



INTRODUCTION

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In December 2022, 195 countries signed an international agreement at the 15th Conference of Parties to the United Nations Convention on Biological Diversity (CBD) in Montreal, Canada. Notably, the "Kunming-Montreal Global Biodiversity Framework" includes the global target to protect 30% of Earth's lands and coastal waters by 2030. California is poised to be a leader of this effort with its 30x30 Initiative that aligns with this international goal. Indigenous Peoples actively steward most of the world's biodiversity in cycles and traditions that connect people with environment for reciprocal care. While 30x30 has generated worries about the impacts on and inclusion of Indigenous Peoples, California's vision includes strengthening partnerships with Tribes. California Native leaders emphasize that this must include acts of restorative justice like returning Indigenous lands, a process that is increasingly at the intersection with biodiversity, conservation, and climate change.

This special issue illustrates the essential role that Native American people in California play in collectively navigating the intertwined crises of climate

change and biodiversity loss. The stories that emerge show the challenges that climate change is posing for Indigenous communities, lands, and plants. However, they also illustrate something bigger: stories that are rooted in resilience and revitalization-conservation. For many Tribes in California, the Anthropocene is coming at a time of Indigenous reclamation of space and time filled by native plants and foods, lands, knowledge, stewardship, stories, and language. In some ways these are a response to climate stress but in others they are generations upon generations of work to maintain Indigenous sovereignty.

The stories brought to us in Part II of this special issue demonstrate how this is unfolding under the careful leadership of Indigenous researchers and practitioners to build generational strength during the Anthropocene. Tribes are responding to climate change as they simultaneously fulfill a community desire for

Above: A cultural burning workshop hosted by CAL Fire in 2022.
Photo: CAL Fire

relationship and responsibility to their land and kin, Indigenous processes of conservation.

This issue opens with the Amah Mutsun Tribal Band (AMTB) of central coastal California. They have undertaken innovative approaches to access ancestral lands and waters during times of limited access and dormant cultural knowledge systems. As one of several dozen non-federally recognized tribal communities in California, the AMTB created the Mutsun Land Trust to restore access to and revitalize ancestral lands and waters and traditional knowledge systems through co-management and collaborative research partnerships. Amah Mutsun Tribal Member and Native Steward Steven Pratt notes that the Amah Mutsun, since time immemorial, are active members of the landscape and the community of life. Responsibility for both are equally related—care of the land equates to taking care of relatives.

The Amah Mutsun are using innovative partnerships with work in ecoarchaeology, geospatial data and mapping, and restoration. These developments are supporting Amah Mutsun's role as active stewards of biodiversity in the Bay Area through restored land access, stewardship, and abundance of cultural use plants. Working with ecoarchaeological research and AMTB oral knowledge and ethnographic archival materials, formerly dormant information regarding cultural foods and fibers and endangered grasslands is being revived. This approach has informed collaborative stewardship practices with state and federal land managing agencies, and local land trusts.

Indigenous knowledge systems, created over millennia, are grounded in principles of this relationality and care. In times of great uncertainty and unprecedented anthropogenic climate change, their application offers guidance for Indigenous and settler societies alike.

In that context the Yurok Tribe—along with other Tribal communities in northwest California, non-profit organizations, universities, and governmental agencies—are working to restore forests and woodlands to improve resilience to wildfires, drought, pests, and diseases. The Tribe's current work, within the Ancestral Yurok Territory, incorporates the design and evaluation of forest treatments that include hazardous fuels reduction, tree harvesting, and intentional burning, based upon Indigenous knowledge and associated Tribal stewardship practices.

Indigenous knowledge and associated Tribal stewardship practices are also incorporated in the mission of the Karuk Tribe-University of California Berkeley Collaborative (KBC). As a team of Karuk Tribal members and descendants, cultural practitioners, and researchers, KBC is working to support Indigenous

led monitoring and revitalization of Karuk lands and non-human relatives under prolonged drought, seasonal shifts, and annual climate induced natural disasters. This effort is part of a four-year collaborative research project, which supports Karuk efforts towards the restoration of the lands and related food systems, knowledge, culture, and language.

Karuk cultural practitioner, archaeologist, and forest ecologist, Kathy McCovey, is working to document the changes to culturally important plants and support Karuk Tribal members by caring for them. Karuk People have remained connected to land and plants through many waves of stress and violence and hold a rich repository of generational knowledge which informs their resilience.

Using monitoring and research methods that center Karuk knowledge of climate stress and environment with measures of habitat structure and diversity from forestry, ecology, and wildlife studies, the KBC team has developed a methodology that aims to support long-term documentation of climate change, and Karuk led landscape stewardship and restoration impact. Their article shares documented climate change impacts on black and woodwardia ferns, and hazel and grey willow, used for basketry, and observations on other important plants like pepperwood and chinquapin nuts, blackcap raspberries, and green leaf manzanita.

The final article outlines a specific approach to building climate and community resilience, and serves as an example of how to center Indigenous perspectives in climate science. The work presented brings together knowledge systems of southern California Tribes, and academic research through meaningful engagement and rigorous capacity-building training sessions.

With a foundation that places ways of knowing, climate science, and cultural knowledge on equal footing, the Climate Science Alliance's Stewardship Pathways Program is focused on supporting economic development and the co-stewardship of ancestral lands through various training pathways. The Program helps articulate appropriate ways to integrate TEK into western management practices in ways that promote cultural and ecological resilience under climate change, help plan for climate adaptation, and respect and value cultural knowledge systems. As a result, the coproduction of knowledge between these groups is rare. To fully understand climate change impacts in Southern California's terrestrial ecosystems, the decolonization of the academic sciences through the prioritization of Indigenous voices and the inclusion of social and environmental justice components is essential.



The perspectives shared in this issue provide a timely snapshot of the now and of the future. It is thrilling to think about a space where native plants are surviving and thriving in new ways through adaptive stewardship led by Indigenous Peoples. Plants are stories, teachings, songs, relatives, food, medicines. They regenerate through cells and Earth systems, but they persist through people.

Figure 6c: Frank Lake and Kathy McCovey measuring the diameter of a particularly large madrone tree at a Karuk-Berkeley collaborative climate change plot. Photo: Jennifer Sowerwine