

Conserving Cactus Wren Populations in the Nature Reserve of Orange County

Kristine Preston
Nature Reserve of Orange County



Photo Karly Moore

Cactus Wren

(*Campylorhynchus brunneicapillus*)

Inhabits deserts in
American southwest



Coastal populations
restricted to cactus scrub
in southern California



Cactus Wren Decline



Today's Talk

- Efforts to conserve Coastal Cactus Wren
- Why are Cactus Wren populations declining in Orange Co?
- Results of 2009 - 2010 Cactus Wren monitoring
- Restoring cactus scrub in the Coastal Reserve

Photo Kris Preston

What Steps are Being Taken to Conserve Cactus Wrens in Southern California?



Photo Karly Moore

Natural Community Conservation Plans (NCCP)

- USFWS & CDFG - designed to protect habitats & species after 1993 listing of California Gnatcatcher as federally threatened
- Broader than State & Federal Endangered Species Acts
- Objective - conserve natural communities at ecosystem scale while accommodating economic growth & development



Photo Birds of North America

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NCCP's Conserving Coastal Cactus Wren

San Diego, Western Riverside County, Palos Verdes Peninsula, Orange County



Photo Christine Beck



Photo Karly Moore

Conserving Cactus Wren in Central & Coastal Orange County

- Orange County's Central & Coastal NCCP/HCP

- ~37,000 acres conserved



NROC

- Multiple land owners & managers
- Three target species: orange-throated whiptail, California Gnatcatcher & Coastal Cactus Wren
- Coverage/conditional coverage for 36 other species



Conservation of Cactus Wren in NROC

NROC conserves over 4,100 acres of cactus scrub in Orange County's Central & Coastal Reserves





Since we have conserved so much habitat, why are we concerned about Cactus Wren in the NROC?



