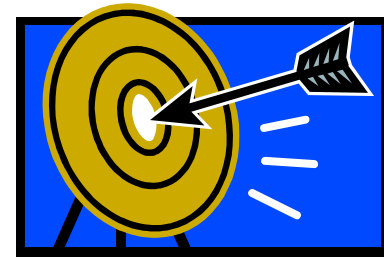


The Riparian Weed Management Program at Marine Corps Base Camp Pendleton: Past, Present, and Future

Meghan Trainor Fitch and Deborah Bieber
AC/S Environmental Security
Land Management Branch



Outline of Presentation

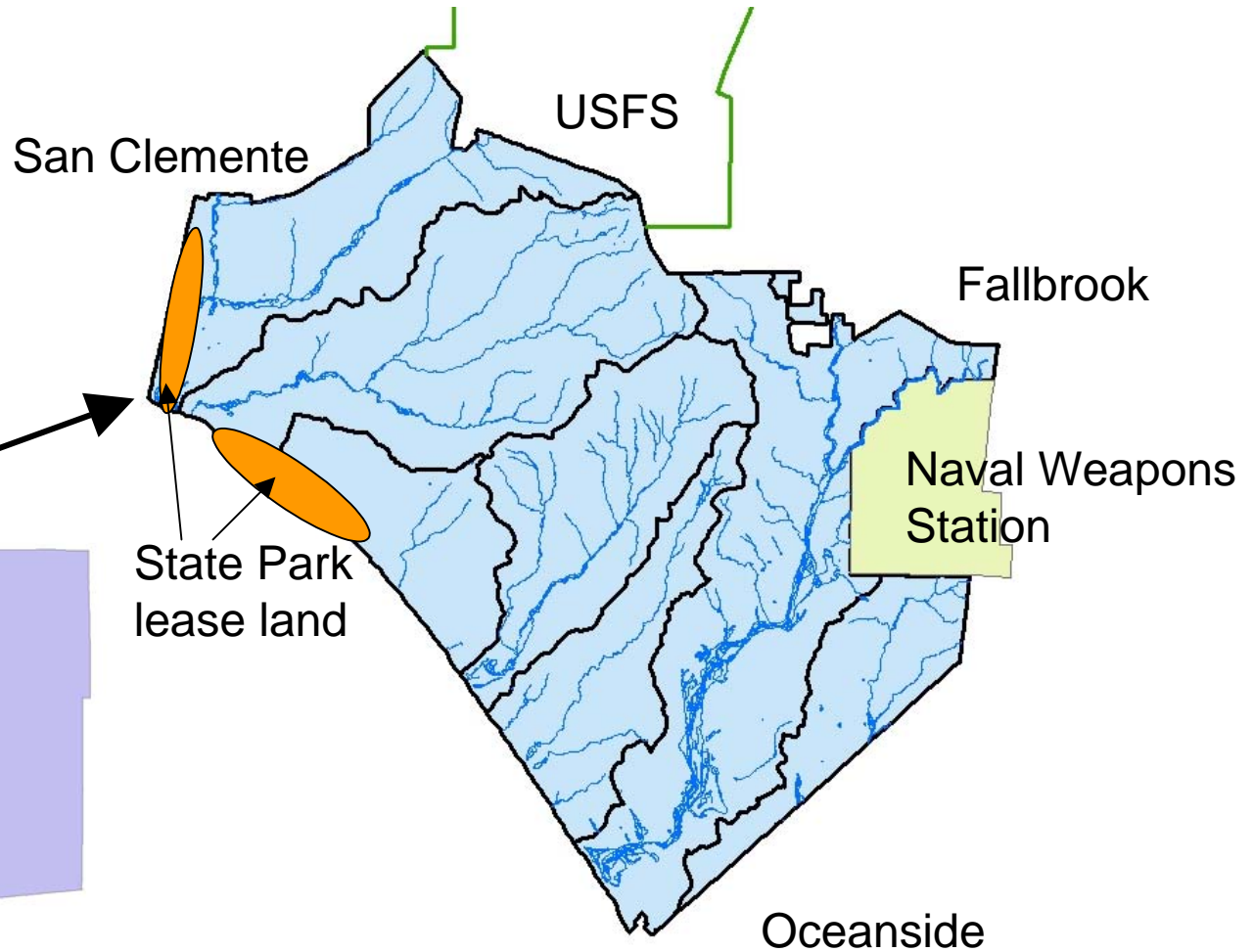


1. Camp Pendleton *location*, shared *boundaries*, *watersheds*
2. *Background* of weed management
3. Development of *methods*
4. *Results* of management efforts
5. Current efforts to develop a riparian weed *geodatabase*
6. Future plans for vegetation *monitoring*



