

**Nature Reserve of Orange County:  
Coastal Cactus Wren Dispersal and Survival Surveys, Genetics & Parasite Sampling, and  
Arthropod Foraging Ecology in 2012**

Annual Report Prepared in Fulfillment of Reporting Requirements for the Memorandum of  
Understanding between Dana Kamada and the California Department of Fish and Wildlife

*Final Report prepared for:*

Ms. Nancy Frost  
California Department of Fish and Wildlife  
South Coast Region  
3833 Ruffin Road  
San Diego, CA 92123

Prepared by:

Dana Kamada  
3413 Calle la Veta  
San Clemente, CA 92672

And

Kristine Preston, PhD<sup>†</sup>  
Science Program Director  
Nature Reserve of Orange County  
15600 Sand Canyon Avenue  
Irvine, CA 92618

February 2013

<sup>†</sup> Currently Ecologist for  
U.S. Geological Survey  
4165 Spruance Road, Suite 200  
San Diego, CA 92101-0812  
KPreston@usgs.gov

## Introduction

Southern California supports both coastal and desert populations of the Cactus Wren (*Campylorhynchus brunneicapillus*). In coastal regions, Cactus Wrens are year round residents of coastal sage scrub plant communities that contain cholla and/or prickly-pear cactus tall enough (>1 m) to support and protect nests. Mature stands of cactus are patchily distributed within coastal sage scrub leading to a naturally patchy distribution of Cactus Wren in coastal southern California. Despite this uneven distribution, Cactus Wrens were historically widespread and abundant. In the last few decades, coastal populations have shown dramatic declines and are of great conservation concern (Sauer et al. 1999; Proudfoot et al. 2000; Solek and Szijj 2004; Mitrovich and Hamilton 2007). This report presents the preliminary results of studies conducted in 2012 investigating Cactus Wren genetics and parasite load, foraging ecology, and banded bird resighting surveys, to follow-up on the 2009 to 2011 Cactus Wren reproduction, dispersal and survival study, in Orange County's Central and Coastal Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP).

## Conservation Status

Habitat loss and fragmentation, edge effects associated with development, and catastrophic wildfire have contributed to a loss of Cactus Wren populations in coastal southern California. The San Diego Cactus Wren (*C. brunneicapillus sandiegensis*) is designated as a Species of Special Concern by the California Department of Fish and Wildlife (Unitt 2008) and coastal populations of Cactus Wrens are target species for the Natural Community Conservation Planning (NCCP) program. NCCP Plans have been completed for western Riverside County, central and coastal Orange County, and northern and southern San Diego County. The Cactus Wren is one of three Target Species conserved under Orange County's Central and Coastal NCCP/HCP (County of Orange 1996).

## Factors Contributing to the Decline of Coastal Populations of Cactus Wrens

Over the past two decades, extensive urban development in coastal southern California has led to habitat loss and fragmentation resulting in small, isolated Cactus Wren populations. Dispersal between populations may be constrained increasing the potential for local extinction and limited recolonization. Remnant patches of cactus scrub are also subject to edge effects that may impact Cactus Wren reproduction and survival and affect population dynamics. Exotic plant species often invade habitat fragments and can alter the structure and composition of native cactus scrub; potentially affecting wren foraging and breeding. Mortality and nest predation may also be high within habitat fragments because of changes to the predator community associated with urban development and human activities.

Recent catastrophic wildfires in southern California have burned large expanses of cactus scrub and impacted Cactus Wren populations across the region. In addition to wildfire induced mortality, wrens are also affected by the temporary and even permanent loss of cactus scrub habitat. Following a wildfire, it can take many years for cactus to grow back to a size sufficient to support breeding Cactus Wrens (Proudfoot et al. 2000; Solek and Szijj 2004).

*Population Status of Cactus Wrens in the NCCP/HCP*

The Nature Reserve of Orange County (NROC) is responsible for implementing Orange County's Central and Coastal NCCP/HCP. When the NCCP/HCP was established in 1996, 67.5% of 994 Cactus Wren locations documented during 1992 surveys were conserved in a multiple owner/manager Reserve System (County of Orange 1996). Another 10.4% of locations were potentially conserved in special linkages and existing use areas. Since the NCCP/HCP was established, NROC has been monitoring Cactus Wren populations in the Reserve System. Although the original Cactus Wren locations within the Reserve System were conserved, wrens have disappeared from many of these areas over the last two decades. Large wildfires have played a major role in the decline of Cactus Wren populations in Orange County's Central and Coastal NCCP/HCP.

In 1993, the Laguna Fire burned 75% of the ~17,000 acre Coastal Reserve. Surveys in the first year following the fire found the number of Cactus Wrens reduced to 28% of their pre-fire levels (Bontrager et al. 1995). A post-fire study of Cactus Wrens in the San Joaquin Hills showed little recovery of wren populations or habitat five years after the Laguna Fire (Harmsworth Associates 1999). Cactus Wren surveys and cactus scrub mapping of the Coastal Reserve in 2006 indicated an 87% decline in occupied habitat between 1993 and 2006 (Mitrovich and Hamilton 2007). In fall 2007, the Santiago Fire burned 75% of the Central Reserve, severely burning 1,059 acres (75%) of mapped cactus scrub (Leatherman BioConsulting 2009). Approximately 684 acres were considered potentially suitable for occupancy by Cactus Wrens and were surveyed. It was estimated that 67 territories remain in unburned and lightly burned cactus scrub, representing an 82% decline in Central Reserve territories based on the 2004 estimates.

While the Laguna Fire substantially impacted Cactus Wren populations in the Coastal Reserve, there have also been considerable declines in local wren populations in unburned habitat. Annual surveys conducted from 1999 to 2004 documented larger proportional reductions in Cactus Wren populations in unburned portions of the Coastal Reserve than in the ~20,000 acre Central Reserve (Hamilton 2004). These declines may be due to reduced annual productivity and survivorship and to increased population isolation from urban development, new road construction and wildfire destruction of habitat. To manage Cactus Wren populations and enhance their recovery within the Reserve System will require a better understanding of factors affecting population dynamics.

*Cactus Wren Population Demographics*

Reproduction. Cactus Wrens tend to have a fairly long nesting cycle relative to other North American passerines (Clark and Martin 2007). The period from nest building to fledging can extend 42-55 days with another 17-25 days of post-fledging dependence on parents (Proudfoot et al. 2000). Cactus Wren can produce up to three broods in a breeding season, although most wrens produce only one or two broods with three young per brood.

Food limitation and nest predation have long been considered the most important factors regulating avian productivity (e.g., Lack 1954; Martin 1987; Newton 1998). There has been

considerable debate regarding their relative importance in regulating avian fecundity and influencing population dynamics. Although nest predation is the major cause of nest failure in passerines (Ricklefs 1969; Martin 1993), experimental food supplementation studies show an important role of food limitation in influencing avian productivity (e.g., Boutin 1990). In arid and semi-arid ecosystems, such as in southern California, the timing and amount of annual rainfall influences reproductive output in birds (e.g., DeSante and Geupel 1987; Grant et al. 2000; Morrison and Bolger 2002). Rainfall is positively correlated with food availability for nesting birds. Over the last decade, there have been multiple years of lower than average rainfall in southern California. Extreme drought in 2002 was associated with severe food limitation and led to reproductive failure of birds inhabiting coastal sage scrub and chaparral habitats in San Diego County (Bolger et al. 2005; Preston and Rotenberry 2006a). Food limitation and nest predation may both be simultaneously regulating annual productivity of birds in southern California. For example, during the extreme 2002 southern California drought it was expected that food limitation was the primary factor limiting reproduction in several species (Bolger et al. 2005). However, an experimental study manipulating food and nest predation during the same drought found that both factors had equal and independent effects on annual fecundity of a chaparral songbird in the region (Preston and Rotenberry 2006a,b).

A few studies of Cactus Wren reproduction in southern California during the 1990s indicated fairly high productivity, except in recently burned areas (Bontrager et al. 1995, Harmsworth Associates 1999, Atwood et al. 2002). However, more recent observations have indicated low productivity (Hamilton 2003, Kamada 2008). Cactus Wren surveys conducted by NROC in Orange County reported an estimated 30% decrease in abundance from 2002 to 2003, presumably due to drought and a lack of reproduction in 2002 (Hamilton 2003). A second exceptional drought year in 2007 was also associated with low Cactus Wren productivity in the NCCP/HCP (Kamada 2008). Information on the relative importance of nest predation and food limitation in affecting Cactus Wren reproduction is lacking in coastal areas, as most information comes from studies of reproduction in desert populations.

An experimental study of a desert population of Cactus Wrens demonstrated that annual productivity was influenced by food availability during the nestling stage (Simons and Martin 1990). Food-supplemented pairs had a greater number of second broods over the two year study and higher nestling survival in one year. There are also reports of nestling starvation in another desert population (Marr and Raitt 1983). This study found that Cactus Wrens initiated nests when temperatures were high and predicted favorable temperatures and food conditions during the nestling stage. In one year, unusually cold temperatures at night resulted in most pairs abandoning nests with eggs and reduced hatching success and starvation of broods in the remaining nests.

The role of nest predation in limiting Cactus Wren productivity is not well known. As protection against predation, Cactus Wrens build domed nests in spiny cholla and prickly pear cactus, making the nests inaccessible to many predators (Proudfoot et al. 2000). However, some avian species and snakes can still access and depredate nests. Documented nest predators

include several snake species and Greater Roadrunners (*Geococcyx californianus*). Cactus Wren pairs have been observed defending nests against ground squirrels, Loggerhead Shrikes (*Lanius ludovicianus*), Western Scrub-Jays (*Aphelocoma californica*), and Northern Mockingbirds (*Mimus polyglottus*), indicating a wider range of potential nest predators (Anderson and Anderson 1963a; Proudfoot et al. 2000; Solek and Szijj 2004).

Juvenile Dispersal and Recruitment into Breeding Population. Cactus Wrens are sedentary, with juveniles typically dispersing short distances to find an available territory and mate. A study of desert wrens found juvenile males stayed near their natal territory while females moved farther to find mates (Anderson and Anderson 1973). A study of banded Cactus Wrens from 1992 to 1994 in NROC's Coastal Reserve (Bontrager and Gorospe 1995) documented juveniles dispersing an average of 1.3 km (std  $\pm$  2.0, n = 23, range: 0.0 to 5.6 km). Of these juveniles, 30% inherited their natal territory with the disappearance of their parents. Similar results were documented for the Palos Verdes Peninsula in Los Angeles County where juveniles dispersed an average of 1.6 km (std  $\pm$  2.28, n = 71; Atwood et al. 2002). Since the early 1990s natural habitats in the NCCP/HCP have become more fragmented due to urban development and road construction. As habitat patches become smaller and more isolated, it may be increasingly difficult for juveniles to successfully disperse and establish into a breeding population (Solek and Szijj 2004; Mitrovich and Hamilton 2007; Kamada 2008). Smaller, isolated habitat fragments may also support smaller populations with greater chance of local extinction. To improve management of wrens within the NCCP/HCP it is important to determine the degree to which Cactus Wrens are currently dispersing and establishing into populations throughout the Reserve System and whether they are able to recolonize areas where wrens have disappeared.

Annual Survival. On the Palos Verdes Peninsula of Los Angeles County, annual survival rates for Cactus Wren averaged 0.65 (std  $\pm$  0.06, n = 5 years) for adults and 0.32 (std  $\pm$  0.26, n = 5 years) for juveniles (Atwood et al. 2002). A study of a banded population in the desert found males living an average of 2 years and females 1.4 years (Anderson and Anderson 1963b). This may have been rather low survivorship, as the wrens were of unknown age when banded and were in an urban edge environment with high mortality from domestic cat predation. Based on Bird Banding Lab records, the oldest known banded individual was 6 years and 4 months (Gustafson and Hildenbrand 1998). Another desert study showed survival of fledglings 3-40 days out of the nest was equivalent to less than 50% survival over a year, with survivorship increasing with age (Ricklefs and Hainsworth 1968). Causes of mortality include predation of juveniles and adults by Cooper's Hawk (*Accipiter cooperii*) and domestic cats (*Felis domesticus*).

#### *Objectives of this Study*

Conservation and management of the coastal Cactus Wren relies upon a better understanding of how individual productivity, dispersal, and survival are related to population dynamics. The Nature Reserve of Orange County is conducting a multi-year study to intensively monitor Cactus Wrens in Orange County's Central and Coastal NCCP/HCP. The intent of this research is to collect data to guide development of adaptive management actions to enhance recovery of populations within the NCCP/HCP.

The objectives of this study include:

1. Measure dispersal and survival and establishment of territories/pair bonds of banded wrens.
2. Determine whether individuals are recolonizing locations where wrens have disappeared and the degree to which individuals are dispersing between populations.
3. Identify factors affecting Cactus Wren population dynamics.
4. Collect genetic material to conduct Cactus Wren taxonomic analyses, determine population genetic structure, and assess connectivity between local populations.
5. Determine the presence, identity, and level of parasite load in the Cactus Wren population.

This report describes NROC's fourth year of studying banded Cactus Wrens in Orange County's Central and Coastal NCCP/HCP.

## **Methodology**

### *Banded Bird Resighting Surveys*

We surveyed 35 sites within NROC's Coastal and Central Reserves for banded Cactus Wrens during 2012 (Figure 1a & 1b). Two other non-NROC sites were noted since wrens were incidentally observed or we visited a site to confirm a dispersed wren that was banded.

The primary survey objective was to look for banded birds that have survived from previous years and may have dispersed from their original banding locations. Upon encountering a Cactus Wren we would follow and observe it to determine and record its banding status and the UTM coordinates of its location. If the bird is banded we would try and identify and record the band color combination. If necessary, we would return to the location multiple times in order to positively identify the band combination. We would also determine and record whether the wren occupies a territory by observing its behavior and breeding status.

However, monitoring reproduction and assessing total populations were not primary survey objectives, although if brood nests or fledglings were encountered, then accessible nests were checked for nesting stage or nestling age or fledglings counted. If the wrens at the site had not been sufficiently sampled in previous years, then genetic samples were collected and the birds banded. Sites that were visited three times should give a fairly accurate assessment of the number of pairs that were present at the site during the 2012 survey period (March to August). In the Coastal Reserve, a total of 24 sites were visited and are listed in Table 1. In the Central Reserve, a total of 13 sites were visited and are also listed in Table 1.

### *Collection of Genetic Material and Blood Smear Slides*

During 2011, after we were trained by Dr. Barbara Kus and her team at the United States Geological Service (USGS), we began collecting growing feathers from nestlings and from fledglings, juveniles and adults if they also had growing feathers for genetic analysis. If growing feathers were not found on fledglings, juveniles and adults then blood was obtained by clipping a toe nail just above the tip of the quick and rinsing the blood (less than a drop) into a 1.5-mL tube with about 40 $\mu$ L of collection buffer. Toe nail blood collection technique followed from Busch, J.D., et. al. 2000. The samples were submitted to geneticists, Dr. Amy Vandergast and Dr. Kelly Barr, for microsatellite DNA analysis at the USGS Western Ecological Research Center. The results of the analyses will be pooled with other samples collected by Dr. Kus's team from San Diego, Los Angeles, and other counties in Southern California.

During 2012, after we were trained by Dr. Winston Vickers, a wildlife veterinarian with the Department of Veterinary Medicine at U.C. Davis, we began collecting blood smear slides from wrens that had blood collected for genetic sampling by toe nail clip. If extra blood remained after placing a sample into the buffer vial for genetic analysis, then we placed the extra drop of blood onto a labeled glass microscope slide and smeared the blood evenly over the slide with the edge of another glass slide. After the blood dried, we wrapped the slide in a piece of paper and placed it in a collection box and later stored it in a refrigerator. The slides were labeled with

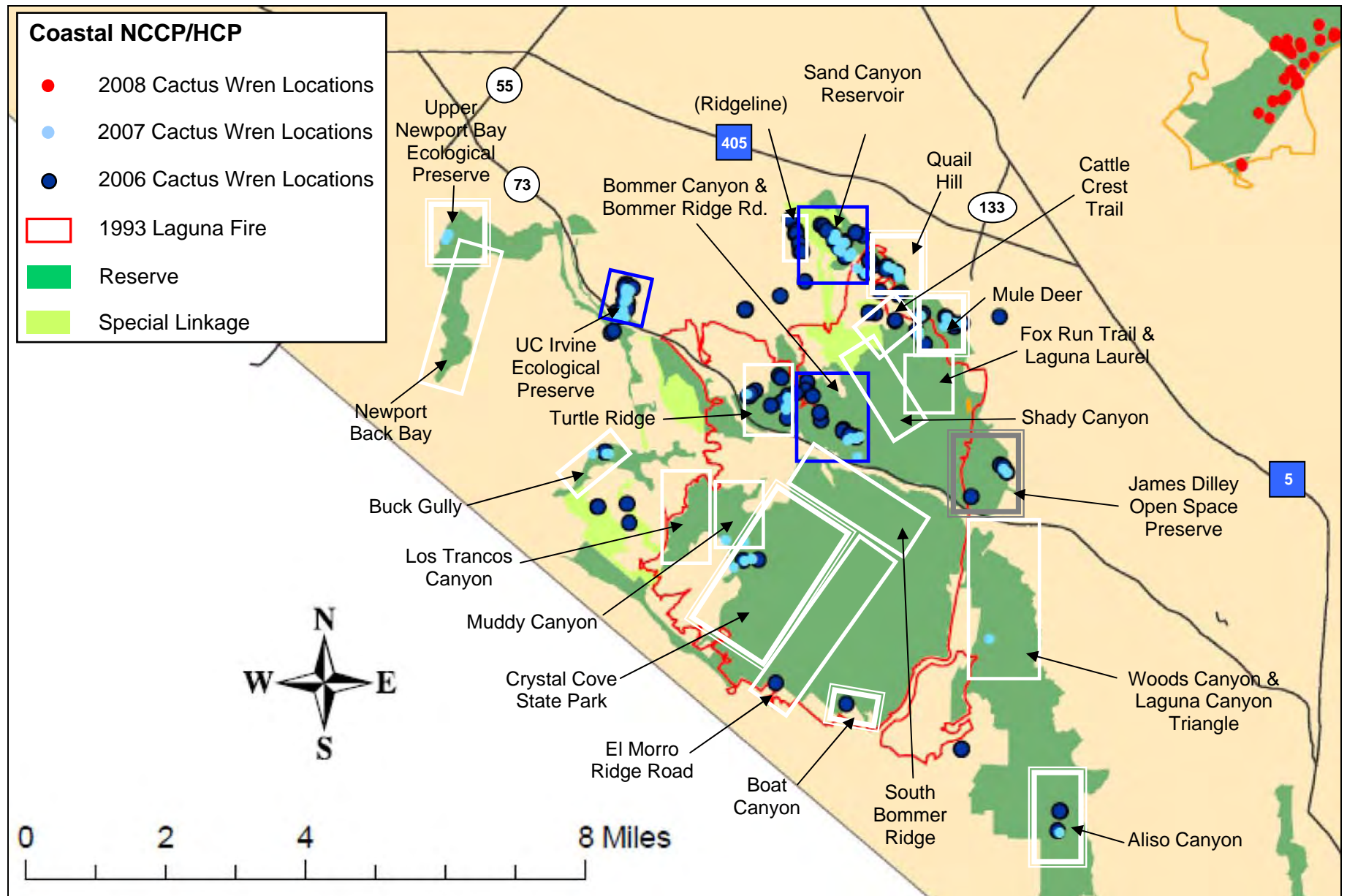


Figure 1a. Cactus Wren survey sites (white boxes), survey sites where genetic samples were collected (white 2-lined boxes), and Foraging study monitoring sites (blue boxes) on coastal region NCCP/HCP lands in the Nature Reserve of Orange County's 2012 Cactus Wren projects. The translocated wrens at James Dilley Preserve (grey 2-lined box) were monitored in 2012 and the results presented in a separate NROC report.



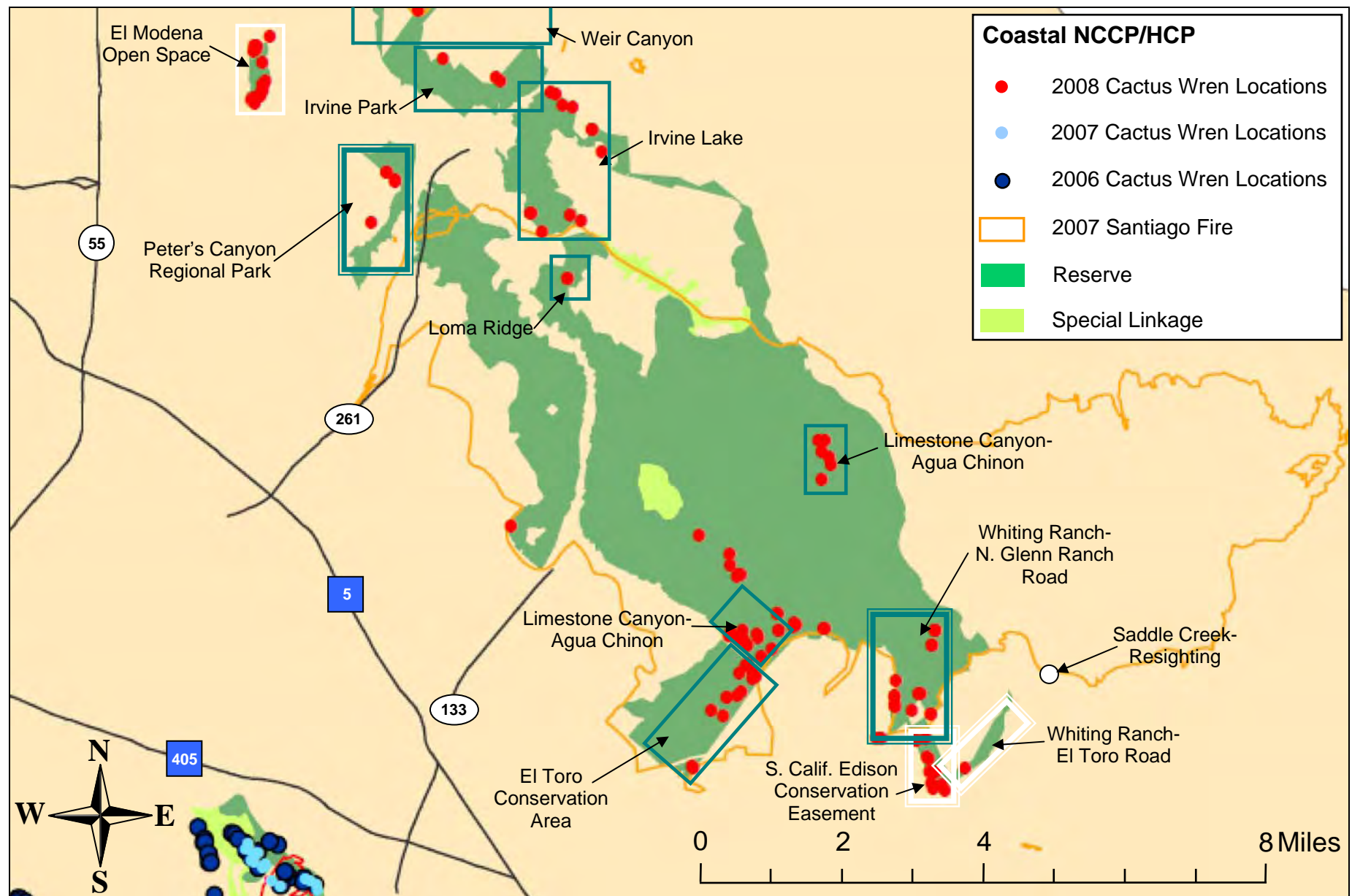


Figure 1b. Cactus Wren survey sites (white boxes), survey sites where genetic samples were collected (white 2-lined boxes), genetic sampling sites only (green boxes) or both genetic sampling & survey sites (green 2-lined boxes) on central region NCCP/HCP lands in the Nature Reserve of Orange County's 2012 studies. The white dot indicates the resighting of a banded wren from the SCE site at Saddle Creek, which is not within NCCP lands.

