

# **Tipping the Balance: Using Natives to Combat Weeds and Promote Ecological Resilience of Riparian Restoration**

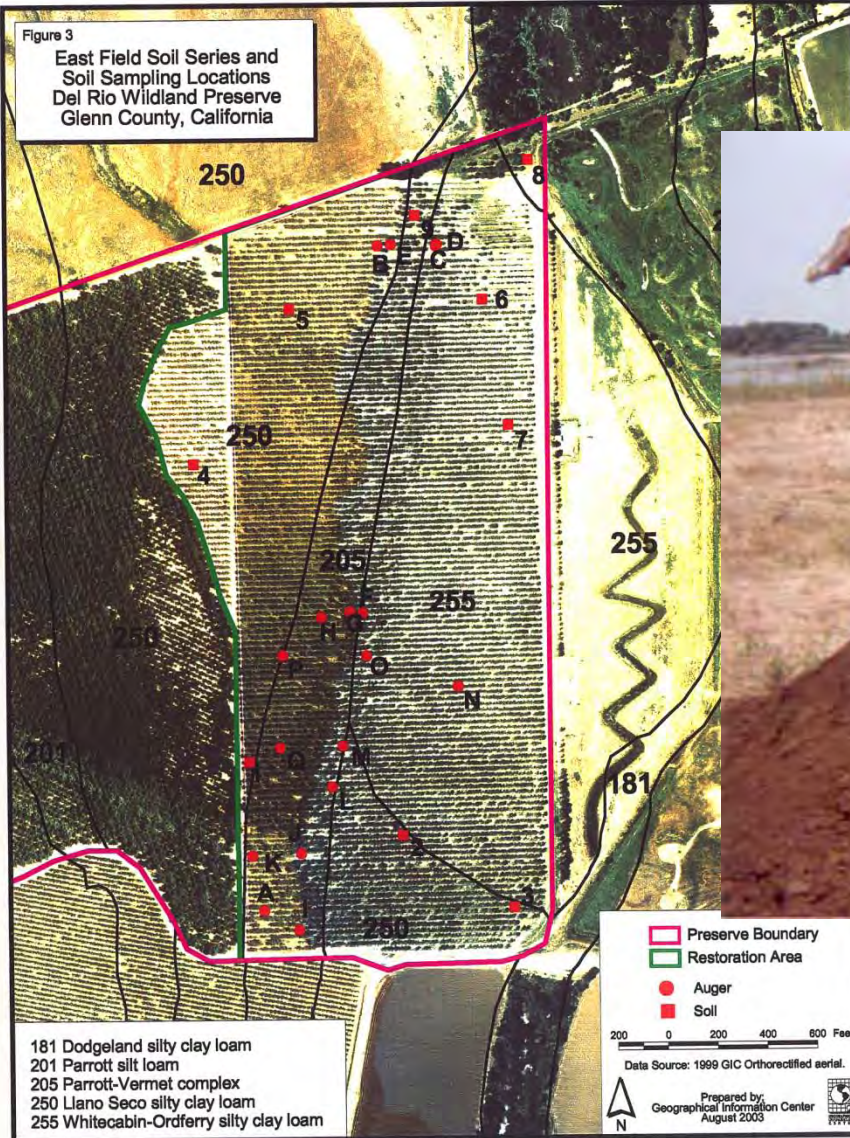
Heyo Tjarks  
River Partners

# San Joaquin River National Wildlife Refuge

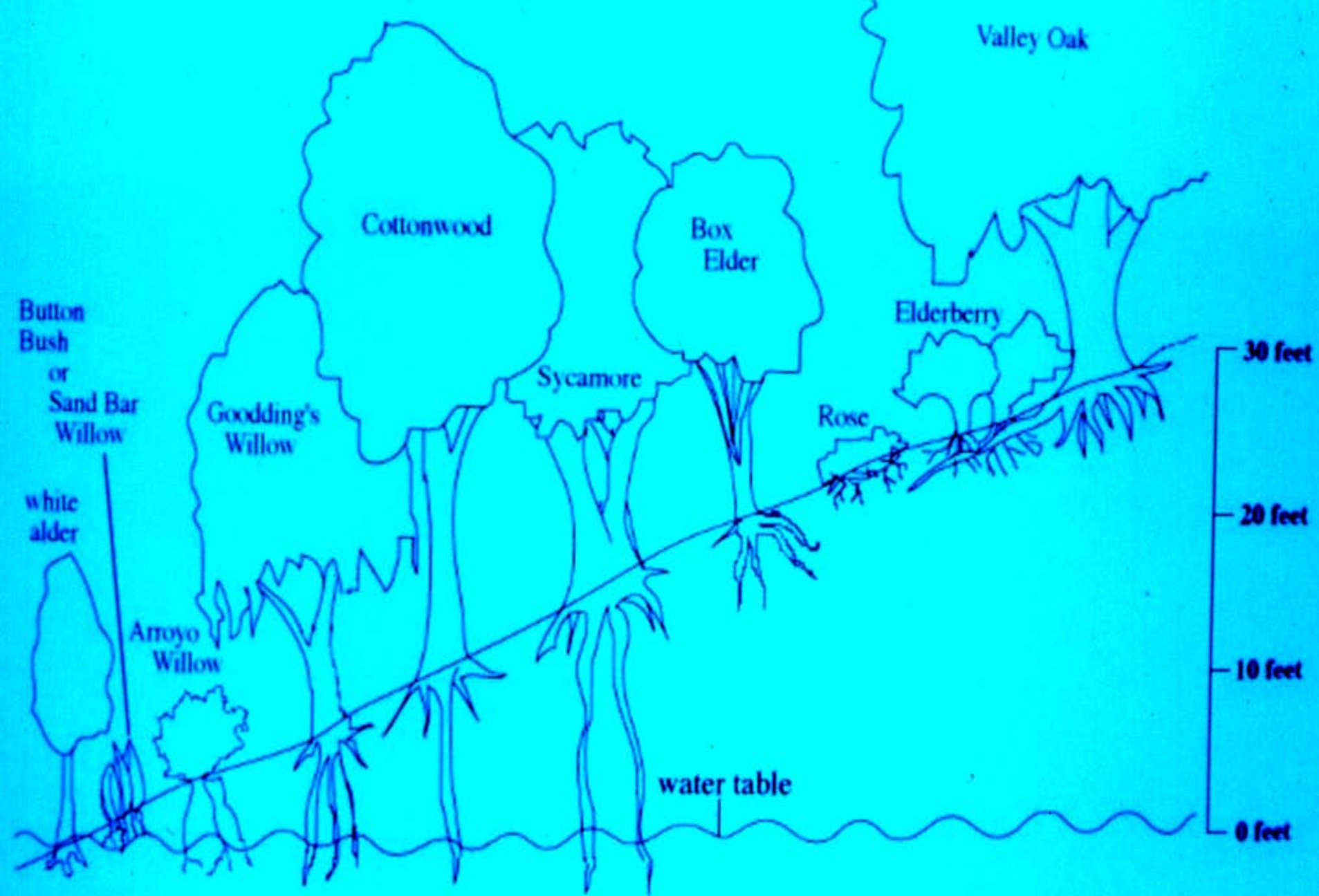
An aerial photograph of the San Joaquin River National Wildlife Refuge. The image shows a winding river with several meanders and oxbow-like curves. The river is surrounded by a mix of agricultural fields, some with distinct rows of crops, and large areas of dense, green forest. The landscape is flat, and the sky is clear and bright. The overall scene depicts a natural area integrated with agricultural land.

**20 - 800 Acres**

Figure 3  
 East Field Soil Series and  
 Soil Sampling Locations  
 Del Rio Wildland Preserve  
 Glenn County, California