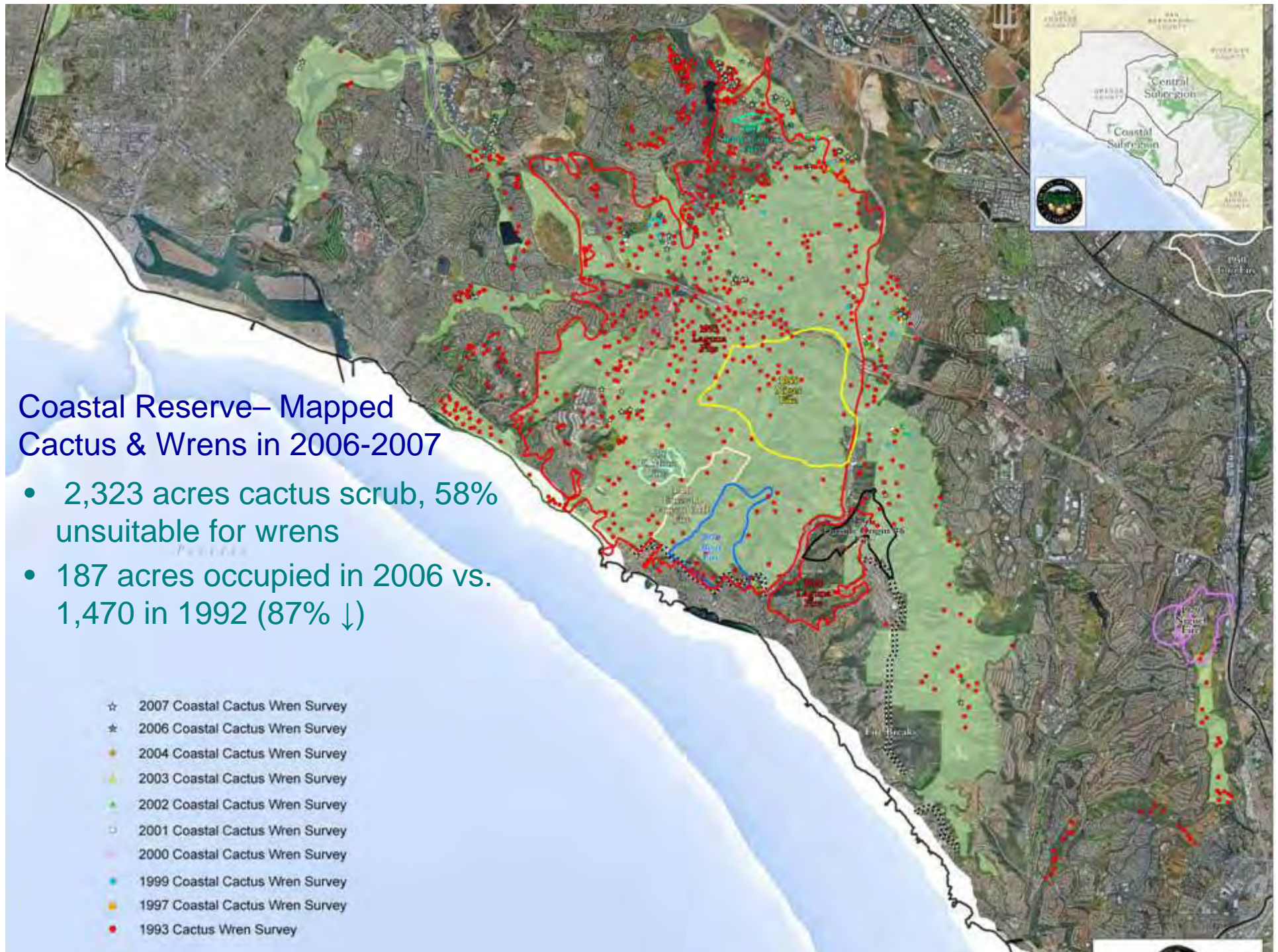
Santiago Fire – 10-07, CBS News Photo

1993 Laguna
Fire burned
75% of Coastal
Reserve

2007 Santiago
Fire burned
75% of Central
Reserve

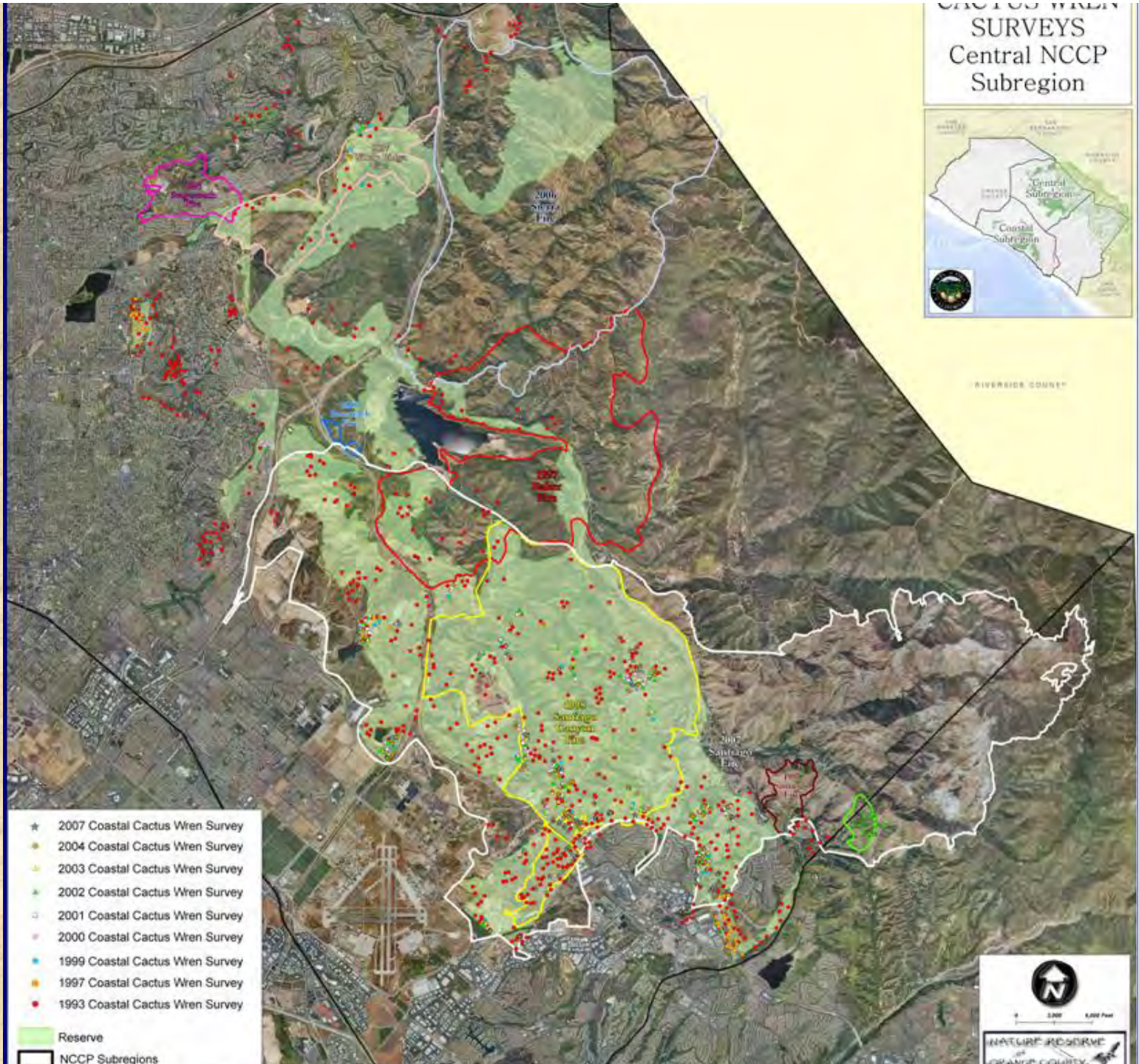


Santiago Fire – 10-07, CBS News Photo



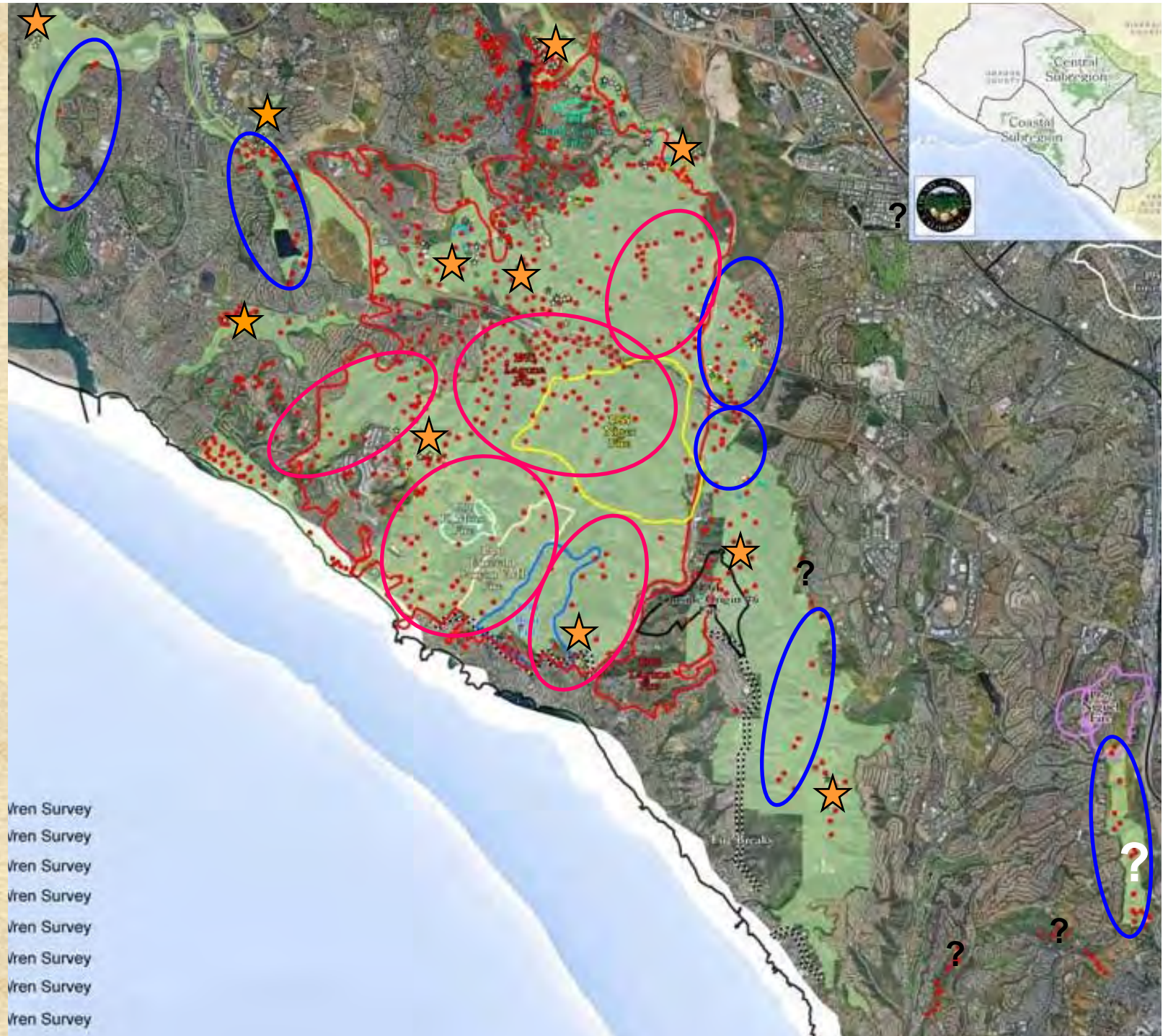
2008 Central Reserve Post-fire Surveys

- 1,855 acres cactus scrub, 77% burned
- 683 acres suitable for wrens
- ~67 territories (est. 82%↓ from 2004)



Cactus Wren are declining even in unburned areas of Coastal Reserve

- Present at 11 sites in 2010 (≥ 28 territories)
