

Sahara Mustard

and other *Weed Hurricanes* hitting California



Photo: Mark Dimmitt



California Department
of Food and Agriculture™

Steve Schoenig
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Research Scientist*

The Colonization of California

- Phillip Munz collected *B. tournefortii* in Imperial County in 1941.
- Jepson Online Interchange: collections from the Mojave and Colorado deserts 1967,1968.
- It has been collected in 8 counties in southern California - 3/4 of the collections over 10 years ago (probably over 40 separate collections).
- The Jepson manual came out in 1993 and lists *B. Tournefortii* as "Locally abundant" in the South West and Desert Regions.
- It has been very problematic in Anza Borrego for at least a couple decades.
- Craig Dremann has watched dramatic spread from a locus east of 29 Palms over the past 8 years .
- Others have seen movement of a similar nature, but somewhat earlier, from other loci.
- CalIPC Working Group -- Sahara Mustard – 2001
- Mojave WMA CDFR/SB1740 Research Grant 2001

2005 Survey

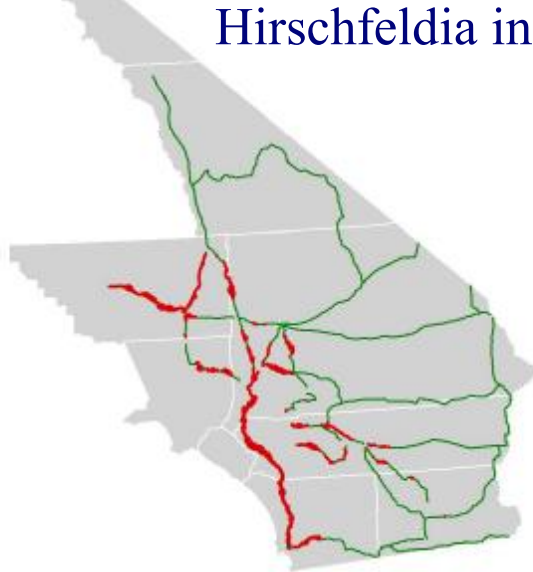
Brassica tournefortii



Descurainia sophia



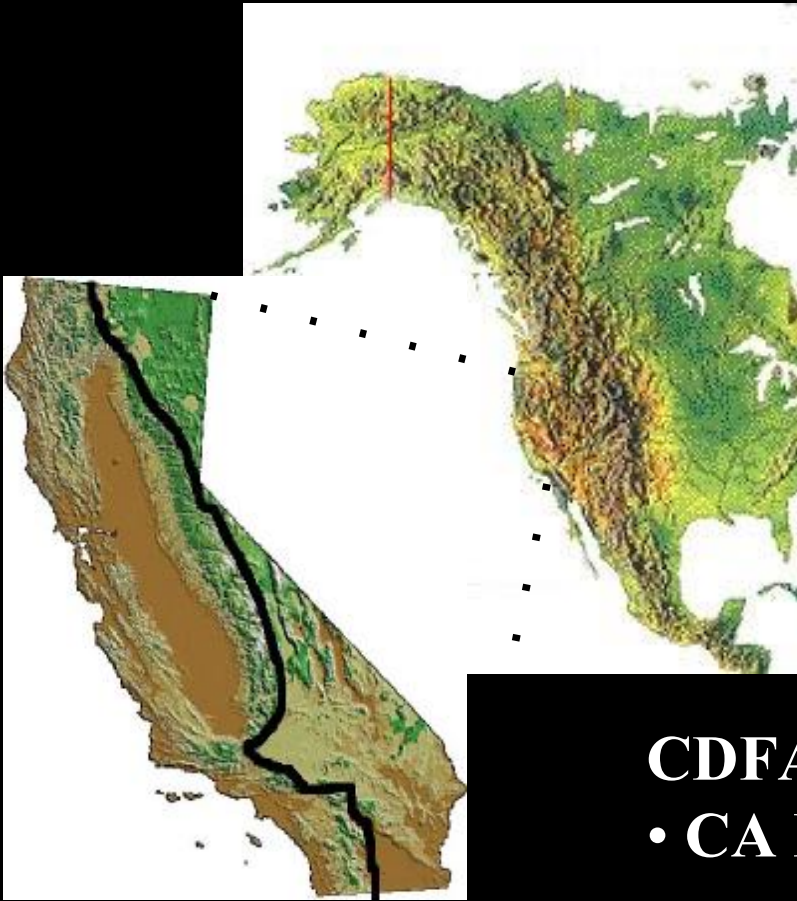
Hirschfeldia incana



Sisymbrium irio



California Weed Environment in a Nutshell



- 1400-1600 Naturalized Plants
- 200-300 Truly Invasive
- 15-20 Top Priority for Eradication
- Most from Europe/Asia
- Grasslands almost 100% Invaded
- 32,000,000 people live here
- 7000 Native Plant Species
- 2000 spp. rare, endangered, sensitive

CDEFA Noxious Weed List (A,B,&C)

- CA Invasive Plant Council List:

