

# Cactus Scrub Restoration

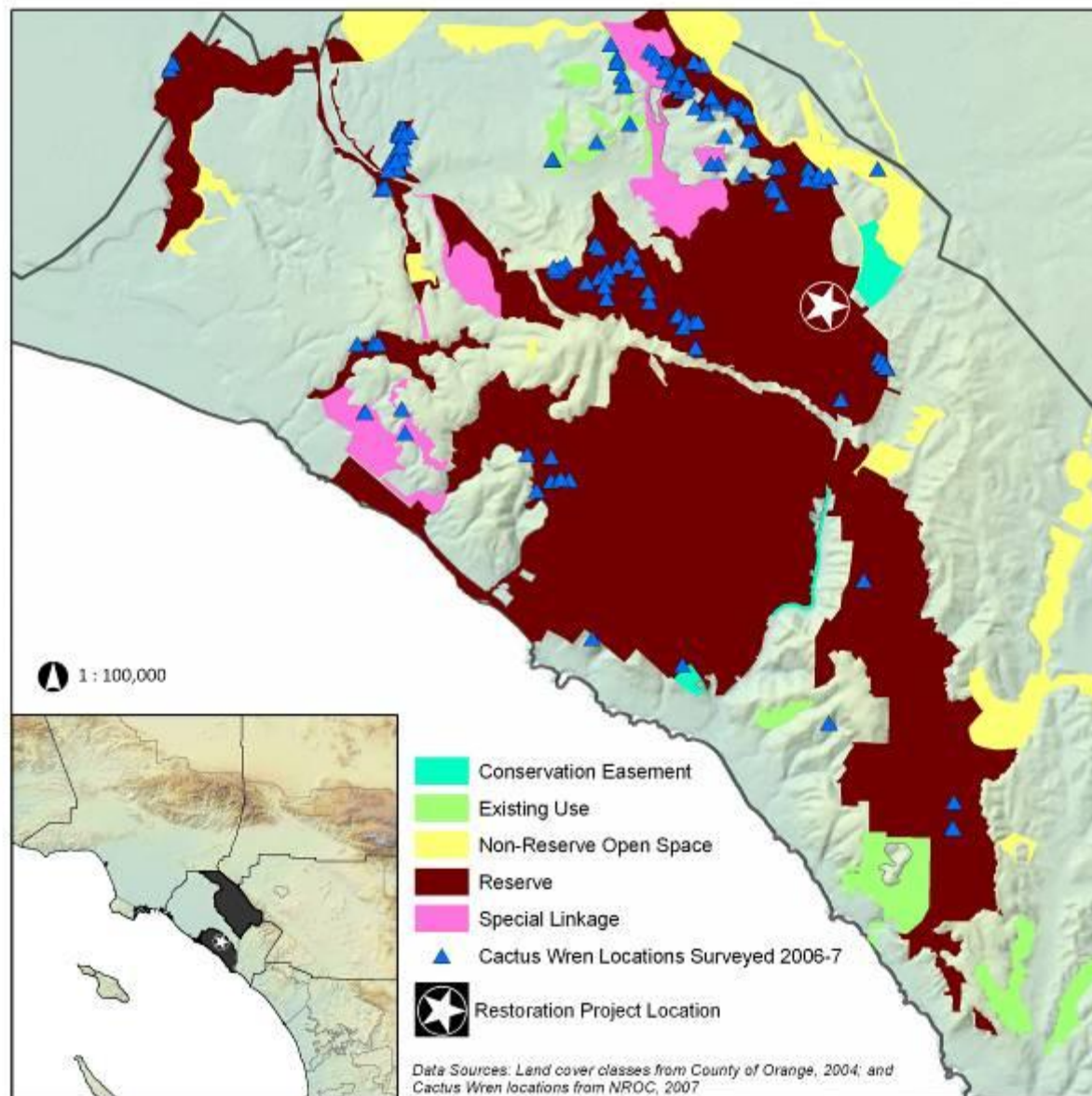
## *Examples of Four Projects in Orange County*



# Cactus Restoration Planning

- Appropriate site selection based on goals - e.g. linkage and/or expansion of existing cactus scrub
- Connectivity to existing cactus scrub or sage scrub
- Suitability of soil, landscape position and existing vegetation
- Accessibility of the restoration site and cactus donor site