## Evaluation of Site Conditions that support Horticultural Restoration



**Rooting Depth**

**Two years after  
stopping irrigation**

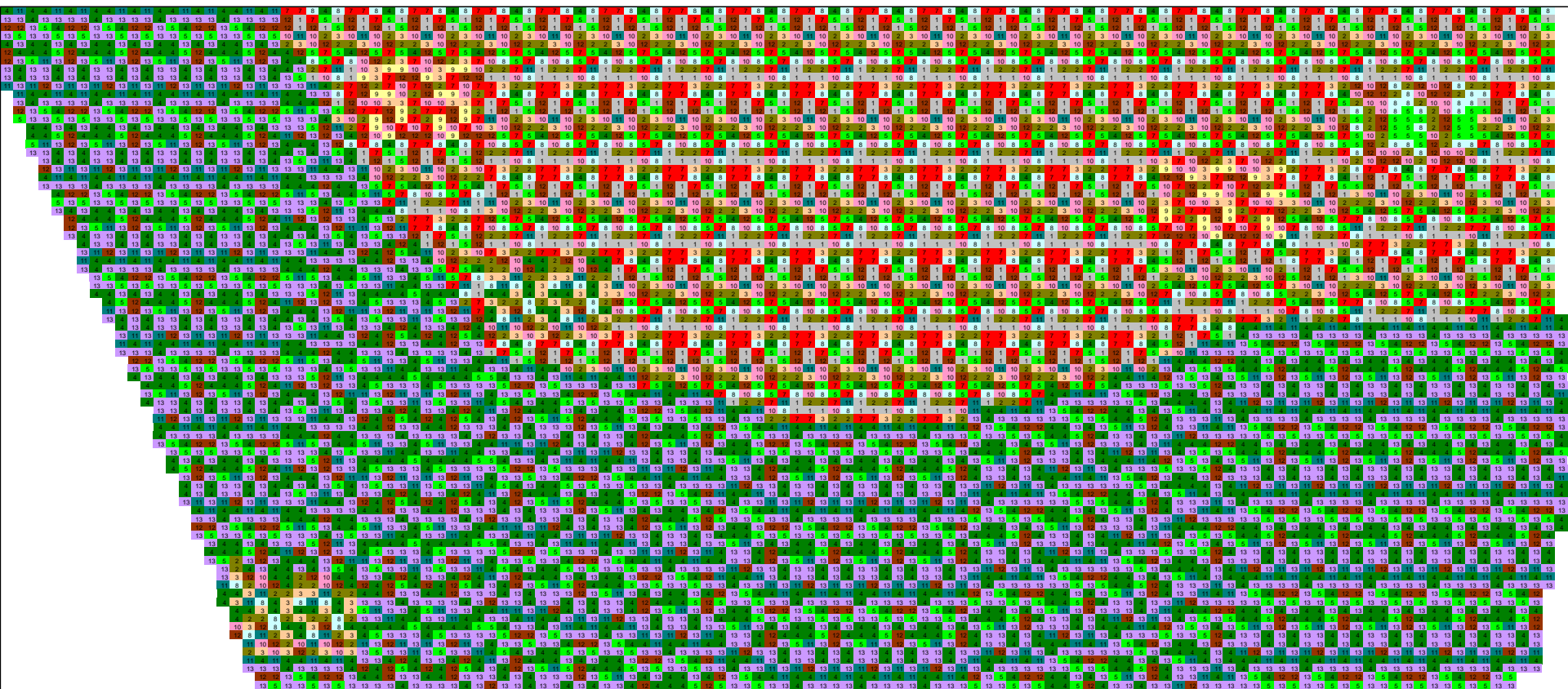


**Cottonwood  
- dead**

**Elderberry - surviving**

## Objective

1. Design a native plant association that will develop into a sustainable community through ecological succession under current and future conditions.
2. Establish ecologically and structurally beneficial wildlife habitat.



L3

Valley Oak	1
Coyote Brush	9
Mule Fat	14
Arroyo Willow	2
Sandbar Willow	3
Black Willow	4
Blackberry	12
Rose	10
Fremont Cottonwood	5
Buttonbush	13
Oregon Ash	11
Boxelder	8
Elderberry	7

- Great Valley Oak
- Mixed Riparian Woodland
- Willow Scrub
- Mule Fat Scrub

# Planting







# Field Prep

**Black Mustard**





Planting



Year 1



Year 2



Year 3



# Native Understory Component

- 1) Can we get them to germinate and grow?
- 2) Will they tolerate our maintenance activities?

