Translocation, Restoration and Management Methods for Otay tarplant (*Deinandra conjugens*), Challenges and Lessons Learned

Southern California Grassland Symposium

March 22, 2012

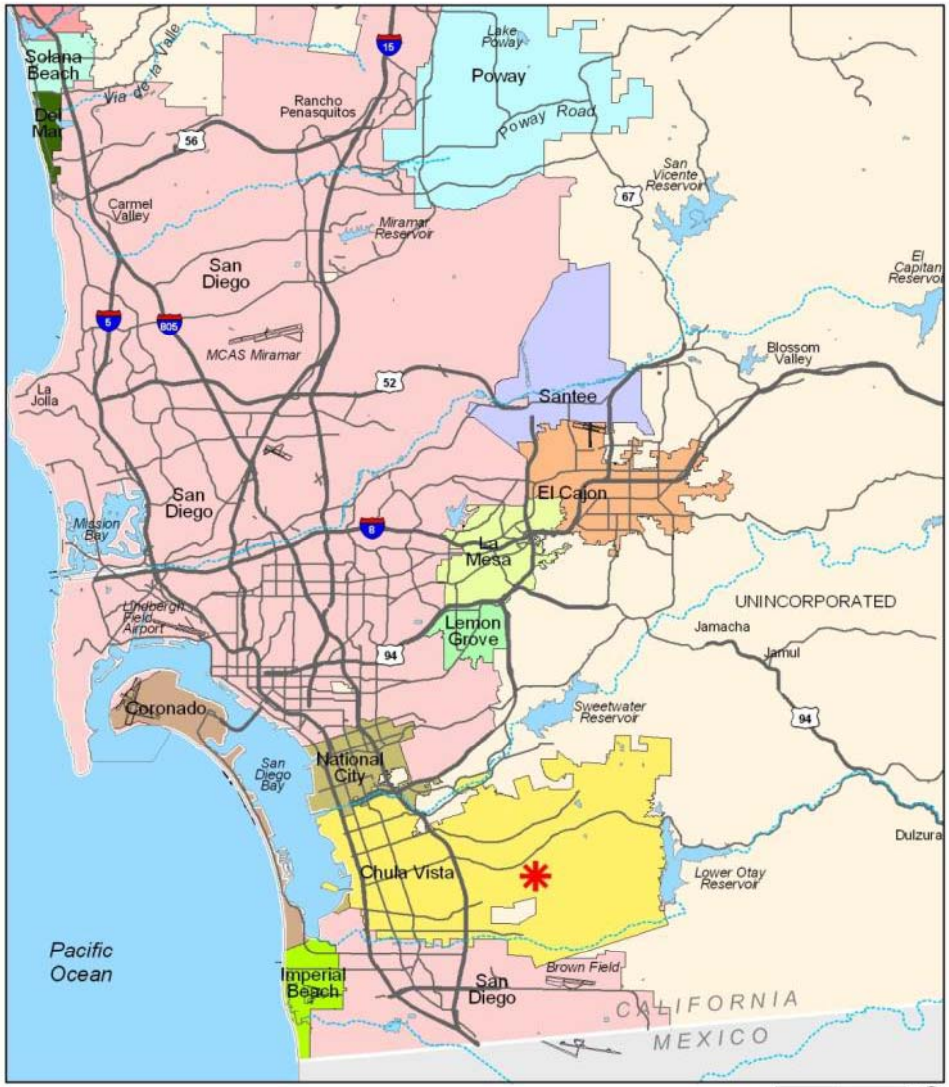

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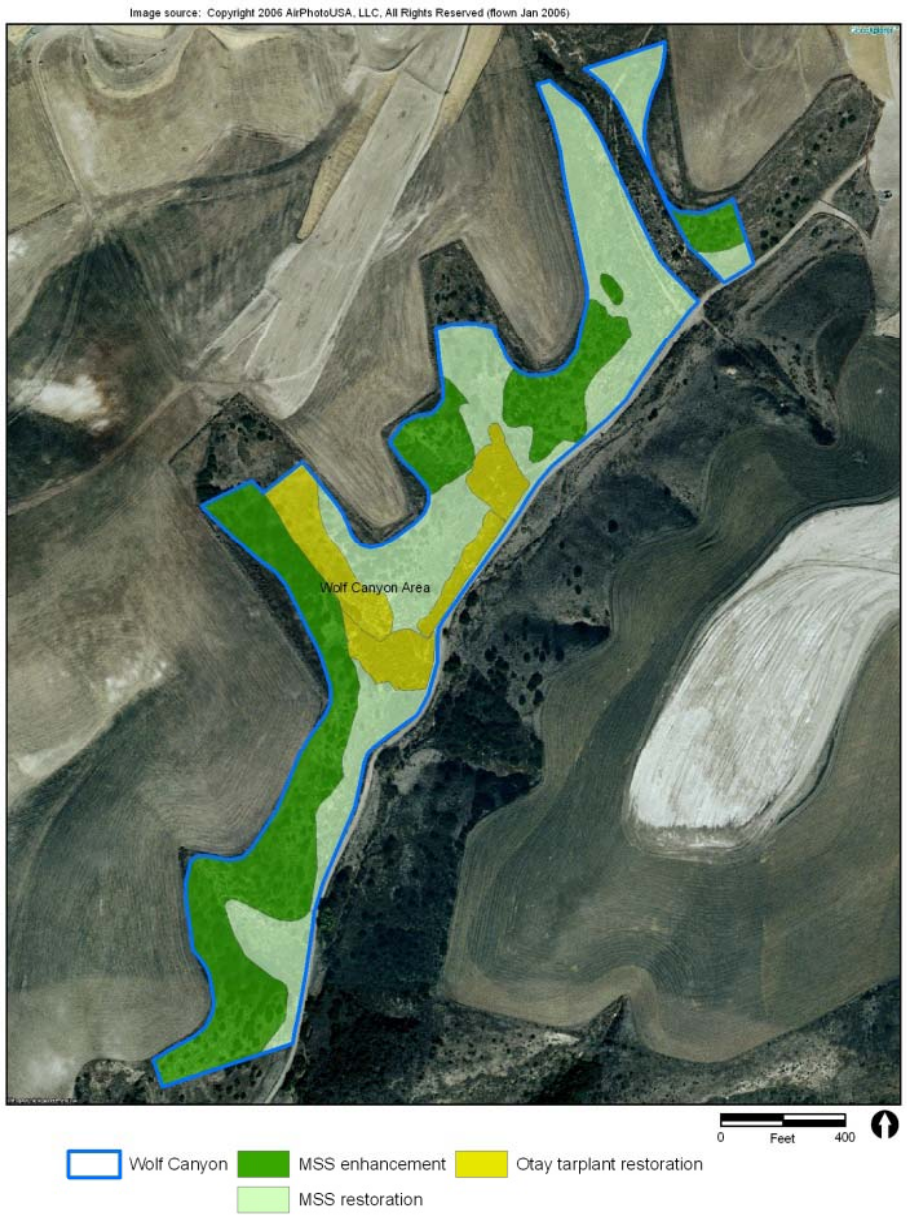
FIGURE 1

Regional Location

The Project Included Habitat Restoration for Otay Tarplant and Maritime Succulent Scrub, Village I Otay Ranch

Wolf Canyon Restoration Areas



Otay Tarplant *Deinandra conjugens*

- Annual Species
- Restricted to Southern San Diego County and Extreme Northern Baja
- State and Federally Listed-USFWS Recovery Plan

- Threats Include Direct Loss of Habitat Through Agricultural Conversion and
- Development
- Weed Invasion/Competition
- Population numbers can fluctuate significantly from year to year