- Missing from 5 large areas burned in 1993
- Missing from ≥ 5 areas unburned in 1993



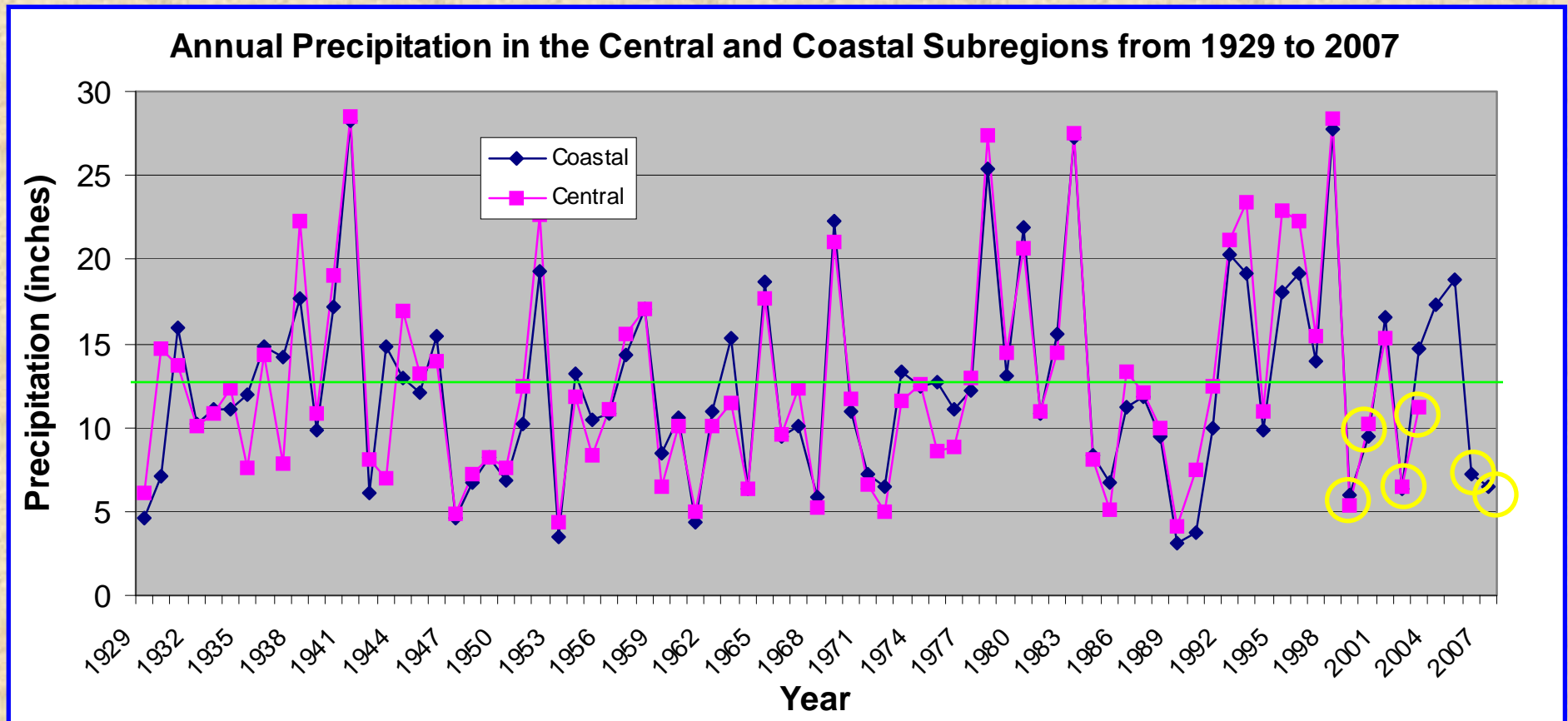
**Why have Cactus Wren
populations declined in unburned
habitat?**

Potential Factors Contributing to the Decline of Cactus Wrens

- Low productivity (food limitation, nest predation)
- Low survivorship (predation, disease)
- Isolated small populations (vulnerable to local extinction with limited opportunity for individuals to disperse and recruit into population)
- Lack of suitable habitat

How important are nest predation and food limitation in Cactus Wren productivity?