Wildland Weeds of Greatest Ecological Concern

State Weed Lists

- Noxious Weed List: Authorized in the CA Ag Code Sec. 5004; The list itself is in the California Code of Regulations Sec. 4500
- Species ratings are in accordance with the Assistant Director for Plant Industry Memorandum of January 1, 1980, entitled "Action Oriented Rating System", and Plant Industry Policy Letter 89-2, dated May 1, 1989.
- A – Rare within the state; mandatory quarantine action; candidate for eradication
- B – Rare within the state; except one or a few large infestations; quarantine action at the discretion of Ag Commissioner except in nurseries; candidate for local eradication only
- C – Common within the state; quarantine action at the discretion of the Ag Commissioner; candidate for local eradication only
- D – Beneficial plant.
- Q – Temporary rating; resolved to a A,B,C,D typically within a year.

California Department of Food and Agriculture

Pest Prevention System

Mission *To Promote and Protect California Agriculture*

To prevent the introduction and spread of injurious insects or animal pests, plant diseases, & noxious weeds

Plant Health and Pest Prevention Service Branches:

- ❖ *Pest Exclusion*
- ❖ *Pest Detection/Emergency Projects*
- ❖ *Integrated Pest Control*
- ❖ *Plant Pest Diagnostic Center*

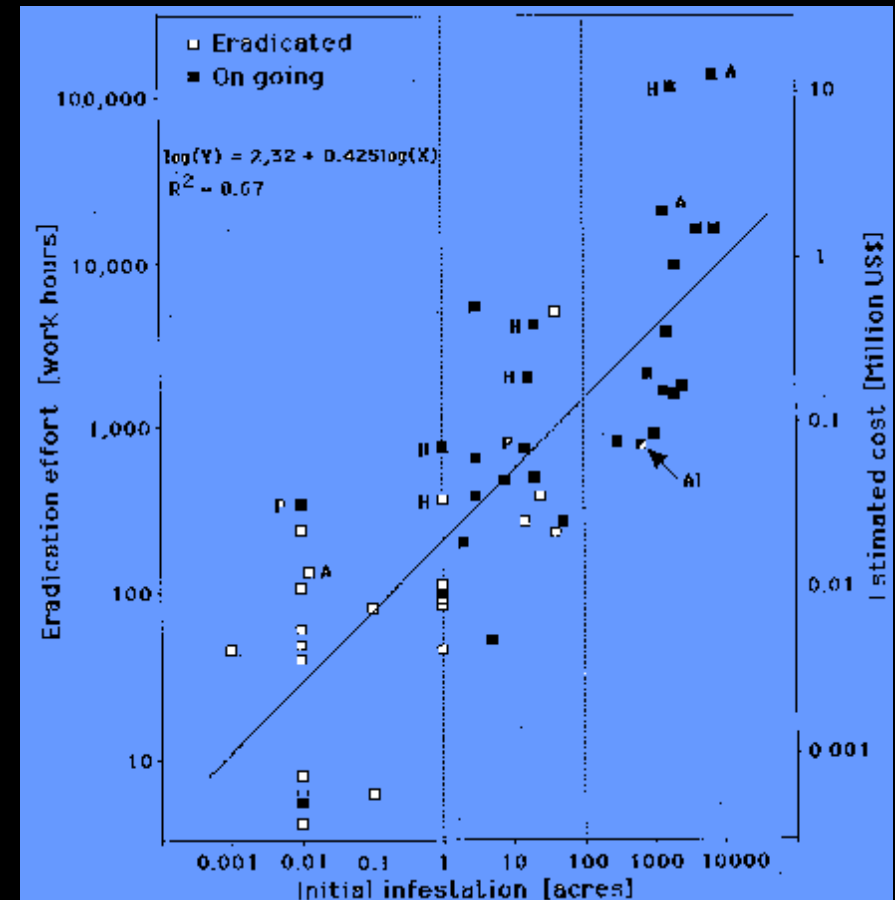
Broad Strategies of Weed Control

A progression as a weed moves from rare to common.

- Prevention and Exclusion
- Early Detection and Rapid Response
- Containment & Biological Control
- Development and Application of Successful and Economic Suppression Methodologies