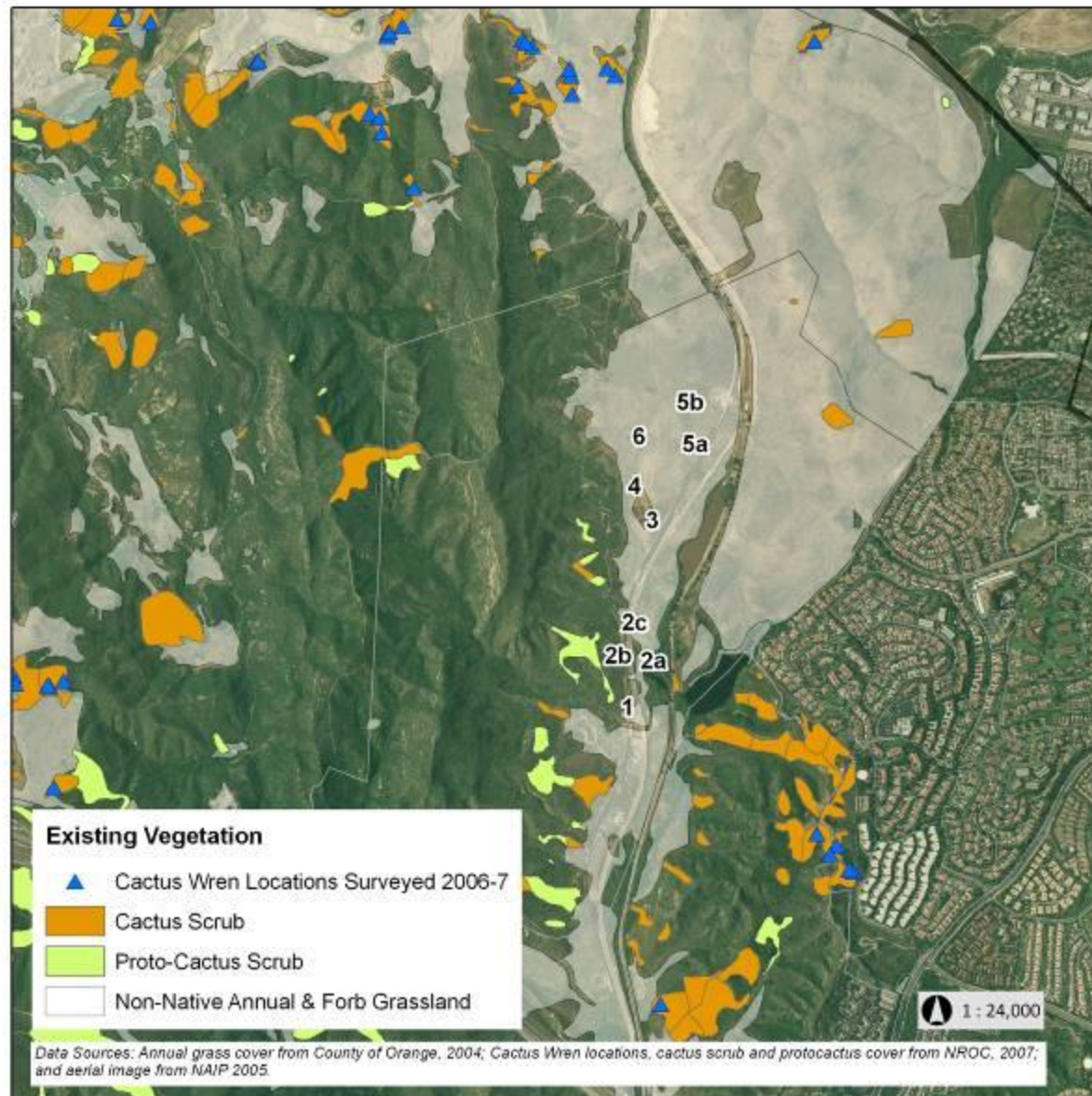
# Coastal Reserve of Orange County: Cactus Wren Habitat Restoration Project