Table 1. List of Survey, Genetics, and/or Foraging sites in Nature Reserve of Orange County 2012 Cactus Wren Studies.

<i>Coastal Sites</i>	Code	Survey	Genetics	Foraging	Comments
Aliso Canyon	AC	Y	Y		
Buck Gully	BG	Y			
Boat Canyon	BTC	Y	Y		
Bommer Canyon	BMR	Y	Y	Y	
Bommer Ridge Road	BRR	Y			
Crystal Cove State Park	CCSP	Y	Y		
Cattle Crest Trail	CCT	Y			Surveyed only once
El Morro Ridge Road	ERR	Y			
Fox Run Trail	FXR	Y			Surveyed only once
Laguna Canyon Triangle	LCT	Y			Surveyed only once
Laguna Laurel	LL	Y			
Los Trancos Canyon	LTC	Y			
Muddy Canyon	MCN	Y			
Mule Deer	MD	Y	Y		
Newport Back Bay	NBB	Y			
Quail Hill	QH	Y	Y		
Ridgeline*	RL	(Y)			Not selected as a site, incidental wren observation.
South Bommer Ridge	SBR	Y			
Sand Canyon Reservoir	SCR	Y	Y	Y	
Shady Canyon	SHC	Y			Surveyed only once
Turtle Ridge	TRD	Y			
UC Irvine	UC	Y	Y	Y	
Upper Newport Bay	UNB	Y	Y		
Woods Canyon	WC	Y			
<i>Central Sites</i>					
El Modena	ELMO	Y			
El Toro Conservation Area	ETC		Y		
El Toro Road (Aliso Creek)	ETR	Y	Y		
Irvine Lake	FIL		Y		
Irvine Park	FIP		Y		
Limestone Agua Chinon	LAC		Y		
Limestone Cactus Hill	LCH		Y		
Loma Ridge	LR		Y		
Peter's Canyon	PC	Y	Y		
Southern California Edison	SCE	Y	Y		
Saddle Creek South*	SCS	(Y)			Audubon/The Nature Conservancy Cactus Wren survey site visited to identify bands of a dispersed wren.
Weir Canyon	WCN		Y		
Whiting Ranch	WR	Y	Y		
Prima Deshecha Landfill*	PDL		(Y)		Not NROC site; incidental feather sampling

the bird's Fish & Wildlife Service band number, Territory Code, and Collection Date. The blood smear slides were submitted to the California Animal Health and Food Safety Lab at UC Davis for parasite analysis. Later in the field season (late June to July), orange ectoparasites were observed on the skin of some of the fledglings, juveniles and adults being banded and sampled. Dr. Vickers collected a few of the orange ectoparasites to also be identified at the California Animal Health and Food Safety Lab at UC Davis.

We focused on sampling and banding efforts primarily at 11 selected sites in the Central Reserve (Figure 1b and Table 1). Four of the sampling sites at the Central Reserve were also survey sites. Samples were collected at the Coastal Reserve as the opportunities arose (Figure 1a and Table 1). Nestlings, fledglings, juveniles and adults were sampled at sites if either none or only a few samples have been collected in previous years, such as Aliso Canyon and Boat Canyon; a site appeared to be recolonizing, Crystal Cove State Park; at sites such as Mule Deer and Quail Hill that appear to be dispersal hubs between many Coastal Reserve sites (Bommer Canyon, U.C. Irvine, Boat Canyon, and potentially the Central Reserve); or at Upper Newport Bay where there appears to be a high level of inbreeding. Nestlings were banded and feather sampled at all the Arthropod (Foraging) Study sites in the Coastal Reserve.

*Arthropod Abundance, Community Composition, and Habitat structure as Determinants of Habitat Quality for Cactus Wren*

During 2012 and continuing to 2013, NROC is collaborating with Dr. Kailen Mooney and Dr. Kathleen Treseder of the Center for Environmental Biology (CEB) at the University of California Irvine and Dr. Jutta Burger from the Irvine Ranch Conservancy (IRC) to study Cactus Wren foraging relative to arthropod richness and abundance on different plant species and substrates in coastal cactus scrub habitats. The CEB and IRC are responsible for sampling plants and arthropods, whereas NROC will record Cactus Wren foraging behavior and monitor reproduction at selected territories with nesting pairs at the UC Irvine Ecological Preserve, Bommer Canyon, and Sand Canyon Reservoir sites (Figure 1a and Table 1).

During 2012, Dr. Kris Preston, Karly Moore, and, less frequently, Dr. Milan Mitrovich collected data on wren foraging behavior and reproductive success in conjunction with arthropod sampling and vegetation measurements conducted by CEB and IRC. Dr. Preston, Ms. Moore, and Dr. Mitrovich are on Mr. Kamada's California Dept. of Fish & Wildlife Cactus Wren MOU List of Authorized Individuals to survey, check nests, and band wrens. Preston and Moore are also on Mr. Kamada's Banding permit to color band Cactus Wrens. From February through July, the two biologists visited territories at each site approximately once a week. One acted as the observer and the other as the recorder. Wrens at a nesting territory were observed for one hour and the type of activity was recorded every 15 seconds. Each bird's banding status and sex was noted. The substrate that the bird is in was recorded. Any specific foraging behavior seen during the observation period was recorded continuously. If possible prey item size and identity were noted. Brood nests were monitored and the nestlings banded and feather sampled.

Fecal samples were opportunistically collected during banding, from nest sites after the nestlings have fledged, or dropped by wrens while perched or in flight. If possible, the source of the sample was recorded as coming from male, female, or nestlings. Samples were placed in vials with 80% EtOH and submitted to IRC and CEB to identify arthropod fragments and conduct DNA barcoding analysis to also identify the arthropods contained in the fecal samples. IRC and CEB will present a more detailed account of the methods used for the foraging study in their 2013 report.

## Results

### *Field Effort*

In 2012, we surveyed, sampled and/or observed foraging wrens at 35 NROC sites in the Coastal and Central Reserves (Figure 1a & b and Table 1). Three non-NROC locations were visited either for incidental wren observations (Ridgeline), resighting of a dispersed banded wren (Saddle Creek South), or incidental feather sampling of nestlings of a newly located territory (Prima Deschecha Landfill). Appendix I - Table 1a, b and c lists the dates of field work, names of field personnel, and type of activity conducted at each site. In general, one person was responsible for surveying each site. When needed, teams of two or three would visit to help locate and identify banded birds that were difficult to find or follow. A team of two was deployed to conduct mist netting, banding and sampling operations at genetic sampling sites. A team of two was also deployed to conduct foraging and nest monitoring activity at the Arthropod study sites.

### *Cactus Wrens Encountered at Survey, Sampling, and/or Arthropod Study Sites*

We encountered at least 448 Cactus Wrens and approximately 152-157 territories at all the 35 NROC study sites and the 3 non-NROC locations that were visited during 2012 (Appendix I – Table 2). Of the 448 birds, 128 (28.6%) were nestlings or juveniles and 320 (71.4%) were adults. We observed 156 wrens and 36 territories at the sites in the Coastal Reserve, where approximately 76 (48.7%) were nestlings or juveniles and 80 (51.3%) were adults (Figure 2a and Appendix I – Table 2). We encountered 287 wrens and approximately 115 territories in the Central Reserve, approximately 52 (18.1%) were nestlings or juveniles and 235 (81.9%) were adults (Figure 2a and Appendix I – Table 2). Locations of study sites and territories that were found are shown in Appendix II – Figures 1-19.

The apparent difference in the proportion of nestlings and juveniles versus adults between the Coastal and Central Reserves most likely reflects the difference in study site methods than in the actual age structure of the bird populations in each region. In the Coastal Reserve, nest monitoring was conducted at the Arthropod (foraging) study sites (Bommer Canyon, UC Irvine, & Sand Canyon Reservoir) and most of the Coastal sites were survey sites and visited three times, so we were able to follow-up on a number of nests encountered during the survey visits. So this would inflate the number of nestlings and juveniles we would have encounter, especially at the Arthropod sites as well as Crystal Cove State Park, Upper Newport Bay, Boat

## No. of Cactus Wrens Encountered at Coastal Sites in 2012

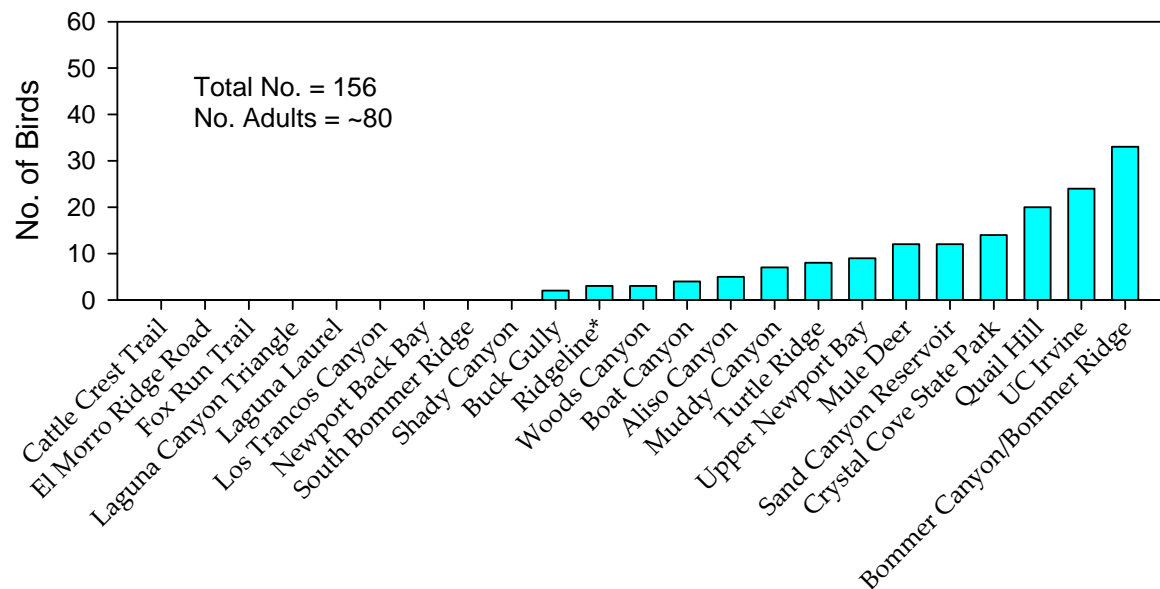


Figure 2a. The number of Cactus Wrens encountered at selected sites in the Coastal region where resighting surveys for banded birds, genetic sampling, and/or foraging studies were conducted for the NROC 2012 Cactus Wren studies. The objective of the surveys was to resight banded birds, not necessarily to census the total number of wrens.

## No. of Cactus Wrens Encountered at Central Sites in 2012

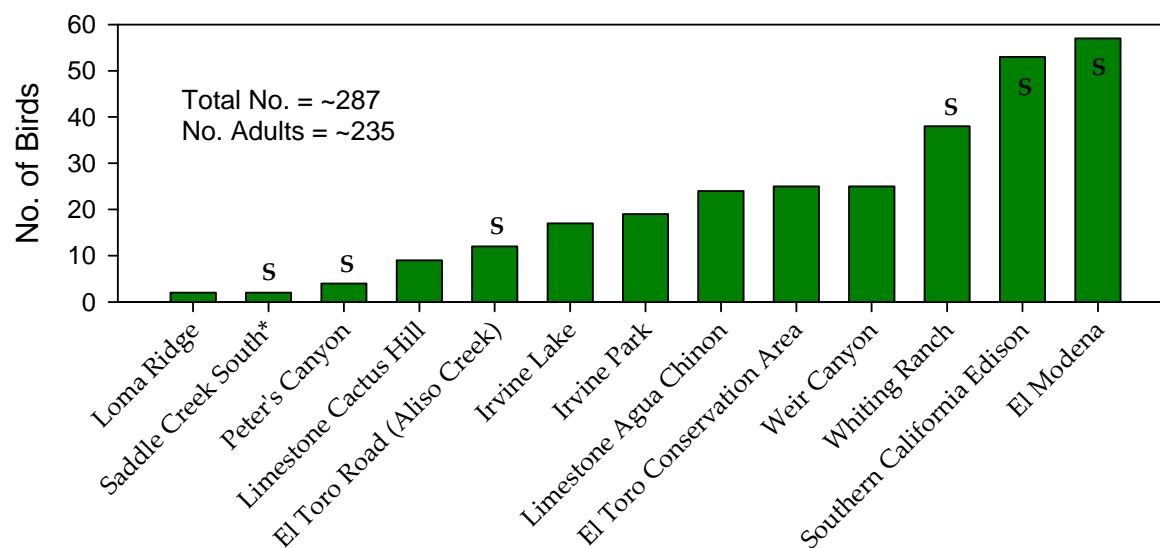


Figure 2b. The number of Cactus Wrens encountered at selected sites in the Central region where resighting surveys for banded birds (S) and/or genetic sampling were conducted for the NROC 2012 Cactus Wren studies. Genetic samples were collected at all sites in 2012 except at El Modena and Saddle Creek. S indicates sites where resighting survey(s) were done. The objective of the surveys was to resight banded birds, not necessarily to census the total number of wrens.

Canyon, Mule Deer and Quail Hill, where we did some additional sampling and banding (Figure 2a). Fewer of the study sites at the Central Reserve were survey sites and most were only genetic sampling sites where we focused on capturing adults at territories which were most easily accessed for mist netting operations (Figure 2b). If we encountered a nest, we were unlikely to return to the territory in a timely manner to monitor and band the nestling, especially if the adults were already sampled.

#### *Resightings and Dispersals*

In 2012, we resighted 102 color banded wrens that were banded in previous years, except for four juveniles that wandered away from their natal territories and were resighted again in the same year (2012) (Figure 3 and Appendix I – Table 3). Of the 16 sites where birds were resighted, the sites that had the most resighted individuals were the ones that were monitored from 2009 to 2011 and had the most territories: El Modena 29 (28.4%) of the birds resighted in 2012, Southern California Edison (SCE) 29 (28.4%), and U.C. Irvine 11 (10.8%). All the resighted birds at El Modena were banded at the site and 11 (37.9%) of these birds were resighted away from their original banding territories. All the resighted birds at SCE were also banded at this site and 19 (18.6%) of these birds were resighted away from their original banding territories. At U.C. Irvine, 10 (90%) were resighted away from their original banding territories, but 8 (90%) these birds were banded at UCI and 2 (20%) dispersed from other sites (Bommer Canyon and Mule Deer) (Appendix I – Table 3). Eleven of the 16 sites where wrens were resighted had fewer numbers of resighting, but had birds that were from other sites. At the two remaining 16 sites, Buck Gully and Upper Newport Bay (UNB), the resighted wrens were banded at the site, except for a male at UNB who was translocated to UNB in 2006. There appears to be inbreeding at UNB with one father-daughter pair and one sibling pair with the same parents, but from different brood nests of the same year. UNB appears to be isolated from other sites.

The age class with the greatest proportion of resighted birds was 2+ years (Figure 3). The oldest resighted wren is 7+ years, which is the male that was translocated to UNB in 2006.

Over all, 62 (60.8%) of the resighted wrens were located away from the territory/location where they were banded (Figure 3 and 4). Of the 102 resighted birds, 40 (39%) of the birds were in the same territory they were banded, 47 (46%) were at the same site, but outside their banding territory, and 15 (15%) were at a site different from the one they were banded (Figure 4).

The average straight line dispersal distance, of the 62 wrens that were resighted away from their banding territory/location, is 1.24 km or a median distance of 0.37 km (Appendix I – Table 4). The shortest straight line dispersal distance is 0.04 km, which is a female that paired and nested with a neighboring male, soon after her first brood nest fledged, leaving the first male to feed the fledglings in 2009. The longest straight line dispersal distance is 10.27 km, a presumed male banded as a member of a pair at Casper's Regional Park in South Orange County in 2009 and resighted by Dr. Barbara Kus's team at Camp Pendleton Marine Corps Base in 2012. However, in 2012, a female at Bommer Canyon dispersed to Crystal Cove State Park (CCSP02) to nest, but was resighted back at Bommer Canyon after a new female was seen nesting with the male at

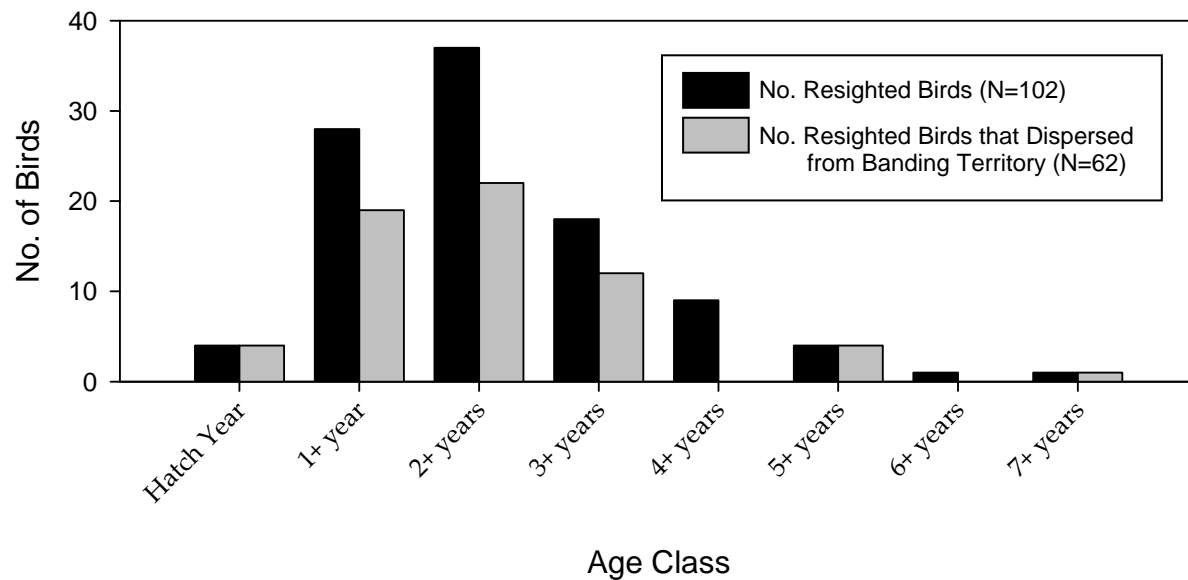


Figure 3. The total number of resighted color banded Cactus Wrens and the number of those that were resighted at a different location from the territory where they were banded for each age class during the Nature Reserve of Orange County wren studies.

No. of Resighted Banded Cactus Wrens (N=102)

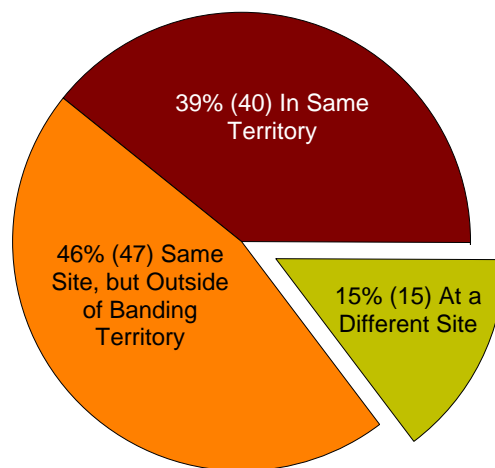


Figure 4. The percentage and number of Cactus Wrens resighted during the 2012 Nature Reserve of Orange County wren studies that were located in the same territory they were banded during previous years, located at the same site they were banded at but not associated with the same territory they were banded in, or located at a site different from the one they were banded.

CCSP02. The Bommer Canyon female would have traveled at least 11.6 km making the round trip from Bommer Canyon to CCSP02 and back. Also, a 2<sup>nd</sup> year floating (non-territorial) wren left its natal territory at Bommer Canyon in 2011 and was recaptured the same year at the Mule Deer site 5.1 km away from its natal territory. In 2012, the same bird was resighted at U.C. Irvine, which is 7.5 km away from Mule Deer. So this wren traveled at least a total distance of 12.6 km (Appendix I – Table 4).

