

Archaeobotany, Historical Ecology, & Contemporary Land Stewardship



Amah Mutsun Native Stewards Paul Lopez and Josh Higuera-Hood and UC Berkeley students Rachel Gordon and Rosario Torres float archaeological samples at Wilder Ranch State Park, June 2016. Photo by K. Lightfoot.

Rob Q. Cuthrell

Owner, Lighterknot Works; Director of Arch. Resource Management, Amah Mutsun Land Trust

Historical Ecology & Land Stewardship

Historical Ecology:

- Multidisciplinary approach to understanding time, place, and people.
- Brings together archaeology, history, paleo-ecology, ethnography, climatology, geomorphology, geography, etc.
- Research focus is on the *landscape*, as the outcome of relationships between people and environment.

Land Stewardship:

- Historically focused on acquisition, management as wilderness
- Not sustainable, doesn't meet goals, e.g. fire safety, biodiversity, indigenous engagement
- Recent focus on *active* modes of land stewardship to meet goals and stakeholder needs.



Quiroste Valley's open floor of grasslands in the early 1900s (left) vs. dominance by woody vegetation today, after 30+ years of management as wilderness (right). The landscape today is less fire safe, with little coastal prairie.

1. Contextualizing Historic Species Composition to Guide Restoration

-Not only species lists, but historic context of native species in terms of climate, fire regime, cultural resources, and land uses.

-Identify locally extirpated or threatened species for stewardship.

-Engage land managers in the concept of natural resources as cultural resources.

-Identify potential remnants of indigenous stewardship on the landscape.

Phacelia malvifolia



Trifolium wormskioldii

Ceanothus thyrsiflorus



Common genera documented archaeologically at site CA-SMA-113 in Quiroste Valley Cultural Preserve that are uncommon or absent on the landscape today. Reductions in some native genera are attributable to removal of disturbance factors, especially fire. Photos by G. Walden, J. Mills, S. Matson (CC BY-NC-SA-ND 3.0)

2. Revitalizing and Continuing Cultural Traditions

Providing tribes with long-term ethnobotanical data.

-Place-based, local information.

-Documenting antiquity of plant presence and use.

From research at Quiroste Valley:

-Research on hazelnut fire ecology

-Tending stands of tarweed to ensure safe harvest

Amah Mutsun Native Stewards Gabriel Pineida, Nathan Vasquez, and Natalie Garcia remove poison hemlock from a stand of coast tarweed at Quirsote Valley Cultural Preserve.



Archaeobotanical tarweed seeds from site CA-SMA-113 in Quiroste Valley Cultural Preserve and tarweed flowers (Keir Morse CC BY-NC-SA 3.0).



3. Addressing Important Conservation Issues

Wildfire

- Unmanaged landscapes accumulate fuels, result in catastrophic fires
- Documenting the long-term history of fire supports reintroduction today

Native Coastal Prairies

- A rare and threatened vegetation type, also the most biodiverse grassland in North America, but public generally unaware of conservation need
- Archaeobotany documents long human engagement with coastal prairies; in partnership with tribes this information strongly connects people today

Amah Mutsun Native Stewards Nathan Vasquez and Gabriel Pineida-Padilla remove young Douglas firs encroaching on native coastal prairie at Quiroste Valley Cultural Preserve.



Amah Mutsun Native Stewards Paul Lopez, Nathan Vasquez, and Abran Lopez light a prescribed burn with traditional fire drills in the Santa Cruz Mountains. This burn was carried out by CalFire crews on Sempervirens Fund land. Photo by Mike Kahn.



Conclusions

Attributes of our approach to contemporary relevance:

- Multidisciplinary historical ecological approach
- Partnering with tribes, land managers
- Designing research to address contemporary issues
- Working with partners to use research outcomes to inform land stewardship and public outreach



Amah Mutsun Native Stewards work with State Parks fire crews to burn piles of Douglas fir at Quiroste Valley Cultural Preserve. This work involved thinning Douglas fir forest to create shaded fuel breaks, lowering fire risk.



Amah Mutsun Native Stewards Abran Lopez and Paul Lopez, Amah Mutsun Tribal Band Chair Valentin Lopez, and Prof. Kent Lightfoot (UCB) survey native plants in a coastal prairie at Quiroste Valley Cultural Preserve.

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