# Cactus Wren Habitat Restoration Project:

## Potential Restoration Sites: 1-6

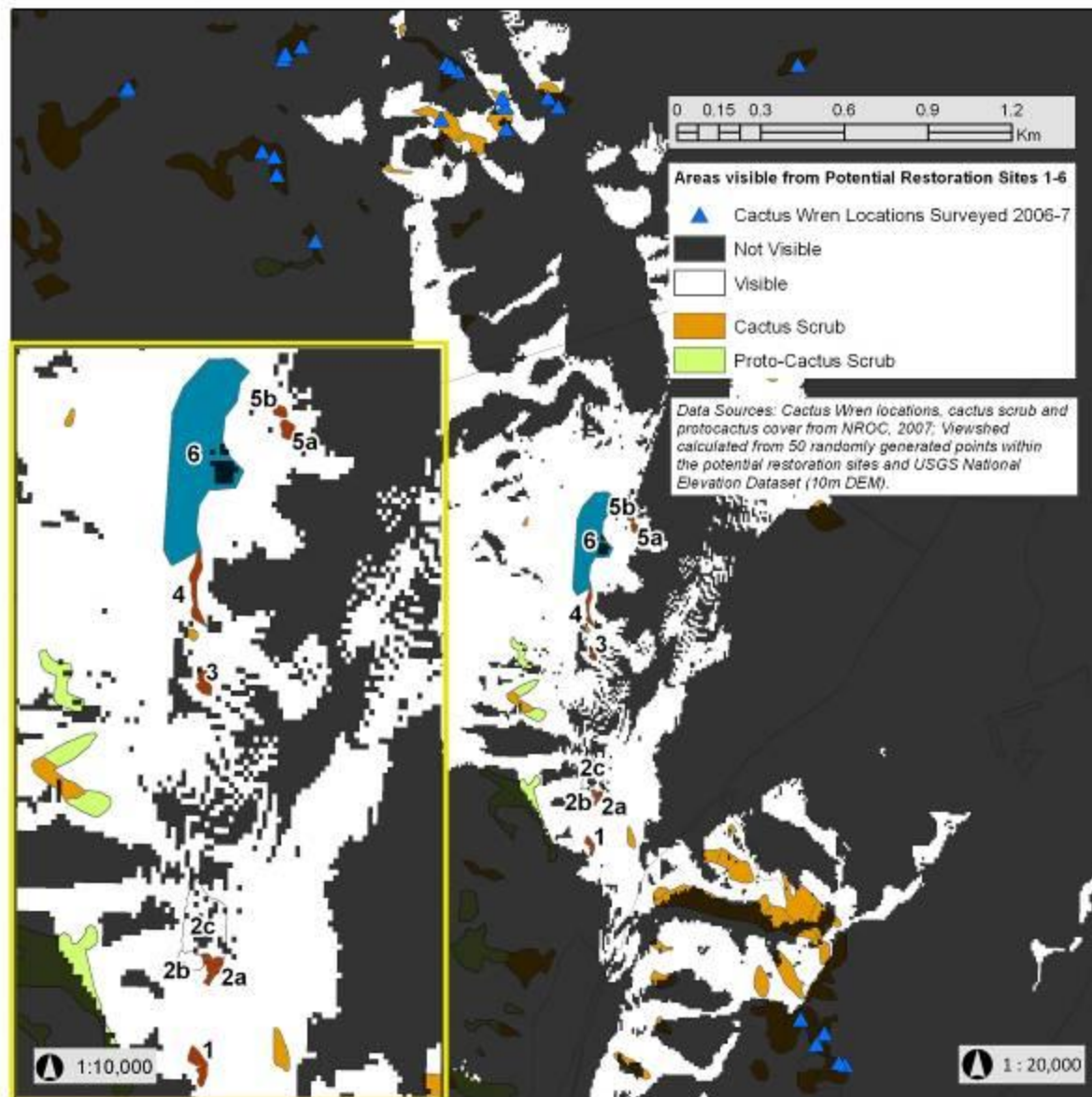


# Cactus Wren Habitat Restoration Project: Potential Restoration Sites: 1-6

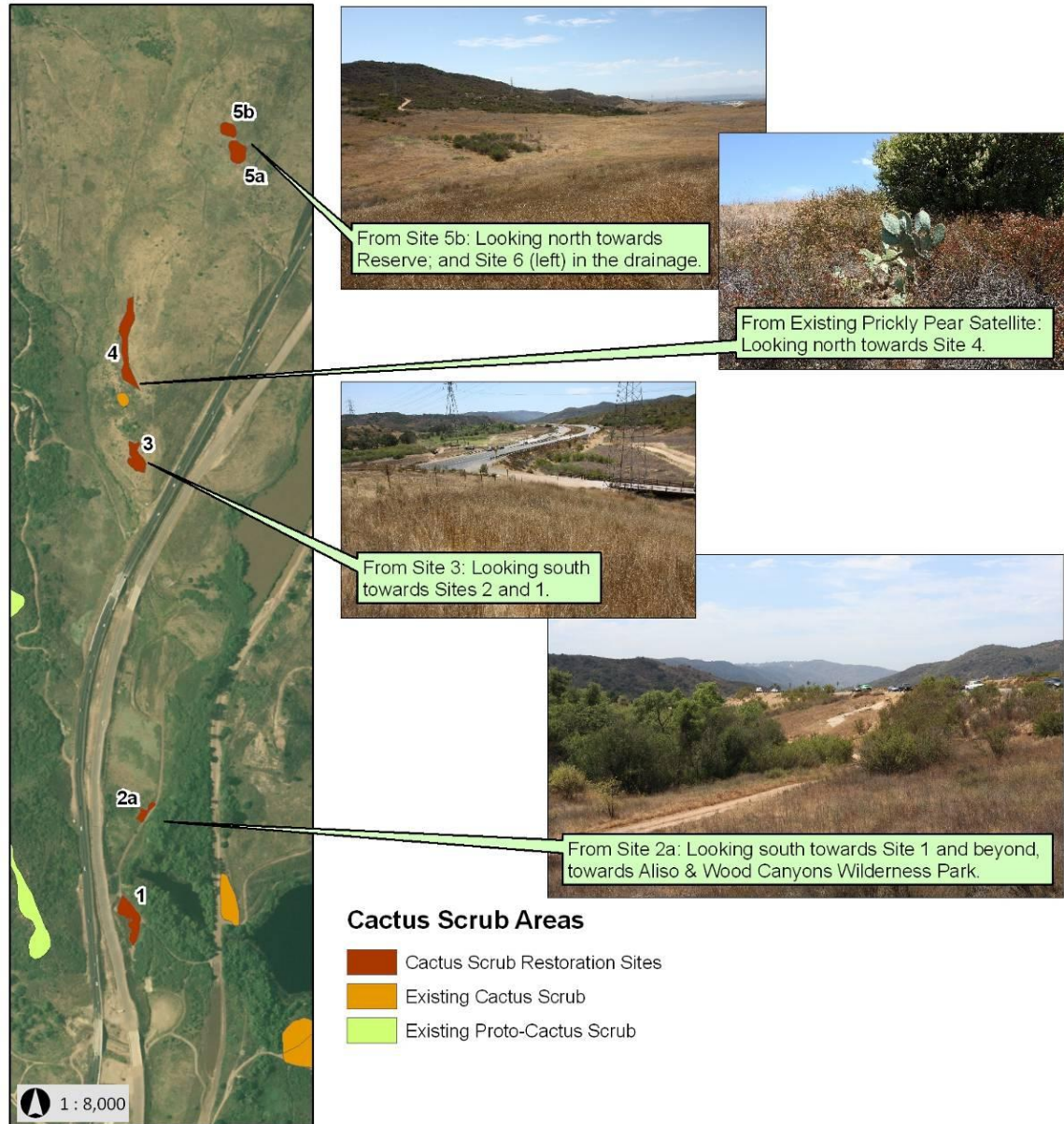




# Cactus Wren Habitat Restoration Project: Viewshed from Potential Restoration Sites



# Cactus Wren Habitat Linkage Project: Restoration Sites



Aerial Image: 2005 NAIP

# Cactus Wren Habitat Restoration Project:

## Potential Restoration Site 3



### ADJACENT CSS PATCH TO SITE 3

#### NATIVES

Species	Common Name	Cover
<i>Artemisia californica</i>	California sagebrush	Dominant
<i>Eriogonum fasciculatum</i>	California buckwheat	Sub-dominant
<i>Malosma laurina</i>	laurel sumac	Uncommon
<i>Lotus scoparius</i>	Deer weed	Uncommon
<i>Opuntia littoralis</i>	prickly pear cactus	Uncommon
<i>Baccharis pilularis</i>	Coyote bush	Uncommon
<i>Malacothamnus fasciculatus</i>	bushmallow	Uncommon

### SITE 3

#### POTENTIAL CACTUS SCRUB RESTORATION AREA

#### NON-NATIVES

Species	Common Name	Cover
<i>Avena</i> sp.	Wild oats	Dominant
<i>Bromus madritensis</i>	compact brome	Uncommon
<i>Centaurea melitensis</i>	toxicole	Uncommon
<i>Hirschfeldia incana</i>	Short pod mustard	Uncommon

#### NATIVES

Species	Common Name
<i>Ambrosia psilostachya</i>	ragweed
<i>Eremocarpus setigerus</i>	dove weed
<i>Heterotheca grandiflora</i>	telegraph weed
<i>Isocoma menziesii</i>	Menzies' goldenbush
<i>Malacothamnus fasciculatus</i>	bushmallow
<i>Nassella pulchra</i>	purple needlegrass
<i>Stephanomeria</i> sp.	wreath plant

### ADJACENT PERENNIAL GRASSLAND PATCHES TO SITE 3

#### NATIVES

Species	Common Name	Cover
<i>Ambrosia psilostachya</i>	ragweed	
<i>Artemisia californica</i>	California sagebrush	
<i>Deinandra paniculata</i>	paniculate tarplant	