Eradicated Species

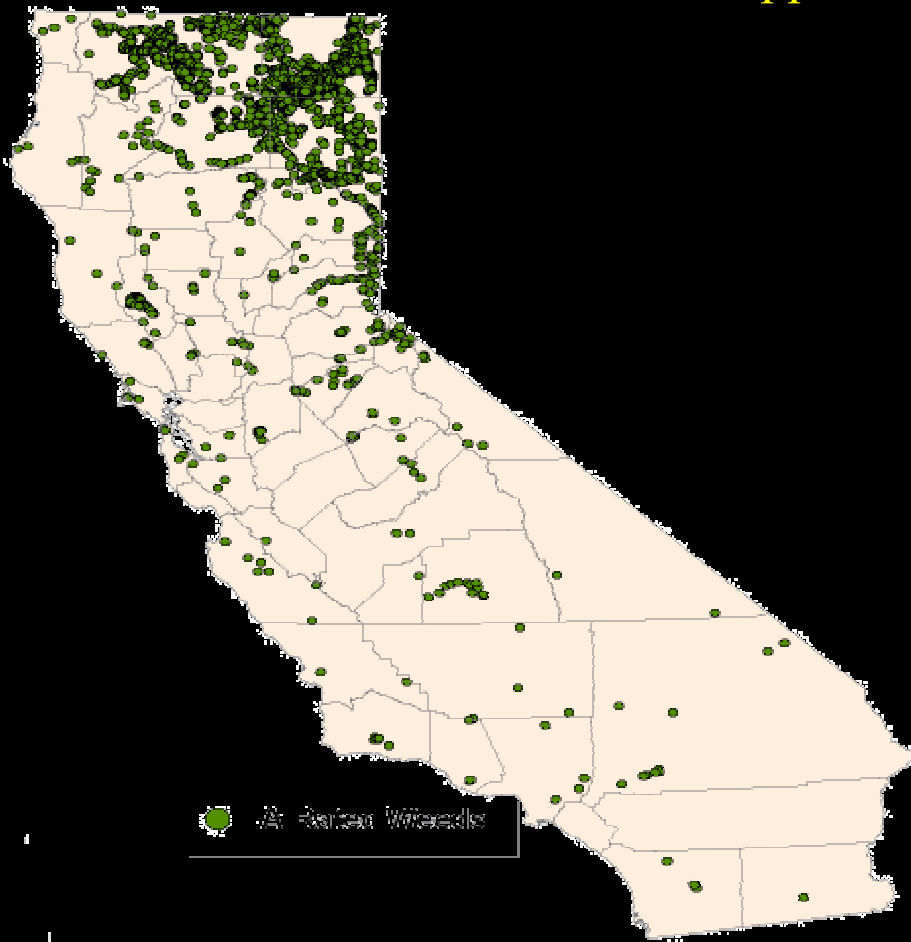
- 1) Whitestem distaff thistle – *Carthamnus leucocaulos*.
- 2) Dudaim melon – *Cucumis melo var. dudaim*
- 3) Giant dodder – *Cuscuta reflexa*
- 4) Serrate spurge – *Euphorbia serrata*
- 5) Russian salttree – *Halimodendron halodendron*
- 6) Blueweed – *Helianthus ciliaris*
- 7) Tanglehead – *Heteropogon contortus*
- 8) Creeping mesquite – *Prosopis strombulifera*
- 9) Meadowsage – *Salvia virgata*
- 10) Heartleaf nightshade – *Solanum cardiophyllum*
- 11) Austrian peaweed – *Sphaerophysa salsula*
- 12) Wild marigold – *Tagetes minuta*
- 13) Syrian beancaper – *Zygophyllum fabago*
- 14) Perennial sowthistle - *Sonchus arvensis*



Species Under Eradication

A-rated weeds

**Under containment at current fiscal support



**Punagrass - *Achnatherum brachychaetum*

Biddy biddy - *Acaena* spp.