- Population decline & low productivity during recent droughts
- Role of predation in nest success & individual survival unknown



NROC Monitoring Study

Objectives:

- Monitor individual productivity & annual survival
- Monitor dispersal & recruitment of individuals into local populations
- Identify threats to the persistence of Cactus Wren
- Collect genetic material for taxonomic analyses



NROC Monitoring Team

Dana Kamada, Karly Moore, Scott Thomas & Kris Preston





Photo Trish Smith



Photo Kris Preston



Photo Kris Preston



Photo Kris Preston



Photo Elisabeth Brown

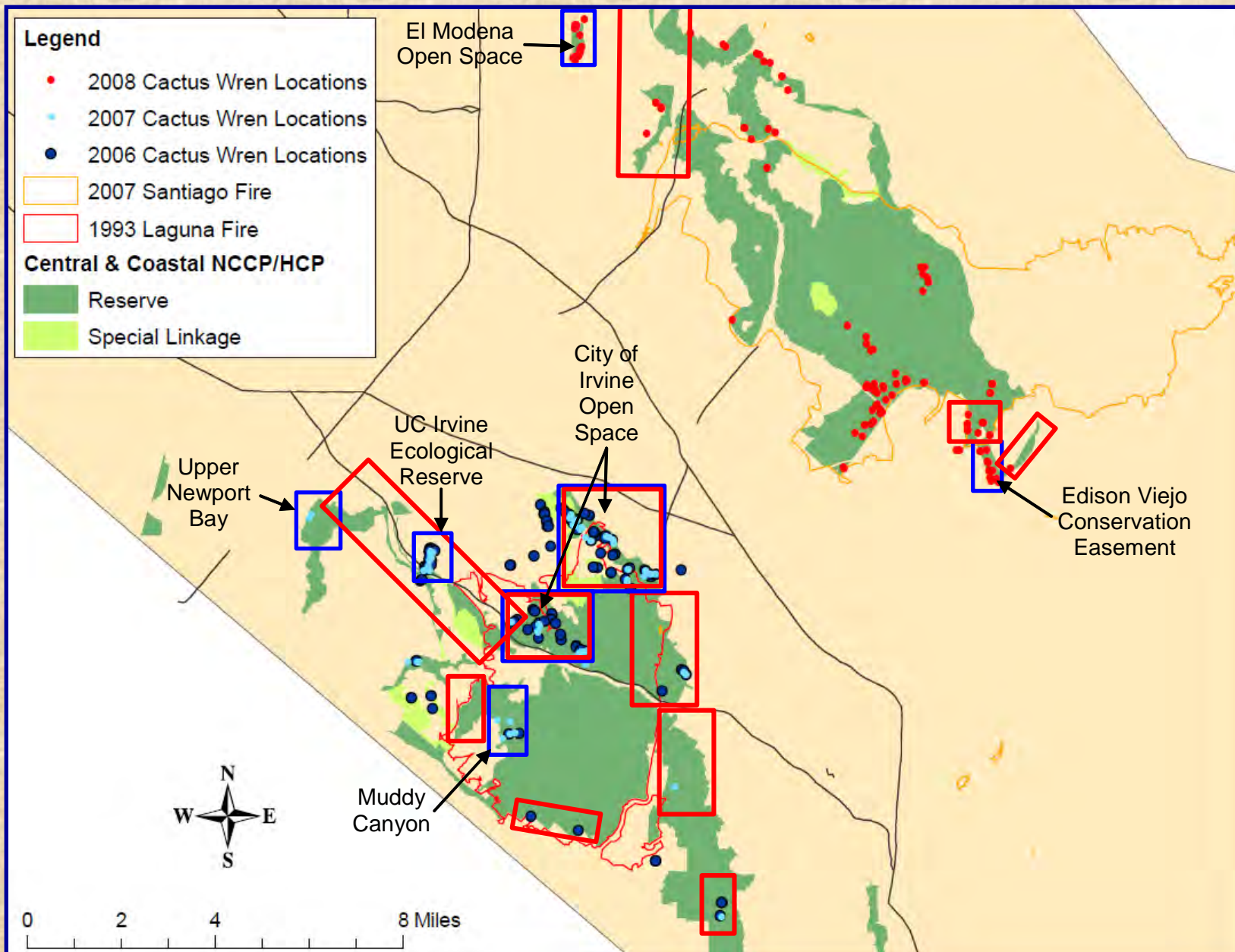
Volunteers have been a BIG help surveying for Cactus Wrens

NROC Monitoring & Banding Effort

- 2009 reproductive monitoring - 34 territories at 5 sites
- 2010 reproductive monitoring - 47 territories at 9 sites
- Banded 328 birds (65 AHYs, 263 HYs)



NROC 2010 Monitoring Study



Reproduction 2009

- 74% of pairs successfully produced young
- Average 2.5 fledglings/pair (n=32)
- Average 3.2 fledglings/successful pair (n=25)
- Unsuccessful: repeated nest predation, loss of one/both birds, late season pairing



Photo Dana Kamada



Photo Kris Preston

Reproduction 2010

- Reproductive success higher in 2010
- 91.5% of pairs successfully produced fledglings
- Average 3.3 fledglings/pr (n=46)
- Average 3.4 fledglings/successful pair (n=42)
- Phenology of initial nests highly variable
- Nest failure – predation, starvation?, infertility



Photo Karly Moore

How Do 2009-2010 Compare with Previous Studies?

- NROC nest monitoring during extreme 2007 drought – 50% of pairs produced fledglings
 - 0.9 fls/pr (n=12)
 - 1.6 fls/successful pair (n=7)
- Harmsworth San Joaquin foothills study – 100% prs successful, average 4.3 fls/pr in 1997 and 4.3 fls/pair in 1998 (n=10 prs/yr)
- Atwood's 1993-97 Palos Verdes Peninsula study - 3.0 to 3.6 fledglings/pr (28 total prs monitored; 3-9 prs/yr over 5 yr study)

NROC Coastal Reserve Populations Slight Expansion in 2010

- In 2010, pairs re-established in Buck Gully & Boat Canyon where wren had disappeared in 2007
- City of Irvine population (4 sites) larger than anticipated in 2010 compared to 2007 surveys & 2009 anecdotal observations



Photo Kris Preston

Adult Survival

- 19 of 49 (39%) of banded adults with established territories disappeared from 3-09 to 6-10
- Most individuals disappeared between breeding seasons