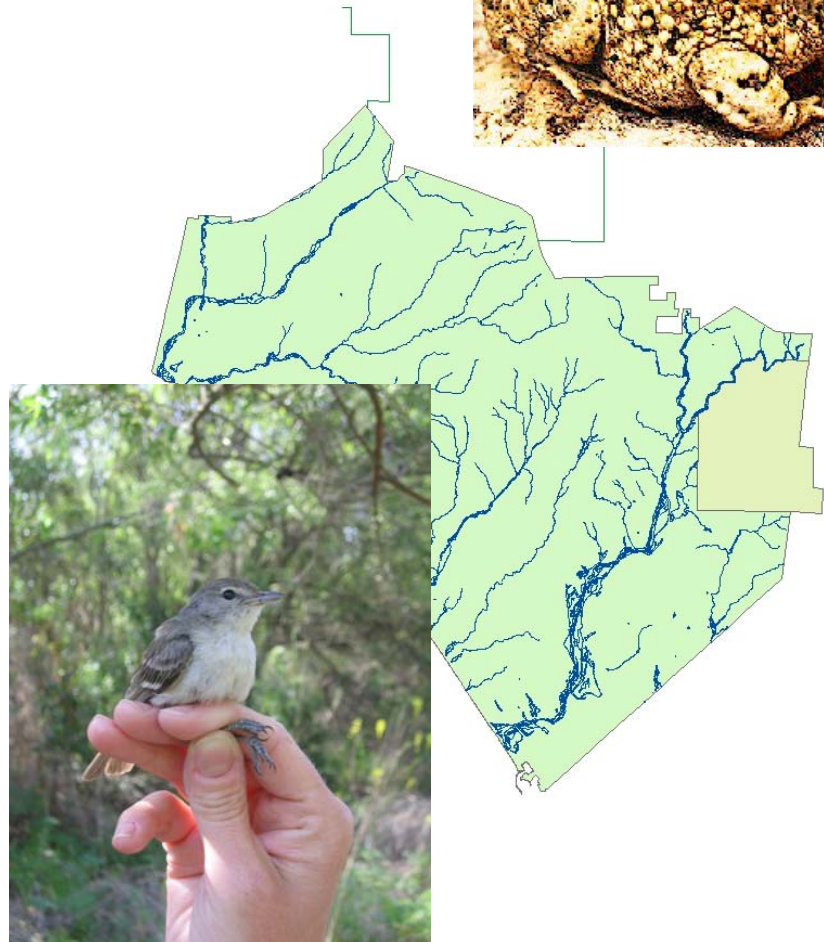
Marine Corps Base Camp Pendleton

- 124,642 acres
- 7 watersheds



Weed Management - Background

- Goal: Improve quality of habitat for listed species
- Large scale effort initiated in 1995 in Santa Margarita River watershed & other Base creeks for Arundo control
- Prior to control effort, Arundo occupied ~26% of Santa Margarita River riparian system