Movement of the female wren between Bommer Canyon and Crystal Cover State Park (Appendix I – Table 4) and the addition of 2 more nesting pairs to CCSP in 2012 (Appendix I – Table 2) indicates that birds can move between Bommer Canyon and CSSP and are attempting to recolonize CCSP since they disappeared from the site after the 1993 Laguna Fire. Also, in the Central Reserve, 2 banded females from Southern California Edison were resighted nesting and paired in Whiting Ranch Wilderness Park north of Glenn Ranch Road in 2011 and 2012. And the number of pairs at Whiting Ranch appears to have increased since 2008. This indicates that birds are recolonizing the Whiting Ranch site since the 2007 wildfire.

No dispersals between the Coastal and Central Reserves have been detected to date. According to the Least Cost Path analysis of areas genetically sampled in 2011 in Appendix II of Barr, Vandergast, and Kus's (2012) recent report, it appears Cactus Wren sites near north Laguna Canyon and the El Toro Conservation Easement site may be the most likely locations to detect movement of color banded wrens between the Coastal and Central Reserves in the NROC. However, it is difficult to determine the location of the route indicated from the figure. Also, the pending analysis of genetic samples collected in 2012 at Mule Deer, Quail Hill, and the El Toro Conservation Easement sites may better indicate the level of genetic connectivity between these sites and between the Coastal and Central Reserves at this location.

Figure 5 shows the distribution of resighted wrens across distance intervals for known males and females. Also, 78.7% of the males and 57.5% of the females were resighted within 0.33 km of their banding territory/location. This suggests males tend to remain within a site or even at the same territory than females. In order to compare the median dispersal distances of males and females, the highest and lowest values were removed from the resighting data of males and females that were resighted away from their original territory/location where they were banded. Males dispersed a median distance of 0.216 km (n=24) and females dispersed a median distance of 0.498 km (n=24). A Mann-Whitney Rank Sum Test indicates a significant difference of  $P=0.004$  between the two medians. So a higher proportion of females were resighted further away from their original banding territory/location than males. This agrees with Anderson and Anderson's (1973) findings that juvenile males stayed near their natal territory while females moved farther to find mates. However both males and females appear capable of wandering relatively far distances (Figure 5 and Appendix I – Table 4).

Dr. Kristine Preston plans to conduct further indepth analysis and modeling of the Cactus Wren dispersal data and to publish her findings (personal communication).



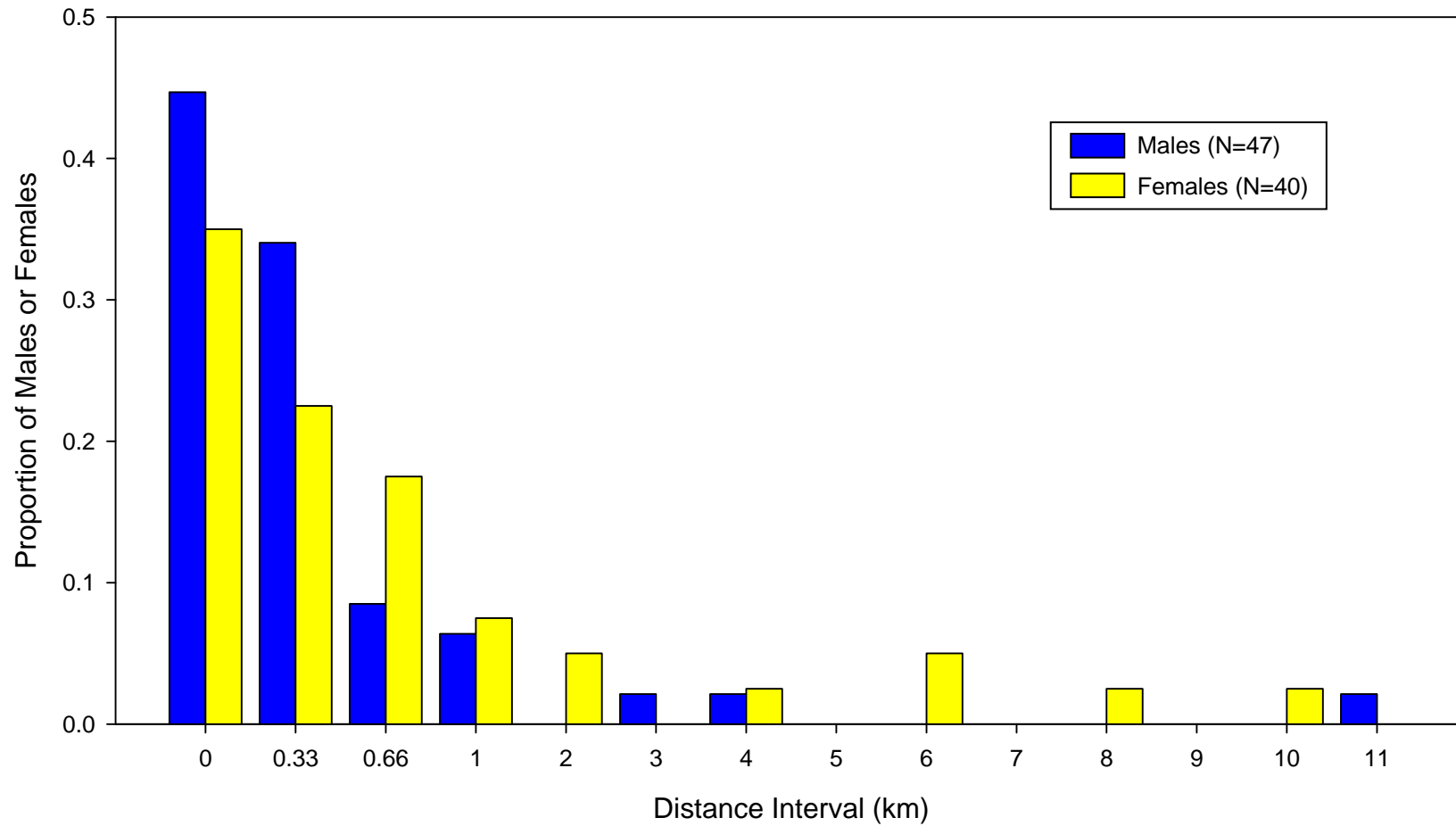


Figure 5. Dispersal distances of resighted male and female banded Cactus Wrens on the coastal and central NCCP/HCP lands in the Nature Reserve of Orange County's 2012 wren studies. The data includes only known males and females banded prior to 2012. Indicated distances represent the upper value of each distance interval. Note 78.7% of the males were resighted within 0.33 km from the original territory where they were banded and 57.5% of the females were resighted within 0.33 km.

*Color Banding and Collection of Genetic Material*

A total of 654 Cactus Wrens (167 adults and 487 nestlings/fledglings/juveniles) have been banded with unique color bands since the study began in 2009. We banded 143 birds in 2009, 93 (65%) of which were nestlings, fledglings or juveniles (Preston and Kamada 2009). In 2010, we banded 185 birds, 170 (92%) of which were born in 2010 (Preston and Kamada 2011). In 2011 we banded 168 Cactus Wren, 147 (87.5%) of which were nestlings and fledglings (Preston and Kamada 2012). In 2012 we newly banded 154 Cactus Wren, 66 (42.9%) of which were nestlings or hatch year birds (Appendix I – Table 5). The banding was associated with the effort to collect more genetic and blood samples across a broader range of sites in the NROC. Also we wished collect samples at sites where few or no samples were collected and at sites where new pairs were recolonizing.

Since 2009 we have collected genetic material from 393 banded birds with 155 of these samples obtained in 2012. We collected secondary, tail, and/or body feathers from 83 birds (7 samples in 2011). Growing feathers were collected from 132 nestlings and one molting juvenile in 2011. Blood and genetic material collected by toe-nail clips were obtained from 22 adults and juveniles. In 2012, growing feathers were collected from 57 nestlings, one molting fledgling and 8 molting adults. Blood and genetic material collected by toe-nail clips were obtained from 6 fledglings, 9 juveniles and 82 adults. All genetic samples collected from 2009-2012 were given to the USGS to develop microsatellite markers and to sample for genetic composition. These samples are currently being analyzed along with samples from Cactus Wrens in San Diego and Los Angeles Counties to determine regional connectivity. Further analyses will be conducted on the birds in Orange County's Central and Coastal NCCP/HCP to determine genetic population structure and relatedness among individuals. Barr, Vandergast, and Kus's (2012) recently presented preliminary results on the *Genetic Connectivity in the Coastal Cactus Wren* in Orange and San Diego Counties from analyses and modeling of Cactus Wren genetic samples and other data collected in 2009 to 2011. Additional samples from Orange, San Diego, and Los Angeles Counties collected in 2012 are currently being analyzed to further refine our understanding of the genetic structure, connectivity and relatedness of Cactus Wrens in NROC and throughout Southern California. Barr, Kus, Preston, & Vandergast of USGS will be reporting the findings of the Cactus Wren genetic analysis.

*Cactus Wren Parasites*

Blood smear slides were also made from the 97 wrens that were toe-nail clipped for genetic samples. The blood slides were given to the California Animal Health and Food Safety Lab at UC Davis for parasite analysis. Preliminary results of the blood slide examinations are shown in Appendix I – Table 6. The lab detected two blood parasites, *Avifilaris* and *Leucocytozoon* and identified one ectoparasite, *Neoscho(e)ngastia americana* or Turkey Chiggers. The following are extractions from emails of Dr. Winston Vicker's discussions about the parasites and the analytical results:

**Avifilaris:**

Prevalence of the Avifilaris was 25% in the first batch, not far off the 18% in this one, suggesting this is an ongoing phenomenon affecting somewhere around 20% of the birds. In the first batch where we also did blood counts, the variation in counts was hard to interpret but elevated eosinophil counts were common suggesting the influence of parasites on white cell distribution – this is consistent with these birds carrying total parasite burdens that might be a little higher than ideal.

The first batch of birds were so variable in their total blood counts with no discernible relationship between counts and physical condition. As such, I don't think there is much value in running differentials on these smears that were examined for parasites.

The Avifilaris parasites are also spread by biting insects – the microfilaria seen in the blood are the transmissible stage of a larger adult parasite elsewhere in the body, often in the skin or an organ. Most of these are regarded as non-pathogenic, but little is known about this particular genus. For the moment I would assume that there is no particular issue with these guys but I'll send along the bird ID numbers when I get them so you can note it in your records.

Because so little is known about Avifilaris (it's not even listed in the "Parasites of wild birds" textbooks), and the location where the adult resides in the body has not been documented. It is something to make note of, and if there ever were any freshly deceased birds that came into your possession, I would advocate necropsy by an avian pathologist (Dr. Leslie Woods at the Calif Animal Health and Food Safety Lab at UC Davis is who I would recommend). The pathologist should be told about these blood results so that they can look closely in tissues for the adult form of the parasite.

Beyond that – making special note of the fates, success in reproduction, etc of these birds that have been parasite positive relative to those who had no sign of the parasites, is a good idea. ... [This] parasite is [not] transmissible to people... .

**Leucocytozoon:**

1 bird of 34 (3%) was positive for Leucocytozoon...

Leucocytozoon is a pathogenic blood parasite spread by biting flies and midges. Infection causes disease in various organs and anemia. There are numerous species and it can be fatal or reduce fitness in wild birds leading to higher mortality rates from other causes or co-infections. It is usually most problematic or at least recognized as such in waterfowl, and sometimes raptors as far as having significant effects on local populations, usually through mortality of young of the year. Some birds harbor the parasite and its presence in the blood goes up and down with the season to take advantage of the vector presence. Whether it is significant clinically in this one bird is not known. If the findings so far reflect a 3 % prevalence in the population it is unlikely to be significant to the population at this time. ... [This] parasite is [not] transmissible to people... .

***Neoscho(e)ngastia americana* or Turkey Chiggers (Figure 6):**

...the external parasites that are causing the cactus wren skin lesions *Campylorhynchus brunneicapillus*. These parasites have a common name of "turkey chiggers", and have been reported in the literature in southern California coastal birds [Walters, B.L., et. al. 2011]. Their occurrence seems to be habitat-related more than species related. My expectation is that they would only have a significant deleterious effect on the birds if the numbers and severity of chiggers (and resultant lesions on the birds) increased

substantially due to environmental factors, and / or a heavy chigger load was combined with other negative health factors in a particular season.



Figure 6. *Neoscho(e)ngastia americana* or Turkey Chiggers or Turkey Mites on the chest of a Cactus Wren.

We usually begin to see Turkey chiggers on Cactus Wrens during late June or early July when temperatures and humidity begin to increase to late summer and early fall levels.

#### *Arthropod Foraging Study*

Foraging observations of wrens were conducted at selected territories with nesting Cactus Wrens at Bommer Canyon, Sand Canyon Reservoir, and UC Irvine Ecological Preserve (Table 1 & 2 and Figure 1a). Nests were also monitored at these territories and a summary of the 2012 reproductive status of each territory where observations were conducted for the Arthropod study is shown in Table 2. Irvine Ranch Conservancy (IRC)/ UC Irvine Center for Environmental Biology (CEB) will be producing reports detailing the results of their arthropod sampling, fecal analysis, and vegetation assessments of each territory.

#### *Plant Community Composition*

Appendix I –Table 7 lists the dominant plant communities at each site and dominant plant species within the Cactus Scrub vegetation at each site. Coastal Sage Scrub and Cactus Scrub

were present at all the sites and similar dominant plant species were present in the Cactus Scrub at each site. Vegetation density and structure appear to be the factors that varied between the sites. Bare ground and grassland were also an important component of many territories,

particularly at El Modena, Southern California Edison, El Toro Conservation Easement, Irvine Park, Irvine Lake, Limestone Canyon, Whiting Ranch, Boat Canyon and in portions of UCI Ecological Reserve.

Table 2. Reproductive Status of Cactus Wren Territories Monitored for the Irvine Ranch Conservancy (IRC)/ UC Irvine Center for Environmental Biology (CEB) Arthropod Foraging Study

Territory	Nest No.	NAD 83 UTM East	NAD 83 UTM North	Nest Fate	No. of Nest Attempts	# Eggs	# Nestlings	# Fledglings	# Fls/Pr/Yr
<i>Bommer Canyon</i>									
BMR02	1	425855	3720054	Fledged	2		4	4	7
	2	425855	3720054	Fledged			3	3	
BMR04	1	425768	3720444	Depredated?	2	3	2	0	1
	2	425735	3720386	Fledged		2	1	1	
BMR05	1	426120	3719883	Fledged	1		4	3+	3+
<i>Sand Canyon Reservoir</i>									
SCR01	1	426255	3723834	Depredated?	2	4-5	4	0	0
	2	426256	3723825	Depredated?		3	2	0	
SCR05	1	426097	3724013	Fledged			2	2	2
<i>UC Irvine</i>									
UC03	1	421493	3722252	Depredated?/Abandoned?	1	4	1	0	0
UC04					Unk	0	0	0	0
UC05/06	1	421567	3722565	Depredated	2+	3	3	0	3-4
	2	421594	3722638	Fledged		4	4	3-4	
UC09/01/02	1	421445	3721789	Fledged	4	4	2	2	6-7
	2	421450	3721788	Depredated		4	0	0	
	3	421450	3721788	Fledged		3	2	1-2	
	4	421445	3721789	Fledged		3	3	3	

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Appendix I - Table 1a. Dates of field work, names of field personnel, and type of field work conducted at Nature Reserve of Orange County 2012 Survey, Genetic Sampling, and Foraging Study Sites.

Date	Personel	Aliso Creek	Buck Gully	Bommer Canyon (Foraging Study Site)	Bommer Ridge Road	Boat Canyon	Crystal Cove SP	Cattle Crest Trail	El Modena	El Morro Ridge Road	El Toro Conservation Area	El Toro Road	Fox Run Trail
3/13/12	KM, KP, DK			S, F									
3/20/12	KM, KP, DK			S, F			S						
3/23/12	DK											S	
3/28/12	KM, DK								S				
3/29/12	KM, KP, DK			S, F		S				S			
4/3/12	KM, KP			S, F									
4/4/12	DK									S			
4/10/12	KM, KP, DK			S, M, F									
4/12/12	KM								S				
4/17/12	KM, KP			M, F									
4/18/12	DK, KM, KY						S, M						
4/19/12	DK						S, M						
4/20/12	KM, DK		S								S		
4/24/12	KM, KP, DK	S		M, F									
4/26/12	DK										S		
4/27/12	DK, KM					M	B						
4/30/12	DK, KM										B, M		
5/1/12	KM, KP			M, F									
5/3/12	DK, KM	M											
5/4/12	DK, KM										B		
5/8/12	KM, KP			M, F									
5/9/12	KM, DK			B								S, B	
5/11/12	KM, DK, KP			B			S, M						
5/14/12	KM, DK			S, M, F									
5/15/12	DK, KM, MM, KY	B											
5/16/12	DK										M		
5/18/12	DK, MM						B, M						

Appendix I - Table 1a *continued* . Dates of field work, names of field personnel, and type of field work conducted at Nature Reserve of Orange County 2012 Survey, Genetic Sampling, and Foraging Study Sites.

Date	Personel	Aliso Creek	Buck Gully	Bommer Canyon (Foraging Study Site)	Bommer Ridge Road	Boat Canyon	Crystal Cove SP	Cattle Crest Trail	El Modena	El Morro Ridge Road	El Toro Conservation Area	El Toro Road	Fox Run Trail
5/21/12	KM, KP			M, F									
5/23/12	DK, KM					S, M							
5/24/12	KM, DK			S, M	S	S	B, M						S
5/25/12	DK										M		
5/29/12	KM			M, F, B		B							
5/31/12	KM, DK		S							S			
6/4/12	DK, MM, KM, KP			M, F									
6/7/12	DK						S						
6/8/12	DK						S						
6/11/12	KM								S				
6/12/12	KM, KP, DK			M, F									
6/13/12	DK, KM	S, M							S				
6/18/12	KM			M	S								S
6/19/12	KM, MM			M, F									
6/26/12	KM, MM			M, F									
7/2/12	DK, KM, KY						S, M						
7/5/12	KM, KP			M, F									
7/10/12	KM, KP			M, F, B									
7/11/12	DK, KM						B						
7/16/12	KC, DK										S	S	
7/17/12	KM, MM			M, F									
7/18/12	DK, KM						B						
7/24/12	KM, MM, DK			S, M, F			S, M						
7/25/12	DK, KM										B		
7/26/12	KM, DK		S									S	
7/30/12	KM, DK			S, M, F									
7/31/12	KM			S	S								S

Appendix I - Table 1a *continued* . Dates of field work, names of field personnel, and type of field work conducted at Nature Reserve of Orange County 2012 Survey, Genetic Sampling, and Foraging Study Sites.

Date	Personel	Aliso Creek	Buck Gully	Bommer Canyon (Foraging Study Site)	Bommer Ridge Road	Boat Canyon	Crystal Cove SP	Cattle Crest Trail	El Modena	El Morro Ridge Road	El Toro Conservation Area	El Toro Road	Fox Run Trail
8/1/12	DK, KC					S	S			S	S		
8/2/12	DK, KM						S			S			
8/3/12	DK, KC						S				S		
8/8/12	DK	S											
8/9/12	DK						S						
8/10/12	KM, DK							S					S
8/16/12	DK												
8/29/12	KM, DK								S				

Appendix I - Table 1b. Dates of field work, names of field personnel, and type of field work conducted at Nature Reserve of Orange County 2012 Survey, Genetic Sampling, and Foraging Study Sites.

				Limestone		Laguna		Los							
				Agua	Limestone	Canyon	Laguna	Loma	Trancos	Muddy		Newport	Peter's	Prima	
Date	Personel	Irvine Lake	Irvine Park	Chinon	Cactus Hill	Triangle	Laurel	Ridge	Canyon	Canyon	Mule Deer	Back Bay	Canyon	Deshecha <sup>n</sup>	
3/5/12	KM											S			
3/7/12	DK, KM							S					S		
3/14/12	DK, KM		S												
3/15/12	DK, KM	S	B, S												
3/15/12	DK, KM							B							
3/16/12	DK			S	S										
3/20/12	KM, KP, DK									S					
3/22/12	DK, KM	S													
3/23/12	DK, KM	B, S													
3/28/12	KM, DK				S								B		
3/30/12	DK, KM	B, S	S, M												
4/6/12	DK, KM		B, S												
4/9/12	DK, KM								S						
4/16/12	DK, KM								S						
5/4/12	DK, KM				B, S, M										
5/7/12	DK, KM		B, S												
5/9/12	KM, DK										S, M				
5/11/12	KM, DK, KP								S	S		S			
5/22/12	DK, KM				B										
5/30/12	KM												S		
6/1/12	DK, KM		S												
6/12/12	KM, KP, DK			S											
6/14/12	DK, KM	B													
6/20/12	DK													I, B	
6/27/12	DK, KM			B											
6/28/12	KM						S				S, M				
7/2/12	DK, KM, KY									S					
7/4/12	DK, KM			B											
7/6/12	DK, KM										B				

Appendix I - Table 1b *continued* . Dates of field work, names of field personnel, and type of field work conducted at Nature Reserve of Orange County 2012 Survey, Genetic Sampling, and Foraging Study Sites.

				Limestone		Laguna		Los							
				Agua	Limestone	Canyon	Laguna	Loma	Trancos	Muddy		Newport	Peter's	Prima	
Date	Personel	Irvine Lake	Irvine Park	Chinon	Cactus Hill	Triangle	Laurel	Ridge	Canyon	Canyon	Mule Deer	Back Bay	Canyon	Deshecha <sup>n</sup>	
7/11/12	DK, KM										B				
7/18/12	DK, KM								S						
7/20/12	DK, KM, MM			B											
7/23/12	DK, KM, WV			B											
7/24/12	KM, MM, DK									S					
7/27/12	KM, DK						S				S				
8/2/12	DK, KM											S			
8/7/12	KM												S		
8/16/12	DK					S									

<sup>n</sup>

Not a NROC study site, but incidental observation or banding &amp; samples collected.