<i>Dichelostemma capitatum</i>	wild hyacinth	
<i>Eremocarpus setigerus</i>	dove weed	
<i>Ericameria palmeri</i>	Palmer's goldenbush	
<i>Isocoma menziesii</i>	Menzies' goldenbush	
<i>Lupinus bicolor</i>	miniature lupine	
<i>Nassella pulchra</i>	purple needlegrass	Dominant Native
<i>Stephanomeria</i> sp.	wreath plant	

#### NON-NATIVES

Species	Common Name	Cover
<i>Avena</i> sp.	wild oats	Dominant Non-native
<i>Bromus diandrus</i>	riggus brome	Sub-dominant
<i>Cynara cardunculus</i>	Artichoke thistle	uncommon
<i>Erodium cicutarium</i>	redstem filaree	uncommon
<i>Hirschfeldia incana</i>	short pod mustard	uncommon
<i>Sonchus</i> sp.	Sow thistle	uncommon

### ADJACENT LUPINE - PERENNIAL GRASSLAND PATCH TO SITE 3

#### NATIVES

Species	Common Name
<i>Ambrosia psilostachya</i>	ragweed
<i>Artemisia californica</i>	California sagebrush
<i>Calystegia macrostegia</i>	morning glory
<i>Isocoma menziesii</i>	Menzies' goldenbush
<i>Lupinus succulentus</i>	Arroyo lupine
<i>Nassella pulchra</i>	purple needlegrass
<i>Stephanomeria</i> sp.	wreath plant

#### NON-NATIVES

Species	Common Name	Cover
<i>Avena</i> sp.	Wild oats	Dominant
<i>Brachypodium distachyon</i>	purple false brome	Uncommon
<i>Hirschfeldia incana</i>	short pod mustard	Uncommon



# Cactus Wren Linkage Project

- Sites planted with pads and 1-gallon cactus plants
- Sites were weeded prior to planting in February 2010
- Sites were weeded during the first growing season
- Sites were hand seeded at the end of the first year
- Sites were not irrigated



# Cactus Wren Linkage Project



Cactus pads harvested from areas that were scheduled to be trimmed away from fire roads and then hardened off.



Cactus group of 30 composed of 1-gallon cactus plants in center with pads surrounding.



