and next year the acorn will come" (Ortiz 1991c: 41).

This belief—that the earth and sky and all objects in between have life and consciousness—underpins the spiritual traditions of indigenous people throughout North America. The world has the potential for both good and bad, not in the moral or ethical sense of right and wrong, but as an expression of harmonious and inharmonious elements. People keep the world harmonious (balanced) through prayerful thoughts, actions, and offerings, adherence to rules of proper behavior, and the observance of spiritual dances in proper seasons on a yearly cycle (Bean and Vane 1978). These spiritual practices likewise underpin traditionalist California Indian interactions with oaks, tanoaks, and acorns today. For instance, traditionalist Miwok/Paiute and those they have taught refrain from wishing for acorns or looking at them in the trees lest the acorns be scared away and a poor harvest result. Prayers occur during acorn gathering and the preparation and sharing of the food, with some of the food offered to the cooking fire before eating (Ortiz 1991c: 38-39).

Ceremonial dances may be thought of as a visible prayer (Bates 1982). They provide a means to thank the Creator. They serve to renew the world, maintain its spiritual balance, and insure the health and well-being of the group (Bean and Vane 1978).

Every autumn, several Central California tribes host "big times" to dedicate, give thanks for, and celebrate the new acorn harvest. As Julia explains, "When the acorn does come, there's dances and songs. Take from the earth and say please. Give back to the earth and say thank you" (Ortiz 1991c: 27).

Prayers, offerings, ceremonies and cultural proscriptions provide a tangible means to give back for what is taken. They serve to bind the relationship between people, the plants, the food and "sacred time," when the world had its birth. The dances recapitulate sacred time, while myth encapsulates it, explaining how people and the world came to be, including foods, such as acorn, and how to prepare those foods (for examples of mythology, see Barrett 1933: 84-85; Gayton and Newman 1940: 28; Goddard 1909: 183-188; Kroeber 1932: 305; Simpson 1977: 13-35).

Fire Management and Pruning[5]

Contrary to the image of California Indians as hunter-gatherers with little impact on the landscape they inhabited, they re-shaped the landscape through the use of such horticultural techniques as burning, digging, and pruning. The proper application of these techniques resulted in a world adorned by a complex mosaic of plant communities. This managed landscape nurtured the health and vigor of diverse plant species, while amply providing for the needs of humans and other animal species, including the many species upon which humans depended.

[5] Unless otherwise indicated, this overview of California Indian land management techniques is derived from field research conducted by the author from 1981 to present. Some of this information has been published by the author in the following: Ortiz 1992, 1993, 1998. For more information about this topic, see Blackburn and Anderson 1993, and Anderson 2005.

California Indians used fire as a management technique to enhance the growth of seed-bearing forbs and grasses, keep meadows open, ensure the growth of mature, open woodland trees with a dispersed understory, and to control some disease organisms and insect infestations. They used it to stimulate the growth of fine, straight, supple shoots used for weaving baskets, and long, straight, sturdy hardwood branches useful for digging sticks and other tools. They also used it to generate the tender, new growth consumed by foraging animals, which, in turn, the men hunted.

In 1792, British Naval Captain George Vancouver described managed oak woodland landscapes as he traveled from Mission Dolores in San Francisco to Mission Santa Clara. About the California coast range, he wrote, "...their sides and summits exhibited a high degree of luxuriant fertility, interspersed with copses of various forms and magnitude, verdant open spaces, and enriched with stately forest trees of different descriptions."

Referring to the route he followed, Vancouver continued, "For about twenty miles it could only be compared to a park, which had originally been closely planted with the true old English oak. The underwood that had probably attended its early growth had the appearance of having been cleared away and had left the stately lords of the forest in complete possession of the soil, which was covered with luxuriant herbage and beautifully diversified with pleasing eminencies and valleys" (Paddison 1999: 84-86).

In 1997, 92-year-old Karuk elder Ramona Starritt described the fire-managed landscape of the Trinity River area that she grew up in, "The Indians burned all over... The earlier years it would just burn, burn, burn, until the sun looked like a big orange. It just burned itself out. That was that.