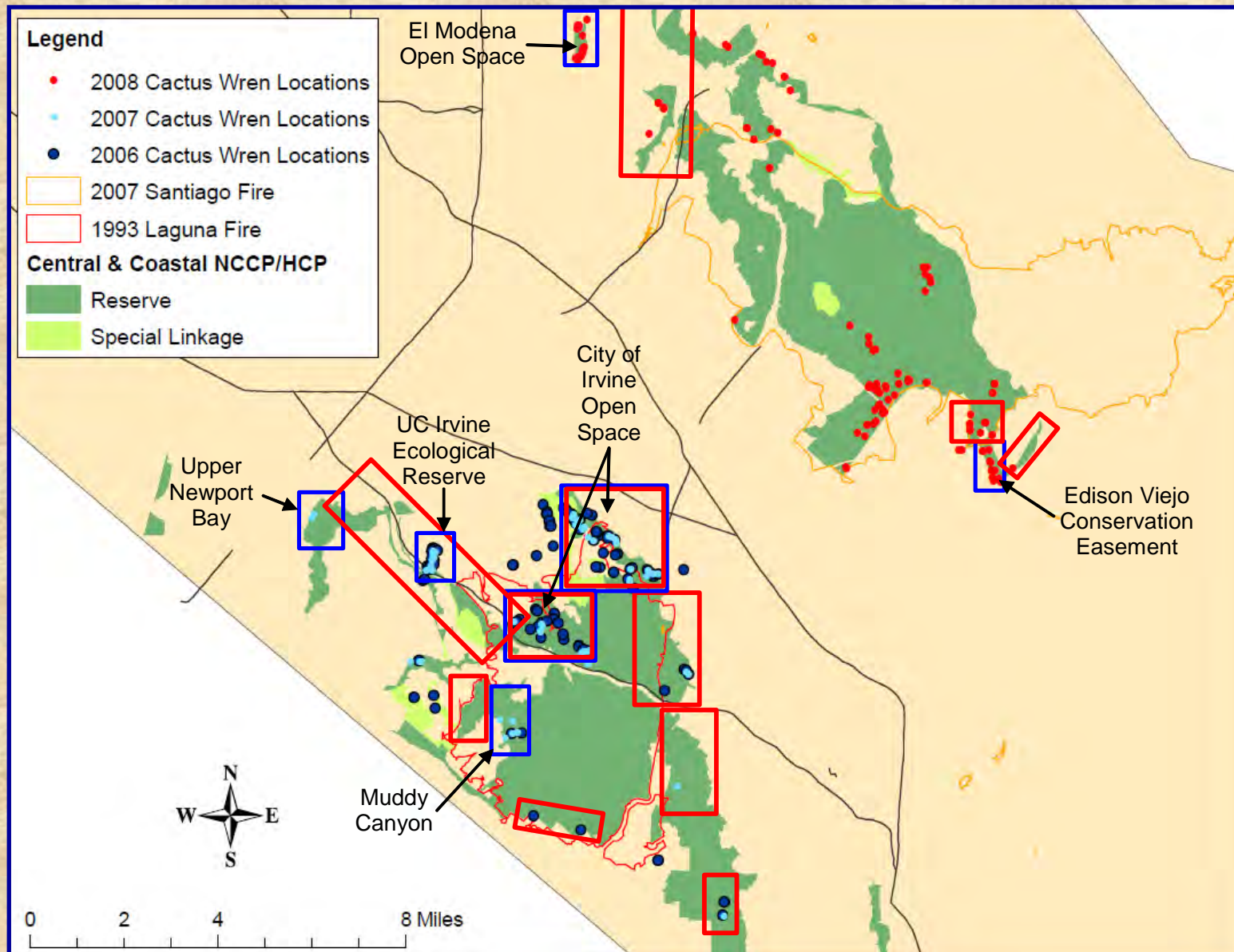
Changes in Pair Composition

Cactus Wren pair composition changes between 2009 & 2010 (both members of pair banded in 2009)

Pair bond status 2009 to 2010	Number of pairs	% of pairs
F leaves M mid-breeding season after 1st brood & breeds with another M	1	6.3%
F forced out of territory by another F in 2010	3	18.8%
Pair dissolves after 1st breeding season, become floaters	1	6.3%
Pair dissolves after 1st breeding season, obtain new territories & mates	1	6.3%
F disappears mid-breeding, suspect alive with Fls, M gets 2nd F & breeds	1	6.3%
Mate disappears between breeding & remaining bird gets new mate	2	12.5%
Both birds disappear (die?) between breeding season	1	6.3%
Pair remains together 2009 & 2010 breeding seasons	6	37.5%
Total	16	

**For pairs changing mates: 62% “divorced”
& 38% had partner disappear (dead?)**

Monitored dispersal of banded birds (2010) at 18 sites (including 9 monitoring sites)



Juvenile Dispersal

- Documented dispersal of 16 juveniles in 2010 (7 F, 9 M)
- Juveniles dispersed average 0.4 miles (straight) or 0.6 miles (through natural habitats)
- 9 young established breeding territory at natal site
- Juvenile dispersal distance less than other studies

Atwood 2002 average = 1 mile, outlier - 6.2

Bontrager & Gorospe 1995, average = 0.8 mile, outlier = 3.5



Photo Karly Moore

Adult Dispersal

- 10 adults dispersed from 2009 locations to new 2010 territories
- Adult average dispersal 0.6 mile (straight line) and 1 mile (natural habitat)
- 80% of adult dispersals were by females



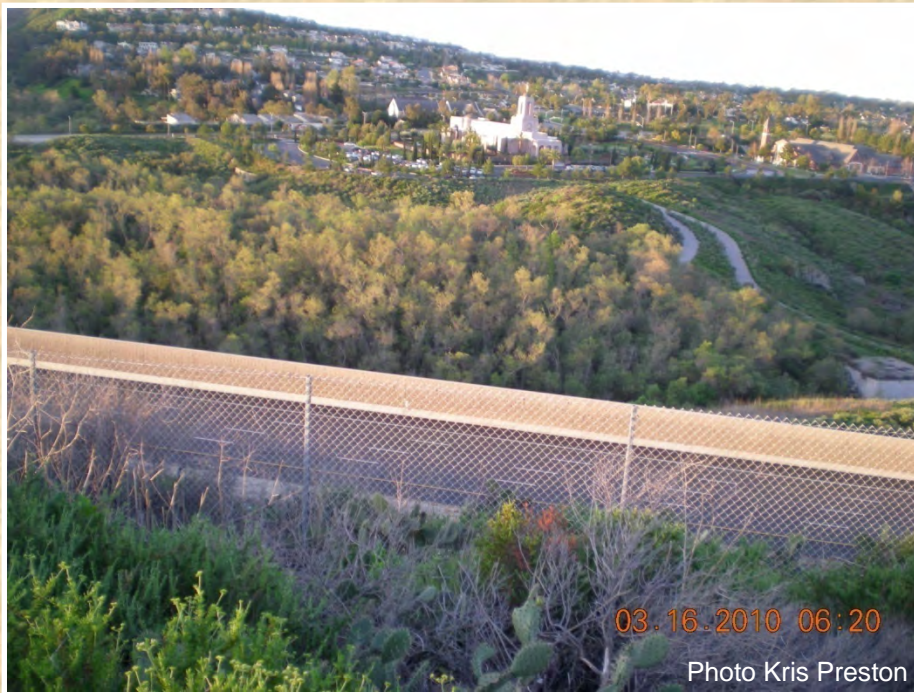
Photo Karly Moore

Dispersal Milestones

- Three long distance dispersals so far
- Dispersing birds are crossing SR 73 Toll Road (8 lanes)

