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Fire management by the First Nations of the Southwest

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In the fire prone Southwest some of the best lessons on land management come from the First Nations. Most practiced extensive fire management that helped create open forests with well spaced tall trees and flower fields that produced a wide range of edible seeds and bulbs. Botanists, ecologists and foresters too often neglect this fire stick agriculture. The ConCow Maidu* would never have allowed the forests around Paradise to become so dangerous.

"Our kind of people never used the plow.... All they used to do was burn the brush at various places, so that some good things will grow up... They did not set fire for nothing…" a Karok informant.

Fire management was an essential and important tool of the native people in California, the Southwest, and many other parts of the country and the world. Selected areas were burned regularly at different seasons and frequencies to improve hunting, facilitate harvesting of acorns and other tree and shrub seeds, to produce desired materials (i.e. numerous straight willow shoots for weaving), to favor preferred food plants (perennial grasses and bulbs), and to maintain open travel and vision. Many early explorers were impressed by the park-like quality of the western landscape. This lives on today in western names like Estes Park, South Park, and Echo Park. Most failed to recognize that this appearance was the result of Native American firestick agriculture.

Fire stick agricultural management practices were pervasive and lasted until long after the missions were established. The settlers in California, who failed to understand the use of fire, were tormented by them, and edicts from the Governor were periodically issued to stop them -- beginning in 1793, ***"to prohibit for the future (availing myself, if it be necessary of the rigors of the law) all kinds of burning, not only in the vicinity of towns, but at the most remote distances…"*** Interim Governor Don José Joaquín de Arrillaga May 31, 1793.

Burning was perhaps most common in Fall, but might be done in the Spring, Fall, Spring and Fall, or on an annual, biannual, 5, 10, or 20 year rotation. Usually the fires were set at times when they would stay on the ground and slowly burn off the unwanted thatch and thickets. This was especially easy to do in the Spring, when it would benefit grasses and bulbs the most. This increase in food production was perhaps the most important aspect of fire management. Burning would improve the harvest of bulbs from plants such as wild hyacinth, lilies, wild onions, brodiaeas, yampa, and other bulbs; and would improve yields from perennial grasses such as wild rye, needlegrass, and wild barley, and annuals with preferred seeds such as tarweeds, red maids, and chia.

Fire played an equally important role in making the acorn and pine nut harvests easier and better. First, clearing the ground of debris made it easier to collect the acorns and cones after they were shaken or knocked off the trees. Equally important, the regular burning (annual in most cases)

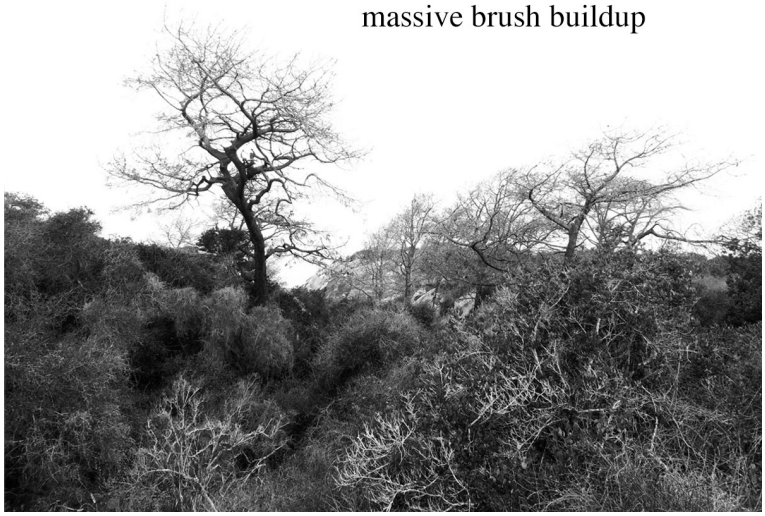
burned up debris and weevil invested acorns and nuts on the ground, and limited pest damage to the following crop.
"Old acorn on ground have lots of worms; no burn old acorn, no burn old bark, old leaves, bugs and worms come more every year. Indian burn every year just same, keep all ground clean..." Klamath River Jack. By limiting competition with brush and releasing nutrients burning would increase the health and yield of oak and pine trees.

Fire was also critical for making better materials for baskets, thatching, granaries, and other craft items. Hundred if straight rhizomes and thousands of straight branches were needed each year by a village to maintain its baskets and to make baskets for trade. Often this was done by pruning, but equally common was the use of fire to clean off old stems and allow for fast growing and straight shoots. These shoots played an important role in food collection and storage. The Miwok of Yosemite, for example, made basket traps for fish with willow shoots. Acorn harvest, processing and storage all involved woven baskets.

The elimination of periodic burning (often on a short return frequency) contributed to dramatic changes in plant communities. In many areas open savanna oak and pine turned into brush fields after the control of fire (exacerbated later by poor timber harvest practices and over- grazing). The way fire had been managed developed an open landscape most of us would prefer even today. In Yosemite for example, regular fires controlled the young conifers and favored the oaks. As the native people were forced out the fires were controlled and the open meadows and park like settings disappeared under thickets of conifers. Recently prescription burning has been returned to Yosemite's fields and meadows to open up the views and improve the beauty of the park. The magnitude of the changes is dramatic. For example, in Ponderosa forests in the Southwest, stem counts increased from 23 to more than 800 trees per acre in some areas. Dramatic increases in tree density have also been found in California.

Coastal California was probably once much more flower-fields, bunch grasses and oak savannas that has now been invaded by brush. Quoting Fr. Juan Crespi as he headed north from San Diego in July 1769, *"We ascended a large grassy hill...and found ourselves on some broad mesas ...all covered with grass... except here and there some very small oaks and chaparral."*

Dead Torrey Pines 2018, massive brush buildup



One of the major factors in the current decline of the Torrey Pines at the Torrey Pines Natural Reserve is the absence of the Ystaguay, the local group that used fire to manage their groves. As Delfina Cruz (A Kumeyaay informant) told Florence Shipek, *"burning every year never let enough fuel accumulate to damage the trees."* She had also been told that pine nuts were planted to increase the

size of the groves. The increased brush has also stressed the trees by taking away critical rain, fog drip and nutrients in this coastal desert.

Modern times

Disastrous fires in the Midwest (see for example the Peshtigo, Wisconsin disaster of 1871 with 2,000 killed) and the Big Blowup in the West (3 million acres and 85 deaths in 1910) led to state and national campaigns of fire suppression. Billions of dollars have been spent to stop fires -- yet it has only succeeded in making those that do escape bigger and more dangerous. The removal of controlled burning has paradoxically increased the fire risk.

The carefully considered and regular burning of large parts of the country by Native people limited fuel buildup and made natural fires (from lightning) less of a threat. Despite the very intensive use of fire by Native people biologists and foresters have been slow to acknowledge their impact. Fire suppression has dramatically changed the plant communities of San Diego and the Southwest. We could learn much from the people who managed this land for 3-15,000 years before the Europeans arrived.

Excellent video free on line
https://www.kcet.org/shows/tending-the-wild the first section is on managed fire

Further information

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*almost wiped out in the 1830s by malaria introduced by Hudson's Bay trapping parties. The Hudson's Bay Company Brigades of 1832-33 and the Malaria Epidemic in California. See: https://works.bepress.com/david_a_bainbridge/40/download/

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