Annual Population Changes in Distribution and Density can be Significant

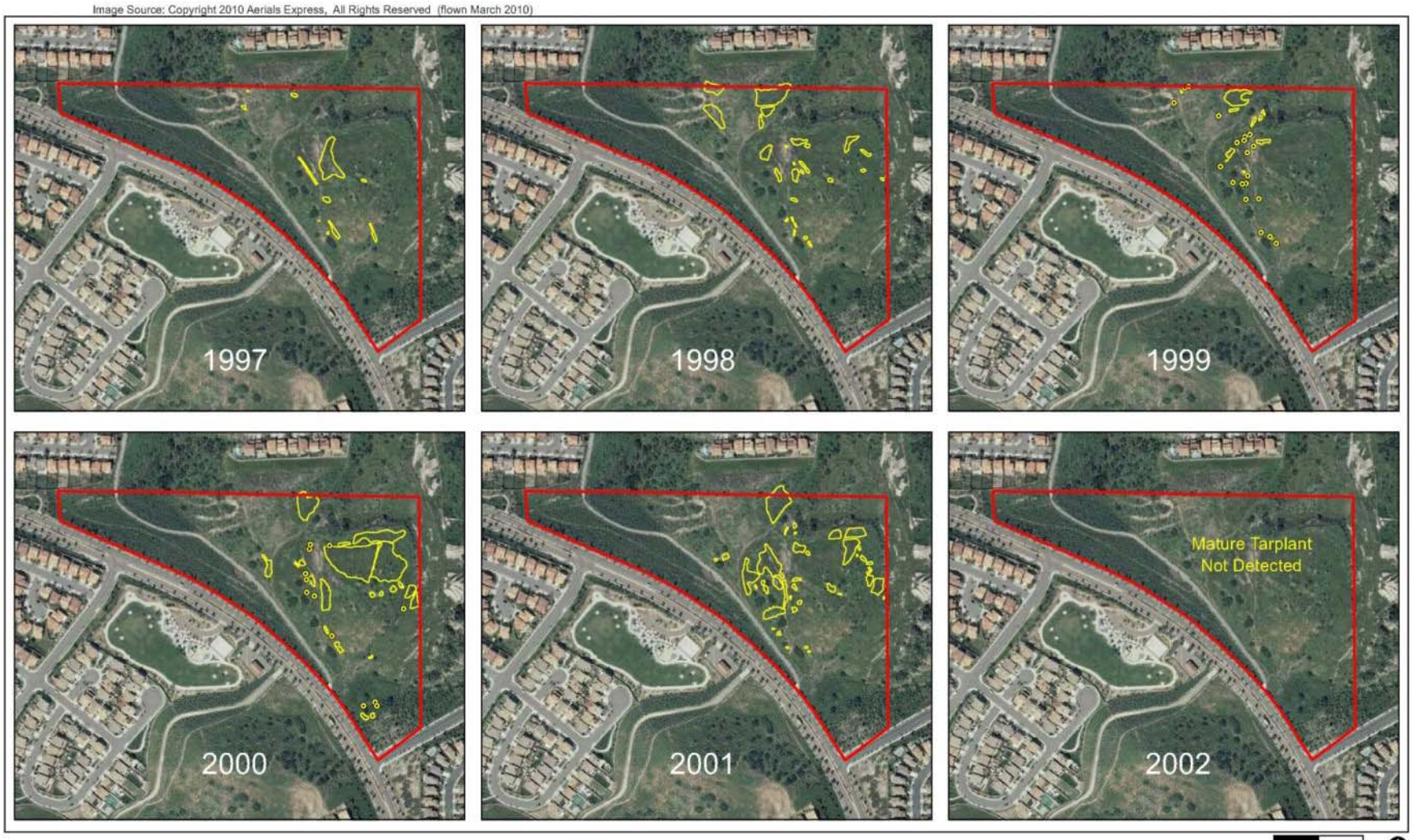


FIGURE 5
Tarplant History

Pre-Restoration Conditions

The area was heavily grazed for years prior to restoration

Numerous weeds were present:

Wild oats (*Avena* spp.)

Black mustard (*Brassica nigra*)

Tocalote-star thistle (*Centaurea melitensis*)

Otay Ranch Village I Impacts: 0.75 acre of Otay tarplant Habitat -The Impact Site Supported 500 plants

Mitigation Goals and Success Criteria:

Restoration of approximately three acres of disturbed habitat in Wolf Canyon for the Otay tarplant and establishment of a minimum of 2,000 plants by the end of the five-year maintenance period. A 10-year monitoring period is required as part of the translocation and restoration program.

Success Criteria:

1) A replacement of 4:1 of the baseline number of plants at the donor site is achieved in at least one of the monitoring years between years 6 though 10 following the end of the intensive maintenance period;

2) No supplemental seeding of Otay tarplant has occurred for at least two growing seasons prior to the year which population counts meet success criterion 1; and

3) The population does not show a decline in years 6 through 10 **unless** a natural population chosen as a reference site exhibits the same pattern and magnitude of decline over those same years.