Appendix I -Table 1c. Dates of field work, names of field personnel, and type of field work conducted at Nature Reserve of Orange County 2012 Survey, Genetic Sampling, and Foraging Study Sites

[illegible]

Appendix I - Table 1c *continued* . Dates of field work, names of field personnel, and type of field work conducted at Nature Reserve of Orange County 2012 Survey, Genetic Sampling, and Foraging Study Sites

Date	Personel	Quail Hill	Ridgeline <sup>n</sup>	South Bommer Ridge	Southern California Edison	Sand Canyon Reservoir (Foraging Study Site)	Saddle Creek South <sup>n</sup>	Shady Canyon	Turtle Ridge	UC Irvine (Foraging Study Site)	Upper Newport Bay	Woods Canyon	Weir Canyon	Whiting Ranch
5/8/12	KM, KP									S, M, F				
5/9/12	KM, DK	S, M, B			B									
5/10/12	DK, KM					S, M, B, F								
5/11/12	KM, DK, KP									S, M, F				
5/14/12	KM, DK				S					S, M, F				
5/15/12	DK, KM, MM, KY										S, M, B	S		
5/17/12	DK													S, M
5/18/12	DK, MM													S
5/21/12	KM, KP					F				S, M, B, F				
5/23/12	DK, KM								S					
5/24/12	KM, DK											B		
5/28/12	DK				S, M									
5/29/12	KM					S, M, F				S, M, F				
5/31/12	KM, DK			S										
6/1/12	DK, KM												B, S, M	
6/4/12	DK, MM, KM, KP					S, M, F				S, M, F				B, M
6/6/12	DK				S, B									
6/12/12	KM, KP, DK									S, M, F				
6/13/12	DK, KM										S			
6/15/12	KM, DK					S, M, F						S		
6/19/12	KM, MM									S, M, B, F				
6/22/12	KM, KY										S			
6/26/12	KM, MM					S, M, F				S, M, F				
6/27/12	DK, KM													B
6/28/12	KM	S, M, B												
7/2/12	DK, KM, KY									B	S			
7/3/12	KM								S					



Appendix I - Table 1c *continued*. Dates of field work, names of field personnel, and type of field work conducted at Nature Reserve of Orange County 2012 Survey, Genetic Sampling, and Foraging Study Sites

Date	Personel	Quail Hill	Ridgeline <sup>n</sup>	South Bommer Ridge	Southern California Edison	Sand Canyon Reservoir (Foraging Study Site)	Saddle Creek South <sup>n</sup>	Shady Canyon	Turtle Ridge	UC Irvine (Foraging Study Site)	Upper Newport Bay	Woods Canyon	Weir Canyon	Whiting Ranch
7/5/12	KM, KP					S, M, F				S, M, F				
7/6/12	DK, KM				S, M									
7/9/12	DK				S					S, M, F				
7/10/12	KM, KP					S, M, F								
7/11/12	DK, KM	S												
7/13/12	DK				S, M									
7/16/12	KC, DK				S									
7/17/12	KM, MM									S, M, F				
7/18/12	DK, KM		I			S			S					
7/19/12	KM									S, M, F				
7/24/12	KM, MM, DK									S, M, F				
7/27/12	KM, DK	S												S
7/30/12	KM, DK													S
7/31/12	KM	S												
8/2/12	DK, KM			S							S			
8/7/12	KM											S		
8/10/12	KM, DK	S						R						

<sup>n</sup> These locations area not a NROC study sites, but incidental observation or banding & samples were collected.

Personnel Codes

DK = Dana Kamada

KM = Karly Moore

KP = Kris Preston

MM = Milan Mitrovich

KY = Kathy Young

KC = Kevin Clark\*

Personnel Activity Codes

B = Band and collect samples from wrens

F = Observe and record foraging behavior and monitor nesting for the IRC-NROC-UCI Cactus Wren foraging study

I = Incidental observation

M = Observe and/or check nest(s) to determine nesting stage or age of nestlings for banding and sampling

S = Survey for Cactus Wrens to document banded birds or to find birds to capture and sample

\* Kevin Clark was not associated with the NROC cactus wren studies, but shared wren observations from the California gnatcatcher & Cactus Wren survey he conducted at El Toro Conservation Area

Appendix I - Table 2. Number of territories and wrens observed at Survey, Genetics, and/or Foraging sites during Nature Reserve of Orange County 2012 Cactus Wren Studies.

Site/Territory	Age	Sex	Bands	NAD 83 UTM East	NAD 83 UTM North	No. of Observed Territories	No. Wrens Observed at Site	Comments
<i>Aliso Canyon</i>			Survey	Genetics		2	5	
AC01	ASY	M	YLG-MLB	431619	3710560			
AC01	AHY	F	UB	431619	3710560			
AC01	N	U	UB	431619	3710560			
AC03	AHY	U	UB	431785	3710153			
AC03	AHY	U	UNK	431785	3710153			
<i>Buck Gully</i>			Survey			1	2	
BG01	ATY	M	PM-P	421039	3718792			
BG01	AHY	F	UB	421039	3718792			
<i>Bommer Canyon/ Bommer Ridge</i>			Survey	Genetics	Foraging	7	33	Bommer Ridge was a survey site only
BMR02	ATY	M	W-MO	425855	3720054			
BMR02	ATY	F	LG-YM	425855	3720054			
BMR02	N	U	RLB-LBM	425855	3720054			
BMR02	N	U	MDB-YLB	425855	3720054			
BMR02	N	U	PO-WM	425855	3720054			
BMR02	N	U	YM-YY	425855	3720054			
BMR02	N	U	DBO-MW	425855	3720054			
BMR02	N	U	PM-KY	425855	3720054			
BMR02	N	U	OLG-MK	425855	3720054			
BMR03	AHY	M	UB	426606	3719190			
BMR03	SY	F	M-OP	426606	3719190			
BMR03	N	U	UB	426607	3719188			
BMR03	N	U	UB	426607	3719188			
BMR04	AHY	M	UB	425735	3720386			
BMR04	ATY	F	W-OM	425735	3720386			
BMR04	N	U	RK-MO	425768	3720444			
BMR04	N	U	MY-YO	425768	3720444			
BMR04	N	U	DBM-DBW	425735	3720386			
BMR05	TY	M	KP-MLB	426120	3719883			
BMR05	AHY	F	UB	426120	3719883			
BMR05	TY	F	RDB-KM	425972	3719825			Resighted nesting at Crystal Cover State Park one month later. Returned to BMR05 after nest failed and being displaced by a female at CCSP.
BMR05	N	U	MLG-YK	426120	3719883			
BMR05	N	U	MR-YLB	426120	3719883			
BMR05	N	U	MY-DBLB	426120	3719883			
BMR05	N	U	OLB-MLG	426120	3719883			
BMR05	HY	U	PM-WY	425946	3719939			
BMR06	AHY	U	UB	425067	3720501			

Appendix I - Table 2 *continued*. Number of territories and wrens observed at Survey, Genetics, and/or Foraging sites during Nature Reserve of Orange County 2012 Cactus Wren Studies.

Site/Territory	Age	Sex	Bands	NAD 83 UTM East	NAD 83 UTM North	No. of Observed Territories	No. Wrens Observed at Site	Comments
BMR06	AHY	U	UNK	425067	3720501			
BMR06	N	U	UB	425067	3720501			
BMR06	N	U	UB	425067	3720501			
BRR01	TY	M	W-LBM	426770	3719065			
BRR01	ATY	F	MDB-O	426770	3719065			
BRR01	N	U	UB	426770	3719065			
<i>Boat Canyon</i>			Survey	Genetics		1	4	
BTC03/01	AHY	M	UB	427159	3712522			
BTC03/01	SY	F	DBP-M	427159	3712522			
BTC03/01	N	U	MLB-LGDB	427159	3712522			
BTC03/01	N	U	UB	426945	3712448			
<i>Crystal Cove State Park</i>			Survey	Genetics		3	14	
CCSP01	ATY	F	Y-DBM	424485	3716302			
CCSP01	SY	M	MLG-DBDB	424485	3716302			
CCSP01	SY	F	GN-MO	424485	3716302			
CCSP01	N	U	KM-GN	424485	3716342			
CCSP01	N	U	MK-WY	424485	3716342			
CCSP01	N	U	OK-MP	424485	3716342			
CCSP02	ASY	M	LGK-LGM	424317	3714347			
CCSP02	TY	F	RDB-KM	424317	3714347			Arrived from BMR05 to nest at Crystal Cove State Park. Returned to BMR05 after nest failed and being displaced by a female at CCSP.
CCSP02	AHY	F	UB	424321	3714336			
CCSP02	N	U	DBM-LGR	424321	3714336			
CCSP04	SY	M	RDB-MR	424744	3716618			
CCSP04	SY	F	LBW-WM	424744	3716618			
CCSP04	N	U	OR-MP	424744	3716618			
CCSP04	N	U	WLB-WM	424744	3716618			
CCSP04	N	U	GNM-K	424744	3716618			
<i>Cattle Crest Trail</i>			Survey			0	0	Surveyed only once
CCT				428179	3721638			
<i>El Modena</i>			Survey			15	57	
ELMO01	AHY	M	UB	426331	3740667			
ELMO01	ATY	F	LB-DGM	426331	3740667			
ELMO01	SY	U	Y-KM	426331	3740667			
ELMO01	N	U	UB	426331	3740667			
ELMO01	N	U	UB	426331	3740667			
ELMO01	N	U	UB	426331	3740667			
ELMO02	ATY	M	R-LGM	426357	3740523			

Appendix I - Table 2 *continued* . Number of territories and wrens observed at Survey, Genetics, and/or Foraging sites during Nature Reserve of Orange County 2012 Cactus Wren Studies.

Site/Territory	Age	Sex	Bands	NAD 83		No. of Observed Territories	No. Wrens Observed at Site	Comments
				UTM East	UTM North			
ELMO02	ATY	F	MLB-P	426357	3740523			
ELMO02	SY	U	OM-K	426323	3740525			
ELMO02	SY	U	LGM-K	426308	3740540			
ELMO02	TY	U	LG-RM	426308	3740540			
ELMO02	0	U	UB	426267	3740553			
ELMO02	0	U	UB	426266	3740485			
ELMO03	AHY	M	UB	426526	3740246			
ELMO03	ATY	F	MP-Y	426526	3740246			
ELMO03	AHY	U	UB	426588	3740249			
ELMO03	0	U	UB	426583	3740186			
ELMO03	0	U	UB	426583	3740186			
ELMO04	TY	M	W-MW	426592	3739776			
ELMO04	ATY	F	R-MY	426592	3739776			
ELMO04	SY	U	LGM-K	426631	3739859			
ELMO04	HY	U	UB	426539	3739811			
ELMO04	HY	U	UB	426539	3739811			
ELMO05	TY	M	MDB-P	426579	3739646			
ELMO05	TY	F	LB-MR	426579	3739646			
ELMO05	TY	U	M-LGY	426560	3739623			
ELMO05	AHY	U	UB	426523	3739625			
ELMO05	TY	U	Y-M	426566	3739564			
ELMO06	ATY	M	(K)K-M	426373	3739478			
ELMO06	ATY	F	M-KW	426373	3739478			
ELMO07	SY	U	LGM-K	426603	3739890			
ELMO07	AHY	U	UB	426603	3739890			
ELMO07EC	AHY	U	UB	426678	3740040			
ELMO07EC	AHY	U	UB	426678	3740040			
ELMO07EC	AHY	U	UB	426678	3740040			
ELMO07EC	SY	M?	WK-M	426639	3740113			
ELMO08	ATY	M	M-RR	426519	3739369			
ELMO08	ATY	F	PDG-M	426519	3739369			
ELMO08	SY	M	LG-MK	426459	3739372			
ELMO10/13	TY	M	LBLB-M	426470	3739916			
ELMO10/13	AHY	F	UB	426470	3739916			
ELMO10/13	HY	U	UB	426470	3739916			
ELMO10/13	AHY	U	UB	426506	3739776			
ELMO10/13	AHY	U	UB	426543	3739745			
ELMO11	AHY	U	UB	426308	3740396			
ELMO12	TY	M	M-LGDB	426381	3740333			
ELMO12	AHY	F	UB	426418	3740380			
ELMO12	N	U	UB	426418	3740380			
ELMO14	ATY	M	R-KM	426541	3740014			

Appendix I - Table 2 *continued*. Number of territories and wrens observed at Survey, Genetics, and/or Foraging sites during Nature Reserve of Orange County 2012 Cactus Wren Studies.

Site/Territory	Age	Sex	Bands	NAD 83 UTM East	NAD 83 UTM North	No. of Observed Territories	No. Wrens Observed at Site	Comments
ELMO14	TY	F	MO-LB	426474	3740063			
ELMO14	ATY	M	R-DBM	426474	3740063			
ELMO14	N	U	UB	426474	3740063			
ELMO14	N	U	UB	426474	3740063			
ELMO16	SY	M	LG-MK	426448	3739369			
ELMO16	AHY	F	X-PM	426448	3739369			
ELMO17	TY	M	MDB-LG	426418	3740670			
ELMO17	TY	F	MY-K	426418	3740670			
<i>El Morro Ridge Road</i>			Survey			0	0	
ERR				426768	3715931			
<i>El Toro Conservation Area</i>			Genetics			11	25	
ETC01	0	U	UB	436472	3727280			
ETC02	SY	M	RGN-M	435416	3726904			
ETC02	AHY	F	UB	435416	3726904			
ETC03	0	U	UB	435774	3727504			
ETC06	AHY	M	UB	436203	3726948			
ETC06	ASY	F	DBW-PM	436203	3726948			
ETC06	HY	U	GN-YM	436203	3726948			
ETC06	HY	U	WK-MLG	436203	3726948			
ETC06	HY	U	UB	436203	3726948			
ETC07	AHY	M	UB	436698	3727066			
ETC07	AHY	F	UB	436698	3727066			
ETC08	ASY	M	OK-WM	436564	3726898			
ETC08	ASY	F	M-DBGN	436564	3726898			
ETC08	N	U	MGN-Y	436564	3726898			
ETC08	N	U	LBV-MR	436564	3726898			
ETC12	SY	M	PDB-MP	436058	3726692			
ETC12	ASY	F	WM-GN	436058	3726692			
ETC15	0	U	UB	436998	3727464			
ETC16	SY	M	LGO-DBM	435715	3725505			
ETC16	AHY	F	UB	435715	3725505			
ETC17	AHY	M	UB	436381	3727837			
ETC17	AHY	F	UB	436381	3727837			
ETC17	HY	U	UB	436381	3727837			
ETC17	HY	U	UB	436381	3727837			
ETC18	0	U	UB	436851	3727647			
<i>El Toro Road (Aliso Creek)</i>			Survey	Genetics		7	12	
ETR01	AHY	M	UB	440138	3724888			
ETR01	AHY	F	UB	440138	3724888			
ETR01	N	U	M-OGN	440138	3724888			

Appendix I - Table 2 *continued*. Number of territories and wrens observed at Survey, Genetics, and/or Foraging sites during Nature Reserve of Orange County 2012 Cactus Wren Studies.

Site/Territory	Age	Sex	Bands	NAD 83 UTM East	NAD 83 UTM North	No. of Observed Territories	No. Wrens Observed at Site	Comments
ETR02	AHY	M	UB	441346	3725455			
ETR02	AHY	F	UB	441346	3725455			
ETR03	AHY	M	UB	441378	3725568			
ETR03	AHY	F	UB	441378	3725568			
ETR04	AHY	M	UB	442065	3726246			
ETR05	AHY	M	UB	441338	3725603			
ETR06	AHY	M	UB	441315	3725498			
ETR06	AHY	F	UB	441315	3725498			
ETR07	AHY	M	UB	441329	3725284			
ETR07	AHY	F	UB	441329	3725284			
<i>Irvine Lake</i>				Genetics		9	17	
FIL02	ASY	M	DB-MGN	432928	3736921			
FIL02	ASY	F	MW-LBLG	432928	3736921			
FIL03	ASY	M	OM-GN	433077	3737028			
FIL03	AHY	F	UB	433077	3737028			
FIL05	SY	M	MLG-PR	432766	3739297			
FIL05	ASY	F	GNLB-M	432766	3739297			
FIL07	ASY	M	OR-MY	433062	3739418			
FIL07	SY	F	DBGN-M	433062	3739418			
FIL08	AHY	M	Unk	433136	3739703			
FIL14b	AHY	M	UB	432514	3739636			
FIL14b	AHY	F	UB	432514	3739636			
FIL16	ASY	M	LGP-PM	432830	3739402			
FIL16	SY	F	O-GNM	432830	3739402			
FIL18b	ASY	M	GN-DBM	433048	3739364			
FIL18b	ASY	F	MDB-PK	433048	3739364			
FIL21	ASY	M	XX-M	433648	3738327			
FIL21	ASY	F	MY-YW	433648	3738327			
<i>Irvine Park</i>				Genetics		11	19	
FIP01	AHY	M	UB	430538	3740250			
FIP01	AHY	F	UB	430538	3740250			
FIP03	ASY	M	LBDB-LBM	430477	3740601			
FIP03	SY	F	OGN-M	430477	3740601			
FIP04	AHY	M	UB	432131	3739968			
FIP04	AHY	F	UB	432131	3739968			
FIP06a	ASY	M	MR-ODB	431543	3739931			
FIP06a	ASY	F	MK-OP	431543	3739931			
FIP06b	AHY	M	UB	431438	3739946			
FIP06b	AHY	F	UB	431438	3739946			
FIP07	ASY	M	MLB-RK	430159	3740367			
FIP07	AHY	F	UB	430159	3740367			

Appendix I - Table 2 *continued* . Number of territories and wrens observed at Survey, Genetics, and/or Foraging sites during Nature Reserve of Orange County 2012 Cactus Wren Studies.

Site/Territory	Age	Sex	Bands	NAD 83 UTM East	NAD 83 UTM North	No. of Observed Territories	No. Wrens Observed at Site	Comments
FIP08	AHY	M	UB	431528	3739824			
FIP08	AHY	F	UB	431528	3739824			
FIP09	AHY	U	Unk	430607	3740771			
FIP10	AHY	U	Unk	430677	3740716			
FIP11	AHY	U	Unk	430514	3740532			
FIP14a	ASY	M	MDB-GN	430296	3740367			
FIP14a	ASY	F	YLB-MY	430296	3740367			
<i>Fox Run Trail</i>			Survey			0	0	Surveyed only once
FXR				428063	3720259			
<i>Limestone Agua Chinon</i>			Genetics			8	24	
LAC01	ASY	M	MR-YW	436247	3728803			
LAC01	SY	F	W-GNM	436247	3728803			
LAC01	HY	U	WP-MLG	436247	3728803			
LAC01	HY	U	KW-MDB	436247	3728803			
LAC02	AHY	U	UB	437191	3727875			
LAC1005	ASY	M	LGM-LBK	437035	3727826			
LAC1005	SY	F	MR-GN	437035	3727826			
LAC1005	HY	U	PLG-LBK	437035	3727826			
LAC1007	AHY	M	UB	436967	3728136			
LAC1007	ASY	F	LGLB-MW	436967	3728136			
LAC1007	N	U	UB	436967	3728136			
LAC1007	N	U	UB	436967	3728136			
LAC1008	ASY	M	MP-WO	436767	3728141			
LAC1008	AHY	F	UB	436767	3728141			
LAC1009a	ASY	M	PLG-MDB	436666	3728317			
LAC1009a	ASY	F	RY-LBM	436666	3728317			
LAC1009a	N	U	UB	436666	3728317			
LAC1009a	N	U	UB	436666	3728317			
LAC1009b	AHY	M	UB	436666	3728317			
LAC1009b	ASY	F	GN-OM	436666	3728317			
LAC1011	ASY	M	GNM-GN	437264	3728011			
LAC1011	ASY	F	PDB-DBM	437264	3728011			
LAC1011	HY	U	YM-YR	437264	3728011			
LAC1011	HY	U	LB-GNM	437264	3728011			
<i>Limestone Cactus Hill</i>			Genetics			4	9	
LCH01	AHY	M	UB	438328	3732608			
LCH01	SY	F	PW-LGM	438328	3732608			
LCH02	AHY	U	UB	438734	3731725			
LCH20	AHY	M	UB	438481	3731571			
LCH20	SY	F	Y-GNM	438481	3731571			

Appendix I - Table 2 *continued* . Number of territories and wrens observed at Survey, Genetics, and/or Foraging sites during Nature Reserve of Orange County 2012 Cactus Wren Studies.

Site/Territory	Age	Sex	Bands	NAD 83 UTM East	NAD 83 UTM North	No. of Observed Territories	No. Wrens Observed at Site	Comments
LCH22	SY	M	YM-OK	438517	3731974			
LCH22	SY	F	M-KGN	438517	3731974			
LCH24	ASY	M	RLG-WM	438378	3732362			
LCH24	ASY	F	LB-MGN	438471	3732362			
<i>Laguna Canyon Triangle</i>			Survey			0	0	Surveyed only once
LTC				429745	3716750			
<i>Laguna Laurel</i>			Survey			0	0	
LL01				429002	3721016			
<i>Loma Ridge</i>			Genetics			1	2	
LRG01	AHY	M	RM-PP	433459	3735955			
LRG01	AHY	F	MGN-O	433459	3735955			
<i>Los Trancos Canyon</i>			Survey			0	0	
LTC				424037	3717695			
<i>Muddy Canyon</i>			Survey			2	7	
MCN01	AHY	M	UB	424019	3716669			
MCN01	AHY	F	UB	424019	3716669			
MCN01	HY	U	UB	424019	3716669			
MCN01	HY	U	UB	424019	3716669			
MCN02	AHY	M	UB	423887	3716759			
MCN02	AHY	F	UB	423887	3716759			
MCN03	AHY	M	UB	424424	3716858			
<i>Mule Deer</i>			Survey	Genetics		3	12	
MD01	TY	M	MLG-YLG	429074	3721826			
MD01	AHY	F	UB	429074	3721826			
MD01	SY	U	RM-DBP	429117	3721809			Floater
MD01	HY	U	GN-MDB	429074	3721826			
MD01	HY	U	WLB-MW	429074	3721826			
MD01	HY	U	YM-RW	429074	3721826			
MD01	HY	U	PM-WY	429074	3721826			
MD02	ASY	M	KW-Mp	429006	3721661			2011 Translocated wren that dispersed from James Dilley Preserve
MD02	AHY	F	UB	429006	3721661			
MD02	N	U	GNO-Mp	429006	3721661			Descendant of a 2011 translocated wren
MD02	N	U	MpR-LGDB	429006	3721661			Descendant of a 2011 translocated wren
MD02	N	U	YLG-MpO	429006	3721661			Descendant of a 2011 translocated wren
MD03	SY	U	RM-DBP	429272	3721847			Floater? Seen with a juvenile from MD01
MD03	HY	U	WLB-MW	429272	3721847			
<i>Newport Back Bay</i>			Survey			0	0	



Appendix I - Table 2 *continued* . Number of territories and wrens observed at Survey, Genetics, and/or Foraging sites during Nature Reserve of Orange County 2012 Cactus Wren Studies.