Camelthorn - *Alhagi pseudalhagi*

**Alligatorweed - *Alternanthera philoxeroides*

Fertile capeweed - *Arctotheca calendula*

**Plumeless thistle - *Carduus acanthoides*

**Musk thistle - *Carduus nutans*

**Diffuse knapweed - *Centaurea diffusa*

Iberian starthistle - *Centaurea iberica*

Spotted knapweed - *Centaurea maculosa*

**Squarrose knapweed - *Centaurea squarrosa*

Yellowspine thistle - *Cirsium ochrocentrum*

Wavyleaf thistle - *Cirsium undulatum*

**Bearded creeper - *Crupina vulgaris*

Golden thistle - *Scolymus hispanicus*

Leafy spurge - *Euphorbia esula*

Halogeton - *Halogeton glomeratus*

**Dalmatian toadflax - *Linaria genistifolia* spp. *dalmatica*

**Scotch thistle - *Onopordum acanthium*

Illyrian thistle - *Onopordum illyricum*

Taurian thistle - *Onopordum tauricum*

Harmel - *Peganum harmala*

Wormleaf salsola - *Salsola vermiculata*

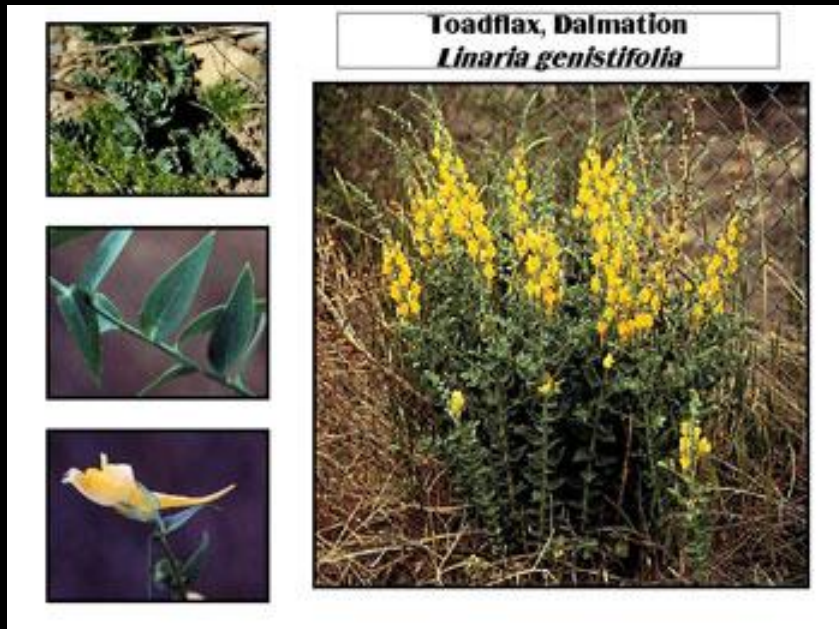
Examples Of Priority Invasive Weeds

- Leafy Spurge*
- Dalmation Toad Flax*
- Scotch Thistle*
- Spotted Knapweed
- Perennial Pepperweed*
- Yellow Starthistle
- Tamarisk, Arundo*, Brooms

* No non-chemical treatment known to be effective

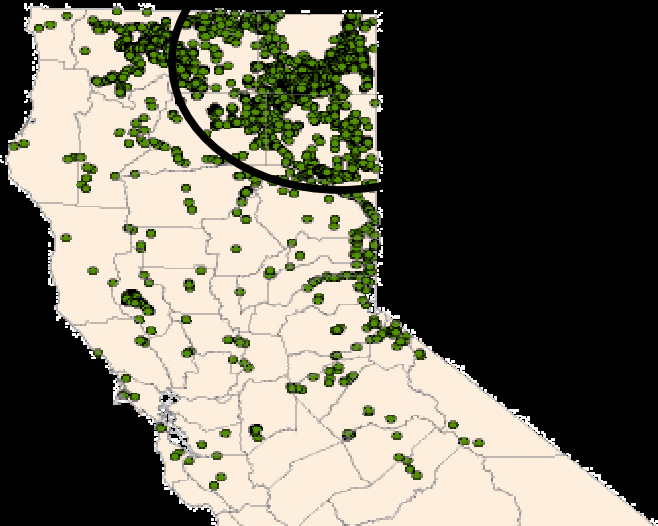
Dalmation Toad Flax

- Forms monocultures
- No mechanical
- Chemical control difficult



Scotch Thistle

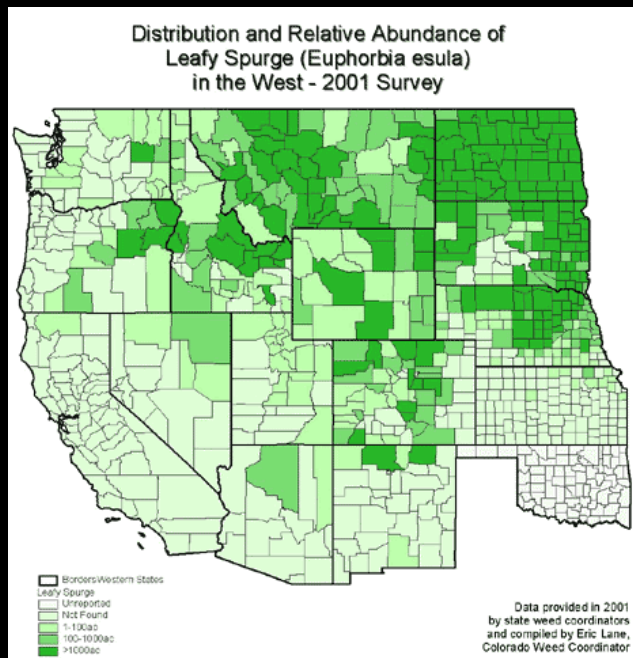
- Can be over 10 feet tall- spiny cornfield
- Very heavy in Modoc county
- Herbicidal control necessary
- 50 year seed bank



