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Fire as Medicine: Fire Dependent Cultures and Re-Empowering American Indian Tribes

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Topic: [Fuels treatment / Prescribed fire](#) [Traditional Ecological Knowledge](#)

Across North America, many communities seek to live more safely with wildland fire; some call that working to become a fire adapted community. Many American Indian tribes were historically able to live within fire-prone ecosystems, but rather than just being **fire adapted**, they were and still are **fire dependent** cultures. To understand more about what a fire dependent culture is, how and why so many tribes are fire dependent, and how increasing restoration can promote such cultures, I provide a few examples of tribes' interdependence with fire from the Sierra Nevada and Klamath Mountains of California.

Although this post will focus on California, many tribes across North America (in a variety of ecosystems) adapted to living with fire over millennia. Fire was, and remains, a form of "socio-ecological medicine." Tribal communities developed what is known as Traditional Fire Knowledge by using fire for many reasons, including [subsistence and ceremonial purposes](#). This long-term human relationship with wildland fire led to the development of cultural fire regimes (which are essentially landscape-level fire processes that are influenced by both humans — intentionally — and by natural ignitions such as lightning). Specifically, cultural burning can modify natural fire regimes by increasing or changing the frequency, seasonality, location, extent, intensity and resulting severity of fires. It also creates desired post-fire conditions, regarding habitat, access to and quality of valued resources and much more. Much like other fire-dependent animals (remember, humans are animals, too!), many tribes rely on fire for fostering cultural renewal, sustaining traditions, providing water and food security, and generating ecosystem services.

The Karuk Tribe, among others, sees fire as medicine, and as such views traditional burning as a human service for ecosystems. Prescribing fire in specific areas fosters and enhances water, food, materials, medicines and vegetation that benefits both people and the environment. On the converse, many landscapes that have experienced fire suppression and exclusion, or in simpler terms, *not enough fire* — are sick (as are the people who live there, from a tribal perspective). Eventually, those places then get *too much fire* (i.e., catastrophic wildfire), like an overdose. Traditional Fire Knowledge is the sophisticated application of fire, "prescribing" fire like a medicine, to promote healthy and resilient landscapes and human communities. Here are some examples of how that works.

Yurok heritage consultant standing with a sugar pine along the Somes Fire 2006 fireline, on a culturally significant ridge. Credit: Frank K. Lake, USDA Forest Service

In the Sierra Nevada and Klamath Mountains, tribes rely upon sugar pines ([Pinus lambertiana](#); PDF, 180KB) for a range of spiritual, subsistence and utilitarian purposes. Sugar pines have thick bark that protects their internal tissue from heat damage. They also have sparse branches, which allow a fire's heat to dissipate and not carry as easily through the canopy. Their needles have special functioning which allow them to conserve water when experiencing drought. Among the Karuk and Yurok tribes (whose ancestral territory is in and around the Klamath Mountains), sugar pines are believed to be spirit beings who transformed into trees and now serve as physical teachers of the importance of fires on the landscape.

Beyond their spiritual importance, sugar pines' cones provide highly nutritional nuts, and the sap is used for medicine, and to ignite cultural burns. Their wood is used for lumber and canoes, and the roots for basket weaving. Sugar pines, alive or dead, provide highly valuable habitat for a variety of birds, such as woodpeckers and bluebirds, and fur-bearers such as pine martens and fishers (which the northwestern California tribes use for ceremonies). Because of the high level of tribal dependency on sugar pines and the habitat they create, tribes value them and the

roles they serve across the landscape. In current cooperative landscape restoration approaches, sugar pines are being actively retained, promoted in treatments, and those that are resistant to prominent diseases like white pine blister rust are being planted during post-fire recovery. These actions facilitate the reintroduction of fire as an eco-cultural revitalization process, as [the ecology is restored and indigenous culture is revitalized simultaneously. Fire dependent culture thus becomes stronger.](#)

Black oak acorn soup in a Mono basket. Credit: Frank K. Lake, USDA Forest Service

The [California black oak](#) (*Quercus kellogii*) is another important species regarding both cultural identity and resources for many tribes across California. Tribes use black oak habitat, many of their groves or “orchards” in or near villages, and the tree itself for sustaining ceremonies, food, materials and highly valued wildlife species. The black oak thrives in more frequently burned, more open habitats. The tree often has a burl that can resprout if its main trunk is killed, although the resprout produces fewer acorns. It also has physical features that reduce fire intensity, such as open, wide branches and less flammable leaves (when they are green; the tree is deciduous). Black oaks can draw up water deep in the soil via a process called hydrologic redistribution and leak it nearer the surface of the ground, around the tree. During drought conditions, the oak leaves’ openings (stomata) close to conserve water, similar to the sugar pine. Their acorns are highly prized by wildlife and tribes alike as food; the wood is used for lumber, heating and cooking, and the burl sprouts and limbs are used for tools. The tree provides important habitat for a range of plants, fungi and animals that tribes rely upon for food, materials and medicines. Traditional Fire Knowledge of the adaptations of such species and a desire for more drought and wildfire resilience are why tribes are working to restore, enhance and promote black oaks and sugar pines across the landscape.