Riparian Weeds Treated on Camp Pendleton

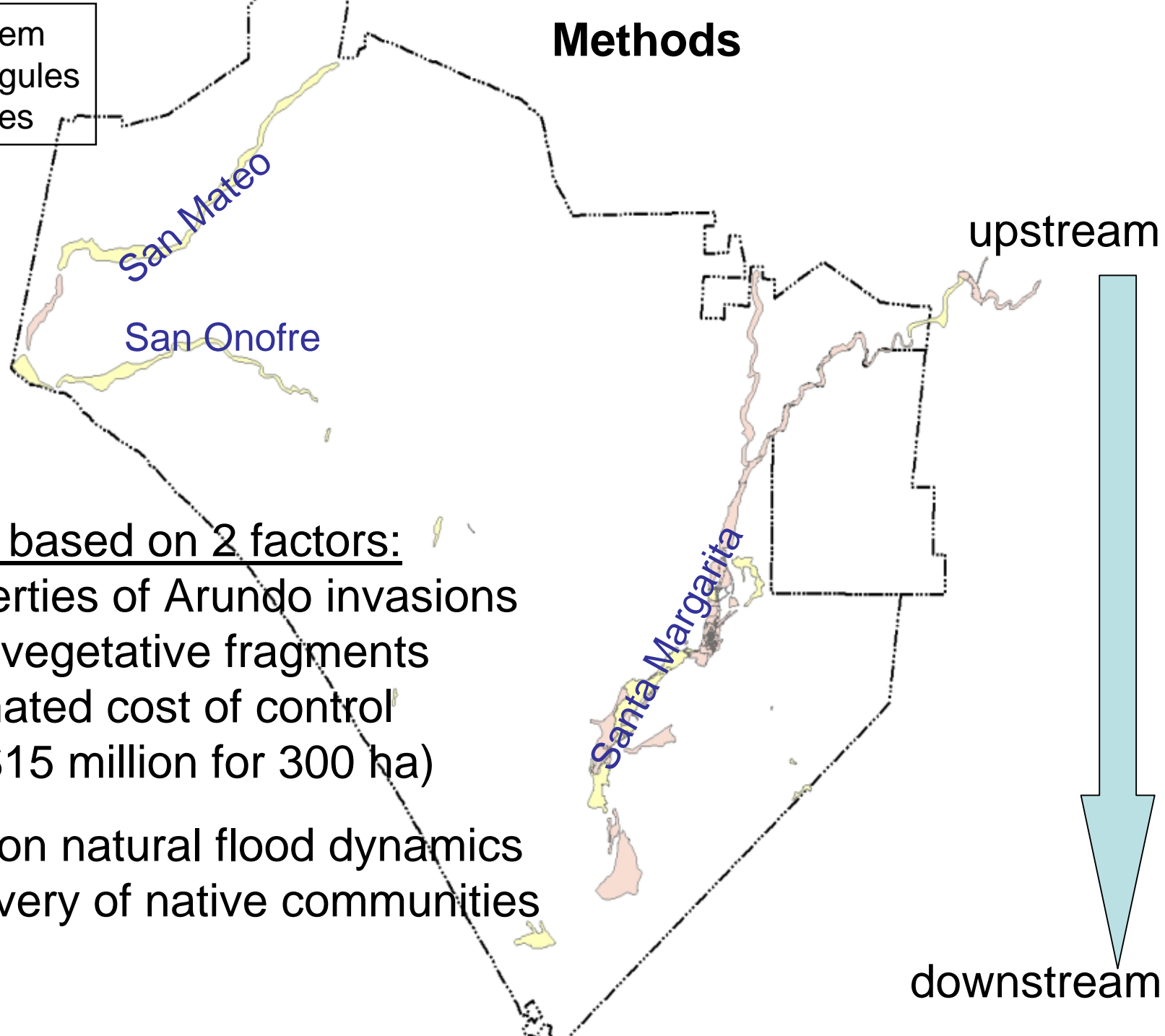


Invasion by a new species is influenced by three factors:

1. Ecosystem properties, which could be related to the level or frequency of disturbance or other biotic and abiotic factors that determine habitat quality;
2. Protagules: Number entering a new environment (propagule pressure); and,
3. Properties of the invading species (Lonsdale, 1999).

