

## **Effects of Glyphosate to Control Exotic Annuals for Coastal Sage Scrub Restoration.**

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Barnett Ranch is a new San Diego County Park with a history of grazing and is dominated in part by dense stands of *Erodium botrys*, an exotic forb, and invasive annual grasses. Plots were established to determine whether broadcast application of glyphosate herbicide could be used to restore native Coastal Sage Scrub vegetation. There were two treatments -- an early season broadcast application of glyphosate, and an early season broadcast application followed by a late season spot treatment of glyphosate -- and a control. Two sites were treated; one a hillside dominated by *E. botrys* and the second a swale site dominated by exotic grasses. At the *E. botrys* dominated site, both treatments had significantly increased native forb cover and decreased exotic forb and exotic grass cover in relation to the control, but the two treatments did not differ significantly from each other. At the grassland site, native forbs increased and exotic grasses decreased significantly in both treatments compared to the control, however, exotic forbs also increased significantly with the removal of exotic grass. Species richness increased in both treatments at both sites relative to the control. However, the two treatments did not vary significantly from each other in species richness. These results suggest one application of glyphosate is sufficient. Seeding did not increase percent cover of natives or species richness. Seeding was performed in 2007, one of the driest years on record, so the lack of significant differences in seeding treatment is likely due to lack of sufficient precipitation.