



Cooperative Habitat Restoration of a California Grassland

Importance: An extensive deergrass field (*Muhlenbergia rigens*) and expansive beds of white root sedge (*Carex barbarae*) occupy a site within Pinnacles National Monument, called McCabe Canyon. Botanically, large stands of deergrass and white-root are extremely rare in California. Culturally, deergrass and white root have deep meanings for past and present Mutsun and other California Indian peoples. Pinnacles is partnering with the UC Santa Cruz Arboretum and the Amah Mutsun Tribal Band to restore both natural and cultural processes in this unique site. This project provides an opportunity for resource management collaboration that is unprecedented in the park's 100 year history.



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McCabe Canyon is botanically significant because it maintains native grassland, oak woodland, and riparian ecosystems. Valley oak savannah and riparian ecosystems are plant communities vulnerable to degradation and are considered threatened habitats by the California Native Plant Society and the California Department of Fish and Game. The area's large populations of deergrass, covering 2 acres, and white root sedge, stretching 3 acres, are a rare remnant of native grasslands that centuries ago were widespread.

UC researchers, Tribal members, and Park staff meet to create an action plan for McCabe Canyon

McCabe Canyon is also culturally significant. Deergrass and white root sedge provide key materials for California Indian basketweaving. Both species were traditionally and are contemporarily managed or tended by Native peoples. Other ethnobotanically significant species in the area include valley oak (*Quercus lobata*), coast live oak (*Quercus agrifolia*), and gray pine (*Pinus sabiniana*), all traditional food plants. A perennial stream runs through the canyon, and the combination of permanent water, plentiful food and abundant basketry material provides a probable case that this site may have been historically managed by Native peoples.

Currently the area is not managed, and is impacted by exotic pigs, invasive weeds, and possibly by the absence of traditional tending practices. In the field of restoration ecology, there is an increasing awareness as to the significant role that Native Americans historically played in shaping the landscape. Traditional ecological knowledge teaches that both deergrass and white root sedge respond favorably to intermediate

human disturbance. The application of fire maintains healthy stands of deergrass and encourages new growth and flower stalk production. The process of tending white root sedge increases root growth by aerating the soil and removing weeds.



2 acres of deergrass



3 acres of white root sedge

California Indians still carry on the tradition of gathering and tending these species today. The cooperative habitat restoration project between Pinnacles, UC Santa Cruz, and the Amah Mutsun Tribal band aims to understand traditional management processes and restore these

The Project: Restore the condition of botanically and culturally significant vegetation communities to a reference state inclusive of cultural management, reintroduce traditional resource management techniques and determine flora and fauna response, and form lasting working relationships with project partners.

This project takes an innovative approach to habitat restoration by integrating traditional Native American tending practices with contemporary techniques to restore and protect the natural and cultural processes of a unique California grassland system. This collaborative restoration project will research, test and re-learn appropriate traditional management techniques in a way that is mutually beneficial to all parties.

Over a period of three years, this project aims to:

- Compile baseline data regarding the cultural and natural resources within McCabe Canyon
- Develop desired future conditions for the deergrass and white root, combining both cultural and ecological needs
- Implement experimental treatments and measure flora and fauna response
- Conduct invasive species control within the site and throughout McCabe Canyon
- Create educational and interpretive products for the park, the University of California, and the Amah Mutsun Tribal Band
- Convey to the public how California's first people shaped the landscape and how these concepts are linked to contemporary California Indian culture
- Produce an Amah Mutsun Basketry Type Collection for both display for educational purposes and for park archives
- Incorporate an archaeology component to include both surface and sub-surface level survey
- Gain a better understanding of ecosystem structure and function within McCabe Canyon
- Gain a better understanding of environmental and fire history of the site

Relearning garden at the UC Santa Cruz Arboretum

This project is complementary to distinct, but related efforts to establish a Re-learning garden at the UC Santa Cruz Arboretum. The Re-learning garden will highlight culturally important plants to California Indian people, with a specific focus on the Amah Mutsun people. This will be a living collection serving as an active learning center that invites ceremony and familiarity focused on the culture and people of the Central California coast. Pinnacles National Monument and the Arboretum at UC Santa Cruz will support each other by collaborating on plant collections, data collection, producing interpretive materials and understanding the growth and tending requirements for key plants of cultural significance.

For more information, contact:

Brent Johnson, Botanist, Pinnacles National Monument
831 389-4486 ext 259 brent_johnson@nps.gov

Sara Reid, ethnobotany intern, Pinnacles National Monument
831 389-4486 ext 272 sara_a_reid@partner.nps.gov

Rick Flores, Curator of California Native Collection, UC Santa Cruz Arboretum
831 427-2998 rflores@ucsc.edu