Site/Territory	Age	Sex	Bands	NAD 83 UTM East	NAD 83 UTM North	No. of Observed Territories	No. Wrens Observed at Site	Comments
NBB				417861	3720824			
<i>Peter's Canyon</i>						3	4	
PC01	AHY	U	UB	429187	3738213			
PC02	AHY	U	UB	429171	3737912			
PC02	AHY	U	UB	429171	3737912			
PC03	SY	M	RY-MR	429389	3737765			
<i>Prima Deshecha</i>				(Genetics)		1	5	Not a NROC study site
PDL01c	AHY	M	UB	443995	3706390			
PDL01c	AHY	F	UB	443995	3706390			
PDL01c	N	U	GNW-M	443995	3706390			
PDL01c	N	U	LBM-RO	443995	3706390			
PDL01c	N	U	DBO-YM	443995	3706390			
<i>Quail Hill</i>			Survey	Genetics		4	20	
QH01	SY	M	MP-WR	428300	3721940			
QH01	AHY	F	UB	428300	3721940			
QH01	N	U	DBY-YM	428300	3721940			
QH01	HY	U	GN-MDB	428322	3721964			
QH03	TY	M	OM-LBLB	428271	3722251			
QH03	TY	F	MP-(WK?)	428271	3722251			
QH03	N	U	OM-PK	428271	3722251			
QH03	N	U	PM-RP	428271	3722251			
QH03	N	U	LBM-WY	428271	3722251			
QH03	N	U	KK-KM	428271	3722251			
QH03	N	U	UB	428265	3722251			
QH03	N	U	LGM-WP	428265	3722251			
QH03	N	U	LBW-MDB	428265	3722251			
QH04	SY	M	PY-DBM	427681	3721757			
QH04	AHY	F	UB	427681	3721757			
QH04	HY	U	UB	427681	3721757			
QH04	HY	U	UNK	427681	3721757			
QH04	HY	U	UNK	427681	3721757			
QH05	AHY	U	UB	427518	3721639			
QH05	AHY	U	Unk	427518	3721639			
<i>Ridgeline</i>			(Survey)			1	3	Not a NROC study site, incidental observation
RL01	AHY	M	UB	425569	3723384			
RL01	AHY	F	UB	425569	3723384			
RL01	N	U	UB	425569	3723384			
<i>South Bommer Ridge</i>			Survey			0	0	
SBR				426426	3718180			

Appendix I - Table 2 *continued* . Number of territories and wrens observed at Survey, Genetics, and/or Foraging sites during Nature Reserve of Orange County 2012 Cactus Wren Studies.

Site/Territory	Age	Sex	Bands	NAD 83 UTM East	NAD 83 UTM North	No. of Observed Territories	No. Wrens Observed at Site	Comments
<i>Southern California Edison</i>			Survey	Genetics		16	53	
SCE01	AHY	M	UB	440464	3726108			
SCE01	SY	F	DB-MP	440464	3726108			
SCE01	N	U	UB	440464	3726108			
SCE01	N	U	UB	440464	3726108			
SCE01	N	U	UB	440464	3726108			
SCE01	N	U	UB	440464	3726108			
SCE02N	TY	M	MLB-LG	440576	3726113			
SCE02N	AHY	F	UB	440576	3726113			
SCE02S	SY	M	KM-W	440532	3726000			
SCE02S	SY	F	K-OM	440532	3726000			
SCE03	ATY	M	R-MDB	440571	3725746			
SCE03	ATY	F	P-RM	440571	3725746			
SCE03	SY	U	P-MLB	440535	3725724			
SCE03	N	U	UB	440571	3725746			
SCE03	N	U	UB	440571	3725746			
SCE03	N	U	UB	440571	3725746			
SCE04	ATY	M	DGP-M	440648	3725434			
SCE04	ATY	F	R-MP	440648	3725434			
SCE05	SY	M	M-DBK	440708	3725381			
SCE05	ATY	F	YM-GN	440708	3725381			
SCE05	N	U	UB	440708	3725381			
SCE05	N	U	UB	440708	3725381			
SCE06	ATY	M	WM-O	440745	3725447			
SCE06	ATY	F	M-DBDB	440745	3725447			
SCE07	SY	M	K-LGM	440710	3725239			
SCE07	ATY	F	M-WR	440710	3725239			
SCE07	N	U	DBK-MDB	440710	3725239			
SCE07	N	U	LBM-PLG	440710	3725239			
SCE08				440837	3725123			
SCE09/08	SY	M	W-MDB	440964	3725059			
SCE09/08	TY	F	LBO-M	440964	3725059			
SCE09/08	N	U	DBY-DBM	440964	3725059			
SCE09/08	N	U	OM-YW	440964	3725059			
SCE09/08	N	U	UB	440934	3725130			
SCE09/08	N	U	UB	440934	3725130			
SCE10E	TY	M	MR-P	440794	3725719			
SCE10E	AHY	F	UB	440794	3725719			
SCE10E	N	U	UB	440794	3725719			
SCE10E	SY	M	KM-W	440805	3725626			
SCE10W	TY	M	P-MW	440705	3725645			

Appendix I - Table 2 *continued* . Number of territories and wrens observed at Survey, Genetics, and/or Foraging sites during Nature Reserve of Orange County 2012 Cactus Wren Studies.

Site/Territory	Age	Sex	Bands	NAD 83 UTM East	NAD 83 UTM North	No. of Observed Territories	No. Wrens Observed at Site	Comments
SCE10W	SY	F	DBM-LB	440705	3725645			
SCE11	SY	M	LGK-M	440994	3725191			
SCE11	AHY	F	UB	440994	3725191			
SCE12				440665	3725131			
SCE13/12	ATY	M	MO-R	440774	3725144			
SCE13/12	TY	F	LG-MW	440774	3725144			
SCE13/12	N	U	UB	440604	3725213			
SCE13/12	N	U	UB	440604	3725213			
SCE14	SY	M	M-KK	440717	3725820			
SCE14	SY	F	M-KP	440717	3725820			
SCE15	TY	M	LG-PM	440850	3725357			
SCE15	SY	F	MR-WP	440850	3725357			
SCE15	N	U	UB	440850	3725357			
SCE15	N	U	UB	440850	3725357			
SCE16/2S	TY	M	DBM-W	440402	3725923			
SCE16/2S	TY	F	YDB-M	440402	3725923			
<i>Sand Canyon Reservoir</i>			Survey	Genetics	Foraging	4	12	
SCR01	TY	M	W-YM	426255	3723834			
SCR01	AHY	F	UB	426255	3723834			
SCR03/02	AHY	M	UB	426542	3723579			
SCR03/02	TY	F	M-PR	426542	3723579			
SCR04			M-PR	426664	3723238			
SCR04	AHY	M	UB	426697	3723274			
SCR04	AHY	F	UB	426697	3723274			
SCR04	N	U	UB	426697	3723274			
SCR04	N	U	UB	426697	3723274			
SCR05	SY	M	(K)-DBM	426097	3724013			
SCR05	AHY	F	UB	426097	3724013			
SCR05	N	U	UB	426097	3724013			
SCR05	N	U	UB	426097	3724013			
<i>Saddle Creek South</i>			(Survey)			1	2	Audubon/The Nature Conservancy Cactus Wren survey site visited to identify bands of a dispersed wren.
SCS W6	ATY	M	M-OR	443244	3727451			
SCS W6	AHY	F	UB	443244	3727451			
<i>Shady Canyon</i>			Survey	427143	3720569	0	0	Surveyed only once
SHC				427143	3720569			
<i>Turtle Ridge</i>			Survey			3	8	
TRD02	AHY	M	UB	424756	3719710			
TRD02	AHY	F	UB	424756	3719710			

Appendix I - Table 2 *continued*. Number of territories and wrens observed at Survey, Genetics, and/or Foraging sites during Nature Reserve of Orange County 2012 Cactus Wren Studies.

Site/Territory	Age	Sex	Bands	NAD 83 UTM East	NAD 83 UTM North	No. of Observed Territories	No. Wrens Observed at Site	Comments
TRD03	AHY	M	UB	424674	3720096			
TRD03	AHY	F	UB	424674	3720096			
TRD03	N	U	UB	424674	3720096			
TRD03	N	U	UB	424674	3720096			
TRD04	AHY	M	UB	424327	3719739			
TRD04	TY	F	LG-MLG	424327	3719739			
<i>UC Irvine</i>			Survey	Genetics	Foraging	3-5	24	Three pairs were observed attempting to nest in 3 locations. Same wrens occupied 2 locations through nestling season, but pair composition and area of occupation changed at 3 other locations. Speculate that there has been high predation risk.
UC01	SY	U	LB-DBM	421441	3721885			Transisient
UC02	SY	M	MLG-DBY	421561	3722065			Transisient
UC03	ATY	M	(W)O-M	421548	3722192			
UC03	ATY	F	MP-DG	421493	3722252			
UC03	SY	M	MLG-DBY	421493	3722252			
UC03/04	ATY	M	YW-M	421557	3722340			
UC03/04	AHY	F	UB	421557	3722340			
UC03/04	HY	U	M-KR	421501	3722401			
UC04	ATY	M	YW-M	421480	3722410			
UC04	TY	F	MY-OW	421480	3722410			
UC04	SY	U	MLG-DB	421596	3722427			
UC04	AHY	U	UB	421480	3722410			
UC05/06	ATY	M	M-DGP	421567	3722565			
UC05/06	SY	F	LB-DBM	421594	3722638			
UC05/06	N	U	RM-Y	421594	3722638			
UC05/06	N	U	MLG-W	421594	3722638			
UC05/06	N	U	Y-LGM	421594	3722638			
UC05/06	N	U	M-RP	421594	3722638			
UC09/01/02	TY	M	OW-M	421445	3721789			
UC09/01/02	ATY	F	R-MR	421445	3721789			
UC09/01/02	N	U	M-KR	421445	3721789			
UC09/01/02	N	U	K-YM	421445	3721789			
UC09/01/02	N	U	LG-OM	421450	3721788			
UC09/01/02	N	U	W-PM	421450	3721788			
UC09/01/02	N	U	R-MLG	421445	3721789			
UC09/01/02	N	U	WM-LG	421445	3721789			
UC09/01/02	N	U	DB-MW	421445	3721789			
<i>Upper Newport Bay</i>			Survey	Genetics		2	9	
UNB01	ATY	M	(O)M-LG	417448	3723777			

Appendix I - Table 2 *continued* . Number of territories and wrens observed at Survey, Genetics, and/or Foraging sites during Nature Reserve of Orange County 2012 Cactus Wren Studies.

Site/Territory	Age	Sex	Bands	NAD 83 UTM East	NAD 83 UTM North	No. of Observed Territories	No. Wrens Observed at Site	Comments
UNB01	TY	F	W-MP	417448	3723777			
UNB01	N	U	WM-WR	417448	3723777			
UNB01	N	U	UB	417415	3723710			
UNB01	N	U	UB	417415	3723710			
UNB02	TY	M	M-YDB	417307	3723255			
UNB02	TY	F	LG-MLB	417307	3723255			
UNB02	N	U	ODB-YM	417307	3723255			
UNB02	N	U	MW-WO	417307	3723255			
<i>Woods Canyon</i>			Survey			3	3	Territories appeared to be occupied by single males, no wrens detected later in the season.
WC01	AHY	M	UB	429875	3714557			
WC02	AHY	M	UB	429759	3714644			
WC03	AHY	U	UNK	430075	3714732			
<i>Weir Canyon</i>			Genetics			13	25	
WCN01	AHY	M	UB	432610	3743968			
WCN01	AHY	F	UB	432610	3743968			
WCN02	ASY	M	M-GNY	431525	3743444			
WCN02	ASY	F	DBP-DBM	431525	3743444			
WCN03	ASY	M	RLB-MO	430969	3741659			
WCN03	SY	F	WGN-M	430969	3741659			
WCN04	ASY	M	LGR-MP	429243	3743085			
WCN04	SY	F	MGN-K	429243	3743085			
WCN05	ASY	M	OR-MK	429994	3743258			
WCN05	ASY	F	GN-MW	429994	3743258			
WCN07	AHY	U	UNK	430941	3741603			
WCN08	AHY	M	UB	431128	3742162			
WCN09	AHY	M	UB	430467	3741915			
WCN09	ASY	F	GN-KM	430467	3741915			
WCN14	ASY	M	KGN-M	430883	3742381			
WCN14	AHY	F	UB	430883	3742381			
WCN14c	AHY	M	UB	430973	3742480			
WCN14c	AHY	F	UB	430973	3742480			
WCN14c	N	U	UB	430973	3742480			
WCN17	ASY	M	M-GNR	431152	3742428			
WCN17	AHY	F	UB	431152	3742428			
WCN19	AHY	M	UB	431152	3742088			
WCN19	AHY	F	UB	431152	3742088			
WCN23a	AHY	M	UB	430345	3742120			
WCN23a	AHY	F	UB	430345	3742120			
<i>Whiting Ranch</i>			Survey	Genetics		16	38	

Appendix I - Table 2 *continued* . Number of territories and wrens observed at Survey, Genetics, and/or Foraging sites during Nature Reserve of Orange County 2012 Cactus Wren Studies.

Site/Territory	Age	Sex	Bands	NAD 83 UTM East	NAD 83 UTM North	No. of Observed Territories	No. Wrens Observed at Site	Comments
WR01	ASY	M	OM-KP	440563	3726544			
WR01	TY	F	MDB-Y	440563	3726544			
WR02	AHY	M	UB	440274	3726708			
WR02	TY	F	LG-MY	440274	3726708			
WR02A	AHY	M	UB	440339	3726784			
WR02A	AHY	F	UB	440339	3726784			
WR03	AHY	M	UB	440182	3727326			
WR04	ASY	M	MO-KDB	440348	3726981			
WR04	AHY	F	UB	440348	3726981			
WR05	SY	M	LGW-RM	440490	3727064			
WR05	SY	F	GN-MDB	440490	3727064			
WR05	N	U	UB	440490	3727064			
WR06	SY	M	YO-MK	441066	3727834			
WR06	ASY	F	M-YGN	441066	3727834			
WR06	HY	U	UB	441066	3727834			
WR07	ASY	M	GN-RM	440904	3727647			
WR07	AHY	F	UB	440904	3727647			
WR09	ASY	M	MW-PLB	440883	3728577			
WR09	AHY	F	UB	440883	3728577			
WR09	N	U	Unk	440883	3728577			
WR09	N	U	Unk	440883	3728577			
WR10	AHY	M	UB	441196	3727861			
WR10	AHY	F	UB	441196	3727861			
WR11	ASY	M	LGLB-MO	440727	3726515			
WR11	SY	F	M-RGN	440727	3726515			
WR502	ASY	M	MLB-GN	440645	3728115			
WR502	ASY	F	MLG-ODB	440645	3728115			
WR502	ASY	U	KO-MLB	440645	3728115			
WR502	AHY	U	UB	440645	3728115			
WR504	SY	M	GNR-M	440727	3728392			
WR504	ASY	F	YM-YK	440727	3728392			
WR518	ASY	M	LBM-OO	440370	3726607			
WR518	ASY	F	GNK-M	440370	3726607			
WR518	N	U	UB	440370	3726607			
WR523a	AHY	M	UB	439511	3726147			
WR523a	AHY	F	UB	439511	3726147			
WR523b	AHY	M	UB	439656	3726098			
WR523b	AHY	F	UB	439656	3726098			

Total No. Sites = 38

No. of Territories: 152-157

No. of Wrens: 448+

No. of NROC Sites = 35

Appendix I - Table 2 *continued* . Number of territories and wrens observed at Survey, Genetics, and/or Foraging sites during Nature Reserve of Orange County 2012 Cactus Wren Studies.

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*Banding Code Definitions:*

Age Codes

AHY = After Hatch Year (adult)  
ASY = After Second Year  
ATY = After Third Year  
HY = Hatch year (juvenile)  
N = Nestling or Fledgling  
SY = Second Year  
TY = Third Year  
0 = Unknown Age (HY or AHY)

Sex Codes

F = Female  
M = Male  
U = Unknown

Color Band Codes (Right Leg-Left Leg)

DB = Dark blue  
GN = Medium Green  
K = Black  
LB = Light blue  
LG = Light green  
M = Metal USFWS band  
Mp = Metal USFWS band anodized purple  
O = Orange  
P = Purple  
R = Red  
W = White  
X = Missing color band  
Y = Yellow

Appendix I - Table 3. Resightings of Cactus Wrens that were banded before 2012, except for 4 hatch year (HY) birds that were resighted away from their natal territories, during the Nature Reserve of Orange County 2012 Cactus Wren Studies. (N=102)

Bands	2012 Age*	Sex	2012 Site	2012 Territory	Obs. Territory UTM		Original (Banding) Site	Original (Banding) Territory	Dispersal	Home Terr UTM		Note
					NAD 83 East	NAD 83 North				NAD 83 East	NAD 83 North	
DBP-M	SY	F	Boat Cyn	BTC03/01	427159	3712522	Quail Hill	QH01	Y	428328	3722001	
KP-MLB	TY	M	Bommer Cyn	BMR05	426120	3719883	Same	BMR05		426120	3719883	
LG-YM	ATY	F	Bommer Cyn	BMR02	425855	3720054	Same	BMR02		425855	3720054	
M-OP	SY	F	Bommer Cyn	BMR03	426606	3719190	Same	BMR05	Y	426120	3719883	
PM-WY	HY	U	Bommer Cyn	BMR05	425946	3719939	Mule Deer	MD01	Y	428989	3721893	Wandering Juvenile
W-MO	4+ yrs	M	Bommer Cyn	BMR02	425855	3720054	Same	BMR02		425855	3720054	
W-OM	ATY	F	Bommer Cyn	BMR04	425735	3720386	Same	BMR04		425735	3720386	
W-LBM	TY	M	Bommer Ridge Rd.	BRR01	426770	3719065	Same	BMR03	Y	426731	3718816	
							Bommer Cyn					
PM-P	6+ yrs	M	Buck Gully	BG01	421039	3718792	Same	BG01		421039	3718792	
RDB-KM	TY	F	Crystal Cove State Park	CCSP02	424317	3714347	Bommer Cyn	BMR05	Y	426120	3719883	2011 <b>BMR05</b> ; 2012 BMR01, <b>CCSP02</b> , BMR05. 1st F that attempted nesting w/ the M at CCSP02, was later replaced by an UB F and resighted back at BMR05 w/ the BMR05 family group.
Y-DBM	4+ yrs	F	Crystal Cove State Park	CCSP01	424485	3716302	Same	CCSP01		424485	3716302	F from 2010-11. Last seen 3/20/12 at CCSP01 later occupied by new pair.
(K)K-M	ATY	M	El Modena	ELMO06	426373	3739478	Same	ELMO06		426373	3739478	
LB-DGM	4+ yrs	F	El Modena	ELMO01	426331	3740667	Same	ELMO01		426331	3740667	
LBLB-M	TY	M	El Modena	ELMO10/13	426470	3739916	Same	ELMO10/13		426470	3739916	
LB-MR	TY	F	El Modena	ELMO05	426579	3739646	Same	ELMO05		426579	3739646	
LG-MK	SY	M	El Modena	ELMO08	426459	3739372	Same	ELMO08		426459	3739372	
LG-MK	SY	M	El Modena	ELMO16	426448	3739369	Same	ELMO08	Y	426511	3739431	
LGM-K	SY	U	El Modena	ELMO07	426603	3739890	Same	ELMO17	Y	426415	3740662	
LG-RM	TY	U	El Modena	ELMO02	426308	3740540	Same	ELMO11	Y	426298	3740373	Intruder?
MDB-LG	TY	M	El Modena	ELMO17	426418	3740670	Same	ELMO01	Y	426351	3740636	
MDB-P	TY	M	El Modena	ELMO05	426579	3739646	Same	ELMO06	Y	426371	3739478	
M-KW	ATY	F	El Modena	ELMO06	426373	3739478	Same	ELMO06		426373	3739478	
MLB-P	3 yrs	F	El Modena	ELMO02	426357	3740523	Same	ELMO02		426357	3740523	
M-LGDB	TY	M	El Modena	ELMO12	426381	3740333	Same	ELMO12		426381	3740333	
M-LGY	TY	U	El Modena	ELMO05	426560	3739623	Same	ELMO05		426560	3739623	Resident
MO-LB	TY	F	El Modena	ELMO14	426474	3740063	Same	ELMO04	Y	426622	3739860	
MP-Y	3 yrs	F	El Modena	ELMO03	426526	3740246	Same	ELMO05/09	Y	426506	3739648	Banded as SY at ELMO05/09 area



Appendix I - Table 3 *continued* . Resightings of Cactus Wrens that were banded before 2012, except for 4 hatch year (HY) birds that were resighted away from their natal territories, during the Nature Reserve of Orange County 2012 Cactus Wren Studies.