January 2003



*Grindelia camphorum*

*Artemisia douglasiana*

*Conyza coulteri*

July 2003





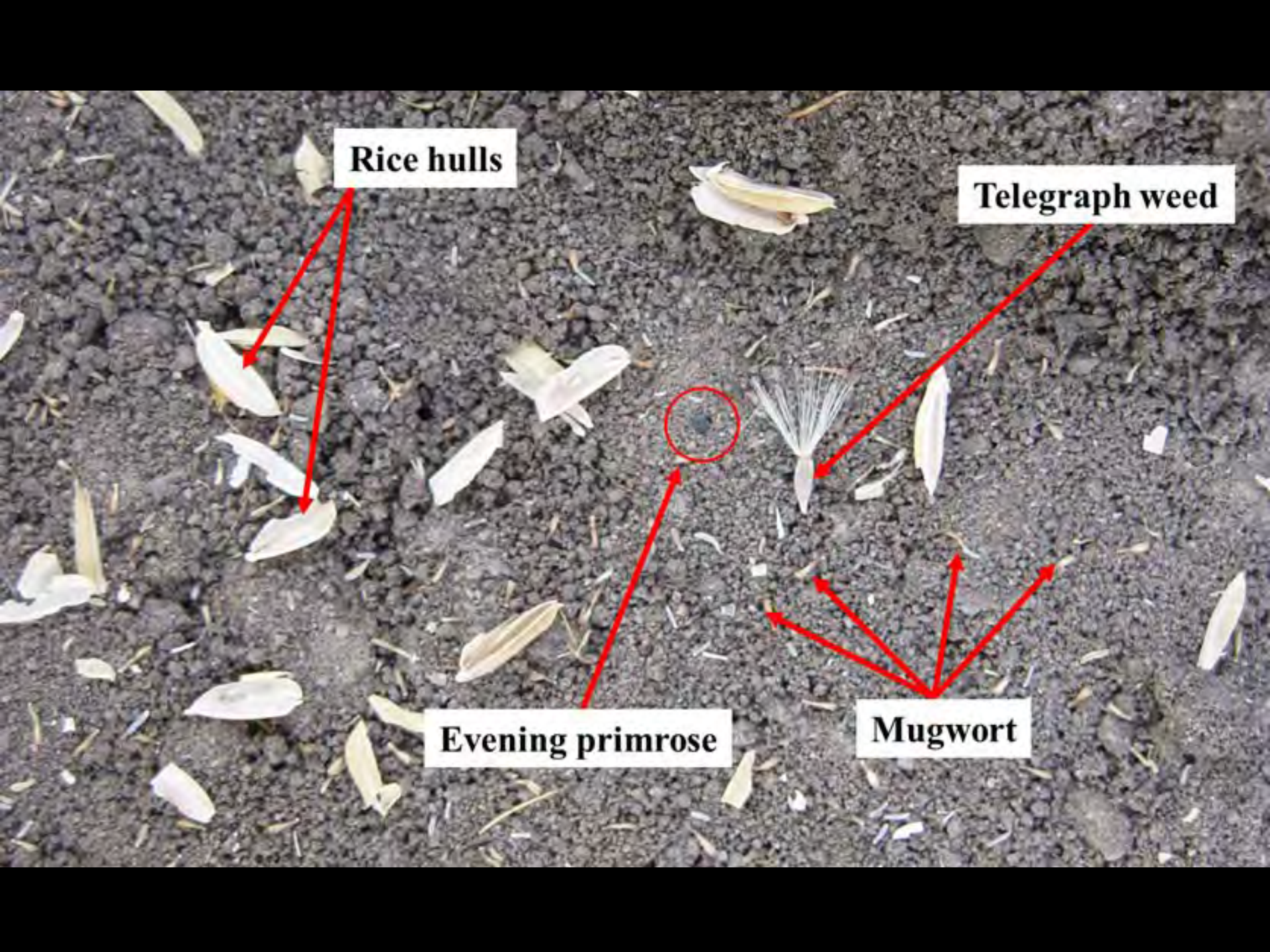






# Sterile Seedbed Approach





**Rice hulls**

**Telegraph weed**

**Evening primrose**

**Mugwort**







May 2004



September 2004



September 2005

June 2004



September 2004



September 2005





Parting the  