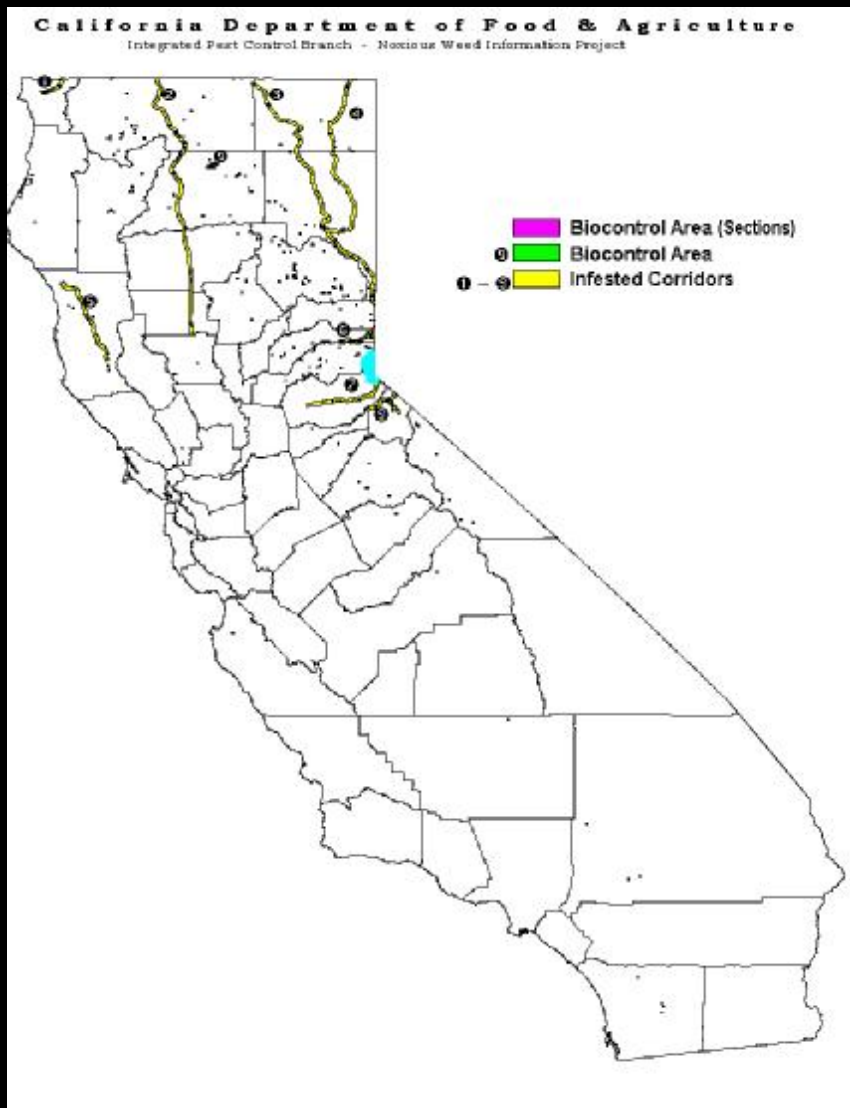
Leafy Spurge



- On the 100 worst Invasive Species of the World list
- Only on Scott River and heading down the Klamath
- \$180 million losses in upper midwest / year
- Need to use herbicide in a river channel



Spotted Knapweed



- Many small infestation
- \$40 million per year losses in Montana
- Watershed group pulled > 500,000 plants
- Biocontrol program and local eradication