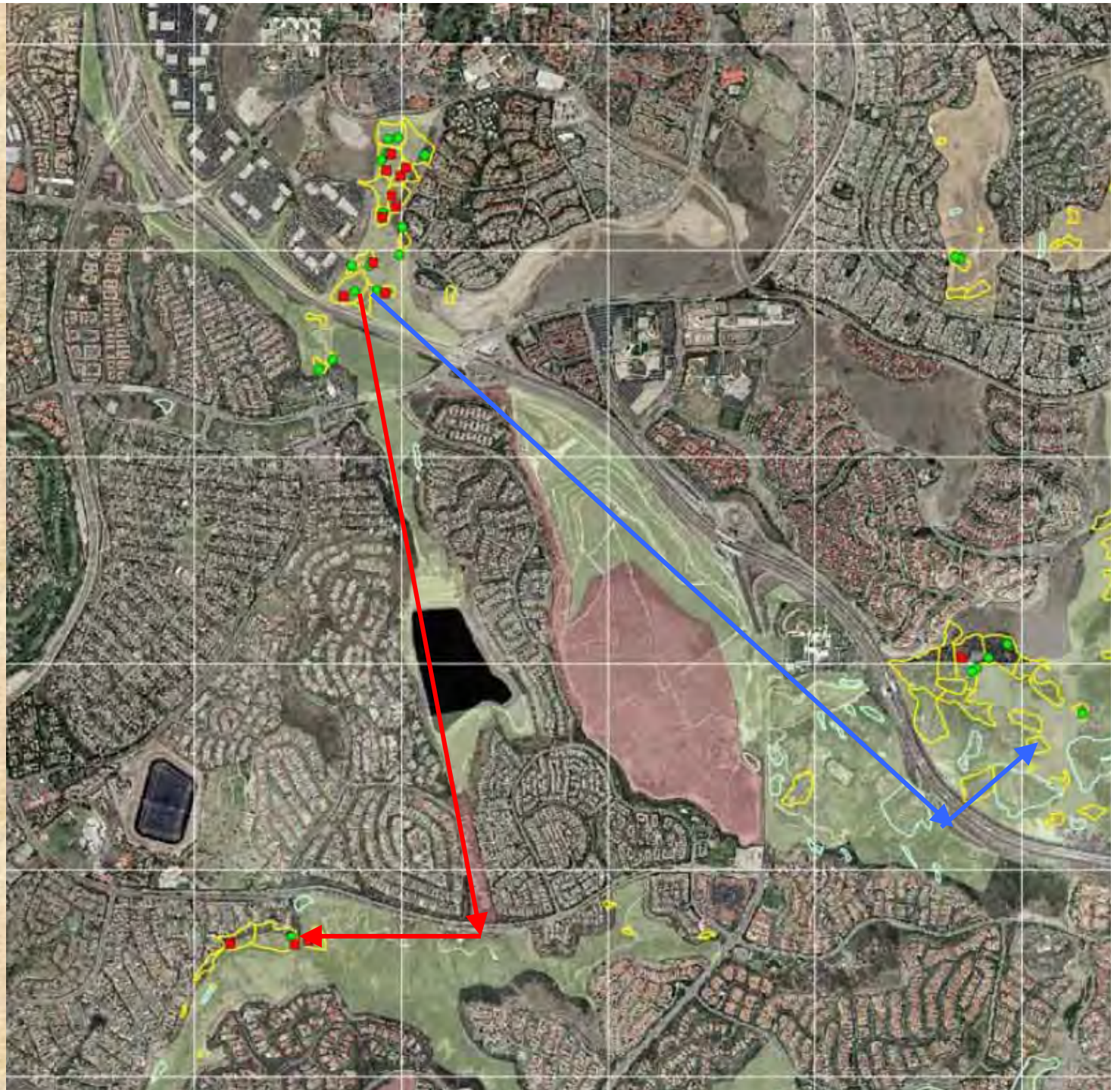


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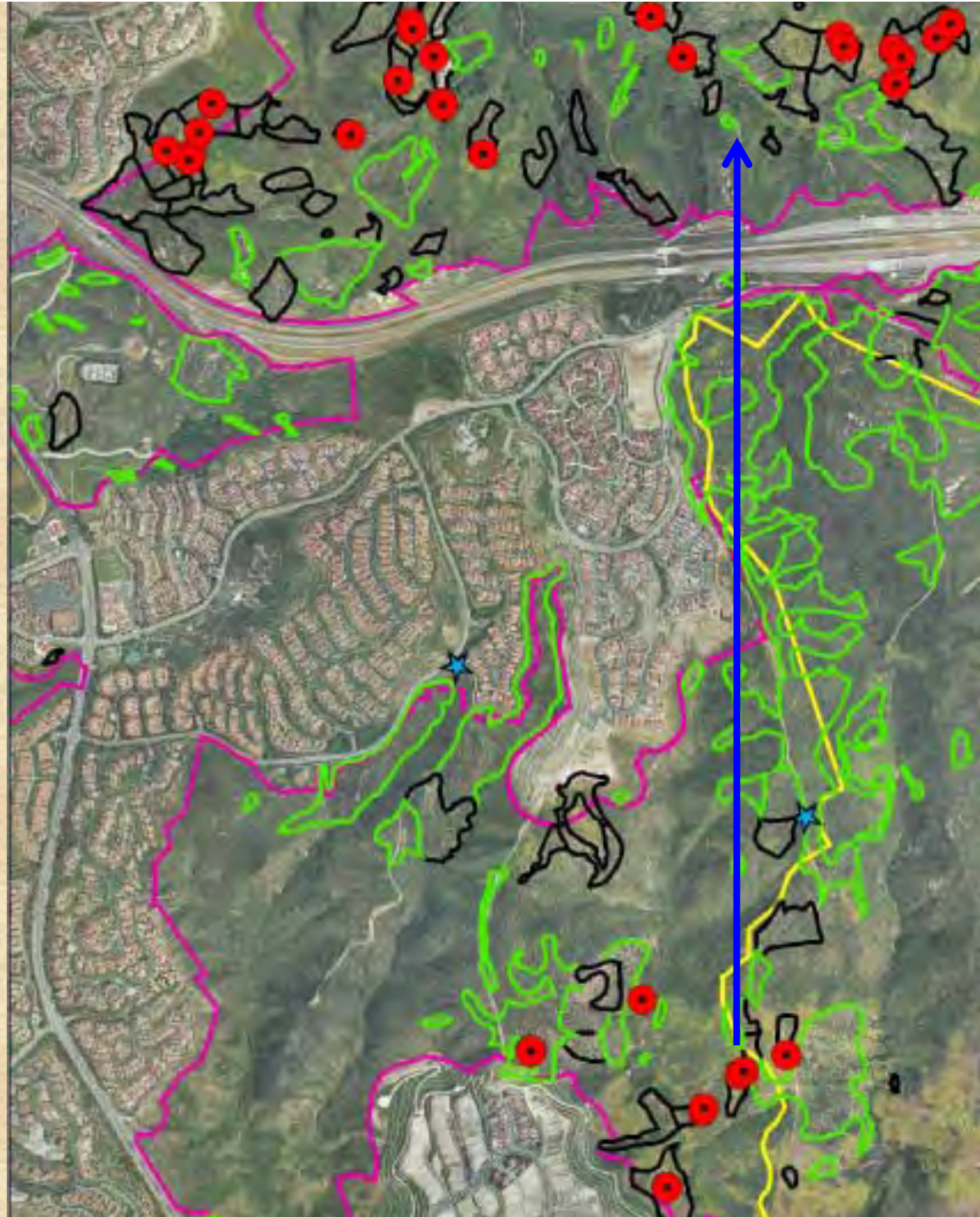
Pair of
banded
juveniles
disperse
2.7 miles

Banded
adult
female
with
unbanded
male
disperse
3.1 miles





AHY
unpaired
female
disperses