Site Preparation-Dethatch Using Weed Whips

Salvaged Clay Soil from Impact Site

Planted Salvaged Native Grasses

Other Grassland Species Were Also Salvaged or Germinated From Soil Seed Bank

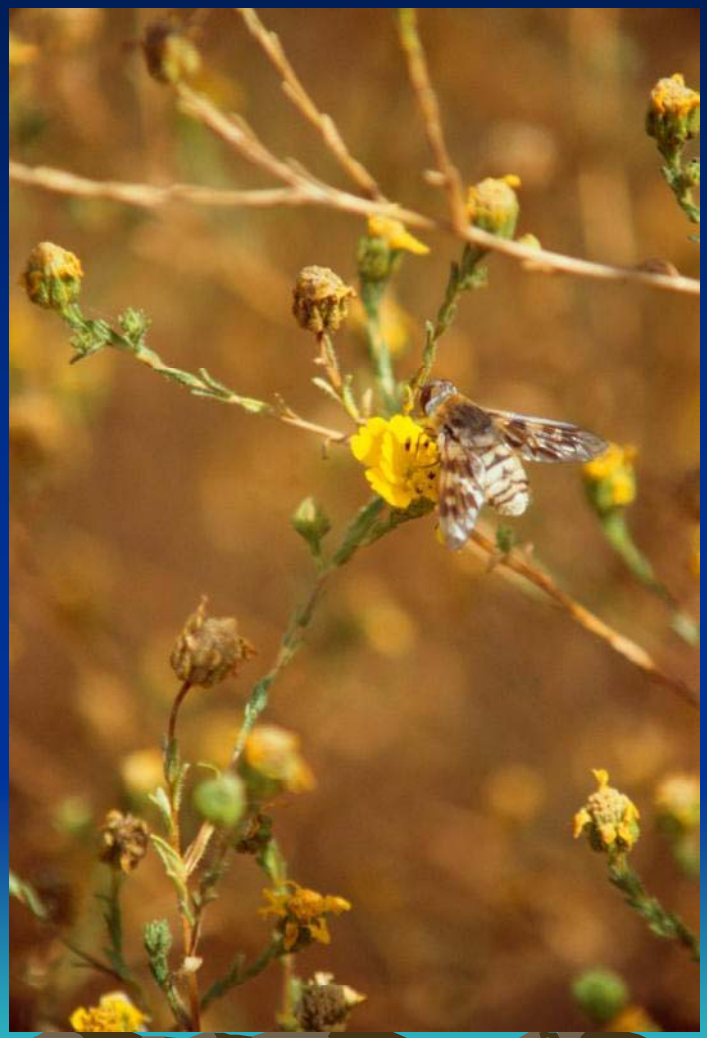
Year 1 Growth

January 2000

April 2000

Seeded Otay tarplant and Gumplant
215 Tarplants in Year 1(2000)