Perennial Pepperweed

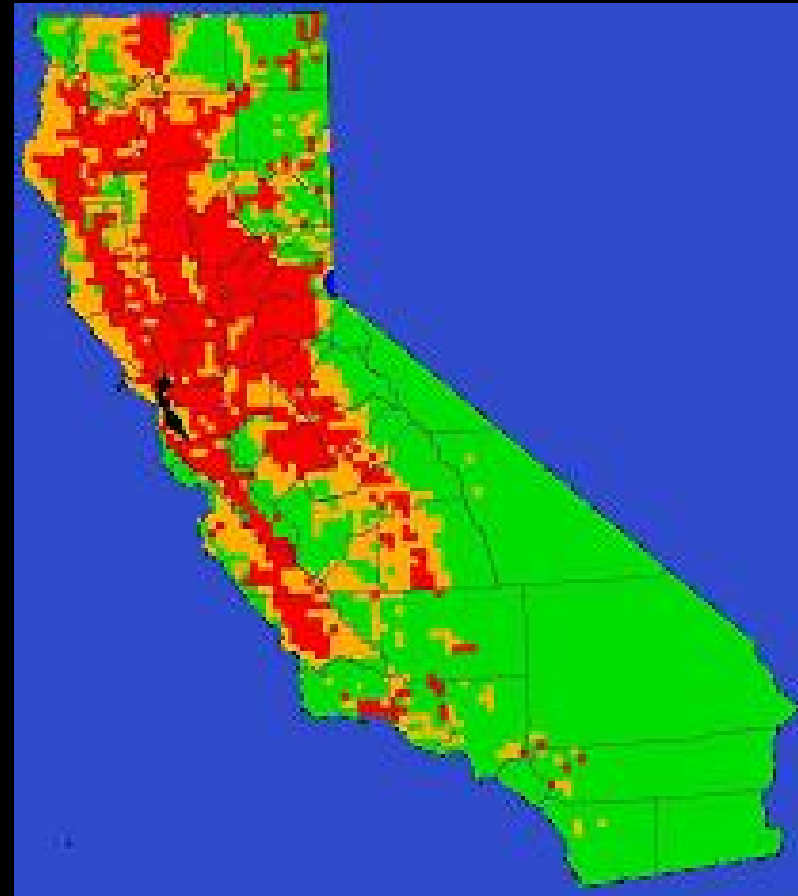
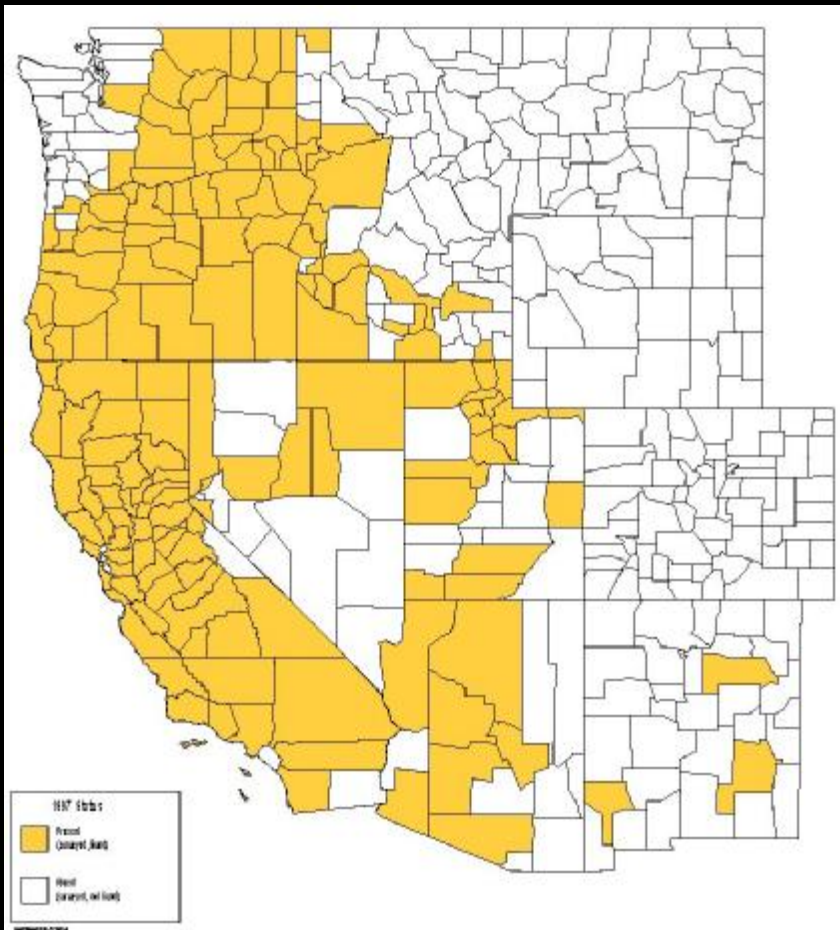
- Spreading rapidly
- Forms monocultures
- No mechanical control
- Telar not registered in wetlands



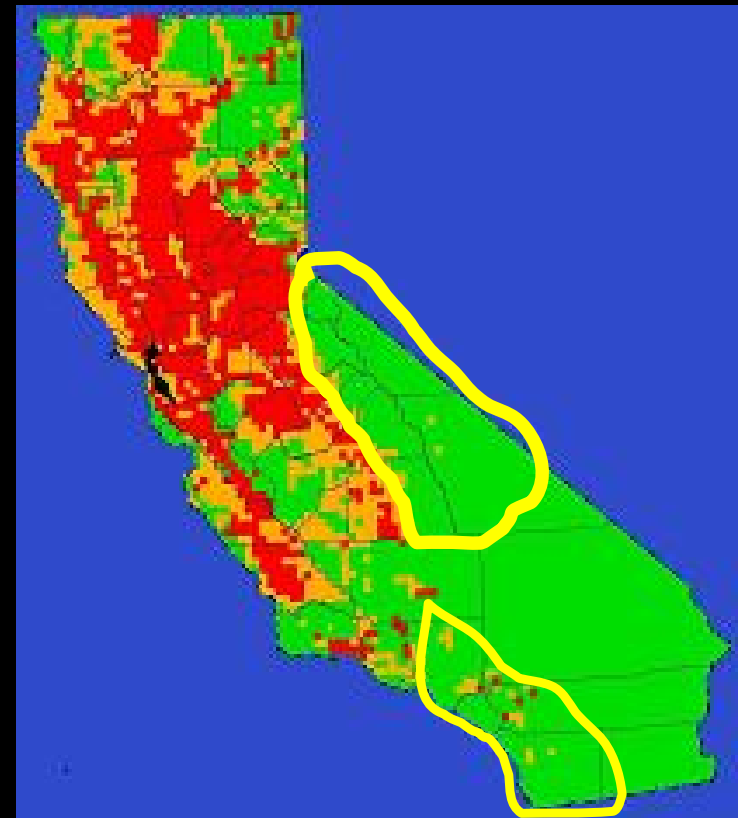
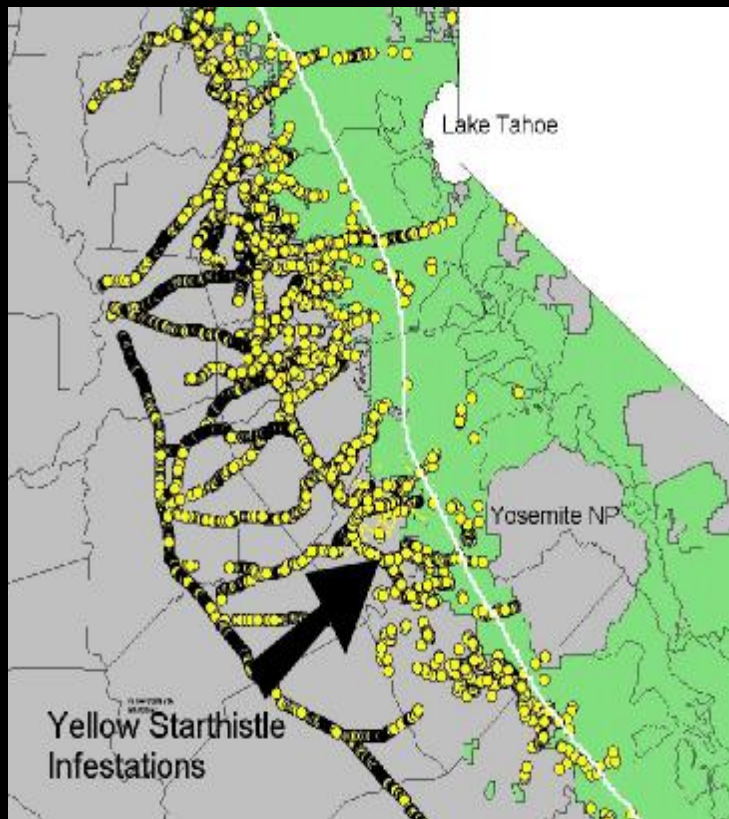
Pepperweed