In addition to the sugar pine and black oaks, Traditional Fire Knowledge and cultural burning promote other vegetation of cultural significance that is also drought tolerant and fire adapted. Shrubs such as the serviceberry (*Amelanchier*) and California hazel have many cultural and ecological services, especially the resprouting stems in the 2–5 years after fire. For serviceberries, spring flowers are beneficial to pollinators and people alike; the fruit ripen early in the summer providing nourishing vitamins and sugars before many other plants are able to, and the stems are used by many tribes for tools. California hazel provides edible nuts, and many tribes use the shoots or stalks for basketry, other materials or tools. Both types of shrubs provide food and habitat for wildlife, many of which are valued game by tribes and nonindigenous communities alike. Increasing healthy sugar pine and black oak groves, which are by no surprise often associated with serviceberries and California hazelnut, has positive implications beyond tribal communities.

Serviceberries are among the first plants to flower and then fruit each year and thus provide nourishment before many other plants are able to. Its stems are used by many tribes for tools. Serviceberries are among the many plants that depend on fire to thrive. Credit: Frank K. Lake, USDA Forest Service

One the most challenging barriers to promoting fire dependent cultures is for nonindigenous partners to understand the ways tribes rely upon wildland and prescribed fires, and their desire to promote fire adapted habitats and species. The Indigenous Peoples Burning Network (and all of its sister networks under the [Promoting Ecosystem Resilience and Fire Adapted Communities](#) agreement, “PERFACT”; PDF, 2.54MB), is increasing this understanding by working with agencies, academics, other organizations, tribes and indigenous families. This work simultaneously strengthens tribal engagement and sovereignty. Partnerships and trainings, such as the [Western Klamath Restoration Partnership](#) and the Yurok and [Klamath Prescribed Fire Training Exchanges](#) (TREX), incorporate Traditional Fire Knowledge through increased community and tribal participation.

California hazelnuts, in a hazel-stick basket, on a hazel bush. Credit: Frank K. Lake, USDA Forest Service

At the core of a fire dependent culture are the teachings of “*pyro-kincentricity*,” or having a holistic, family-like, reciprocal relationship and connectedness with wildland fires. These teachings are core to networks like the Indigenous Peoples Burning Network and landscape collaboratives such as the Western Klamath Restoration Partnership, and learning from them is key to our survival.

Restored fire-adapted forests allow for more managed (rather than suppressed) wildland fire, easier suppression or control of wildfire when values are at risk, increased opportunity for prescribed fire, enhanced water and food security, wildlife habitat, and overall, a more functional, resilient landscape. [With their dependence on fire, American Indians are uniquely positioned to teach other communities throughout the country about how fire is medicine for both people and the environment.](#)

Dr. Frank Kanawha Lake is a research ecologist in the fire and fuels program at the USDA Forest Service's Pacific Southwest Research Station. He received a Bachelor of Science in Integrated Ecology and Culture, with a minor in American Indian Studies from the University of California-Davis in 1995. In 2007, Frank completed his Ph.D. at Oregon State University in the Environmental Sciences Program. His research focuses on restoration ecology and the incorporation of Traditional Ecological Knowledge (TEK) into wildland fire and forest management in the Pacific Northwest and northern California, with an emphasis on the Klamath-Siskiyou bioregion. He has a research interest in wildland fire and management effects on cultural resources and tribal values. Frank acts as the tribal-climate change contact at the Pacific Southwest Research Station, and lead coordinating scientist for the Redwood Experimental Forest and Western Klamath Restoration Partnership landscape collaborative. He also serves as an adviser to the Indigenous Peoples Burning Network and was the chair of the TEK section of the Ecological Society of America from 2014–2016. Recently, he has been studying how TEK can be incorporated into western research on climate change to support [tribal adaptation and mitigation strategies](#). Frank's heritage is a mix of American Indian, Chicano and European American.

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