1. Ecosystem
2. # Propagules
3. Properties

Methods



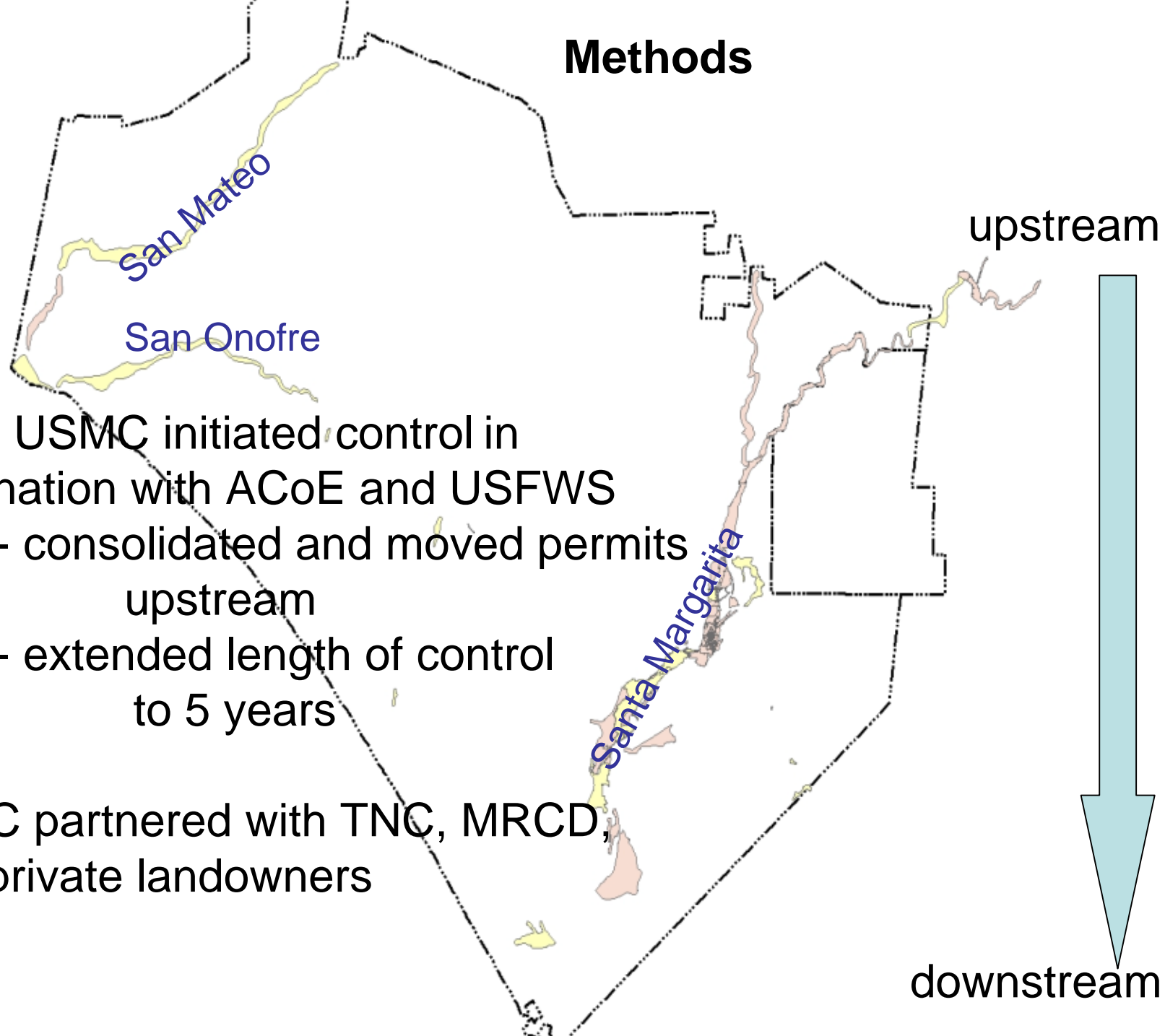
Strategy based on 2 factors:

1. Properties of Arundo invasions
 - vegetative fragments
 2. Estimated cost of control
(\$15 million for 300 ha)
- Relied on natural flood dynamics for recovery of native communities

downstream

Methods

- 1995: USMC initiated control in coordination with ACoE and USFWS
 - consolidated and moved permits upstream
 - extended length of control to 5 years
- USMC partnered with TNC, MRCD, and private landowners



Arundo Control Methods

Arundo going dormant/ dormant



Breeding season (Mar-Sept. 15)



Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug



Spray herbicide



Spray resprouts



Extraction of Arundo rhizomes & stems



Cut & Spray



Methods



- Foliar spray
6% glyphosate solution
~90-95% effective

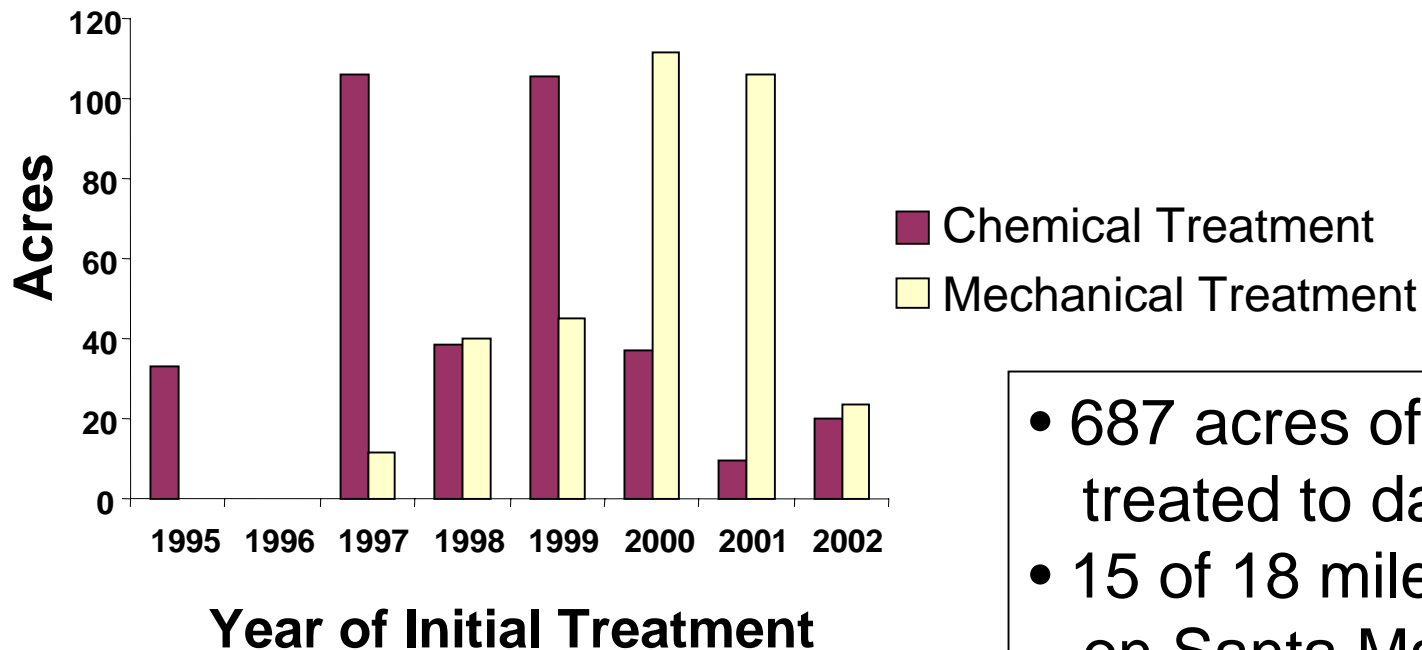


- Mechanical removal of stems and rhizomes (followed by spraying of re-sprouts)

- Problem: biomass

Results

Acres of Arundo Treated in the Santa Margarita, San Mateo, and San Onofre



Approximate cost to date:
\$8.5 million

- 687 acres of Arundo treated to date
- 15 of 18 miles treated on Santa Margarita R.
- 1% Arundo cover in sections treated for 5 years

Lessons Learned



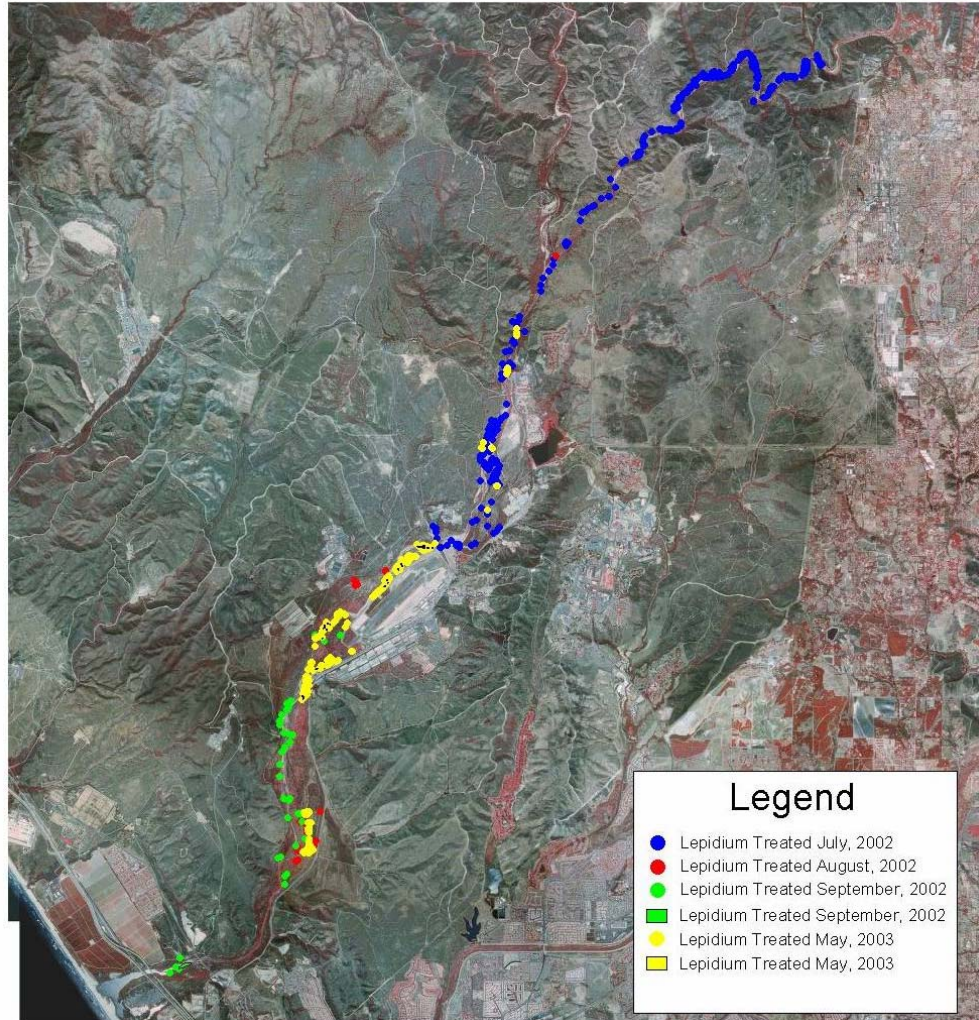
- Invasive ruderal plants (e.g. perennial pepperweed) could spread in treated areas due to soil disturbance/new niche
- Prior to management, create a standardized database