"They did it for the purpose of their basket weaving, and for the animals. The deer had to eat. They ate the young sprouts. And you could see for miles. You weren't hemmed in with brush... There were very nice trees. You go to where the Indians lived and burned, you'll see really tall fir trees; and pine trees, and madrone trees were large... When I was young, you could see clear across the gorge. You could look over, see a bear climbing the mountain, or a deer, or anything."

Photographs taken in the Trinity River area in the late 1800s and early 1900s provide visual documentation of the same (McCovey 2003).

California Indians managed several species of oaks and tanoak with fire and pruning. The Pomo managed Oregon oak, valley oak, and tanoak stands with fire, while the Northfork Mono and Chukchansi/Choynumni used fall burns to manage black oak (Anderson 2005: 138; Peri and others 1985: 81, 82). The Karuk, Yurok and Hupa likewise managed oaks with fire. According to Kathy Wallace (Karuk/Yurok/Hoopa 2003), "I was told...they would burn under oaks, and it took care of a lot of the bugs... It was a low-temperature burn, but it would take care of ground-carried diseases. It would also clear off the area underneath the trees to make it easier to gather the acorns."

Other northwest California accounts of oak management credit it with hastening the acorn drop, and burning up old acorns, duff and decaying wood and bark that would otherwise become host to a new generation of filbert worms, filbert weevils, their pupae and other insect pests the following year. As with Vancouver's account, ground burning likewise kept mature oaks well spaced and free of tall understory. In addition to these benefits, the Maidu noted oak savannahs as easier to travel through

and spot game and enemies. Forbs, grasses, bulbs, corms, and tubers likewise had more space and light to grow. Ground fires stimulated root crown sprouting, creating shoots useful for making such implements as shinny bones and digging sticks, depending on the diameter. Fire may also have created conditions suitable for some oak regeneration (Anderson 2006: 145-148, 279, 287-290, 352).

The Pomo, Yosemite Miwok/Paiute and Mono pruned the acorn-bearing tips of oak branches (Anderson 2006:139; Peri and others 1985:81, 82) to increase future acorn harvests. Peri and others (1985: 81, 82) have identified black oak, canyon live oak (*Quercus chrysolepis*), coast live oak (*Q. agrifolia*), interior live oak (*Q. wislizenii*), Oregon oak (*Q. garryana*), scrub oak (*Q. dumosa*), valley oak (*Q. lobata*), and tanoak as all having been pruned, in the case of scrub oak for straight, flexible shoots useful for basketry.

Today, California Indians across the state, with the support of their tribes, and local basketweavers[6] and other organizations, are working with land managers to bring fire back to the landscape in the form of prescribed burning for cultural purposes, and the concomitant health of the environment. They have made particular strides in working with the United States Department of Agriculture Forest Service in northwest California to conduct burns for beargrass for basketry, as well as with private landowners for hazel burns for basketry. The Hoopa Valley Tribe, with its large landbase, has conducted several cultural burns in recent years. California Indian graduate students have conducted, and are in the process of conducting, M.A. and Ph.D. studies to quantify the effect of burning on particular plants. This includes Don Hankins' (Plains Miwok/Osage) Ph.D. study of pyrogeography (Hankins 2005), Erin Rentz's (Karuk/Yurok) Master's study of cellular changes in northwest California basketry plants after burning (Rentz 2003); and Frank K. Lake's (Karuk) study of how traditional ecological knowledge can be integrated with science to come to a better understanding of northwest California Indian management of sandbar willow for basketry, for which he received a 2005 Community Forestry Research Fellowship.

Longitudinal, quantitative studies of Native-American land management practices in large land areas have yet to be done.