2.2 miles
(finds mate
at new site)



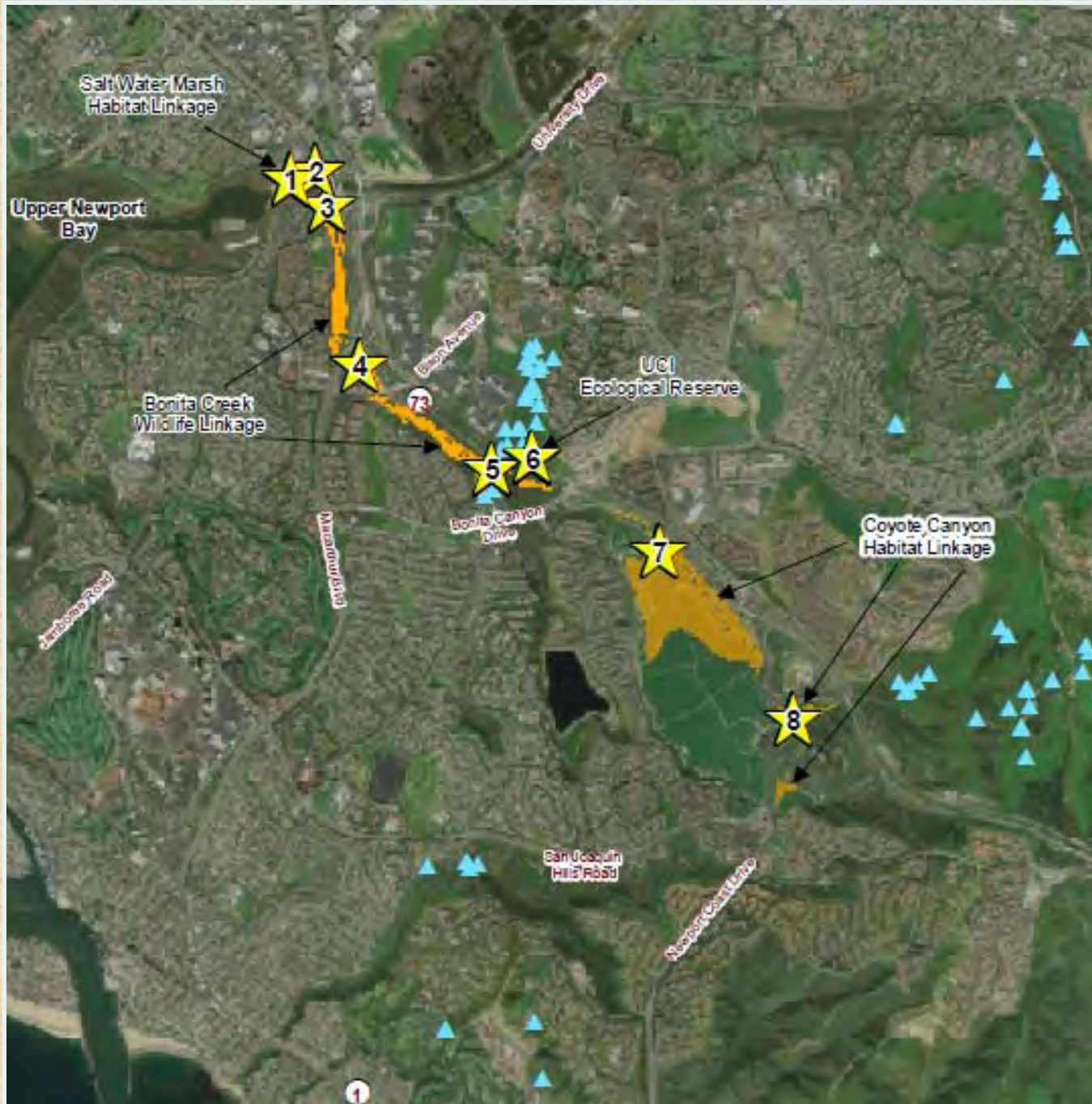
Restoration of Cactus Scrub

- Can take many years for cactus to grow back after fire & become suitable for wrens
- NROC and land managers are implementing cactus scrub restoration projects

