

Large Scale, Low Cost Restoration of Native Grasslands and Coastal Sage Scrub using Herbicides

Carl Bell, Regional Advisor – Invasive Plants
University of California Cooperative Extension
9335 Hazard Way, Suite 201
San Diego, CA 92123-1222
cebell@ucdavis.edu

Restoring native habitat in southern California has not met with great success over the past few decades despite lots of effort. It is also expensive, with costs typically in the range of \$3,000 to \$40,000 per acre. Working with several colleagues, such as Edith Allen and Milt McGiffen at UC Riverside (and their students), John Eckhoff at CA Department of Fish and Game, and Marti Witter with the National Park Service, we have been exploring herbicide-based approaches as a low cost alternative.

These approaches concentrate on killing non-native annual grasses and forbs in order to eliminate competition with native plants. We are utilizing broadcast applications of low rates of herbicides; principally glyphosate, fluazifop-P-butyl, and triclopyr, as an efficient and inexpensive way to kill these weeds. We apply the herbicides in winter or early spring to kill the weeds early in the rainy season so the resident natives have access to the limited annual supply of precipitation. We repeat herbicide treatments annually for 3-5 years in order to eliminate the weedy plant seed bank so the problem does not re-occur.

In one site near Ramona in San Diego County, after a five-year regimen of glyphosate, weed whipping the inflorescences of persistent weeds, and seeding with natives; we have increased native cover to 50% compared to less than 5% for the untreated plots. We also have counted over 30 species of natives in the treated plots compared to 3-5 in the untreated plots. Our costs for the treatments for the five years of the study are about \$2000 per acre.

In another site near Jamul in San Diego County, we have been using herbicides to selectively remove non-native weeds in an area with a sparse native stand of purple needlegrass (*Stipa (Nasella) pulchra*, the CA State Grass). In this experiment, we are also applying herbicides broadcast in winter or early spring to kill the weeds. Our most successful treatment has been a combination of fluazifop and triclopyr, which is killing the weeds without visible damage to the native grass. After three years of treatment, our treated plots have purple needlegrass cover ranging from 20-60%, while cover in the untreated plots averages about 5%.