Observations of Potential Pollinators



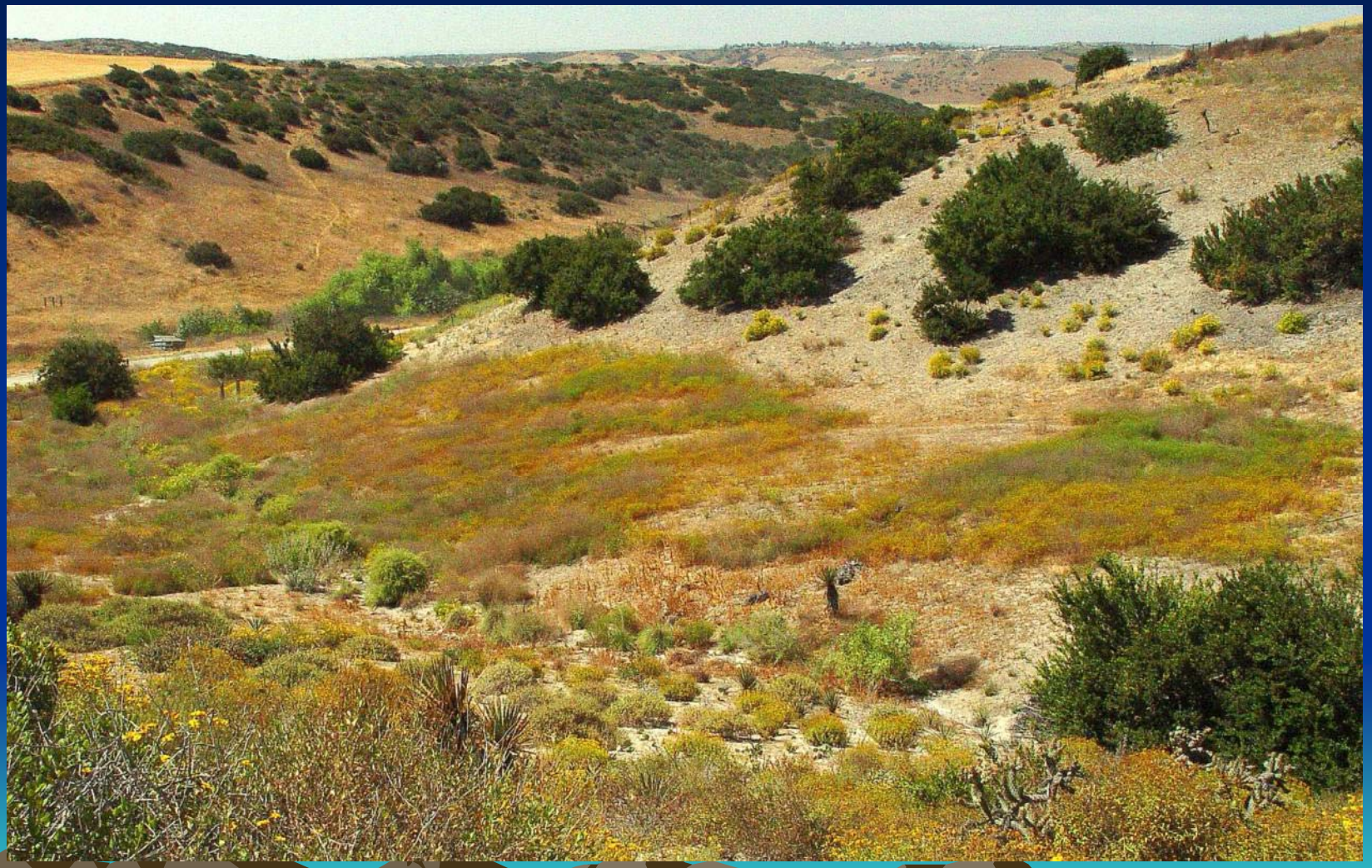
In Addition to Intensive Weed Control Efforts, Potential Pollinators were Attracted to the Site with Artificially Constructed Burrows

Year 2 Growth
Estimated 4,370 Otay Tarplant (2001)

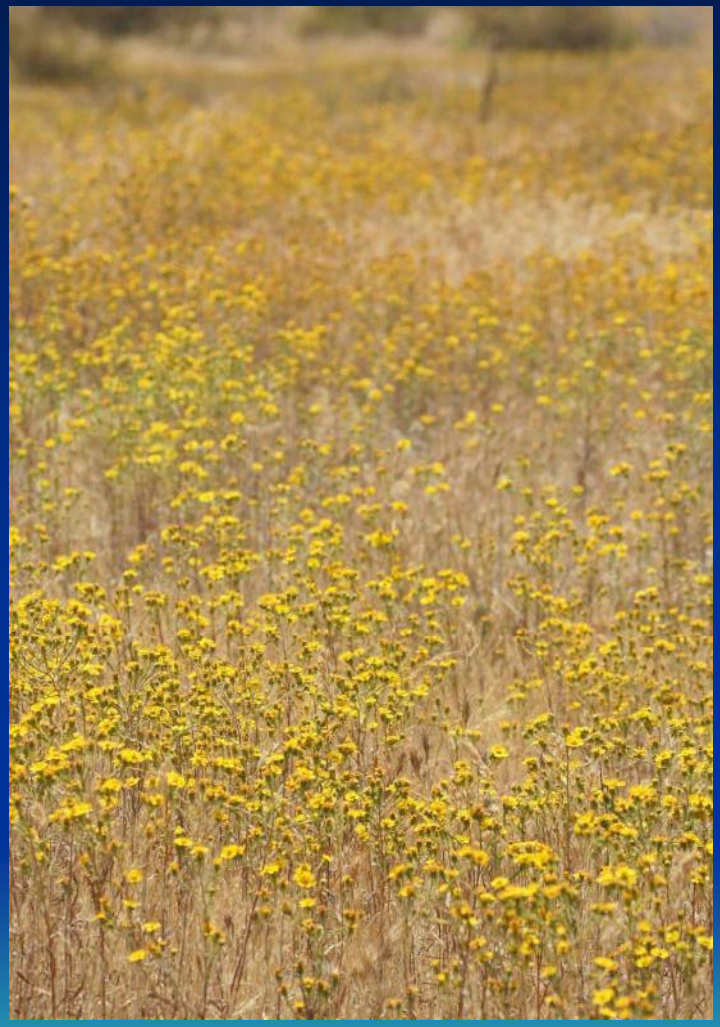
Year 3 Drought
Zero Plants Survived to Flower (2002)