Sudden Oak Death

"Invasions have had a huge impact on our culture, from the settlers who came in, right down to the microscopic level of different [pathogens], such as smallpox, that have come in... "

--Don Hankins (Plains Miwok) 2003

Since July of 2000, when researchers identified SOD as the cause of unusual levels of tanoak die offs in Mill Valley, Santa Cruz, and Monterey, California Indians have had to grapple with a new and wide-ranging threat to cultural survival. Not only does this disease kill particular species of acorn-producing trees, but two of those species, black oak and tanoak, are the most valued acorn-producing species used by California Indians statewide today. As Karuk cultural consultant LaVerne Glaze (2003) explained about the prominence of tanoak acorns as a contemporary dietary staple, "I can see different ones [in the fall] out there all the time trying to find them."

[6] For example, Karuk Indigenous Basketweavers, Southern California Indian Basketweavers Organization, and the statewide California Indian Basketweavers Association.

Of the 23 native plant species and one genera that have been designated as regulated hosts for SOD as of September 11, 2006,[7] and the 18 other associated native plant species that may soon follow as regulated hosts, the author has identified contemporary cultural uses for all but 12. This does not mean, of course, that those 12 lack contemporary cultural uses, but only that such uses have not been identified. Additional, as yet unidentified, cultural uses may also exist for the others.

Although outside the scope of the present paper, it should be noted that Robert Clement (2006), Plant Protection and Quarantine Technician for the United States Department of Agriculture in Morgan Hill, California, has compiled 39 fact sheets based on data related to past uses by California Indians of 42 species "that are in some way associated with SOD," and/or their California Indian names or poisonous qualities.

A summary of contemporary California Indian cultural uses of regulated hosts and associated native species in Northwest (NW) and Central (C) California follows in table form.

Regulated Hosts	
Acer macrophyllum	**Big leaf maple**
NW: Stripped inner bark used to make girls' and women's work skirts (Colegrove 2006, McCovey 2006, Ortiz 1996/97: 28, 29).[8] NW/C: Leaves used for wrapping bulbs, corms, deer meat and other foods baked in pit ovens.[9] C: Maple shoots from winter coppiced, pruned or burned plants heated, then split four ways; used as overlay in twined Maidu baskets and as sewing strands in Maidu and Sierra Mewuk coiled baskets (Ortiz 2000/01: 8-9).[10]	
Adiantum aleuticum	**Five-fingered fern** **Western maidenhair fern**[11]
NW: Dried or fresh leaves gathered before the spores form steeped in boiled water to make hair rinse (Ortiz and others 2006: 123). Black half of stem used as design overlay in finely woven baskets (Ortiz 1996/97: 27, 1998: 26).	
Adiantum jordanii	**California maidenhair fern**
NW: Dried or fresh leaves gathered before the spores form and steeped in boiled water to make hair rinse; applied after shampooing to soften hair. A teaspoon of leaves steeped in a cup of boiled water to treat fevers; the resultant tea taken two to three times a day until fever gone. Caution: Some people are allergic to the tea (Ortiz 1998, Ortiz and others 2006: 124).	

[7] The list of regulated hosts and associated plant species given in this paper comes from the California Oak Mortality Task Force web site, http://nature.berkeley.edu/comtf.
[8] Field data 1997 to 2006.
[9] Field data 1980 to 2006.
[10] Field data 1981 to 2006.
[11] Although this plant is usually referred to as five-fingered fern, northwest California Indian basketweavers refer to it as maidenhair fern.