Bands	2012 Age*	Sex	2012 Site	2012 Territory	Obs. Territory UTM		Original (Banding) Site	Original (Banding) Territory	Dispersal	Home Terr UTM		Note
					NAD 83 East	NAD 83 North				NAD 83 East	NAD 83 North	
M-RR	4+ yrs	M	El Modena	ELMO08	426519	3739369	Same	ELMO08		426519	3739369	
MY-K	TY	F	El Modena	ELMO17	426418	3740670	Same	ELMO08/06	Y	426393	3739400	
OM-K	SY	U	El Modena	ELMO02	426323	3740525	Same	ELMO02		426323	3740525	
PDG-M	4+ yrs	F	El Modena	ELMO08	426519	3739369	Same	ELMO08		426519	3739369	
R-DBM	3 yrs	M?	El Modena	ELMO14	426474	3740063	Same	ELMO01	Y	426419	3740674	New male?
R-KM	ATY	M	El Modena	ELMO14	426541	3740014	Same	ELMO14		426541	3740014	
R-LGM	4+ yrs	M	El Modena	ELMO02	426357	3740523	Same	ELMO02		426357	3740523	
R-MY	ATY	F	El Modena	ELMO04	426592	3739776	Same	ELMO10	Y	426325	3739883	
WK-M	SY	M?	El Modena	ELMO07EC	426639	3740113	Same	ELMO03	Y	426541	3740274	New male?
W-MW	TY	M	El Modena	ELMO04	426592	3739776	Same	ELMO04		426592	3739776	
X-PM	AHY	F	El Modena	ELMO16	426448	3739369	Unknown	Unk		426448	3739369	Missing band on right leg
Y-KM	SY	U	El Modena	ELMO01	426331	3740667	Same	ELMO01		426331	3740667	Possibly a F
Y-M	TY	U	El Modena	ELMO05	426566	3739564	Same	Unk		426566	3739564	
M-DGDG	5+ yrs	M	MCB Camp Pendleton	MCBCP-Y01	453612	3702028	Casper's Park	CAPK230-1	Y	448405	3710883	USGS found on Camp Pendleton. 5+ yrs old
KW-Mp	ASY	M	Mule Deer	MD02	429006	3721661	James Dilley Reserve	GC02,JD01	Y	430242	3718284	Translocated wren from Glass Creek/Dilley
MLG-YLG	TY	M	Mule Deer	MD01	429074	3721826	Same	MD03	Y	429269	3721846	
RM-DBP	SY	U	Mule Deer	MD01	429117	3721809	Quail Hill	QH03	Y	428373	3722255	
WLB-MW	HY	U	Mule Deer	MD03	429272	3721847	Same	MD01	Y	429074	3721826	Wandering Juvenile
GN-MDB	HY	U	Quail Hill	QH01	428322	3721964	Mule Deer	MD01	Y	428989	3721893	Wandering Juvenile
MP-(WK?)	TY	F	Quail Hill	QH03	428271	3722251	Same	QH03		428271	3722251	
MP-WR	SY	M	Quail Hill	QH01	428300	3721940	Mule Deer	MD01	Y	429068	3721749	
OM-LBLB	TY	M	Quail Hill	QH03	428271	3722251	Same	QH03		428271	3722251	
PY-DBM	SY	M	Quail Hill	QH04	427681	3721757	Same	QH03	Y	428373	3722255	
M-OR	3 yrs	M	Saddle Creek	SCS W6	443244	3727451	So. Calif. Edison	SCE02	Y	440596	3726115	Resighting visit. TNC/SR survey site
(K)-DBM	SY	M	Sand Cyn Res.	SCR05	426097	3724013	Same	SCR01	Y	426257	3723840	Missing band on right leg
M-PR	TY	F	Sand Cyn Res.	SCR03/02	426542	3723579	UC Irvine	UC06	Y	421619	3722648	
W-YM	TY	M	Sand Cyn Res.	SCR01	426255	3723834	Same	SCR01		426255	3723834	
DBM-LB	SY	F	So. Calif. Edison	SCE10W	440705	3725645	Same	SCE10		440705	3725645	
DB-MP	SY	F	So. Calif. Edison	SCE01	440464	3726108	Same	SCE02N	Y	440566	3726105	
DBM-W	TY	M	So. Calif. Edison	SCE16/2S	440402	3725923	Same	SCE02	Y	440517	3726038	Nested W of N/S Road

Appendix I - Table 3 *continued* . Resightings of Cactus Wrens that were banded before 2012, except for 4 hatch year (HY) birds that were resighted away from their natal territories, during the Nature Reserve of Orange County 2012 Cactus Wren Studies.

Bands	2012 Age*	Sex	2012 Site	2012 Territory	Obs. Territory UTM		Original (Banding) Site	Original (Banding) Territory	Dispersal	Home Terr UTM		Note
					NAD 83 East	NAD 83 North				NAD 83 East	NAD 83 North	
DGP-M	5+ yrs	M	So. Calif. Edison	SCE04	440648	3725434	Same	SCE06	Y	440750	3725420	
K-LGM	SY	M	So. Calif. Edison	SCE07	440710	3725239	Same	SCE07		440710	3725239	Inbreeding? K-LGM is a nestling of M-WR
KM-W	SY	M	So. Calif. Edison	SCE02S	440532	3726000	Same	SCE02N	Y	440566	3726105	7/9/2012 New pair
K-OM	SY	F	So. Calif. Edison	SCE02S	440532	3726000	Same	SCE11	Y	441094	3725247	7/9/2012 New pair
LBO-M	TY	F	So. Calif. Edison	SCE09/08	440964	3725059	Same	SCE12	Y	440629	3725137	
LGK-M	SY	M	So. Calif. Edison	SCE11	440994	3725191	Same	SCE11		440994	3725191	
LG-MW	TY	F	So. Calif. Edison	SCE13/12	440774	3725144	Same	SCE12		440774	3725144	
LG-PM	TY	M	So. Calif. Edison	SCE15	440850	3725357	Same	SCE05	Y	440694	3725396	
M-DBDB	3 yrs	F	So. Calif. Edison	SCE06	440745	3725447	Same	SCE03	Y	440600	3725761	
M-DBK	SY	M	So. Calif. Edison	SCE05	440708	3725381	Same	SCE07	Y	440726	3725292	
M-KK	SY	M	So. Calif. Edison	SCE14	440717	3725820	Same	SCE03	Y	440600	3725771	
M-KP	SY	F	So. Calif. Edison	SCE14	440717	3725820	Same	SCE02N	Y	440566	3726105	
MLB-LG	TY	M	So. Calif. Edison	SCE02N	440576	3726113	Same	SCE02		440576	3726113	
MO-R	3 yrs	M	So. Calif. Edison	SCE13/12	440774	3725144	Same	SCE07	Y	440712	3725240	
MR-P	TY	M	So. Calif. Edison	SCE10E	440794	3725719	Same	SCE10		440794	3725719	
MR-WP	SY	F	So. Calif. Edison	SCE15	440850	3725357	Same	SCE09	Y	440974	3725056	
M-WR	3 yrs	F	So. Calif. Edison	SCE07	440710	3725239	Same	SCE09	Y	440969	3725035	Inbreeding? K-LGM is a nestling of M-WR
P-MLB	SY	U	So. Calif. Edison	SCE03	440535	3725724	Same	SCE03		440535	3725724	Local AHY 3/10
P-MW	TY	M	So. Calif. Edison	SCE10W	440705	3725645	Same	SCE04	Y	440663	3725470	
P-RM	4+ yrs	F	So. Calif. Edison	SCE03	440571	3725746	Same	SCE03		440571	3725746	
R-MDB	4+ yrs	M	So. Calif. Edison	SCE03	440571	3725746	Same	SCE03		440571	3725746	
R-MP	5+ yrs	F	So. Calif. Edison	SCE04	440648	3725434	Same	SCE05	Y	440659	3725399	
W-MDB	SY	M	So. Calif. Edison	SCE09/08	440964	3725059	Same	SCE09		440964	3725059	
WM-O	3 yrs	M	So. Calif. Edison	SCE06	440745	3725447	Same	SCE11	Y	441004	3725178	
YDB-M	TY	F	So. Calif. Edison	SCE16/2S	440402	3725923	Same	SCE10	Y	440813	3725563	Nested W of N/S Road
YM-GN	5+ yrs	F	So. Calif. Edison	SCE05	440708	3725381	Same	SCE11	Y	441004	3725178	
LG-MLG	TY	F	Turtle Ridge	TRD04	424327	3719739	UC Irvine	UC06	Y	421619	3722648	
(W)O-M	3 yrs	M	UC Irvine	UC03	421548	3722192	Same	UC06	Y	421741	3722542	1st M of Territorial Pair for the 2012 season
LB-DBM	SY	F	UC Irvine	UC05/06	421594	3722638	Same	UC04	Y	421611	3722425	Used UC05 and UC06
M-DGP	4+ yrs	M	UC Irvine	UC05/06	421567	3722565	Same	UC05		421567	3722565	Used UC05 and UC06
M-KR	HY	U	UC Irvine	UC03/04	421501	3722401	Same	UC09	Y	421445	3721789	Wandering Juvenile

Appendix I - Table 3 *continued* . Resightings of Cactus Wrens that were banded before 2012, except for 4 hatch year (HY) birds that were resighted away from their natal territories, during the Nature Reserve of Orange County 2012 Cactus Wren Studies.

Bands	2012 Age*	Sex	2012 Site	2012 Territory	Obs. Territory UTM		Original (Banding) Site	Original (Banding) Territory	Dispersal	Home Terr UTM		Note
					NAD 83 East	NAD 83 North				NAD 83 East	NAD 83 North	
MLG-DB	SY	U	UC Irvine	UC04	421596	3722427	Bommer Cyn	BMR01	Y	425272	3720083	Bird 1st seen at upper (E) UC03. It then flew 200m towards me (421641, 3722427). This bird is from BMR, later recaptured in Muledeer (7/15/11). (BMR01 to MD01 5.1km, 65.5°; MD01 to UC04 7.5km, 274.8°. Total min. dist. traveled = 12.6km)
MLG-DBY	SY	M	UC Irvine	UC03	421493	3722252	Same	UC09	Y	421440	3721783	2nd M of Territorial Pair for the 2012 season
MP-DG	3 yrs	F	UC Irvine	UC03	421493	3722252	Same	UC05	Y	421551	3722555	1st Territorial F for the 2012 season
MY-OW	TY	F	UC Irvine	UC04	421480	3722410	Mule Deer	MD03	Y	429269	3721846	Resighted the MD03 female in UC04 territory w/ the UC04 male. They did greeting displays and chased a UB wren back S into the sumac near the office bldgs. No nest found. (7.81km, 275.03deg)
OW-M	TY	M	UC Irvine	UC09/01/02	421445	3721789	Same	UC01	Y	421376	3721863	
R-MR	3 yrs	F	UC Irvine	UC09/01/02	421445	3721789	Same	UC03	Y	421525	3722316	
YW-M	3 yrs	M	UC Irvine	UC04	421480	3722410	Same	UC05	Y	421518	3722527	
(O)M-LG	7+ yrs	M	Upper Newport Bay	UNB01	417448	3723777	Same Portola to UNB	PORT, UNB01	Y	418294	3723959	Translocated from Portola 2006. Released at UNB04. Dispersed to UNB01 2007. Orange band missing
LG-MLB	TY	F	Upper Newport Bay	UNB02	417307	3723255	Same	UNB01	Y	417416	3723705	Inbreeding both from 2010 UNB01
M-YDB	TY	M	Upper Newport Bay	UNB02	417307	3723255	Same	UNB01	Y	417416	3723705	Inbreeding both from 2010 UNB01
W-MP	TY	F	Upper Newport Bay	UNB01	417448	3723777	Same	UNB01		417448	3723777	Inbreeding W-MP from (O)M-LG 2010 nest.
LG-MY	TY	F	Whiting Ranch	WR02	440274	3726708	So. Calif. Edison	SCE03	Y	440589	3725773	
MDB-Y	TY	F	Whiting Ranch	WR01	440563	3726544	So. Calif. Edison	SCE08	Y	440837	3725078	
OM-KP	ASY	M	Whiting Ranch	WR01	440563	3726544	Same	WR01		440563	3726544	

Banding Code Definitions:Age Codes

AHY = After Hatch Year (adult)

ASY = After Second Year

ATY = After Third Year

HY = Hatch year (juvenile)

N = Nestling or Fledgling

SY = Second Year

TY = Third Year

Sex Codes

F = Female

M = Male

U = Unknown

Color Band Codes (Right Leg-Left Leg)

DB = Dark blue

GN = Medium Green

K = Black

LB = Light blue

LG = Light green

M = Metal USFWS band

Mp = Metal USFWS band anodized purple

O = Orange

P = Purple

R = Red

W = White

X = Missing color band

Y = Yellow

\* Age code follows the above categories until known age is past TY (Third Year or ~2 years old), then the age of the bird is in years.

Appendix I - Table 4. Dispersal resightings of Cactus Wrens that were resighted away from their natal territories during the Nature Reserve of Orange County 2012 Cactus Wren Studies. (N=62)

Band Code	Age Banded	Sex	Natal/Original (Banding) Site	Natal/Original (Banding) Territory	Date Last Seen at Original Territory	New 2012 Site	New 2012 Territory/ Location	Date First Seen at New 2012 Territory	Age	Straight Line Distance (km)	Breeding Status at 2012 Location	Comments
PM-WY	HY	U	Mule Deer	MD01	7/11/12	Bommer Cyn	BMR05	7/30/12	HY	3.62	Unknown	
WLB-MW	HY	U	Mule Deer	MD01	7/11/12	Mule Deer	MD03	7/27/12	HY	0.20	Unknown	Seen with a 2nd wren.
GN-MDB	HY	U	Mule Deer	MD01	7/11/12	Quail Hill	QH01	7/27/13	HY	0.67	Unknown	2nd wren seen in new territory
M-KR	HY	U	UC Irvine	UC09	5/11/12	UC Irvine	UC03/04	6/12/12	HY	0.61	Unknown	
M-OP	N	F	Bommer Cyn	BMR05	10/24/11	Bommer Cyn	BMR03	12/21/11	SY	0.85	Fledglings	
DBP-M	N	F	Quail Hill	QH01	6/15/11	Boat Cyn	BTC03/01	5/23/12	SY	9.55	Fledglings	
LGM-K	N	U	El Modena	ELMO17	6/23/11	El Modena	ELMO04	8/30/11	SY	0.83	Floater	Seen in ELMO04 3/28/12
LGM-K	N	U	El Modena	ELMO17	6/23/11	El Modena	ELMO07	6/13/12	SY	0.79	Paired	
WK-M	N	M?	El Modena	ELMO03	11/16/11	El Modena	ELMO07EC	4/12/12	SY	0.19	Paired?	2 other wrens seen.
LG-MK	N	M	El Modena	ELMO08	10/9/11	El Modena	ELMO16	6/13/12	SY	0.09	Paired	
RM-DBP	N	U	Quail Hill	QH03	6/24/11	Mule Deer	MD01	6/28/12	SY	0.87	Unknown	
RM-DBP	N	U	Quail Hill	QH03	6/24/11	Mule Deer	MD03	6/28/12	SY	0.99	Unknown	Seen with a 2nd wren.
MP-WR	N	M	Mule Deer	MD01	7/15/11	Quail Hill	QH01	5/9/12	SY	0.79	Nestlings	
PY-DBM	N	M	Quail Hill	QH03	12/20/11	Quail Hill	QH04	5/9/12	SY	0.85	Fledglings	
DB-MP	N	F	So. Calif. Edison	SCE02N	9/12/11	So. Calif. Edison	SCE01	11/3/11	SY	0.10	Fledglings	
KM-W	N	M	So. Calif. Edison	SCE02N	12/8/11	So. Calif. Edison	SCE02S	5/14/12	SY	0.11	Paired	
K-OM	N	F	So. Calif. Edison	SCE11	5/31/11	So. Calif. Edison	SCE02S	7/11/11	SY	0.94	Paired	Paired on 7/9/12
M-DBK	N	M	So. Calif. Edison	SCE07	9/2/11	So. Calif. Edison	SCE05	3/10/12	SY	0.09	Fledglings	
M-KK	N	M	So. Calif. Edison	SCE03	12/8/11	So. Calif. Edison	SCE14	5/14/12	SY	0.13	Nesting	
M-KP	N	F	So. Calif. Edison	SCE02N	12/8/11	So. Calif. Edison	SCE14	5/14/12	SY	0.32	Nesting	
MR-WP	N	F	So. Calif. Edison	SCE09	12/9/11	So. Calif. Edison	SCE15	3/31/12	SY	0.33	Fledglings	
(K)-DBM	N	M	Sand Cyn Res.	SCR01	4/11/11	Sand Cyn Res.	SCR05	5/10/12	SY	0.24	Fledglings	
MLG-DBY	N	M	UC Irvine	UC09	3/1/12	UC Irvine	UC03	3/13/12	SY	0.47	Nesting	
MLG-DB	N	U	Bommer Cyn	BMR01	6/20/11	UC Irvine	UC04	2/23/12	SY	4.36	Floater	Recaptured at MD01 on 7/15/11, 5.08km from natal territory, BMR01. Resighted at UC04 on 2/23/12. MD01 to UC04 is 7.50km. So this wren traveled at least <b>12.58 km</b> , sum of line distances from BMR01 to MD01 to UC04.
LB-DBM	N	F	UC Irvine	UC04	6/30/11	UC Irvine	UC05/06	2/23/12	SY	0.21	Fledglings	

Appendix I - Table 4 *continued* . Dispersal resightings of Cactus Wrens that were resighted away from their natal territories during the Nature Reserve of Orange County 2012 Cactus Wren Studies.

Band Code	Age Banded	Sex	Natal/Original (Banding) Site	Natal/Original (Banding) Territory	Date Last Seen at Original Territory	New 2012 Site	New 2012 Territory/ Location	Date First Seen at New Territory	2012 Age	Straight Line Distance (km)	Breeding Status at 2012 Location	Comments
RDB-KM	SY	F	Bommer Cyn	BMR05	(3/29/12) seen at BMR05 again 7/5/12	Crystal Cove State Park	CCSP02	4/27/12	TY	5.82	Nesting	2011 at <b>BMR05</b> Nesting; 2012 BMR01 Floater, 2012 <b>CCSP02</b> Nesting, 2012 BMR05 Floater?. RDB-KM was the 1st female observed nesting w/ the male at CCSP02, was later replaced by an unbanded female and resighted back at BMR05 again w/ the BMR05 family group. Did not observe her feeding their fledglings. RDB-KM made an 11.6+ km round trip within a 3 month period.
W-LBM	N	M	Bommer Cyn	BMR03	1/19/11	Bommer Ridge R	BRR01	2/9/11	TY	0.25	Fledglings	Seen feeding fledglings on 7/31/12
LG-RM	N	U	El Modena	ELMO11	8/31/10	El Modena	ELMO02	11/30/10	TY	0.17	Intruder?	This wren occupying ELMO02 with resident pair in 2011. It was seen once in 2012.
MP-Y	SY	F	El Modena	ELMO05/09	2/26/10	El Modena	ELMO03	5/17/10	3 yrs	0.60	Nesting	Last seen nest building at ELMO03 on 6/11/12
R-MY	AHY	F	El Modena	ELMO10	4/14/11	El Modena	ELMO04	4/20/11	ATY	0.29	Nesting	Last seen paired at ELMO04 on 8/29/12
MDB-P	N	M	El Modena	ELMO06	3/1/11	El Modena	ELMO05	4/14/11	TY	0.27	Nestlings	Last seen feeding nestlings at ELMO05 on 6/13/12
MO-LB	N	F	El Modena	ELMO04	2/18/11	El Modena	ELMO14	3/4/11	TY	0.25	Fledglings	Last seen feeding fledglings at ELMO14 on 6/11/12
R-DBM	N	M?	El Modena	ELMO01	4/28/09	El Modena	ELMO14	6/11/12	3 yrs	0.61	Fledglings	
MDB-LG	N	M	El Modena	ELMO01	11/16/11	El Modena	ELMO17	12/27/11	TY	0.08	Nestlings	Last seen feeding nestlings at ELMO17 on 6/11/12
MY-K	SY	F	El Modena	ELMO08/06	11/16/11	El Modena	ELMO17	4/12/12	TY	1.27	Nestlings	
M-DGDG	ASY	M	Casper's Park	CAPK230-1	3/27/09	MCB Camp Pendleton	MCBCP-Y01	5/17/12	5+ yrs	10.27	Paired	Resighted by Dr. Kus's team of USGS
MLG-YLG	SY	M	Mule Deer	MD03	12/20/11	Mule Deer	MD01	5/9/12	TY	0.20	Nestlings	
KW-Mp	AHY	M	James Dilley Reserve	GC02,JD01	12/4/11	JD Mule Deer	MD02	6/28/12	ASY	3.60	Fledglings	Wren translocated from Glass Creek in Lake Forest to James Dilley Preserve in Laguna Cyn. Last seen in JD 12/4/11 then resighted feeding nestlings at Mule Deer.
DGP-M	AHY	M	So. Calif. Edison	SCE06	10/23/09	So. Calif. Edison	SCE04	3/19/10	4+ yrs	0.10	Fledglings	Last seen nest building at SCE04 on 5/14/12
R-MP	AHY	F	So. Calif. Edison	SCE05	5/28/09	So. Calif. Edison	SCE04	5/25/09	4+ yrs	0.04	Fledglings	Last seen at SCE04 on 3/10/12
YM-GN	AHY	F	So. Calif. Edison	SCE11	7/17/09	So. Calif. Edison	SCE05	2/2/10	4+ yrs	0.36	Fledglings	Last seen feeding nestlings at SCE05 on 6/6/12

Appendix I - Table 4 *continued* . Dispersal resightings of Cactus Wrens that were resighted away from their natal territories during the Nature Reserve of Orange County 2012 Cactus Wren Studies.