Perennial Pepperweed Management

MCB Camp Pendleton
Lepidium Treatments 2002-2003



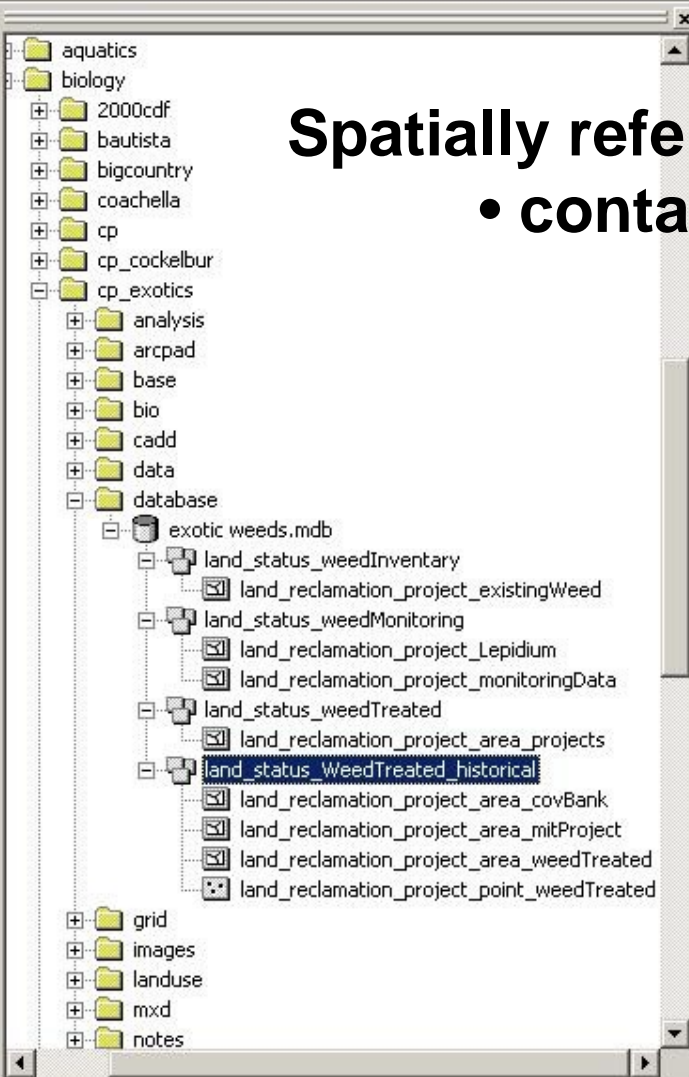
- Appears to be replacing Arundo
- Foliar treatment in spring to early summer



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Location: Z:\sd03\biology\cp_exotics\database\exotic weeds.mdb\land_status_WeedTreated_h... Stylesheet: FGDC ESRI