*Mugwort Sea...*

August 2005



# Long Duration Flooding



# Fire

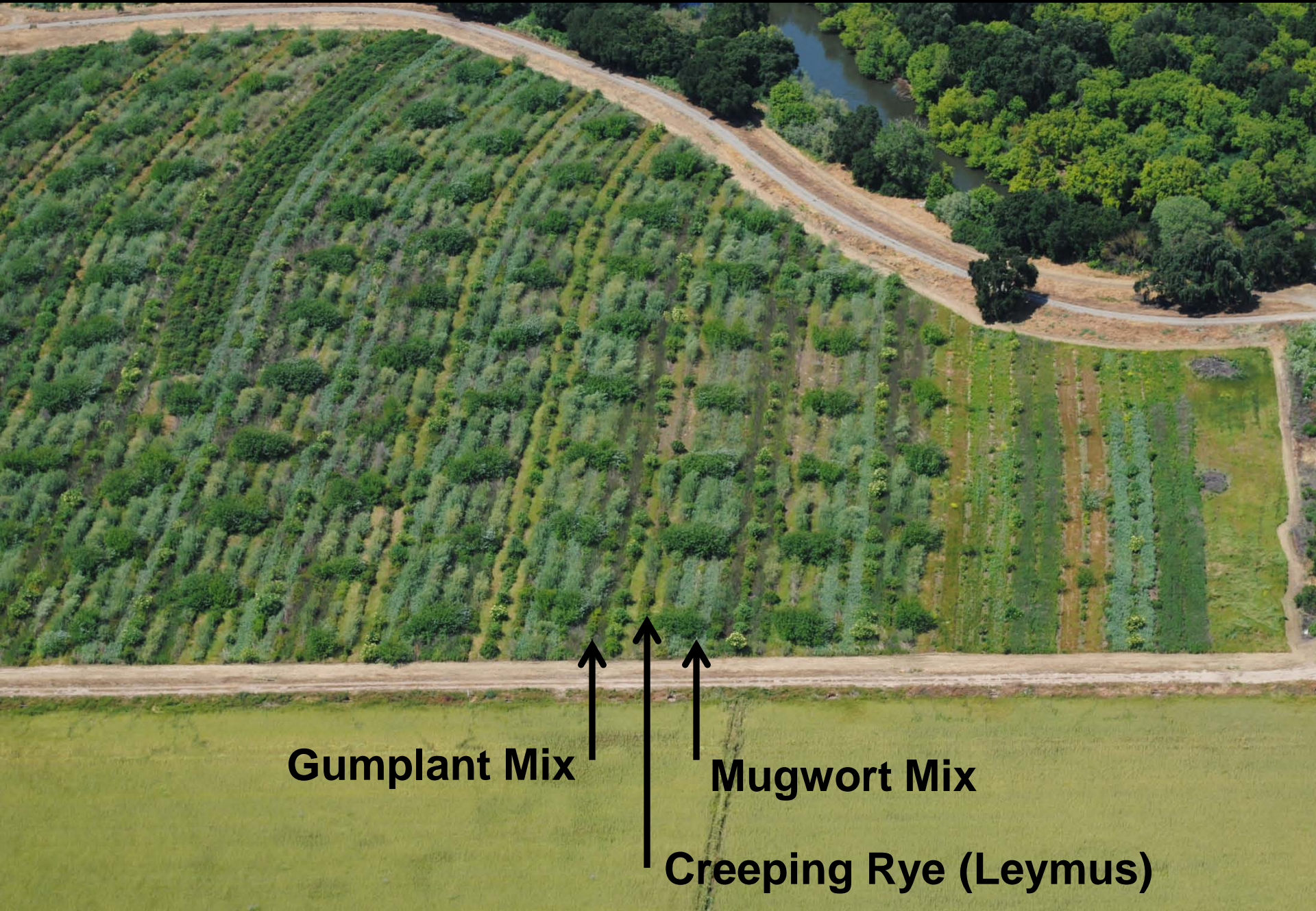




Buffington Riparian Restoration Plantings 2009  
 San Joaquin River National Wildlife Refuge  
 Stanislaus County, California

*B1 - B13 and "Roadside" are field names provided for reference*  
*\*B12 and B13 are understory plantings only*