Year 4 Growth
Estimated 373,000 Otay Tarplant (2003)

Year 5
Estimated 200,000 Otay Tarplants (2004)



Year 10 Growth
Estimated 69,300



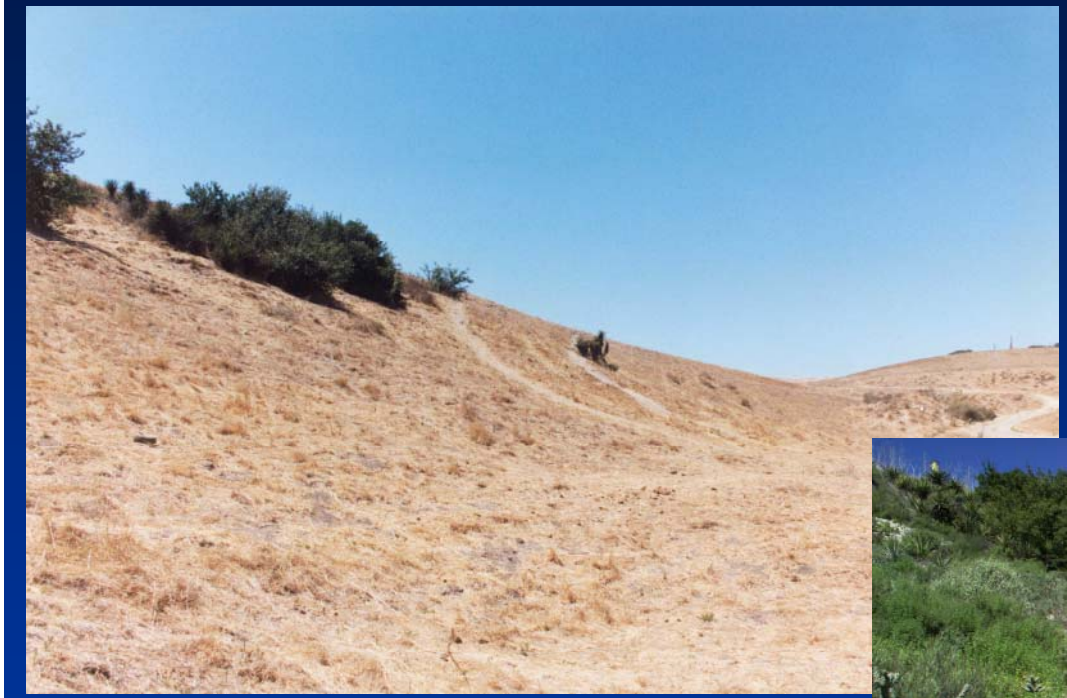
Otay Tarpant Annual Counts 2000-2009

Survey Year	Number of OtayTarplants	AnnualRainfall*/Comments
2000	215	6.35 inches
2001	4,370	6.83 inches
2002	0	3.02 inches (driest year on record)
2003	373,000	7.90 inches
2004	200,000	5.18 inches
2005	275,000	22.49 inches (3rd wettest year)
2006	25,000	5.42 inches
2007	4,875	3.84 inches (4th driest year)
2008	12,200	7.23 inches
2009	69,300	9.12 inches

*Annual Average 10.77 inches for San Diego

Multi-Species Framework
Adjacent MSS now Supports Coastal Cactus Wrens and Coastal California Gnatcatchers

Wolf Canyon Surrounding MSS Before and After



2000

2007

Wolf Canyon Surrounding MSS Before and After

2000

2007

Otay Tarplant/San Diego Thornmint Restoration and Enhancement Program-Year 1 2011-12 SANDAG-City of Chula Vista Transnet Grant