Aesculus californica	**California buckeye**
C: Nuts processed into mush and served with pit oven-cooked deer meat, seafood, roasted peppernuts, and contemporary picnic foods within the living memory of Kashaya Pomo individuals (Ortiz 1989a: 25)	
Arbutus menziesii	**Madrone**
NW: One teaspoon of chopped bark slab steeped in cup of boiled water taken three times per day to reduce blood sugar (Ortiz and others 2006: 166). Dried berries pounded, then water added to make a sweet drink. Fresh leaves rubbed and placed on cut to help blood coagulate (McCovey 2006). C: Differently shaped and colored leaves used to represent people and their cultural roles during game played by Kashaya Pomo girls (within living memory) (Ortiz 1994: 42-45). Like oak, this hardwood preferred for pit-oven cooking (Ortiz 1989a: 26).	
Arctostaphylos manzanita	**Parry manzanita/Manzanita**
NW: Powdered berries of *Arctostaphylos manzanita* or greenleaf manzanita (*A. patula*) soaked in water to make a sweet cider. Ashes made into paste and poulticed on burns. Leaves boiled in water to make a strong wash used to relieve the itch of poison oak rash. Half teaspoon of leaves steeped in a cup of boiled water and taken three times a day for stomach flu (Ortiz 1996/97: 27, Ortiz and others 2006: 63, 167-168). Wood burned to make hot coals (McCovey 2006). Coals used for cooking and ceremonial fires (Colegrove 2006, Glaze 2003). Coals especially good for roasting salmon strips on redwood stakes, grilling eel and barbecuing deer meat, because they do not produce ash that could blow onto the food (Colegrove 2006, Ortiz 1999: 18). This clean-burning wood also used for wood-burning stove fires (Glaze 2003). Wood used for pipe stems (Ortiz 1990/91: 13, 1993/94:20). Wood used as element of ceremonial regalia (Colegrove 2006). C: Water dripped through powdered berries, or powdered berries wrapped in cloth and soaked in water, to make sweet cider. Wood used as element of ceremonial regalia.[12] Wood used by Auberry Mono secondarily to oak for cooking fires used to heat cooking stones (Ortiz 1989: 24).	
Frangula californica ***(=Rhamnus californica)***	**California coffeeberry**
No contemporary uses identified to date.	
Frangula purshiana ***(=Rhmanus purshiana)***	**Cascara**
NW: Leaves, stems, and bark used as a laxative and liver cleanser (Ortiz and others 2006: 96). S: Medicinal tea for stomachaches (Ortiz 1991a: 33).	
Heteromeles arbutifolia	**Toyon**
NW: Berries roasted for food for childhood entertainment by holding branch over fire (within living memory) (Ortiz and others 2006: 248).	

[12] Field data 1980 to 2006.

Lithocarpus densiflorus	**Tanoak**
NW: Acorns preferred for food. The "old timers" relished garnishing their acorn with roasted peppernut halves. Paste from unleached acorn flour or bark ashes used to poultice burns. Water containing acorn flour leachate used to treat eye infections and cataracts. Tanoak mushrooms for food and to lower blood pressure (Ortiz 2000a: 32, Ortiz and others 2006: 42, 49, 52, 66-68, 70, 184-185, 242-243).[13] C: Acorns preferred for food by Pomo and Ohlone peoples.[14] Like oak, this hardwood preferred for pit-oven cooking (Ortiz 1989a: 26).	
Lonicera hispidula	**California honeysuckle**
No contemporary uses identified to date.	
Maianthemum racemosum	**False Solomon's seal**
(=Smiliacina racemosum)	**Fat Solomon's seal**
NW: Bulbs and berries used as sedative during labor. Juice used to prevent poison oak rash, heal bruised or broken bones, and draw out black and blue marks caused by blood beneath the skin (Ortiz and others 2006: 232). Flowers picked by children, who enjoy the sweet taste of the nectar at the base of the blossoms (Colegrove 2006).	
Pseudotsuga menziesii	**Douglas fir**
NW: New-growth needles used to make a gargle for treating tonsillitis (Ortiz and others 2006: 126). Needles a component of tea taken when relative passes away. Fine, long branchlets with little taper used as warp in fine baskets, especially basket caps (Colegrove 2006, McCovey 2006, Ortiz and others 2006: 126). Saplings some 15 to 20 feet long used for dip net poles and the horizontal brace that supports them (Colegrove 2006, Ortiz 1999a: 19, 1999/00a: 34, Spinks 2006). C: Bark-covered and debarked branchlets fashioned by Mountain Maidu individuals into interconnected rings for decorative necklaces, skirts and chains. New, springtime shoots edible (Ortiz 2000/01: 7).[15]	
Quercus agrifolia	**Coast live oak**
NW: Curving, lower limbs of the closely-related interior live oak used to connect Douglas fir dip net poles (Spinks 2006). C: Nuts used for acorn making.[16] Wood used to produce hot coals for pit-oven, deer meat cooking (Ortiz 1989a: 26).	
Quercus chrysolepis	**Canyon live oak**
NW: Paste from unleached acorn flour or bark ashes used to poultice burns. Water containing acorn flour leachate used to treat eye infections and cataracts (Ortiz and others 2006: 42, 49, 52, 184-185). New-growth, lower limbs (long, droopy and curving) that hang over rocks and cliffs along rivers used to make dip-net hoops. Not only is the wood limber, and thus resistant to breakage, but relatively buoyant, staying high in the water. These are lashed to two Douglas fir poles. Other hardwoods used secondarily for the hoops (Colegrove 2006, Ortiz 1999a: 19, 1999/00a: 34, Spinks 2006).	