Band Code	Age Banded	Sex	Natal/Original (Banding) Site	Natal/Original (Banding) Territory	Date Last Seen at Original Territory	New 2012 Site	New 2012 Territory/ Location	Date First Seen at New 2012 Territory	2012 Age	Straight Line Distance (km)	Breeding Status at 2012 Location	Comments
WM-O	HY	M	So. Calif. Edison	SCE11	2/16/10	So. Calif. Edison	SCE06	5/28/10	3 yrs	0.37	Fledglings	Last seen feeding nestlings at SCE06 on 7/9/12
M-DBDB	N	F	So. Calif. Edison	SCE03	6/16/09	So. Calif. Edison	SCE06	3/19/10	3 yrs	0.35	Fledglings	Last seen feeding nestlings at SCE06 on 7/9/12
M-WR	N	F	So. Calif. Edison	SCE09	2/23/10	So. Calif. Edison	SCE07	3/29/10	3 yrs	0.33	Fledglings	Last seen feeding fledgling at SCE07 on 7/13/12
LBO-M	N	F	So. Calif. Edison	SCE12	7/23/10	So. Calif. Edison	SCE09/08	12/16/10	TY	0.34	Fledglings	Last seen at SCE09/08 on 7/16/12
P-MW	N	M	So. Calif. Edison	SCE04	5/14/10	So. Calif. Edison	SCE10W	5/28/12	TY	0.18	Paired	
MO-R	N	M	So. Calif. Edison	SCE07	3/19/10	So. Calif. Edison	SCE13/12	3/25/10	3 yrs	0.11	Fledglings	SCE12 pair used SCE13 and 12 in 2012. This wren last seen SCE13 6/6/12.
LG-PM	N	M	So. Calif. Edison	SCE05	1/18/11	So. Calif. Edison	SCE15	4/5/11	TY	0.16	Fledglings	Last seen feeding fledglings at SCE15 on 7/13/12
DBM-W	N	M	So. Calif. Edison	SCE02	3/10/12	So. Calif. Edison	SCE16/2S	3/10/12	TY	0.16	Nesting	Appeared to have been pushed into adjacent habitat by a new pair in 2012.
YDB-M	N	F	So. Calif. Edison	SCE10	6/23/10	So. Calif. Edison	SCE16/2S	2/1/11	TY	0.55	Nestlings	Appeared to have been pushed into adjacent habitat by a new pair in 2012.
M-PR	N	F	UC Irvine	UC06	2/1/11	Sand Cyn Res.	SCR04	6/1/11		5.08	Fledglings	In 2011 this wren moved from UC06 to SCR04. In 2012 it was resighted in SCR03.
M-PR	N	F	UC Irvine	SCR04	6/1/11	Sand Cyn Res.	SCR03/02	5/10/12	TY	0.36	Nesting	In 2011 this wren moved from UC06 to SCR04. In 2012 it was resighted nesting in SCR03.
M-OR	N	M	So. Calif. Edison	SCE02	5/19/09	Saddle Creek	SCS W6	4/25/12	3 yrs	2.97	Paired	The Nature Conservancy/Audubon volunteers found this wren during their surveys.
LG-MLG	N	F	UC Irvine	UC06	11/2/10	Turtle Ridge	TRD04	7/18/12	TY	3.97	Paired	
(W)O-M	N	M	UC Irvine	UC06	7/20/09	UC Irvine	UC03	2/3/10	3 yrs	0.40	Fledglings	Last seen at UC03 on 3/1/12
MP-DG	N	F	UC Irvine	UC05	5/5/09	UC Irvine	UC03	2/23/12	3 yrs	0.31	Nestlings	This wren appears to have floated around the UCI preserve in 2010 & 2011.
YW-M	N	M	UC Irvine	UC05	2/24/09	UC Irvine	UC04	2/8/11	3 yrs	0.12	Fledglings	Last seen foraging in an adjacent territory with his 4th or 5th female on 5/21/12
MY-OW	SY	F	Mule Deer	MD03	6/23/11	UC Irvine	UC04	4/24/12	TY	7.81	Paired	
OW-M	N	M	UC Irvine	UC01	1/14/11	UC Irvine	UC09/01/02	1/4/11	TY	0.10	Fledglings	Last seen feeding fledglings at UC09/01/02 on
R-MR	N	F	UC Irvine	UC03	6/8/09	UC Irvine	UC09/01/02	1/4/11	3 yrs	0.53	Fledglings	Appeared to have floated around UCI preserve in 2010 and started mating in 2011. Last seen feeding fledglings at UC09/01/02 on 7/24/12

Appendix I - Table 4 *continued* . Dispersal resightings of Cactus Wrens that were resighted away from their natal territories during the Nature Reserve of Orange County 2012 Cactus Wren Studies.

Band Code	Age Banded	Sex	Natal/Original (Banding) Site	Natal/Original (Banding) Territory	Date Last Seen at Original Territory	New 2012 Site	New 2012 Territory/ Location	Date First Seen at New Territory	2012 Age	Straight Line Distance (km)	Breeding Status at 2012 Location	Comments
(O)M-LG	AHY	M	Portola to UNB	PORT to UNB04	7/15/06	Upper Newport Bay	UNB01	5/15/07	7+ y	0.87	Fledglings	Wren translocated as a single male from Portola in east Irvine to Upper Newport Bay in 2006. The wren resighted in 2007 with a female that was also translocated to UNB. Orange color band is missing. Last seen with fledglings at UNB01 on 8/2/12.
M-YDB	N	M	Upper Newport Bay	UNB01	12/28/10	Upper Newport Bay	UNB02	10/27/10	TY	0.46	Fledglings	Wren moved between the neighboring territories as a HY Juv. in 2010. Last seen feeding nestlings at UNB02 on 5/15/12. Mate is a sibling from a previous
LG-MLB	N	F	Upper Newport Bay	UNB01	11/8/10	Upper Newport Bay	UNB02	3/29/11	TY	0.46	Fledglings	Last seen at UNB02 on 8/2/12. Mate is a sibling from a subsequent brood in 2010.
MDB-Y	N	F	So. Calif. Edison	SCE08	8/24/10	Whiting Ranch	WR01	9/1/11	TY	1.49	Nesting	Last seen at WR01 on 7/27/12
LG-MY	N	F	So. Calif. Edison	SCE03	12/16/10	Whiting Ranch	WR02	3/13/12	TY	0.99	Paired	

Banding Code Definitions:Age Codes

AHY = After Hatch Year (adult)

ASY = After Second Year

ATY = After Third Year

HY = Hatch year (juvenile)

N = Nestling or Fledgling

SY = Second Year

TY = Third Year

Sex Codes

F = Female

M = Male

U = Unknown

Color Band Codes (Right Leg-Left Leg)

DB = Dark blue

GN = Medium Green

K = Black

LB = Light blue

LG = Light green

M = Metal USFWS band

Mp = Metal USFWS band anodized purple

O = Orange

P = Purple

R = Red

W = White

X = Missing color band

Y = Yellow

\* Age code follows the above categories until known age is past TY (Third Year or ~2 years old), then the age of the bird is in years.

Appendix I - Table 5. Bander, Fish & Wildlife Service band number, date, time, territory code, age, sex, geographic coordinates, color band codes, feather and toenail clip (blood) collection status for Cactus Wrens captured and banded by Nature Reserve of Orange County biologists in 2012.

Bander	USFWS Band	Date	Location	Color Bands (RLeg-LL)	Age	Sex	Banding	NAD83 UTM		Pulp	Toenail
Initials	Number							Easting	Northing	Feather	Clip
DK	178175802	4/27/2012	CCSP02	RDB-KM	TY	F	Recapture	424355	3714400		Y
DK	178175888	7/11/2012	MD01	RM-DBP	SY	M?	Recapture	428989	3721893		Y
DK	178175909	3/15/2012	LRG01	MGN-O	SY	F	New	433459	3735955	Y	Y
DK	178175910	3/15/2012	LRG01	RM-PP	ASY	M	New	433459	3735955	Y	Y
DK	178175911	3/15/2012	FIP14a	MDB-GN	ASY	M	New	430296	3740367	Y	Y
DK	178175912	3/15/2012	FIP14a	YLB-MY	ASY	F	New	430296	3740367	Y	Y
DK	178175913	3/21/2012	WCN05	GN-MW	ASY	F	New	429994	3743258		Y
DK	178175914	3/21/2012	WCN05	OR-MK	ASY	M	New	429994	3743258		Y
DK	178175915	3/21/2012	WCN04	MGN-K	SY	F	New	429243	3743085		Y
DK	178175916	3/21/2012	WCN04	LGR-MP	ASY	M	New	429243	3743085		Y
DK	178175917	3/21/2012	WCN02	M-GNY	ASY	M	New	431525	3743444		Y
DK	178175918	3/21/2012	WCN02	DBP-DBM	ASY	F	New	431525	3743444		Y
DK	178175919	3/22/2012	WCN14	KGN-M	ASY	M	New	430883	3742381	Y	Y
DK	178175920	3/22/2012	WCN17	M-GNR	ASY	M	New	431152	3742428		Y
DK	178175921	3/23/2012	FIL02	DB-MGN	ASY	M	New	432928	3736921		Y
DK	178175922	3/23/2012	FIL02	MW-LBLG	ASY	F	New	432928	3736921		Y
DK	178175923	3/23/2012	FIL03	OM-GN	ASY	M	New	433077	3737028		Y
DK	178175924	3/28/2012	PC03	RY-MR	SY	M	New	429389	3737765	Y	Y
DK	178175925	3/30/2012	FIL18b	GN-DBM	ASY	M	New	433048	3739364		Y
DK	178175926	3/30/2012	FIL18b	MDB-PK	ASY	F	New	433048	3739364		Y
DK	178175927	3/30/2012	FIL21	MY-YW	ASY	F	New	433648	3738327	Y	Y
DK	178175928	3/30/2012	FIL21	XX-M	ASY	M	New	433648	3738327		Y
DK	178175929	4/6/2012	FIP07	MLB-RK	ASY	U	New	430159	3740367	Y	Y
DK	178175930	4/9/2012	WR518	GNK-M	ASY	F	New	440370	3726607		Y
DK	178175931	4/9/2012	WR518	LBM-OO	ASY	M	New	440370	3726607		Y
DK	178175932	4/9/2012	WR04	MO-KDB	ASY	M	New	440348	3726981		Y
DK	178175933	4/9/2012	WR07	GN-RM	ASY	M	New	440904	3727647		Y
DK	178175934	4/16/2012	WR502	MLB-GN	ASY	M	New	440690	3728124		Y
DK	178175935	4/16/2012	WR502	MLG-ODB	ASY	F	New	440690	3728124		Y
DK	178175936	4/16/2012	WR502	KO-MLB	ASY	U	New	440690	3728124		Y
DK	178175937	4/16/2012	WR504	GMR-M	SY	M	New	440727	3728392		Y
DK	178175938	4/16/2012	WR504	YM-YK	ASY	F	New	440727	3728392		Y
DK	178175939	4/16/2012	WR06	M-YGN	ASY	F	New	441065	3727835		Y
DK	178175940	4/16/2012	WR06	YO-MK	SY	M	New	441065	3727835		Y
DK	178175941	4/27/2012	CCSP04	LBW-WM	SY	F	New	424774	3716654		Y
DK	178175942	4/27/2012	CCSP04	RDB-MR	SY	M	New	424774	3716654		Y
DK	178175943	4/27/2012	CCSP02	LKG-LGM	ASY	M	New	424355	3714400		Y
DK	178175944	4/30/2012	ETC12	WM-GN	ASY	F	New	436058	3726692		Y



Appendix I - Table 5 *continued* . Bander, Fish & Wildlife Service band number, date, time, territory code, age, sex, geographic coordinates, color band codes, feather and toenail clip (blood) collection status for Cactus Wrens captured and banded by Nature Reserve of Orange County biologists in 2012.

Bander Initials	USFWS		Location	Color Bands		Age	Sex	Banding	NAD83 UTM		Pulp Feather	Toenail Clip
	Band Number	Date		(RLeg-LL)					Easting	Northing		
DK	178175945	4/30/2012	ETC12	PDB-MP	SY	U	New		436058	3726692		Y
DK	178175946	4/30/2012	ETC02	RGN-M	SY	M	New		435480	3726847		Y
DK	178175947	4/30/2012	ETC08	OK-WM	ASY	M	New		436528	3726966		Y
DK	178175948	4/30/2012	ETC08	M-DBGN	ASY	F	New		436528	3726966		Y
DK	178175949	5/4/2012	ETC16	LGO-DBM	SY	M	New		435560	3725493		Y
DK	178175950	5/4/2012	LCH24	LB-MGN	ASY	F	New		438471	3732362		Y
DK	178175951	5/4/2012	LCH24	RLG-WM	ASY	M	New		438471	3732362		Y
DK	178175952	5/7/2012	FIP03	OGN-M	SY	F	New		430477	3740601		Y
DK	178175953	5/7/2012	FIP03	LBDB-LBM	ASY	M	New		430477	3740601		Y
DK	178175954	5/7/2012	WCN03	WGN-M	SY	F	New		430969	3741659		Y
DK	178175955	5/7/2012	WCN03	RLB-MO	ASY	M	New		430969	3741659		Y
DK	178175956	5/9/2012	SCE09	DBY-DBM	N	U	New		440964	3725059	Y	
DK	178175957	5/9/2012	SCE09	OM-YW	N	U	New		440964	3725059	Y	
DK	178175958	5/9/2012	ETR01	M-OGN	N	U	New		440138	3724888	Y	
DK	178175959	5/15/2012	AC01	YLG-MLB	ASY	M	New		431502	3710568		Y
DK	178175960	5/18/2012	CCSP01	GN-MO	SY	F	New		424466	3716263		Y
DK	178175961	5/18/2012	CCSP01	MLG-DBDB	SY	M	New		424466	3716263		Y
DK	178175961	7/18/2012	CCSP01	MLG-DBDB	SY	M	Recapture		424464	3716269		
DK	178175962	5/22/2012	LCH01	PW-LGM	ASY	F	New		438328	3732608		Y
DK	178175963	5/22/2012	LCH22	M-KGN	SY	F	New		438523	3731990		Y
DK	178175964	5/22/2012	LCH22	YM-OK	SY	M	New		438523	3731990		Y
DK	178175965	5/22/2012	LCH20	Y-GNM	SY	F	New		438483	3731531		Y
DK	178175966	5/24/2012	CCSP04	OR-MP	N	U	New		424744	3716618	Y	
DK	178175967	5/24/2012	CCSP04	WLB-WM	N	U	New		424744	3716618	Y	
DK	178175968	5/24/2012	CCSP04	GNM-K	N	U	New		424744	3716618	Y	
DK	178175969	5/25/2012	ETC08	MGN-Y	N	U	New		436564	3726898	Y	
DK	178175970	5/25/2012	ETC08	LBY-MR	N	U	New		436564	3726898	Y	
DK	178175971	5/29/2012	BTC03	MLB-LGDB	N	U	New		427159	3712522	Y	
DK	178175972	6/1/2012	WCN09	GN-KM	SY	F	New		430467	3741915		Y
DK	178175973	6/1/2012	FIP06a	MK-OP	ASY	F	New		431543	3739931		Y
DK	178175974	6/1/2012	FIP06a	MR-ODB	ASY	M	New		431543	3739931		Y
DK	178175975	6/4/2012	WR05	GNM-DB	SY	F	New		440430	3727137		Y
DK	178175976	6/4/2012	WR05	LGW-RM	SY	M	New		440430	3727137		Y
DK	178175977	6/4/2012	WR11	M-RGN	SY	F	New		440727	3726515		Y
DK	178175978	6/4/2012	WR11	LGLB-MO	ASY	M	New		440727	3726515		Y
DK	178175979	6/6/2012	SCE07	DBK-MDB	N	U	New		440710	3725239	Y	
DK	178175980	6/6/2012	SCE07	LBM-PLG	N	U	New		440710	3725239	Y	
DK	178175981	6/14/2012	FIL07	OR-MY	ASY	M	New		433062	3739418		Y

Appendix I - Table 5 *continued* . Bander, Fish & Wildlife Service band number, date, time, territory code, age, sex, geographic coordinates, color band codes, feather and toenail clip (blood) collection status for Cactus Wrens captured and banded by Nature Reserve of Orange County biologists in 2012.

Bander	USFWS		Location	Color		Age	Sex	Banding	NAD83 UTM		Pulp	Toenail
	Band	Date		Bands	(RLeg-LL)				Eastings	Northing	Feather	Clip
DK	178175982	6/14/2012	FIL07	DBGN-M	SY	F	New	433062	3739418			Y
DK	178175983	6/14/2012	FIL05	GNLB-M	ASY	F	New	432766	3739297			Y
DK	178175984	6/14/2012	FIL05	MLG-PR	SY	M	New	432766	3739297			Y
DK	178175985	6/14/2012	FIL16	O-GNM	SY	F	New	432830	3739402			Y
DK	178175986	6/14/2012	FIL16	LGP-PM	ASY	M	New	432830	3739402			Y
DK	178175987	6/20/2012	PDL01	GNW-M	N	U	New	443995	3706390	Y		
DK	178175988	6/20/2012	PDL01	LBM-RO	N	U	New	443995	3706390	Y		
DK	178175989	6/20/2012	PDL01	DBO-YM	N	U	New	443995	3706390	Y		
DK	178175990	6/27/2012	WR09	MW-PLB	ASY	M	New	440904	3728605			Y
DK	178175991	6/27/2012	LAC1009	GN-OM	ASY	F	New	436666	3728317			Y
DK	178175992	6/27/2012	LAC1009	PLG-MDB	ASY	M	New	436666	3728317			Y
DK	178175993	6/27/2012	LAC1009	RY-LBM	ASY	F	New	436666	3728317			Y
DK	178175994	6/29/2012	JD01	DBM-GN	ASY	M	Change*	430319	3718377			
DK	178175995	7/4/2012	LAC01	W-GNM	SY	F	New	436247	3728803			Y
DK	178175996	7/4/2012	LAC01	MR-YW	ASY	M	New	436247	3728803			Y
DK	178175997	7/4/2012	LAC01	WP-MLG	HY	U	New	436247	3728803			Y
DK	178175998	7/4/2012	LAC01	KW-MDB	HY	U	New	436247	3728803			Y
DK	178175999	7/11/2012	MD01	GN-MDB	HY	U	New	428989	3721893			Y
DK	178176000	7/11/2012	MD01	WLB-MW	HY	U	New	428989	3721893			Y
KM	233188214	3/20/2012	UC09	M-KR	N	U	New	421445	3721789	Y		
KM	233188215	3/20/2012	UC09	K-YM	N	U	New	421445	3721789	Y		
KM	233188216	4/25/2012	UNB01	WM-WR	N	U	New	417448	3723777	Y		
KM	233188217	5/9/2012	QH01	DBY-YM	N	U	New	428300	3721940	Y		
KM	233188218	5/9/2012	QH03	OM-PK	N	U	New	428271	3722251	Y		
KM	233188219	5/9/2012	QH03	PM-RP	N	U	New	428271	3722251	Y		
KM	233188220	5/9/2012	QH03	LBM-WY	N	U	New	428271	3722251	Y		
KM	233188221	5/9/2012	QH03	KK-KM	N	U	New	428271	3722251	Y		
KM	233188222	5/9/2012	BMR02	RLB-LBM	N	U	New	425855	3720054	Y		
KM	233188223	5/9/2012	BMR02	MDB-YLB	N	U	New	425855	3720054	Y		
KM	233188224	5/9/2012	BMR02	PO-WM	N	U	New	425855	3720054	Y		
KM	233188225	5/9/2012	BMR02	YM-YY	N	U	New	425855	3720054	Y		
KM	233188226	5/10/2012	SCR05	KP-MK	N	U	New	426097	3724013	Y		
KM	233188227	5/10/2012	SCR05	MLB-LBO	N	U	New	426097	3724013	Y		
KM	233188228	5/11/2012	BMR04	RK-MO	N	U	New	425768	3720444	Y		Y
KM	233188229	5/11/2012	BMR04	MY-YO	N	U	New	425768	3720444	Y		Y
KM	233188230	5/15/2012	UNB02	ODB-YM	N	U	New	417307	3723255	Y		
KM	233188231	5/15/2012	UNB02	MW-WO	N	U	New	417307	3723255	Y		
KM	233188232	5/21/2012	UC09	LG-OM	N	U	New	421450	3721788	Y		

Appendix I - Table 5 *continued* . Bander, Fish & Wildlife Service band number, date, time, territory code, age, sex, geographic coordinates, color band codes, feather and toenail clip (blood) collection status for Cactus Wrens captured and banded by Nature Reserve of Orange County biologists in 2012.