Yellow Starthistle

- Pest of range, recreation, H₂O, biodiversity, toxic to horses



Containment of Spread – The Corridor Connection



Integrated Weed Management Toolbox





CINWCC

CA Interagency Noxious Weed
Coordinating Committee

CalIWAC

CA Invasive Weed Awareness
Coalition



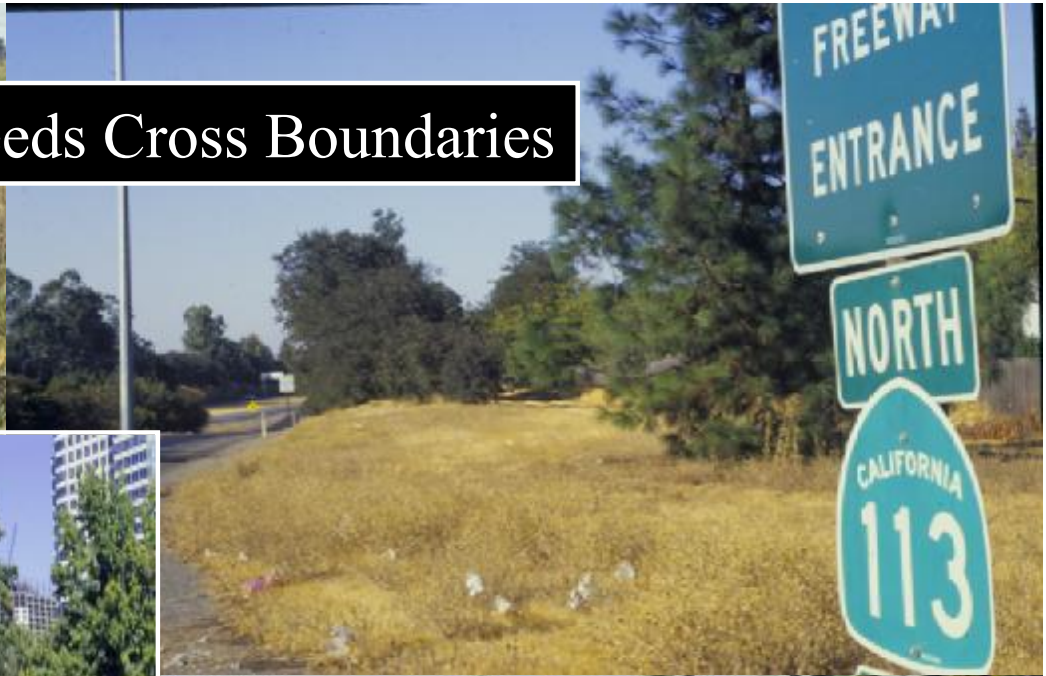
CACASA



A Weed Management Area is Coordination at the Grassroots Level.