[13] Field data 1997 to 2006.
[14] Field data 1983 to 2006.
[15] Field data 1976 to 2000.
[16] Field data 1988 to 1992.

Quercus kelloggii	**California black oak**
NW: Paste from unleached flour or bark ashes used to poultice burns. Water containing acorn flour leachate used to treat eye infections and cataracts (Ortiz and others 2006: 42, 49, 52, 184-185). C: Acorns preferred for food due to their storage capability, thickening properties, color and flavor (Ortiz 1991c:39). Wood used to make fires for heating cooking stones and to produce hot coals for pit-oven, deer meat cooking (Ortiz 1991c: 114). Pruned sprouts bent with heat and water into looped stirrers for cooking acorn with heated stones in baskets (Ortiz 1989:24, 1989a: 26).	
Quercus parvula var. shrevei	**Shreve's oak**
No contemporary uses identified to date.	
Rosa gymnocarpa	**Wood rose**
NW: Hips made into a tea taken for diabetes or when catching a cold. Juice of cut, fresh hips applied to insect bites (Ortiz and others 2006: 214). Juice used for healing sores (Colegrove 2006).	
Rhododendron spp.	**Rhododendron, including azaleas**
Blossoms used for household decoration (Colegrove 2006, Spinks 2006a).	
Sequoia sempervirens	**Coast redwood**
NW: Old-growth and second-growth boles used by Yurok individuals to make dugouts (miniature and full size) (Colegrove 2006, McCovey 2006, Ortiz 1990/91: 12-16).[17] Wood used to make framework of the square drums beaten while singing songs during the Indian card game (see Pacific yew for more about this game) (Ortiz 1993/94: 19, 2002: 4, 5). Wood carved into stakes to hold cuts of fish placed along the periphery of an oval-shaped roasting "pit" covered with hot coals. Not only is the wood soft and easy to carve, but the stakes hold water when soaked, insuring they will not burn and fall into the pit (Colegrove 2006, Ortiz 1998: 29).[18] Wood used to carve cooking paddles for stone boiling and figures for contemporary, culturally-inspired art (Ortiz 1991: 9, 10, 1995: 33).[19] C: Dolls made from shredded redwood bark by Kashaya Pomo (Ortiz 1989b: 13-14).[20] Shingles and shakes used in ceremonial house construction.[21]	
Trientalia latifolia	**Western starflower**
No contemporary uses identified to date.	

[17] Field data 1990 to 2006.
[18] Field data 2006.
[19] Field data 1990.
[20] Field data 2005.
[21] Field data 1993 to 2006.

