

Why Native Grasslands?

California native: *California fescue*, © Saxon Holt

Drive anywhere in California's semi-arid regions and you'll often be looking out across grass-covered plains or foothills. In some areas these landscapes are devoid of trees and shrubs—true grasslands. In others there might be a scattering of oak trees or other tree species—savannas. During the long dry season typifying California's Mediterranean climate, grasslands are beautiful settings. They glow and sway in the sun and wind, and evoke images of a time and place Native Californians and early settlers found common. Unbeknownst to many, you are also most likely looking at a grassland completely dominated by nonnative introduced grass species. That's right—exotics. Europe's finest. California's native grasslands have been under siege for centuries and they are in need of help.

Why, you may ask, does it matter what species of grass is growing in a grassland? More specifically, why does it matter what species of grass grow in state parks?

"Grasses and grasslands," explains Rick Rayburn, State Parks Natural Resources Division Chief, "are among the most important elements of the California landscape. They have been highly altered, and they are

one of the least protected vegetation types in California. And this makes protected grasslands in the state park system of particular importance."

"They are also one of the least understood habitats in California," continues Rayburn, "and one of the most difficult to restore and protect. We have a fairly good handle on most all vegetation types in the state, but grasslands are troubling. That is why we went to Jim Bartolome at U.C. Berkeley to help us."



California's Rouge's Gallery of exotic grass species.
Watercolor by Kristin Jakob, © California Native Plant Society

Bartolome is a Professor of Rangeland Ecology at U.C. Berkeley. He has been studying California's grasslands for decades. Along with Staff Research Associate Michele Hammond, Associate Researcher Peter Hopkinson, and Graduate Students Philip Brownsey, Luke Macauley, Sheri Spiegel, and Rebecca Wenk (San Francisco State), Bartolome has been working with State Parks on a survey of native grasslands in the parks. "This project is designed to develop a quantitative assessment of grasslands in the state park system with the idea of coming up with a way to rank them for their conservation value and also their potential for restoration," states Bartolome.

"We started out looking at the entire system but we narrowed it down to 27 parks where we typically have 3 study plots. That's a lot of sampling sites. We ended up with about 350 plant species across those plots. Of these, perhaps 20 were native grass species, and that is actually quite a lot. We conducted a plant community analysis and discovered there are some very diverse and interesting grasslands in the state parks system. To be honest, we were surprised at how diverse they are and the abundance of native species."

Before Europeans arrived to stay in California in the 18th century, California Indians had been gathering native grass seeds as a highly nutritious food source for thousands of years. They also regularly set fire to the grasslands to encourage new growth. Experts estimate that some 500,000 tule elk thrived in these grasslands. Several million pronghorn antelope flourished in the grasslands with herds of up to 3,000 being recorded in the San Joaquin Valley by early explorers. These are only two of the many wildlife species that benefitted from these productive environments.

But with the arrival of Europeans, all changed quickly. The displacement and eradication of California Indians altered their traditional use of grasslands. Grazing by introduced domestic livestock started in the late 18th

century and spread to Central Valley by the 1820s. As early as the 1880s many grasslands had been plowed under for agriculture, including an estimated 75 percent of the Central Valley. These fire-adapted ecosystems also suffered under a new type of fire management practiced by the newcomers: fire suppression.

In addition to these monumental social and cultural changes, nonnative grass species arrived with the Europeans and their livestock. We know this by the analysis of core samples taken from dry lake beds and the seed content of adobe bricks used for construction. Soon a Rogues Gallery of exotic species swept over the land: Annual bluegrass, foxtail, Italian rye-grass, redstem filaree, and wild oats, to name but a few.

California native: Junegrass, ©Saxon Holt



A display of California native grasses. Watercolor by Kristin Jakob, © California Native Plant Society



Swainson's hawk, © John Muir Laws

Horned lark, © John Muir Laws

STATE PARKS' GRASSLAND PRIORITIZATION PROJECT GOALS

- Protect threatened and endangered grassland species
- Control invasive and naturalized species
- Maintain and improve grassland communities
- Restore historic ecosystem processes
- Improve capacity for information sharing and data-based adaptive management

There are some striking differences between native and nonnative grass species, between what was, and what tends to dominate now. The native species—well represented by needlegrass species, California fescue, and California oatgrass—are perennial plants. That is, they grow throughout the year, for many years. They produce very deep root systems, and typically grow thick and wide bases, therefore the all-inclusive name of “bunch grasses.” Nonnative species are annual plants. They grow vigorously with the arrival of rains in the late fall, produce an abundance of hearty seeds in early spring, then die. They typically have very shallow root systems and lower nutritional value than natives.

In Europe grass species evolved with domestic livestock for millennia and can endure the constant trampling and grazing of horses, cows, and sheep. The new year's growth of these exotics is produced earlier than native species and they can out compete natives for sun and resources. When the soil is disturbed, exotics thrive while natives either die off or are compromised. Simply put, exotic grasses are more adaptable and tougher. Look at any neighborhood sidewalk crack or in a city park—exotic grasses.

“We are looking at major plant and wildlife communities across all of our parks,” states Dave Schaub, Natural Resource Program Manager in charge of the grasslands project. “One of our missions is to restore and maintain

examples of native ecosystems in California. And we know that native grasslands are one of the communities most impacted by agriculture, livestock grazing, and urbanization. This has changed the entire face of grassland communities in the state.”

According to Rayburn, there are some 125,000 acres of grasslands and oak savannas in the state park system, so it is important to focus on management priorities. The results of Bartolome's study will help determine native grassland management goals for State Parks. “Another reason for the study,” Rayburn explains, “is because we only have 15 percent of the funding we need to manage our natural resources in state parks. With limited funding, we want to make sure we are managing and restoring the most important grasslands.”

And, perhaps most importantly, where exotics predominate, ecological richness trends downward. “If you add up all the wildlands in the state, some 10 percent is covered in grasslands or savanna,” says Bartolome. “Also, a significant amount of the state's biodiversity is associated with grasslands. Several important bird species that are declining are grassland obligates, such as the horned lark, grasshopper sparrow, and Swainson's hawk. And studies have shown that native grasslands support higher densities of these species than do grasslands dominated by exotic species of grasses.”

“Besides,” adds the Professor and seasoned field researcher with a slight chuckle, “personally, I really like grasslands. You get a better view standing in a grassland.”

Jerry Emory, Director of Communications, CSPF

RAYBURN'S GRASS VIEWING GUIDE TO STATE PARKS

There are many state parks where you can explore native grasslands, but here are a few of Rick's favorites, from north to south: Prairie Creek Redwoods State Park
Mount Tamalpais State Park
Great Valley Grasslands State Park
Point Mugu State Park

A display of California native grasses. Watercolor by Kristin Jakob, © California Native Plant Society

