

Fire ecology manipulation by California native cultures

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Before the colonial era, 100,000s of people lived on the land now called California, and many of their cultures manipulated fire to control the availability of plants they used for food, fuel, tools, and ritual. Contemporary tribes continue to use fire to maintain desired habitat and natural resources.

Frank Lake, an ecologist with the U.S. Forest Service's Pacific Southwest Station, will lead a field trip to the Stone Lake National Wildfire Refuge during the Ecological Society of America's 99th Annual Meeting, in Sacramento, Cal. this August. Visitors will learn about plant and animal species of cultural importance to local tribes. Don Hankins, a faculty associate at California State University at Chico and a member of the Miwok people, will co-lead the trip, which will end with a visit to California State Indian Museum.

Lake will also host a special session on a "sense of place," sponsored by the Traditional Ecological Knowledge section of the Ecological Society, that will bring representatives of local tribes into the Annual Meeting to share their cultural and professional experiences working on tribal natural resources issues.

"The fascinating thing about the Sacramento Valley and the Miwok lands where we are taking the field trip is that it was a fire and flood system," said Lake. "To maintain the blue and valley oak, you need an anthropogenic fire system."

Lake, raised among the Yurok and Karuk tribes in the Klamath River area of northernmost California, began his career with an interest in fisheries, but soon realized he would need to understand fire to restore salmon. Fire exerts a powerful effect on ecosystems, including the quality and quantity of water available in watersheds, in part by reducing the density of vegetation.

"Those trees that have grown up since fire suppression are like straws sucking up the groundwater," Lake said.

The convergence of the Sacramento and San Joaquin rivers was historically one of the largest salmon bearing runs on the West Coast, Lake said, and the Miwok, Patwin and Yokut tribal peoples who lived in the area saw and understood how fire was involved.

California native cultures burned patches of forest in deliberate sequence to diversify the resources available within their region. The first year after a fire brought sprouts for forage and basketry. In 3 to 5 years, shrubs produced a wealth of berries. Mature trees remained for the acorn harvest, but burning also made way for the next generation of trees, to ensure a consistent future crop. Opening the landscape improved game and travel, and created sacred spaces.

"They were aware of the succession, so they staggered burns by 5 to 10 years to create mosaics of forest in different stages, which added a lot of diversity for a short proximity area of the same forest type," Lake said.

"Complex tribal knowledge of that pattern across the landscape gave them access to different seral stages of soil and vegetation when tribes made their seasonal rounds."

In oak woodlands, burning killed mold and pests like the filbert weevil and filbert moth harbored by the duff and litter on the ground. People strategically burned in the fall, after the first rain, to hit a vulnerable

time in the life cycle of the pests, and maximize the next acorn crop. Lake thinks that understanding tribal use of these forest environments has context for and relevance to contemporary management and restoration of endangered ecosystems and tribal cultures.

"Working closely with tribes, the government can meet its trust responsibility and have accountability to tribes, and also fulfill the public trust of protection of life, property, and resources," Lake said. "By aligning tribal values with public values you can get a win-win, reduce [fire](#) along wildlife-urban interfaces, and make landscapes more resilient."

Provided by Ecological Society of America

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