Umbellularia californica	**Pepperwood** **California bay laurel** **Oregon myrtle**
NW: Fresh leaves placed in water and boiled to make aromatic steam to treat colds and sinus infections. Newly-grown, light-green tips used to treat toothache. Leaves poulticed on shingles. Mashed, fresh nutmeats poulticed on boils, blood poisoning, snake and spider bites and sores. Roasted nutmeats eaten for enjoyment, to prevent allergies in the spring, to prevent colds and flu in the fall, to relieve colitis and to relieve ulcers. Leaf oil used to treat earaches (Ortiz and others 2006: 68-69). Featherwork and baskets stored with leaves to repel insects. Leaves used for ceremonial purification (Colegrove 2006, McCovey 2006). Leaves placed in boiled water and steam breathed, while head covered with blanket, to relieve sinus infections (McCovey 2006). Branches fashioned into drumsticks (Ortiz 2002: 6). Wood used for net-making shuttles (Ortiz 1999/00a: 35, Spinks 2006). C: Roasted nuts eaten for enjoyment, sometimes pounded and shaped into balls and logs (Ortiz 1989a: 25, Smith 2004).[22] Fresh leaves used to make animal sounds (Ortiz 1992a). Branchlets used for ceremonial purification.[23]	
Vaccinum ovatum	**Evergreen huckleberry**
NW: A teaspoon of new, light green leaves dried and steeped in cup of boiled water for insomnia. One cup of tea taken two to three times a day by diabetics to relax. Berries eaten raw, canned and cooked in pies and "duff" (sweetened dough balls cooked in sweetened, thickened berries, spiced with cinnamon) (Ortiz and others 2006: 63, 64, 112, 148). Berries considered a staple by the Karuk and frozen for year-round use (Glaze 2003). C: Berries eaten (Ortiz 2000: 21).	
Viburnum ellipticum	**Western viburnum**
No contemporary uses identified to date.	
Associated Plant Species	
Abies concolor	**White fir**
NW: Pitch steeped in hot water for 15 to 20 minutes, then sticky substances strained off, to make gargle for sore throat (Ortiz and others 2006: 126). Wood used in brush dances (McCovey 2006).	
Abies grandis	**Grand fir**
NW: Pitch steeped in hot water for 15 to 20 minutes, then sticky substances strained off, to make gargle for sore throat (Ortiz and others 2006: 126). Used for Christmas trees (McCovey 2006).	
Abies magnifica	**Red fir**
NW: Pitch steeped in hot water for 15 to 20 minutes, then sticky substances strained off, to	

[22] Field data 1983 to 2006.
[23] Field data 1993 to 2004.

make gargle for sore throat. Insect-resistant wood may be used for holding featherwork (Ortiz and others 2006: 126).	
Acer circinatum	**Vine maple**
No contemporary uses identified to date.	
Arctostaphylos columbiana	**Hairy manzanita**
No contemporary uses identified to date. See *A. manzanita*.	
Calcycanthus accidentalis	**Spicebush**
C: Kashaya Pomo spiritual plant.[24]	
Ceanothus thyrsiflorus	**Blueblossom**
NW: No contemporary uses identified to date. Another species, *Ceanothus integerrimus*, lathered for soap; its pruned shoots used for warps in fine baskets (Ortiz 1998: 26, Ortiz and others 2006: 230).	
Clintonia andrewsiana	**Andrew's clintonia bead lily**
No contemporary uses identified to date.	
Corylus cornuta	**California hazelnut**
NW: Nuts eaten raw, dried like walnuts, or baked. Strong, straight, flexible shoots (from plants burned every two years in the fall) used as warp and weft in work baskets, such as eel traps, baby, "handle" and clothes baskets (Colegrove 2006, McCovey 2006, , 1996/97: 27-28, 29, 30, 1998: 24-25, Ortiz 1999: 17, Ortiz and others 2006: 15-16, 30, 68, 140). Eels pierced with hazel sticks and hung from them in smokehouses. Salmon strips tied with string looped over hazel sticks and hung from them in smokehouses (Ortiz 1999: 17, 18). Twisted hazel used as an element in fish dams and to fasten house poles together (Ortiz 1999/00: 33).	
Dryopteris arguta	**California wood fern**
No contemporary uses identified to date.	
Fraxinus latifolia	**Oregon ash**
No contemporary uses identified to date.	
Gaultheria shallon	**Salal**
NW: Berries eaten raw or canned (McCovey 2006, Ortiz and others 2006: 218). Used ceremonially (McCovey 2006). Berry used as a Jump Dance headpiece dye (Ortiz 1999/00: 32).	
Osmorhiza berteroi	**Sweet cicely**

[24] Field data 1983 to 1993.