# Cactus Wren Linkage Project

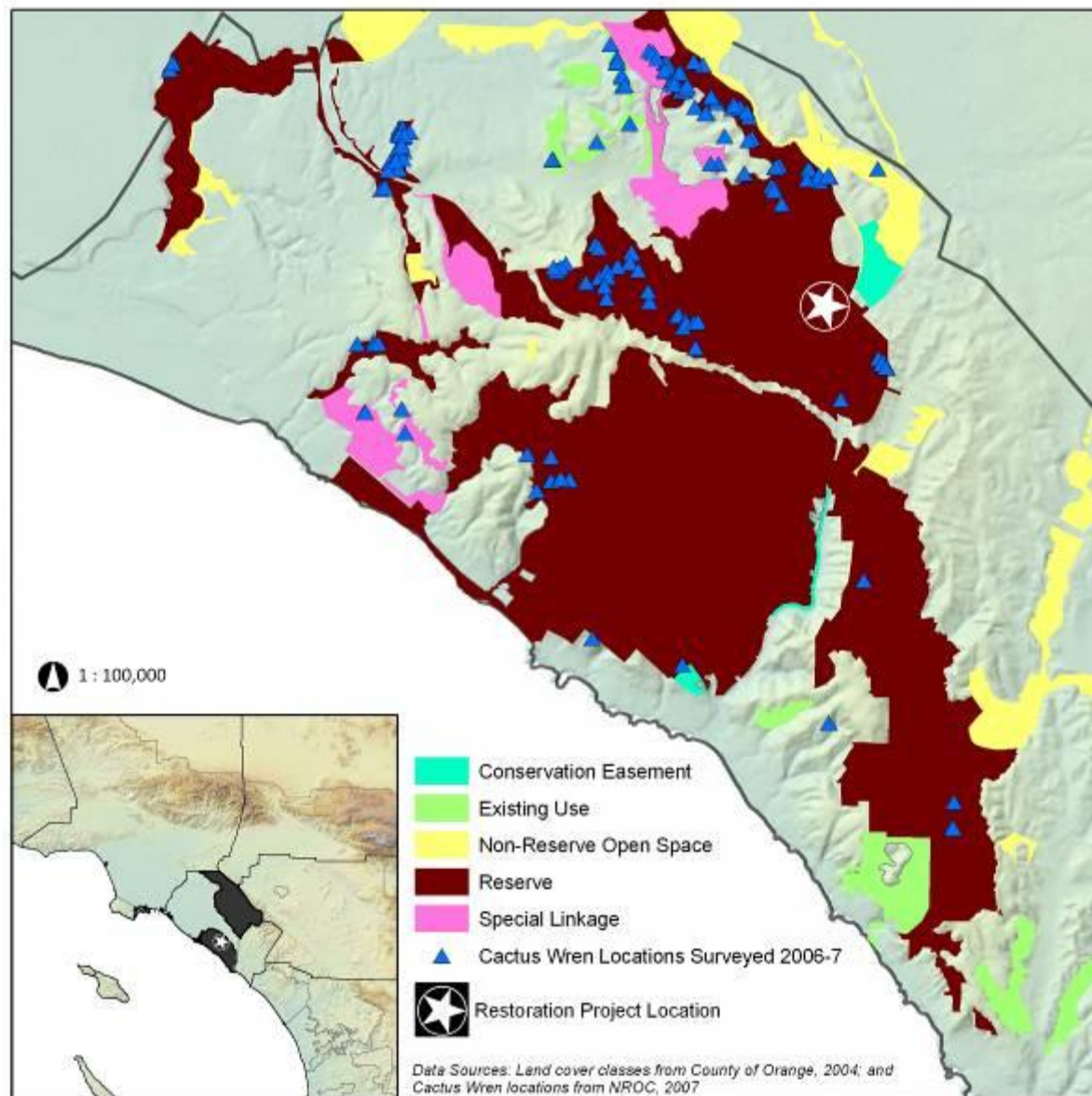


Non irrigated site - growth on rooted  
cactus and pads  
February 2010 through May 2011.



Elderberries planted in 2011  
adjacent to two cactus restoration  
sites.

