Perennial Pepperweed Control Experiment at the Cosumnes River Preserve

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Perennial pepperweed, a non-native invasive species, threatens to dominate floodplains undergoing active and passive restoration.

Information Center for the Environment

California Bay-Delta Authority
Ecosystem Restoration Program
Grant 02D-P66

Ingrid & Becky mixing herbicides

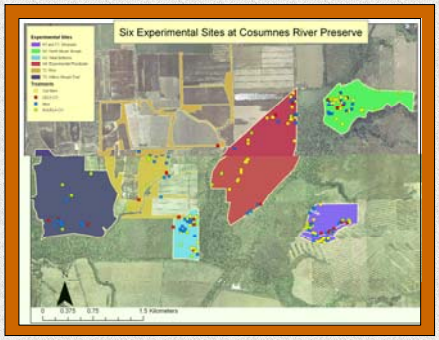
Problem:
How do we control perennial pepperweed in seasonal freshwater floodplain habitats?

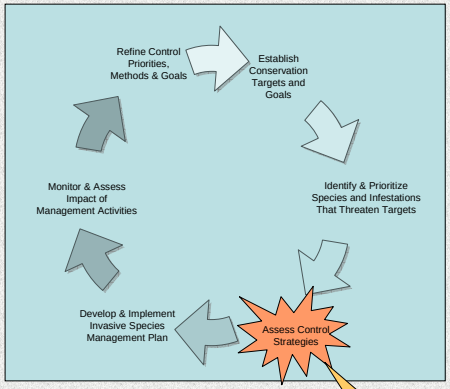
Hypotheses:

1) Environmental characteristics will influence efficacy of control techniques.

2) Type of herbicide and method of application will affect degree of weed control.

3) Tarping (with or without disking) will reduce weeds in areas where herbicides may not be used.





The results of these 3-year experiments will be used to develop site-specific adaptive management guidelines for control of perennial pepperweed at the Cosumnes River Preserve. These guidelines and the research results on which they are based will be shared with the entire conservation community so as to better inform weed control efforts on similar lands throughout the CALFED Bay-Delta area and beyond.

Scientifically rigorous experimental design is used at this step in the Adaptive Weed Management cycle.

3x3 m plot

Herbicides

Telar (Chlorsulfuron)

Aquamaster (Glyphosate)

Garlon (Triclopyr)

Methods	Concentrations
Broadcast	Low (label)
Cut Stem	High (label x 2)

Tarp Treatments

Mow + Tarp

Mow + Disk + Tarp

Measurements:
Stem count and % cover
Soil physical & chemical parameters
Herbicide soil residue levels
Vegetation monitoring pre- and post-treatment
Seedbank analysis

Cut Stem Treatment

Broadcast Treatment

Using GPS to locate plots.

Plot locations were determined using stratified random sampling to capture high and low density populations.

We augur soil at 0-10 cm & 10-20 cm for a bioassay analysis of herbicide soil residues over time.

Fabulous Field Assistants

Lisa Kashiwase, Rachel Hutchinson, Joel Bonilla, Betsy Harbert, Jorgina & Mario Cuixart, Nick Jensen, and the Cosumnes River Preserve Habitat Restoration Team

Experimental Design

Joshua Viers, Jaymee Marty, Joe DiTomaso