(=O. chilensis)	
NW: *Osmorhiza chilensis*, *O. occidentalis*, and *O. Purpurea* used to make childhood drink by steeping the above-ground plant in water (within living memory). According to Josephine Peters (Karuk), "We used to chew it, and play with it, and drink it all the time, because it had a good taste" (Ortiz and others 2006: 85)	
Rubus spectabilis	**Salmonberry**
NW: Berries eaten raw (McCovey 2006, Ortiz and others 2006: 219). Berries canned (McCovey 2006).	
Taxus brevifolia	**Pacific yew**
NW: This extremely durable wood used for hunting and ceremonial bows, spoons and eel hook handles (Colegrove 2006, McCovey 2006, Ortiz 1995: 31-33). Straight, knotless and limb-free branches gathered in fall when sap down, seasoned for a year, and fashioned into bows (Ortiz 1995: 32). Wood used for eel hook handles, some three feet long, with finger notches and designs (Gordon 1996/97: 9). Wood the primary material for the twenty or so sticks ("cards") used by men when playing "Indian card game," a gambling game in which teams earn points when their players correctly guess in which hand a member of the opposite team has hidden the "ace," a yew stick marked with a black ring (Ortiz 2002: 4). Wood used for stick game "sticks" and "tossels" (two wooden blocks connected by a cord). During this very competitive and physically challenging game, on which wagers are placed, men compete to throw the tossel across their team's goal line. Wood used as an element of ceremonial regalia (Colegrove 2006). Wood used by artisans for culturally-inspired carvings, such as "Yew Woman" by George Blake (Hupa/Yurok) (Ortiz 1995: 30, 33-34). Wood preferred for pipes, although madrone, oak, and manzanita can also be used (Ortiz 1993/94: 20).	
Torreya californica	**California nutmeg**
No contemporary uses identified to date.	
Toxicodendron diversiloba	**Poison oak**
NW: Leaflets eaten in small amounts to cause immunity to rash. Juice used for tattooing (Ortiz and others 2006: 206-207). C: Young, tender, partially-grown leaflets eaten in small amounts to prevent colds (Ortiz 1994b, 2002b: 157-160). Poison oak roots become intertwined with those of "Indian tea" (yerba buena), and by drinking the tea when young, one may develop an immunity to poison oak oils (Colegrove 2006).	
Vancouveria planipetala	**Redwood ivy**
No contemporary uses identified to date.	

California Indian Perspectives About, and Response to, Sudden Oak Death[25]

Many California Indians fear that SOD's spread may have irreversible effects on their ability to continue their cultures. A very real possibility exists, for instance, that tanoaks may be entirely eliminated from the landscape in infected areas. Even if the trees continue to exist somewhere else, traditionalist California Indians believe that when gathering cultural materials, it is both spiritually and ethically important to gather within their own tribal territory, in a place where no other family or individual has cultural rights to do so.

In the past, whenever California Indians went into another tribal territory to trade, or, more rarely, to gather, they showed respect for that tribe by doing so only with permission. Today, traditionalist California Indians continue to follow these older ways.

As explained in 2006 by Eric Wilder (Kashaya) about the importance of place to his people, "Part of the belief is that...our teachings to our people come from the land that we come from. The land recognizes our language, and considers us part of the landscape itself. So for us, to go outside of that to another place that recognizes a different group of people's language, we're not only disrespecting them, we're disrespecting the land."

The prayers, offerings, ceremonies, and cultural proscriptions that apply to the gathering of acorns, likewise apply to where, when and in what context traditionalist California Indians gather any plant materials. As Eric Wilder (2006) elaborated about Kashaya traditional law, "You have these rules to follow... As we gather, we use these places as classrooms for our children. We teach them that we're going out here to gather from the creation, and this is something we should respect. We're gathering something that we didn't plant here. The Creator planted these things here for us. We're taking it freely, but we need to sacrifice for it. We put up a picnic to respect the top of the land spirits; to thank the Creator for putting these things here for us."

When traditional law is not followed, acorns and other cultural plant materials "won't come back and won't be here for us the following year." Thus, for traditionalist Kashaya, the recent arrival of SOD into their tribal territory signifies a consequence for not respecting the rules: "The top of the land spirits and the plants and animals are rebelling against us, and trying to teach us that we're breaking the agreement that we had since we were first put on the land" (Wilder 2006).