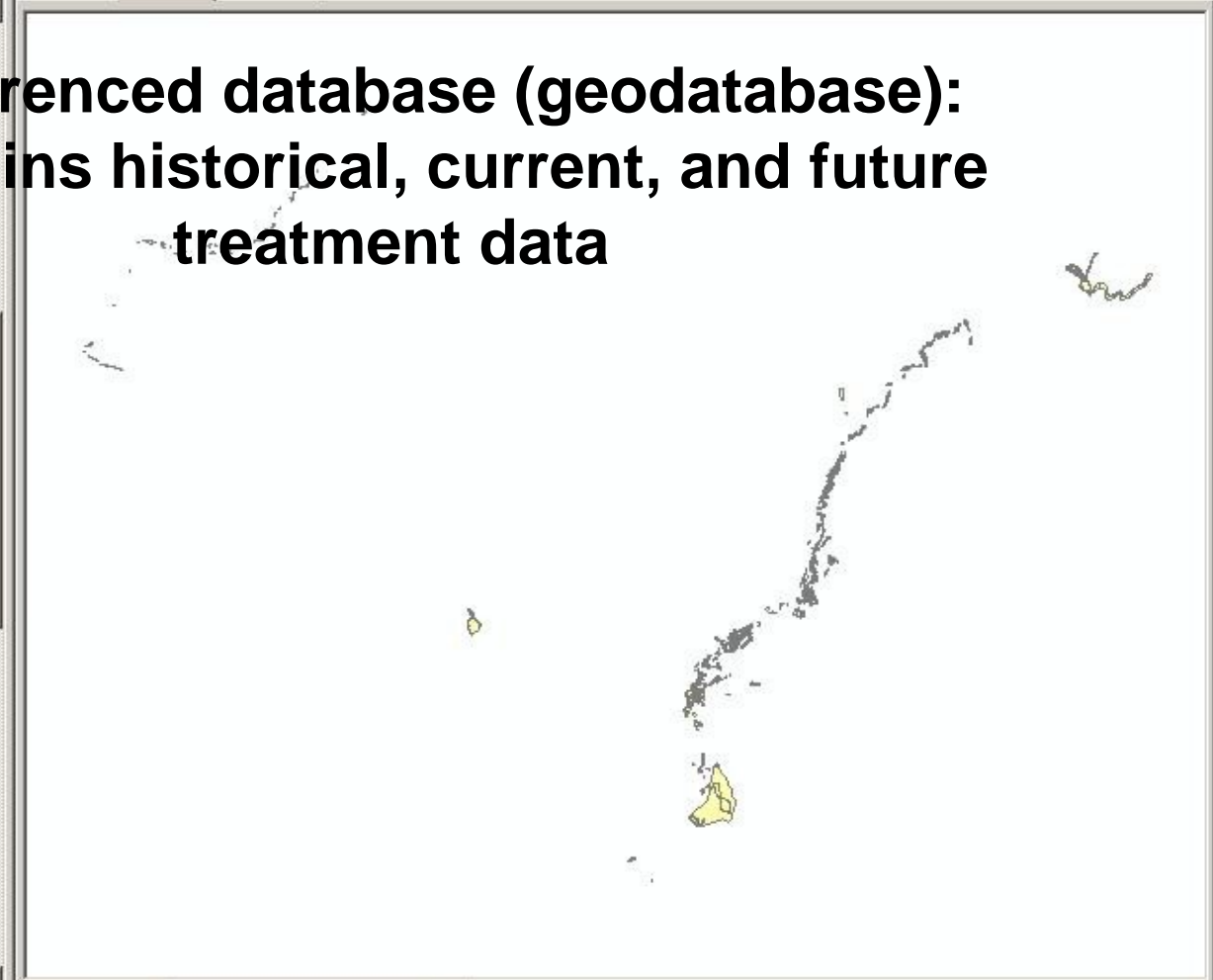


- aquatics
- biology
 - 2000cdf
 - bautista
 - bigcountry
 - coachella
 - cp
 - cp_cockelbur
 - cp_exotics
 - analysis
 - arcpad
 - base
 - bio
 - cadd
 - data
 - database
 - exotic weeds.mdb
 - land_status_weedInventory
 - land_reclamation_project_existingWeed
 - land_status_weedMonitoring
 - land_reclamation_project_Lepidium
 - land_reclamation_project_monitoringData
 - land_status_weedTreated
 - land_reclamation_project_area_projects
 - land_status_WeedTreated_historical**
 - land_reclamation_project_area_covBank
 - land_reclamation_project_area_mitProject
 - land_reclamation_project_area_weedTreated
 - land_reclamation_project_point_weedTreated
 - grid
 - images
 - landuse
 - mxs
 - notes