3 Year Project Goals:

- Manage and Increase Native Grassland and Clay Lens Habitat for Otay tarplant and San Diego thornmint
- Implement a Dethatch and Follow up Weeding Program to Reduce Competition with Non-natives
- Control Perennial Weeds such as Fennel and Artichoke Thistle that are invading Rare Plant Habitat
- As weeds are controlled, Redistribute seeds of Otay Taplant and San Diego thornmint into Suitable Habitat Previously Dominated by Non-natives
- Propagate and Plant 6,000 Purple Needlegrass to increase Native Grassland
- Benefit other covered and sensitive Species such as Variegated Dudleya and Small-flowered Morning Glory

Sensitive Grassland Species
San Diego Thornmint and Variegated Dudleya

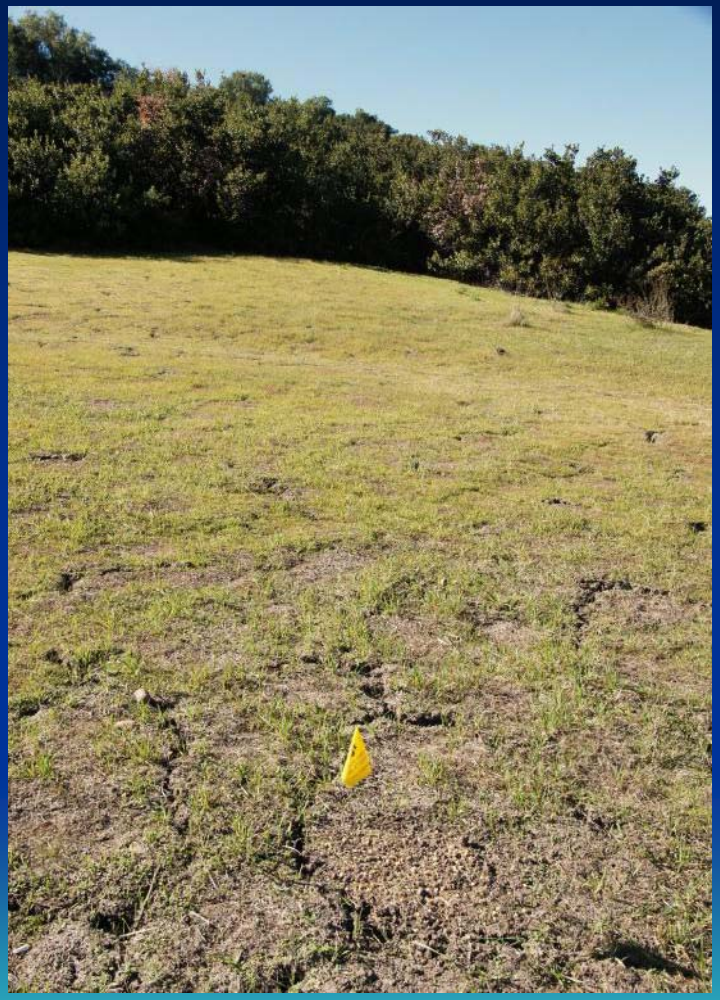
Clay Lens/Grassland Associates
Small-flowered Morning Glory and Erect Dwarf Cudweed

Fennel and Artichoke Thistle are Invading Preserved Grasslands Occupied by Otay Tarplant

Weeds Encourage Gopher Activity

Dethatch using Weed Whips and Rake and Remove Biomass

After Dethatching Weeds Not Longer Mulching Themselves



Easier to See Sensitive Plant Seedlings

Additional Challenges-Minimize Impacts to other Native Species

Use of Fusilade?
In Addition to Non-native Grasses Other Monocots Including Numerous Bulbs and Blue-Eyed Grass are Often Present

Starting New Populations of San Diego Thornmint In Suitable Habitat

Hand Weeding Around Thornmint Labor Intensive

Most Cost Effective Management Method:

- Recommend Periodic Dethaching to Open Up Habitat
- Dethaching can be Done on a Rotational Basis- Possibly Every 3 to 5 Years depending on Funding or Volunteer Efforts
- Benefits of Dethatching-Implemented When Most Plants are Dormant-Early Fall Prior to Seasonal Rains
- Timing of Dethatch Minimizes Potential Impacts to Native Species

Thank You!