Date: October 1, 2009  
 Source: NAIP 2009  
 Created by: J.Rentner



**Gumplant Mix**

**Mugwort Mix**

**Creeping Rye (Leymus)**

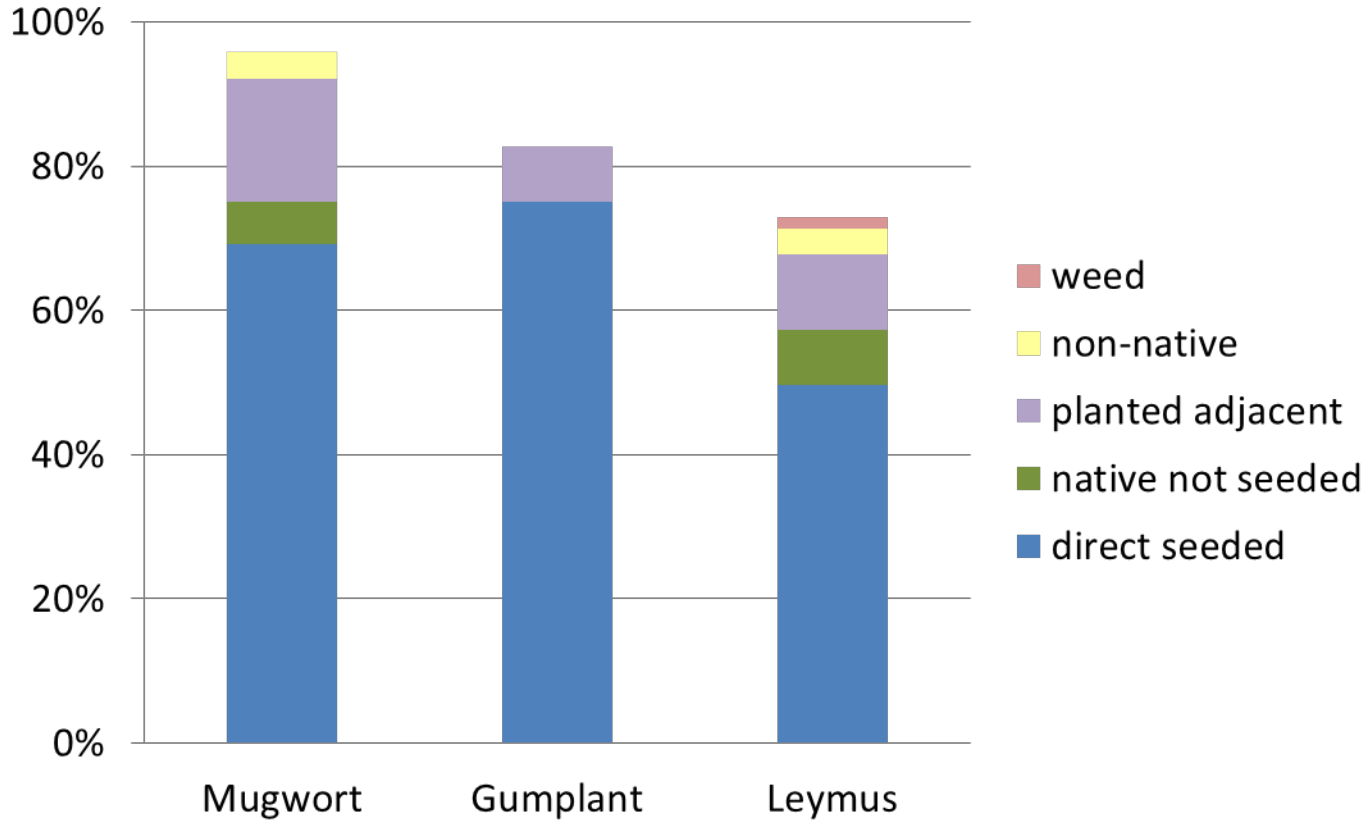








# Absolute Cover 2010



# VOTE OF APPROVAL



Endangered least Bell's vireo

First nesting in Central Valley  
in 60 years!



**Salmon**

[www.itsnature.org](http://www.itsnature.org)



**Steelhead**

[www.nwf.org](http://www.nwf.org)



**Giant Garter Snake**

© Gary Nafis



**Valley Elderberry  
Longhorn Beetle**



**Riparian Brush Rabbit**



# CONCLUSIONS

1. Rapid-growing native herbaceous species can be managed to replace invasive exotics.
2. Future monitoring will describe the long-term effectiveness of these plantings.

# Thank You!

**Creating Wildlife Habitat for the Benefit of People and  
the Environment**