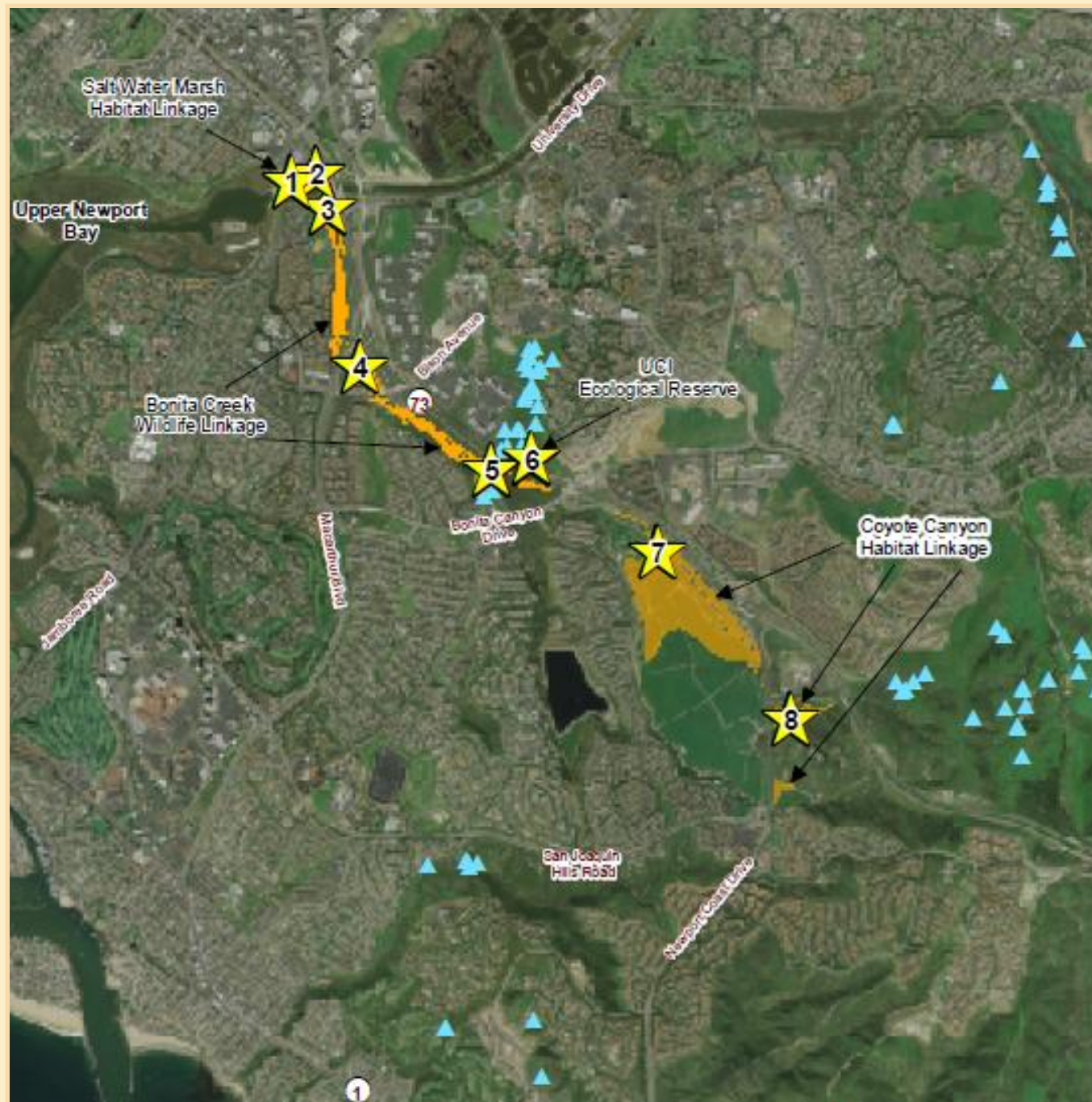
# Coastal Reserve of Orange County: Cactus Wren Habitat Restoration Project





# Cactus Wren Habitat Linkage Enhancement & Restoration Project

- NROC, TCA & UCI are restoring a linkage along SR-73 & creating breeding habitat at UCI Ecological Preserve
- Project is funded by CALTRANS Environmental Enhancement & Mitigation Program