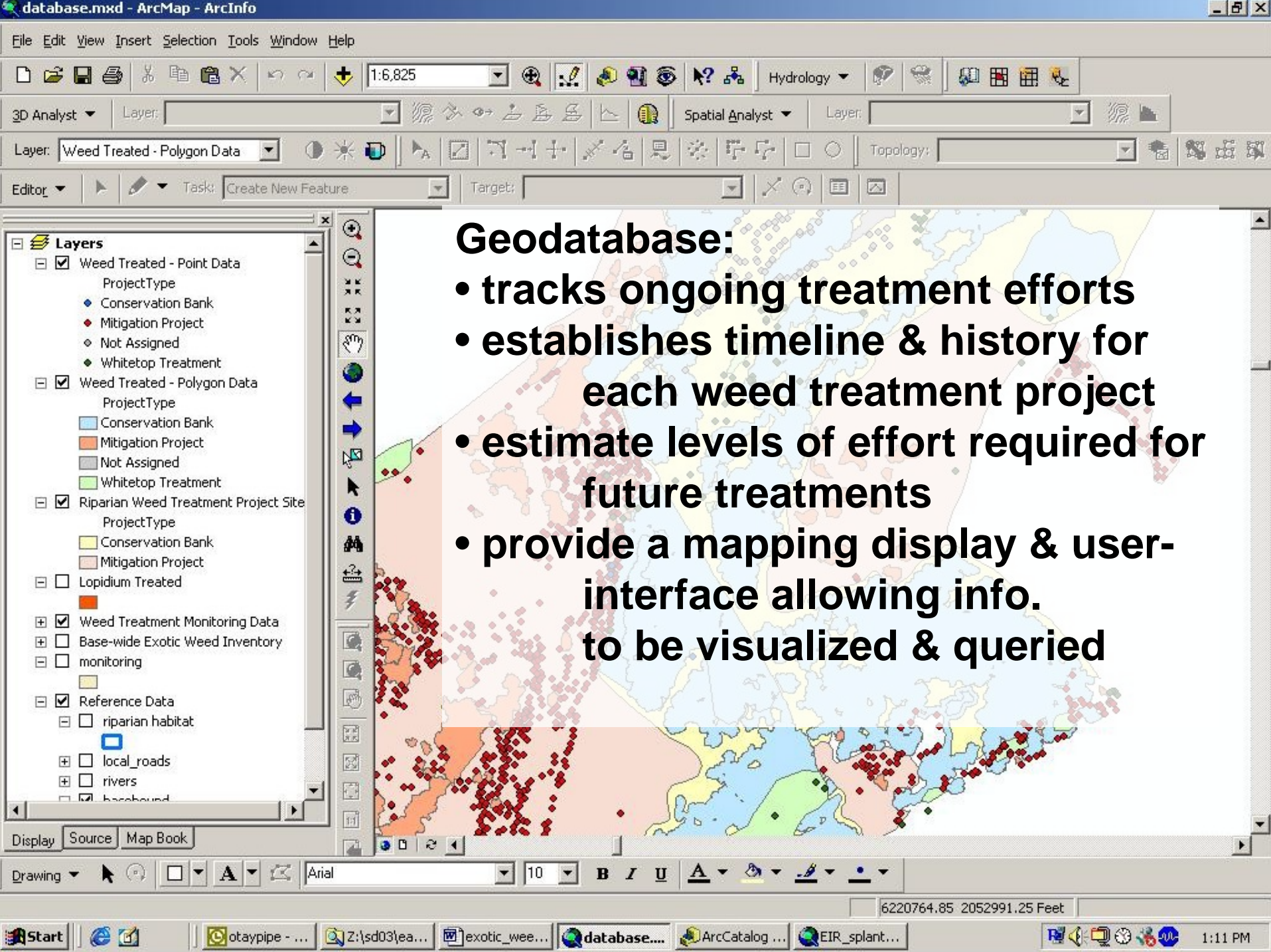
Spatially referenced database (geodatabase):

- contains historical, current, and future treatment data

Contents Preview Metadata



Preview: Geography



Geodatabase:

- tracks ongoing treatment efforts
- establishes timeline & history for each weed treatment project
- estimate levels of effort required for future treatments
- provide a mapping display & user-interface allowing info. to be visualized & queried

Future Plans

- Will continue taking aerial photos every 2 years
- Collect data from transects established in areas that have been treated for 5 years
- Collect data from transects in untreated area
- Review data in preparation for treatment of final 3 miles of Santa Margarita R.
 - Most sensitive stretch of river: 3 endangered species; widest floodplain

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