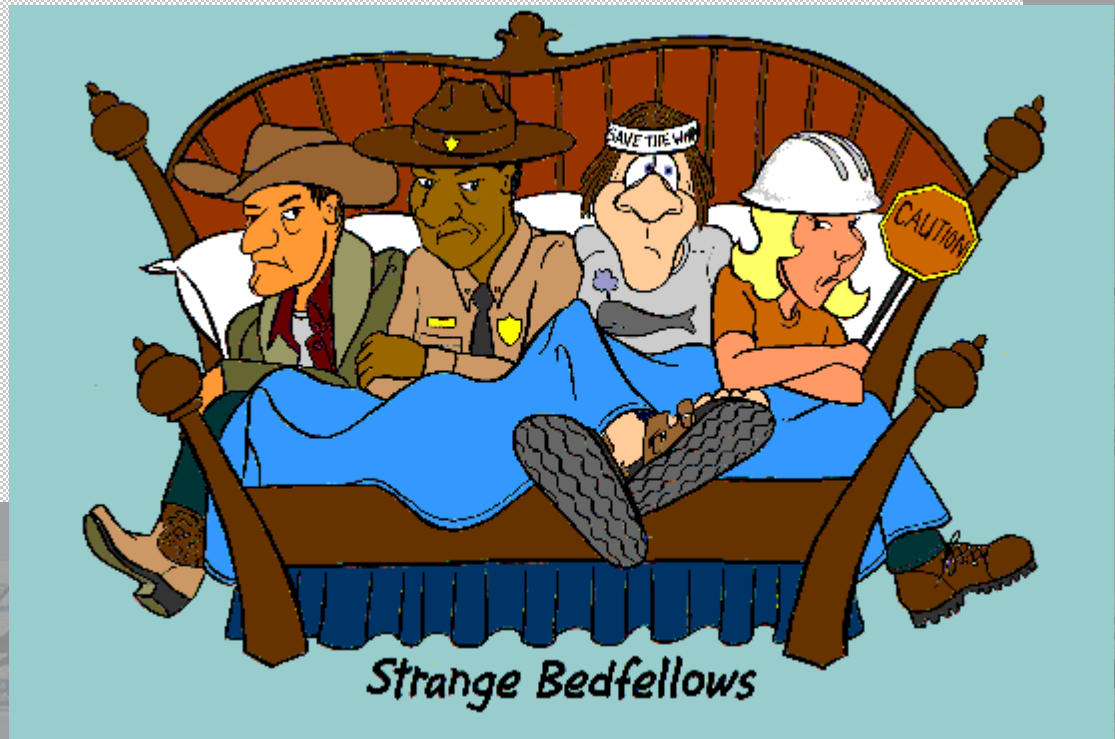


Weeds Cross Boundaries



Who Participates?

- County Ag Department
- State Agencies- CDFA, Parks, Fish & Game, Forestry & Fire, Etc.
- Federal Agencies- BLM, Forest Service, NRCS, NPS
- Growers, Cattlemen, RCDs, Forest Industry, Landowners
- UC Cooperative Extension
- Cities
- Military Landowners
- Departments of Transportation
- CNPS, Nurserymen
- Railroads, Utilities
- Volunteers, Pest Control Ops
- Open Space, Parks, Water Districts



Benefits & Accomplishments

- Enhanced Cooperation & Sharing
 - Weed Education & Awareness
 - Tests Plots, Workshops, Symposia, Mapping
 - More Weeds Killed = \$\$\$\$
-
- Brochures & Posters
 - County Fair Display
 - Shared Personnel
 - War-on-Weeds Conference
 - Treatment Test Plot
 - Grant Applications
 - Adopt-a-highway for weed control
- Newspaper Articles
 - Field Days/ Workshops
 - Shared Spray Equipment
 - Board of Supervisors Tours
 - Weed ID Books
 - Report-a-weed contests
 - Student Weed Mapping
 - Speakers Bureau

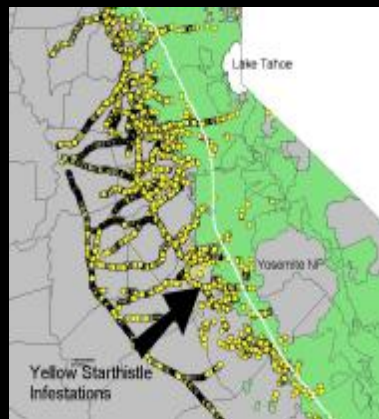
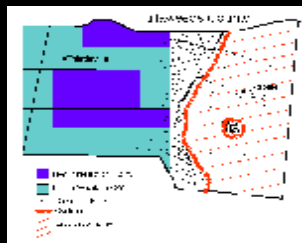
Regional Management Plan

- Clearly Define Problem
- Overview of Weed Control Plan
- Prioritize Weeds
- Objectives and Planned Actions
- Research Needs
- Resources, Budget, and Estimated Costs
- Measuring Progress, Monitoring

Education and Awareness



WMA GIS



Purple loosestrife begins grip on Eel River

Invasive weed has near-exponential spreading capability

John Howard

On a hill in the South Fork of the Eel River north of Wood, a field like vegetation is dead. Invasive purple loosestrife, a species that has been spreading since the late 1980s, has taken hold. The plants have a purple bloom that is very attractive to bees. The plants have a purple bloom that is very attractive to bees. The plants have a purple bloom that is very attractive to bees.



WEEDS

FROM A1

From a1: A purple loosestrife in the field. The weed also has a characteristic purple bloom. Purple loosestrife is a species that has been spreading since the late 1980s, has taken hold. The plants have a purple bloom that is very attractive to bees.