**Cactus scrub  
restoration at UCI  
Ecological  
Preserve  
4.1 acres**







Photo NewFields



Photo NewFields



Photo NewFields



Photo NewFields





Photo Kris Preston

# UCI Cactus Donor Site



Photo Kris Preston





Photo: NewFields Co



Photo: NewFields Co



Photo: NewFields Co



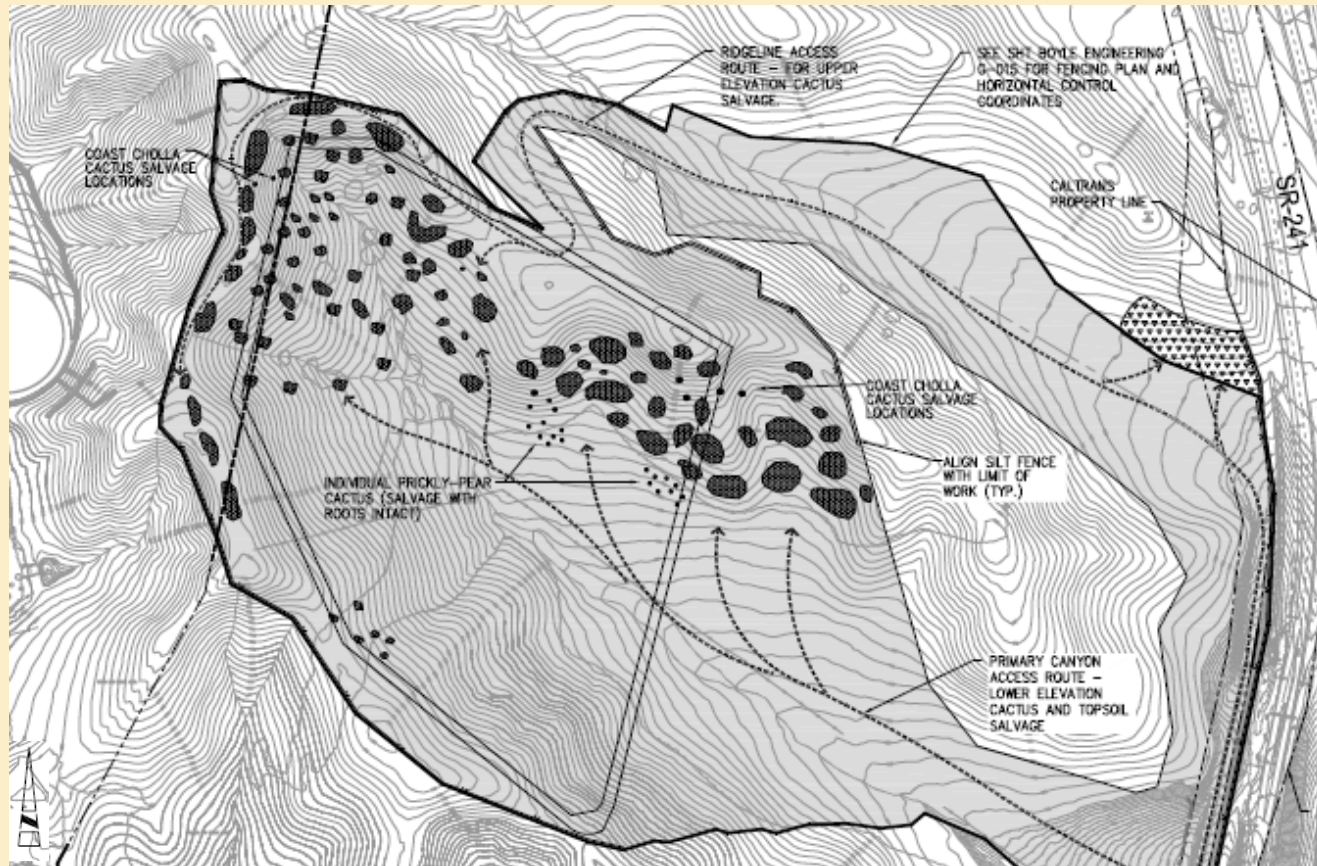
Photo: NewFields Co







# Upper Chiquita Reservoir Cactus Salvage and Translocation



## Upper Chiquita Reservoir Cactus Salvage and Translocation



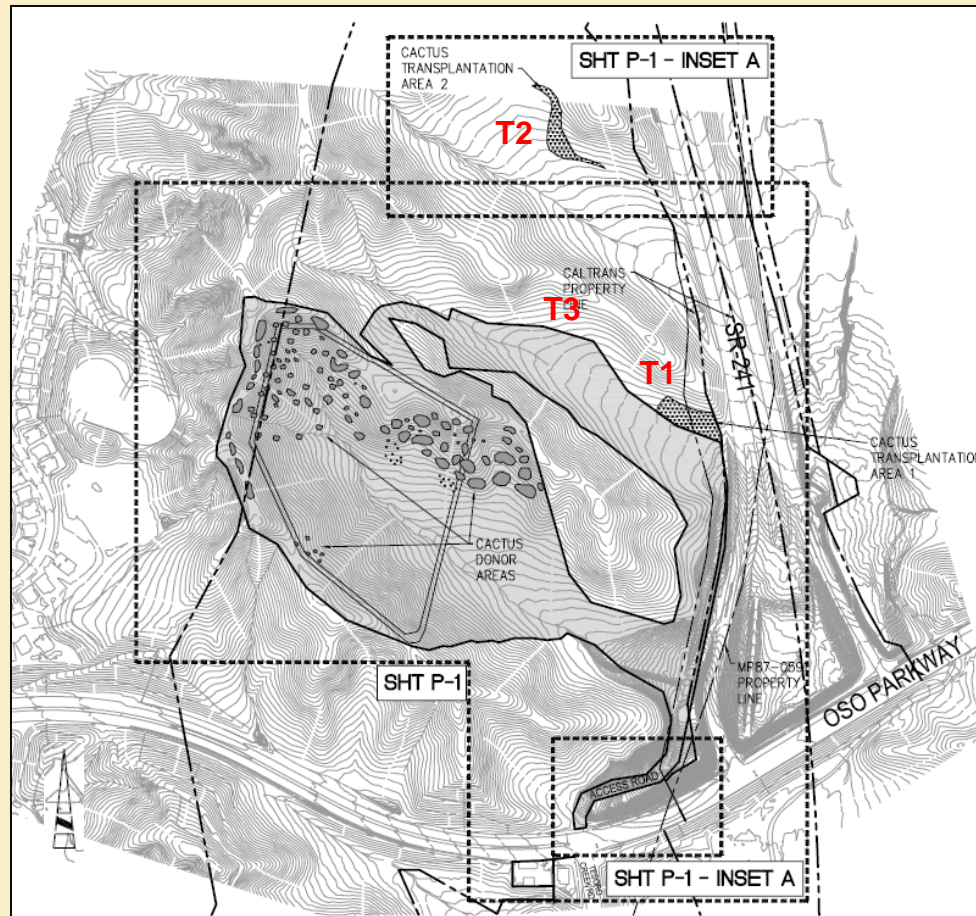
Large, intact prickly pear and cholla cactus, with roots and topsoil, were salvaged off the slopes using front-end loaders; then taken to the translocation sites.



# Upper Chiquita Reservoir Cactus Salvage and Relocation

Translocation sites T1 and T2 are located on south-facing slopes where coastal sage scrub restoration is planned for the Upper Chiquita Conservation Easement Area.