Photo Kris Preston

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

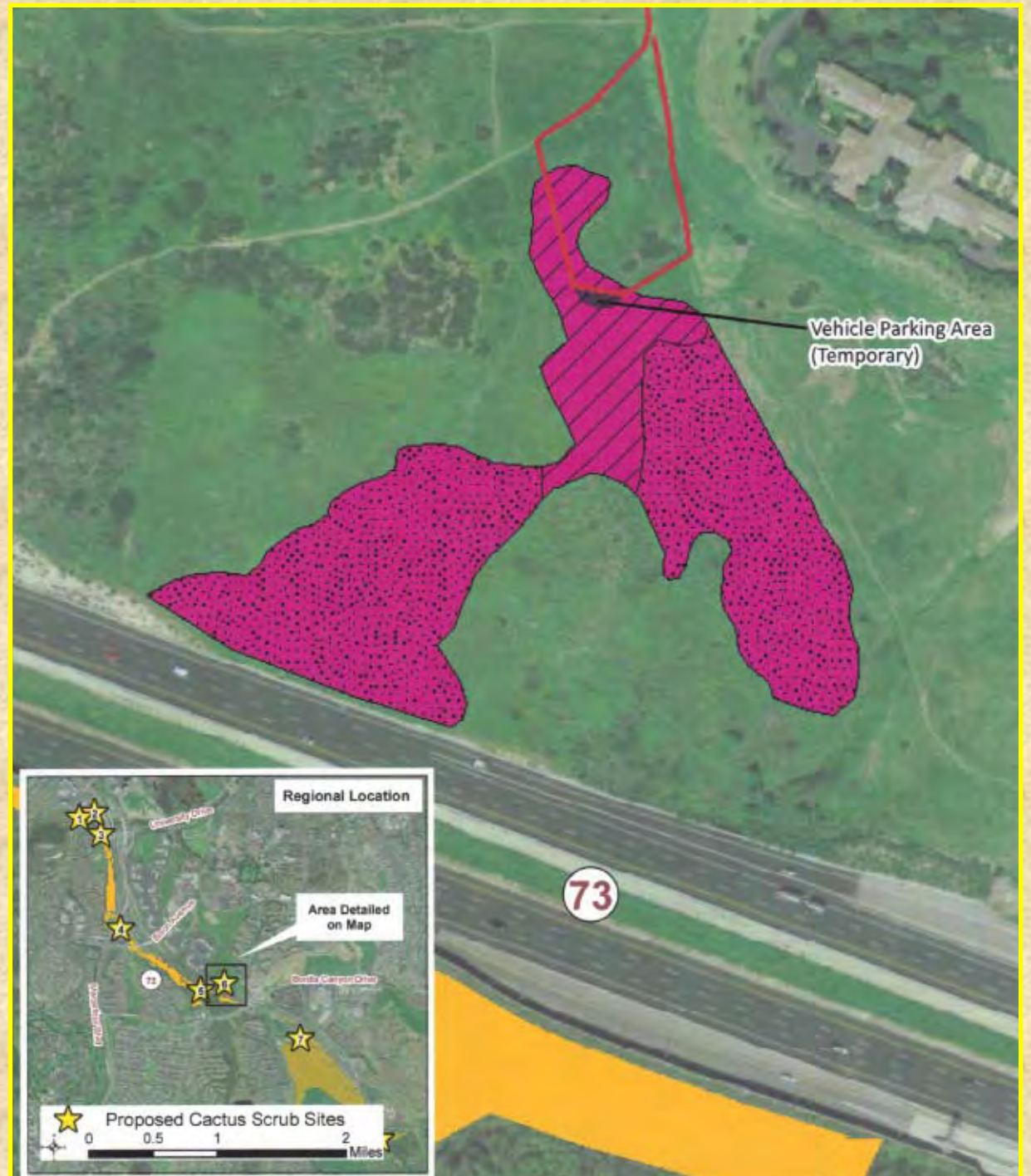


NROC/TCA/UCI Cactus Restoration Team

- Valarie McFall, Transportation Corridor Agencies
- Margot Griswold, Restoration Ecologist, NewFields Co
- Nakae & Associates, Installation Contractor
- Kris Preston, NROC
- Peter Bowler UCI
- Project initiated fall 2010



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





Before



**After
(hopefully)**



Photo Kris Preston

Donor Site (Anteater & Bonita Creek)



Photo Kris Preston



Photo Kris Preston



Photo NewFields



Photo NewFields



09.30.2010

Photo Kris Preston



Photo NewFields



Photo NewFields



Photo NewFields



Photo NewFields



Photo: NewFields Co



Photo: NewFields Co



Photo: NewFields Co



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This year a new pair of Cactus Wren were observed using large transplanted cactus adjacent to mature patch of cactus scrub



Photo NewFields Co



NROC will be receiving OCTA Measure M
funding to restore 8 more acres of
cactus scrub at UCI in 2011

Photo: Kris Preston

Acknowledgements

- California Department of Fish & Game
- NROC Board of Directors
- NROC Technical Advisory Committee
- Transportation Corridor Agencies
- NewFields Co
- Nakae & Associates
- UCI Office of Campus & Environmental Planning

- Irvine Campus Housing Authority
- Peter Bowler, UCI Ecological Preserve
- Dana Kamada
- Karly Moore
- Scott Thomas, Sea & Sage Audubon
- Trish Smith, The Nature Conservancy
- Sandy DeSimone, Audubon Starr Ranch

Volunteers:

Marian & Steve Alter	Sally Menzel
Susie Anon	David Pryor
Portia Arutunian	Shirley Reynolds
Elisabeth Brown	Susan Sheakley
Maria Carillo	Paul Strauss
Deana Collins	Peter Wetzel
Mayra Garcia	Kathy Young
Bethany Glaeser	
Gail Gutierrez	
Janette Havens	
Robert Holcomb	
Dilip Kumar	
Dana Lee	



Photo Karly Moore