In an effort to stem the advance of SOD into their ancestral territory, including their 41-acre rancheria, staff, and tribal members of the Kashaya Band of Pomo Indians have teamed up with researchers, such as Doug Schmidt of the Garbelotto Lab, and plant pathologist Ted Swiecki, to study whether Agrifos (phosphite, an inorganic salt), when applied to the surface of tanoak bark, can protect tanoak stands from *P. ramorum*. Since tanoak acorns continue to be used for food by the Kashaya, an important first step is to test whether phosphite will "affect the balance of tannins or otherwise affect acorn quality" (Spring 2006:19).

[25] Unless otherwise indicated, all information about California Indian responses to this disease is derived from field research conducted from 2003 to present.

The Kashaya are one of several federally recognized tribes that have sponsored educational forums to alert their members about *P. ramorum*, and ways to prevent its spread, as have various tribal organizations. The Hoopa Valley Tribe, whose reservation does not currently have the disease, has instituted an active monitoring program using stream baiting with rhododendron leaves. Through this method, the tribe can monitor some 70 percent of their approximately 80,000-acre reservation in an effort to try and insure that the disease does not get established there. They are also working with the University of California, Davis, to sample for symptomatic trees. As a precaution, they have sponsored efforts such as bicycle-washing stations for mountain bike riders that come from afar to participate in races on the reservation (Salberg 2006).

California Indians openly wonder whether or not the discontinuance of ancestral land management practices honed over thousands of years has aided *P. ramorum*'s ability to spread. This lack of management has created unbroken thickets of understory. If woodlands and forests were once again more open, they argue, it would be more difficult for the disease to move from host to host. Other potential impacts might also be avoided. As explained by forester Kathy McCovey (2003),

"When you get an area too stocked with any type of species, the whole population gets weak. We've already got diseases hitting these trees. The tanoaks are dying. The maples and madrones, they're already stressed out. If we get SOD in there..., it will affect the majority of the species that we have along the river corridor. You'll have more dead trees. Then if you get a wildfire in there, it's going to burn hot. There's not going to be anything left but bare ground, because of the fuel loads and density of the trees. It's going to affect the soil."

Whether or not the return of indigenous land management practices will ultimately halt or reverse the spread of Sudden Oak Death, California Indians speak with assurance that the widespread reintroduction of these practices would be of overall benefit to the health of entire ecosystems.

In the meantime, California Indian plant gatherers worry that they might inadvertently spread SOD while continuing to practice their culture. As noted by Don Hankins (2003):

"We're more mobile today than we've ever been. We have this ability to go to the coast in these areas where SOD might be, and we might be hiking, or even collecting plant materials, and if we're not careful about what we do, we could potentially track this material back into our areas on our shoes, our gathering equipment, our tools, and so forth, and possibly introduce this into our own gathering sites."

Some individuals have stopped gathering anything at all in affected areas, even those who are aware of such safeguards as washing soil from shoes, boots and tires before leaving the gathering site, or cleaning shoes and boots with Lysol or a 10 percent bleach solution before leaving an infested site. They simply do not want to take the risk, especially since the disease is virtually impossible to identify in the field.

If affected areas encompass an individual's tribal territory, avoidance is not an option, given the cultural, emotional, spiritual, and historical ties that connect people to place.

Conclusion

For untold eons, California Indians have interacted with plants in ways that bridged physical and ecological needs with the intangibles of sacred time and cultural proscriptions. Their land management practices insured the health and well-being of the plants upon which they and other animal species relied. In the process of gathering plants, they developed a relationship with them.

Historical events altered those relationships, but did not sever them. Today, California Indians continue to use oak, tanoak, and many other plant species for the same purposes as their ancestors, creatively blending the older ways with newer techniques. The spread of SOD into several coastal and near-coastal, California counties threatens this vital relationship between people, cultural heritage, place, and plants. As California Indians grapple with the cultural and ecological implications of SOD, they face new challenges to the continuance of their cultures.

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