A third site T3, was added for the remaining salvaged cactus after T1 and T2 were filled.



The sites are intended to provide cactus scrub habitat for resident cactus wrens that have been documented for several years in the cactus patches within the reservoir basin area.

## Upper Chiquita Reservoir Cactus Salvage and Translocation



Large cholla cactus were also salvaged and planted at all three translocation sites.

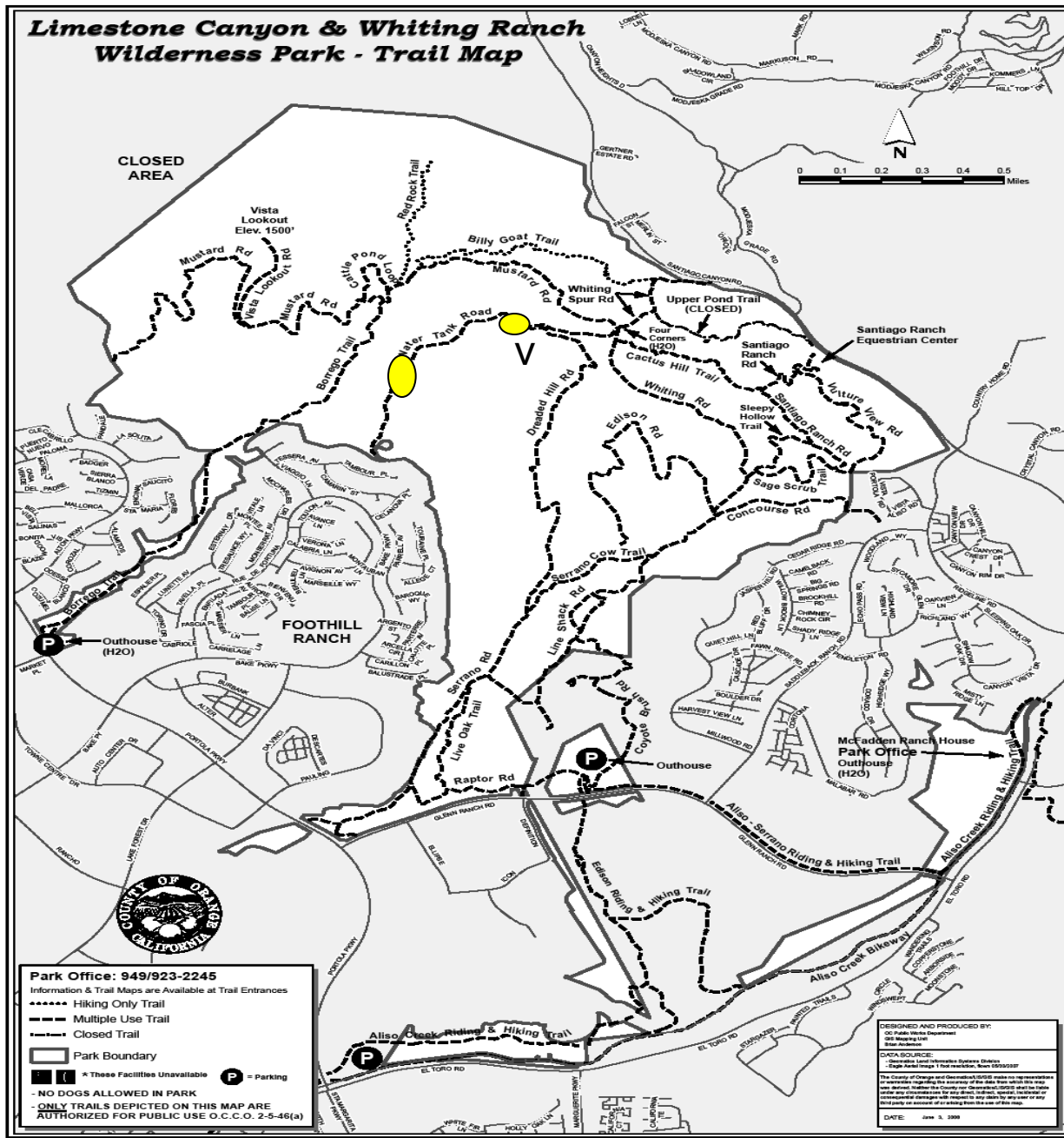


# Upper Chiquita Reservoir Cactus Salvage and Translocation



Native vegetation filling in the areas in between the cactus March 2009 – August 2010. The planted cactus and cactus pads established and show new growth.

***Limestone Canyon & Whiting Ranch  
Wilderness Park - Trail Map***







## Whiting Ranch Cactus Restoration Site Conditions

- Weedy with remnant sage scrub
- Near areas of burned cactus
- No rare plants
- Access for cactus relocation



Site was irrigated and weeded through the first Spring and Summer 2009.





And ....weeding was required  
once again in spring 2010.



Summer 2009



Summer 2010



Spring 2011



Site development  
continues  
with no weeding  
required in 2011





Upper Chiquita Canyon  
Reservoir Relocation Site

UCI Cactus Wren Linkage Site

**Cactus Wren used cactus in 2 of 3 cactus  
transplantation sites within the first year**