Bander	USFWS		Location	Color Bands		Age	Sex	Banding	NAD83 UTM		Pulp Feather	Toenail Clip
	Band	Date		(RLeg-LL)					Easting	Northing		
KM	233188233	5/21/2012	UC09	W-PM	N	U	New	421450	3721788		Y	
KM	233188234	5/29/2012	BMR05	OLB-MLG	N	U	New	426120	3719883		Y	
KM	233188235	5/29/2012	BMR05	MR-YLB	N	U	New	426120	3719883		Y	
KM	233188236	5/29/2012	BMR05	MY-DBLB	N	U	New	426120	3719883		Y	
KM	233188237	5/29/2012	BMR05	MLG-YK	N	U	New	426120	3719883		Y	
KM	233188238	6/19/2012	BMR04	DBM-DBW	N	U	New	425735	3720386		Y	
KM	233188239	6/19/2012	UC05/06	RM-Y	N	U	New	421594	3722638		Y	
KM	233188240	6/19/2012	UC05/06	MLG-W	N	U	New	421594	3722638		Y	
KM	233188241	6/19/2012	UC05/06	Y-LGM	N	U	New	421594	3722638		Y	
KM	233188242	6/19/2012	UC05/06	M-RP	N	U	New	421594	3722638		Y	
KM	233188243	6/28/2012	QH03	LGM-WP	N	U	New	428265	3722251		Y	
KM	233188244	6/28/2012	QH03	LBW-MDB	N	U	New	428265	3722251		Y	
KM	233188245	7/2/2012	UC09	R-MLG	N	U	New	421445	3721789		Y	
KM	233188246	7/2/2012	UC09	WM-LG	N	U	New	421445	3721789		Y	
KM	233188247	7/2/2012	UC09	DB-MW	N	U	New	421445	3721789		Y	
KM	233188248	7/10/2012	BMR02	DBO-MW	N	U	New	425855	3720054		Y	
KM	233188249	7/10/2012	BMR02	PM-KY	N	U	New	425855	3720054		Y	
KM	233188250	7/10/2012	BMR02	OLG-MK	N	U	New	425855	3720054		Y	
DK	233188301	7/11/2012	MD01	YM-RW	HY	U	New	428989	3721893			Y
DK	233188302	7/11/2012	MD01	PM-WY	HY	U	New	428989	3721893			Y
DK	233188303	7/11/2012	CCSP02	DBM-LGR	N	U	New	424320	3714336	Y		
DK	233188304	7/18/2012	CCSP01	KM-GN	F	U	New	424464	3716269			Y
DK	233188305	7/18/2012	CCSP01	MK-WY	F	U	New	424464	3716269			Y
DK	233188306	7/18/2012	CCSP01	OK-MP	F	U	New	424464	3716269			Y
DK	233188307	7/20/2012	LAC1011	GNM-GN	ASY	M	New	437264	3728011			Y
DK	233188308	7/20/2012	LAC1011	PDB-DBM	ASY	F	New	437264	3728011			Y
DK	233188309	7/20/2012	LAC1011	YM-YR	F	U	New	437264	3728011			Y
DK	233188310	7/20/2012	LAC1011	LB-GNM	F	U	New	437264	3728011			Y
DK	233188311	7/20/2012	LAC1007	LGLB-MW	ASY	F	New	436967	3728136			Y
DK	233188312	7/23/2012	LAC1005	MR-GN	SY	F	New	437035	3727826			Y
DK	233188313	7/23/2012	LAC1005	PLG-PM	HY	U	New	437035	3727826			Y
DK	233188314	7/23/2012	LAC1005	LGM-LBK	ASY	M	New	437035	3727826			Y
DK	233188315	7/23/2012	LAC1008	MP-WO	ASY	M	New	436767	3728141			Y
DK	233188316	7/26/2012	ETC06	GN-YM	HY	U	New	436277	3726974			Y
DK	233188317	7/26/2012	ETC06	WK-MLG	HY	U	New	436277	3726974			Y
DK	233188318	7/26/2012	ETC06	DBW-PM	ASY	F	New	436277	3726974			Y
DK	242111102	6/29/12	JD01	DB-LGMp	ASY	M	Change*	430319	3718377			
DK	242111105	6/29/12	JD01	W-MpY	ASY	F	Recapture	430319	3718377			

Appendix I - Table 5 *continued* . Bander, Fish & Wildlife Service band number, date, time, territory code, age, sex, geographic coordinates, color band codes, feather and toenail clip (blood) collection status for Cactus Wrens captured and banded by Nature Reserve of Orange County biologists in 2012.

Bander Initials	USFWS Band	Date	Location	Color Bands	Age	Sex	Banding	NAD83 UTM		Pulp Feather	Toenail Clip
	Number			(RLeg-LL)				Easting	Northing		
DK	242111110	6/29/12	JD01	OMp-PO	F	U	New	430319	3718377	Y	
DK	242111111	6/29/12	JD01	MpP-RY	F	U	New	430319	3718377		Y
DK	242111112	6/29/12	JD02	RMp-YK	N	U	New	430184	3718533	Y	
DK	242111113	6/29/12	JD02	MpGN-R	N	U	New	430184	3718533	Y	
DK	242111114	7/6/12	MD02	GNO-Mp	N	U	New	429006	3721661	Y	
DK	242111115	7/6/12	MD02	MpR-LGDB	N	U	New	429006	3721661	Y	
DK	242111116	7/6/12	MD02	YLG-MpO	N	U	New	429006	3721661	Y	

\* Recaptured DB-LGMp and the anodized metal band appeared to be to tight so we removed all the bands and gave it a new band combination without an anodized metal band, DBM-GN.

Purple Purple highlight indicates the bird was translocated from Lake Forest Sports Park site in 2011 or the descendant of a translocated bird.

Appendix I - Table 5 *continued* . Bander, Fish & Wildlife Service band number, date, time, territory code, age, sex, geographic coordinates, color band codes, feather and toenail clip (blood) collection status for Cactus Wrens captured and banded by Nature Reserve of Orange County biologists in 2012.

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Banding Code Definitions:

Bander Initials

DK = Dana Kamada

KM = Karly Moore

Location Codes

AC = Aliso Canyon

BMR = Bommer Canyon, City of Irvine Open Space

BTC = Boat Canyon

BRR = Bommer Ridge Road, City of Irvine Open Space

CCSP = Crystal Cove State Park

ELMO = El Modena Open Space Preserve

ETC = El Toro Conservaton Area

ETR = El Toro Road (Bike path)

FIL = Fremont Canyon - Irvine Lake

FIL = Fremont Canyon - Irvine Park

JD = James Dilley Open Space Reserve

LAC = Limestone Canyon - Agua Chinon

LCH = Limestone Canyon - Cactus Hill

LRG = Loma Ridge

MD = Mule Deer, City of Irvine Open Space

PC = Peter's Canyon Regional Park

PDL = Prima Deshecha Landfill\*

QH = Quail Hill, City of Irvine Open Space

SCE = Southern California Edison

SCR = Sand Canyon Reservoir, City of Irvine Open Space

TRD = Turtle Ridge, City of Irvine

UC = University of California, Irvine Ecological Preserve

UNB = Upper Newport Bay

WC = Weir Canyon

WR = Whiting Ranch Wilderness Park

Age Codes

ASY = After second year (adult)

F = Fledgling

HY = Hatch year (juvenile)

N = Nestling

SY = Second year

TY = Third year

Sex Codes

F = Female

M = Male

U = Unknown

Color Band Codes (Right Leg-Left Leg)

DB = Dark blue

GN = Medium Green

K = Black

LB = Light blue

LG = Light green

M = Metal USFWS band

Mp = Metal USFWS band anodized purple

O = Orange

P = Purple

R = Red

W = White

X = Missing color band

Y = Yellow

\* This territory is not at a NROC study study site.

Appendix I - Table 6. Preliminary results of Cactus Wren parasite identification by the California Animal Health and Food Safety Lab at UC Davis for wrens sampled during the Nature Reserve of Orange County 2012 Cactus Wren Studies. (N=94)

USFWS Band Number	Date	Site	Territory	Color Bands (RLeg-LL)	Age	Sex	Banding	NAD83 UTM		Blood Parasites Detected	Ectoparasites Observed	Breeding Status	Comments
178175802	4/27/2012	Crystal Cove State Park	CCSP02	RDB-KM	TY	F	Recapture	424355	3714400	None		Nesting	
178175888	7/11/2012	Mule Deer	MD01	RM-DBP	SY	M?	Recapture	428989	3721893	filariid microfilariae Probably Avifilaris spp.	Neoscho(e)ngastia americana "Turkey Chiggers"	Transient	
178175909	3/15/2012	Lomas Ridge	LRG01	MGN-O	SY	F	New	433459	3735955	None		Paired	
178175910	3/15/2012	Lomas Ridge	LRG01	RM-PP	ASY	M	New	433459	3735955	None		Paired	
178175911	3/15/2012	Fremont Cyn - Irvine Park	FIP14a	MDB-GN	ASY	M	New	430296	3740367	None		Paired	
178175912	3/15/2012	Fremont Cyn - Irvine Park	FIP14a	YLB-MY	ASY	F	New	430296	3740367	None		Paired	
178175913	3/21/2012	Weir Cyn	WCN05	GN-MW	ASY	F	New	429994	3743258	None		Paired	
178175914	3/21/2012	Weir Cyn	WCN05	OR-MK	ASY	M	New	429994	3743258	None		Paired	
178175915	3/21/2012	Weir Cyn	WCN04	MGN-K	SY	F	New	429243	3743085	None		Paired	
178175916	3/21/2012	Weir Cyn	WCN04	LGR-MP	ASY	M	New	429243	3743085	None		Paired	
178175917	3/21/2012	Weir Cyn	WCN02	M-GNY	ASY	M	New	431525	3743444	None		Paired	
178175918	3/21/2012	Weir Cyn	WCN02	DBP-DBM	ASY	F	New	431525	3743444	None		Paired	
178175921	3/23/2012	Fremont Cyn - Irvine Lake	FIL02	DB-MGN	ASY	M	New	432928	3736921	None		Paired	
178175922	3/23/2012	Fremont Cyn - Irvine Lake	FIL02	MW-LBLG	ASY	F	New	432928	3736921	None		Paired	
178175923	3/23/2012	Fremont Cyn - Irvine Lake	FIL03	OM-GN	ASY	M	New	433077	3737028	None		Paired	
178175924	3/28/2012	Peter's Cyn	PC03	RY-MR	SY	M	New	429389	3737765	None		Territorial	
178175925	3/30/2012	Fremont Cyn - Irvine Lake	FIL18b	GN-DBM	ASY	M	New	433048	3739364	None		Paired	
178175926	3/30/2012	Fremont Cyn - Irvine Lake	FIL18b	MDB-PK	ASY	F	New	433048	3739364	filariid microfilariae Probably Avifilaris spp.		Paired	
178175927	3/30/2012	Fremont Cyn - Irvine Lake	FIL21	MY-YW	ASY	F	New	433648	3738327	None		Paired	
178175928	3/30/2012	Fremont Cyn - Irvine Lake	FIL21	XX-M	ASY	M	New	433648	3738327	None		Paired	
178175929	4/6/2012	Fremont Cyn - Irvine Park	FIP07	MLB-RK	ASY	U	New	430159	3740367	None		Paired	

Appendix I - Table 6 *continued* . Preliminary results of Cactus Wren parasite identification by the California Animal Health and Food Safety Lab at UC Davis for wrens sampled during the Nature Reserve of Orange County 2012 Cactus Wren Studies. (N=94)

USFWS Band		Site		Color Bands				NAD83 UTM		Blood Parasites	Ectoparasites	Breeding	
Number	Date		Territory	(RLeg-LL)	Age	Sex	Banding	Easting	Northing	Detected	Observed	Status	Comments
178175930	4/9/2012	Whiting Ranch	WR518	GNK-M	ASY	F	New	440370	3726607	None		Fledglings	
178175931	4/9/2012	Whiting Ranch	WR518	LBM-OO	ASY	M	New	440370	3726607	None		Fledglings	
178175932	4/9/2012	Whiting Ranch	WR04	MO-KDB	ASY	M	New	440348	3726981	filiariid microfilariae Probably Avifilaris spp.		Paired	
178175933	4/9/2012	Whiting Ranch	WR07	GN-RM	ASY	M	New	440904	3727647	None		Paired	
178175934	4/16/2012	Whiting Ranch	WR502	MLB-GN	ASY	M	New	440690	3728124	None		Paired	
178175935	4/16/2012	Whiting Ranch	WR502	MLG-ODB	ASY	F	New	440690	3728124	None		Paired	
178175936	4/16/2012	Whiting Ranch	WR502	KO-MLB	ASY	U	New	440690	3728124	None		Unknown	
178175938	4/16/2012	Whiting Ranch	WR504	YM-YK	ASY	F	New	440727	3728392	None		Paired	
178175939	4/16/2012	Whiting Ranch	WR06	M-YGN	ASY	F	New	441065	3727835	filiariid microfilariae Probably Avifilaris spp.		Fledglings	
178175940	4/16/2012	Whiting Ranch	WR06	YO-MK	SY	M	New	441065	3727835	None		Fledglings	
178175941	4/27/2012	Crystal Cove State Park	CCSP04	LBW-WM	SY	F	New	424774	3716654	None		Fledglings	
178175942	4/27/2012	Crystal Cove State Park	CCSP04	RDB-MR	SY	M	New	424774	3716654	None		Fledglings	
178175943	4/27/2012	Crystal Cove State Park	CCSP02	L GK-LGM	ASY	M	New	424355	3714400	None		Fledglings	
178175944	4/30/2012	El Toro FBI/FAA	ETC12	WM-GN	ASY	F	New	436058	3726692	None		Paired	
178175945	4/30/2012	El Toro FBI/FAA	ETC12	PDB-MP	SY	U	New	436058	3726692	None		Paired	
178175946	4/30/2012	El Toro FBI/FAA	ETC02	RG N-M	SY	M	New	435480	3726847	None		Paired	
178175947	4/30/2012	El Toro FBI/FAA	ETC08	OK-WM	ASY	M	New	436528	3726966	None		Fledglings	
178175948	4/30/2012	El Toro FBI/FAA	ETC08	M-DBG N	ASY	F	New	436528	3726966	filiariid microfilariae Probably Avifilaris spp. Haemoproteus/ Plasmodium sp.		Fledglings	
178175949	5/4/2012	El Toro FBI/FAA	ETC16	LGO-DBM	SY	M	New	435560	3725493	None		Paired	
178175950	5/4/2012	Limestone Cyn - Cactus Hill	LCH24	LB-MGN	ASY	F	New	438471	3732362	None		Paired	
178175951	5/4/2012	Limestone Cyn - Cactus Hill	LCH24	RLG-WM	ASY	M	New	438471	3732362	None		Paired	

Appendix I - Table 6 *continued* . Preliminary results of Cactus Wren parasite identification by the California Animal Health and Food Safety Lab at UC Davis for wrens sampled during the Nature Reserve of Orange County 2012 Cactus Wren Studies. (N=94)

USFWS Band	Date	Site	Territory	Color Bands (RLeg-LL)	Age	Sex	Banding	NAD83 UTM		Blood Parasites Detected	Ectoparasites Observed	Breeding Status	Comments
178175952	5/7/2012	Fremont Cyn - Irvine Park	FIP03	OGN-M	SY	F	New	430477	3740601	None		Paired	
178175953	5/7/2012	Fremont Cyn - Irvine Park	FIP03	LBDB-LBM	ASY	M	New	430477	3740601	None		Paired	
178175954	5/7/2012	Weir Cyn	WCN03	WGN-M	SY	F	New	430969	3741659	None		Paired	
178175955	5/7/2012	Weir Cyn	WCN03	RLB-MO	ASY	M	New	430969	3741659	None		Paired	
178175959	5/15/2012	Aliso Cyn	AC01	YLG-MLB	ASY	M	New	431502	3710568	None		Fledglings	
178175960	5/18/2012	Crystal Cove State Park	CCSP01	GN-MO	SY	F	New	424466	3716263	None		Fledglings	
178175961	7/18/2012	Crystal Cove State Park	CCSP01	MLG-DBDB	SY	M	Recapture	424464	3716269	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Fledglings	
178175962	5/22/2012	Limestone Cyn - Cactus Hill	LCH01	PW-LGM	ASY	F	New	438328	3732608	filariid microfilariae Probably Avifilaris spp.		Nesting	
178175963	5/22/2012	Limestone Cyn - Cactus Hill	LCH22	M-KGN	SY	F	New	438523	3731990	filariid microfilariae Probably Avifilaris spp.		Nesting	
178175964	5/22/2012	Limestone Cyn - Cactus Hill	LCH22	YM-OK	SY	M	New	438523	3731990	None		Nesting	
178175965	5/22/2012	Limestone Cyn - Cactus Hill	LCH20	Y-GNM	SY	F	New	438483	3731531	None		Nesting	
178175972	6/1/2012	Weir Cyn	WCN09	GN-KM	SY	F	New	430467	3741915	None		Paired	
178175973	6/1/2012	Fremont Cyn - Irvine Park	FIP06a	MK-OP	ASY	F	New	431543	3739931	None		Paired	
178175974	6/1/2012	Fremont Cyn - Irvine Park	FIP06a	MR-ODB	ASY	M	New	431543	3739931	None		Paired	
178175975	6/4/2012	Whiting Ranch	WR05	GNM-DB	SY	F	New	440430	3727137	None		Fledglings	
178175976	6/4/2012	Whiting Ranch	WR05	LGW-RM	SY	M	New	440430	3727137	None		Fledglings	
178175977	6/4/2012	Whiting Ranch	WR11	M-RGN	SY	F	New	440727	3726515	None		Paired	
178175978	6/4/2012	Whiting Ranch	WR11	LGLB-MO	ASY	M	New	440727	3726515	filariid microfilariae Probably Avifilaris spp.		Paired	
178175981	6/14/2012	Fremont Cyn - Irvine Lake	FIL07	OR-MY	ASY	M	New	433062	3739418	None		Nesting	



Appendix I - Table 6 *continued*. Preliminary results of Cactus Wren parasite identification by the California Animal Health and Food Safety Lab at UC Davis for wrens sampled during the Nature Reserve of Orange County 2012 Cactus Wren Studies. (N=94)

USFWS Band Number	Date	Site	Territory	Color Bands (RLeg-LL)	Age	Sex	Banding	NAD83 UTM		Blood Parasites Detected	Ectoparasites Observed	Breeding Status	Comments
178175982	6/14/2012	Fremont Cyn - Irvine Lake	FIL07	DBGN-M	SY	F	New	433062	3739418		Neoscho(e)ngastia americana "Turkey Chiggers"	Fledglings	Blood specimen not analyzed
178175983	6/14/2012	Fremont Cyn - Irvine Lake	FIL05	GNLB-M	ASY	F	New	432766	3739297	None		Paired	
178175984	6/14/2012	Fremont Cyn - Irvine Lake	FIL05	MLG-PR	SY	M	New	432766	3739297	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Paired	
178175985	6/14/2012	Fremont Cyn - Irvine Lake	FIL16	O-GNM	SY	F	New	432830	3739402	None		Paired	
178175986	6/14/2012	Fremont Cyn - Irvine Lake	FIL16	LGP-PM	ASY	M	New	432830	3739402	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Paired	
178175990	6/27/2012	Whiting Ranch	WR09	MW-PLB	ASY	M	New	440904	3728605	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Fledglings	
178175991	6/27/2012	Limestone Cyn - Agua Chinon	LAC1009b	GN-OM	ASY	F	New	436666	3728317	None		Paired	
178175992	6/27/2012	Limestone Cyn - Agua Chinon	LAC1009a	PLG-MDB	ASY	M	New	436666	3728317	filariid microfilariae Probably Avifilaris spp.	Neoscho(e)ngastia americana "Turkey Chiggers"	Fledglings	
178175993	6/27/2012	Limestone Cyn - Agua Chinon	LAC1009a	RY-LBM	ASY	F	New	436666	3728317	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Fledglings	
178175995	7/4/2012	Limestone Cyn - Agua Chinon	LAC01	W-GNM	SY	F	New	436247	3728803	None		Fledglings	
178175996	7/4/2012	Limestone Cyn - Agua Chinon	LAC01	MR-YW	ASY	M	New	436247	3728803		Neoscho(e)ngastia americana "Turkey Chiggers"	Fledglings	Blood specimen not analyzed
178175997	7/4/2012	Limestone Cyn - Agua Chinon	LAC01	WP-MLG	HY	U	New	436247	3728803	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Juvenile	

Appendix I - Table 6 *continued* . Preliminary results of Cactus Wren parasite identification by the California Animal Health and Food Safety Lab at UC Davis for wrens sampled during the Nature Reserve of Orange County 2012 Cactus Wren Studies. (N=94)

USFWS Band Number	Date	Site	Territory	Color Bands (RLeg-LL)	Age	Sex	Banding	NAD83 UTM		Blood Parasites Detected	Ectoparasites Observed	Breeding Status	Comments
178175998	7/4/2012	Limestone Cyn - Agua Chinon	LAC01	KW-MDB	HY	U	New	436247	3728803	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Juvenile	
178175999	7/11/2012	Mule Deer	MD01	GN-MDB	HY	U	New	428989	3721893	None		Juvenile	
178176000	7/11/2012	Mule Deer	MD01	WLB-MW	HY	U	New	428989	3721893	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Juvenile	
233188301	7/11/2012	Mule Deer	MD01	YM-RW	HY	U	New	428989	3721893	Leucocytozoon gametocytes, only	Neoscho(e)ngastia americana "Turkey Chiggers"	Juvenile	
233188302	7/11/2012	Mule Deer	MD01	PM-WY	HY	U	New	428989	3721893	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Juvenile	
233188304	7/18/2012	Crystal Cove State Park	CCSP01	KM-GN	HY	U	New	424464	3716269	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Juvenile	
233188305	7/18/2012	Crystal Cove State Park	CCSP01	MK-WY	HY	U	New	424464	3716269	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Juvenile	
233188306	7/18/2012	Crystal Cove State Park	CCSP01	OK-MP	HY	U	New	424464	3716269	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Juvenile	
233188307	7/20/2012	Limestone Cyn - Agua Chinon	LAC1011	GNM-GN	ASY	M	New	437264	3728011	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Fledglings	
233188308	7/20/2012	Limestone Cyn - Agua Chinon	LAC1011	PDB-DBM	ASY	F	New	437264	3728011	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Fledglings	
233188309	7/20/2012	Limestone Cyn - Agua Chinon	LAC1011	YM-YR	HY	U	New	437264	3728011	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Juvenile	
233188310	7/20/2012	Limestone Cyn - Agua Chinon	LAC1011	LB-GNM	HY	U	New	437264	3728011	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Juvenile	

Appendix I - Table 6 *continued* . Preliminary results of Cactus Wren parasite identification by the California Animal Health and Food Safety Lab at UC Davis for wrens sampled during the Nature Reserve of Orange County 2012 Cactus Wren Studies. (N=94)

USFWS Band Number	Date	Site	Territory	Color Bands (RLeg-LL)	Age	Sex	Banding	NAD83 UTM Easting	NAD83 UTM Northing	Blood Parasites Detected	Ectoparasites Observed	Breeding Status	Comments
233188311	7/20/2012	Limestone Cyn - Agua Chinon	LAC1007	LGLB-MW	ASY	F	New	436967	3728136		Neoscho(e)ngastia americana "Turkey Chiggers"	Fledglings	Blood specimen not analyzed
233188312	7/23/2012	Limestone Cyn - Agua Chinon	LAC1005	MR-GN	SY	F	New	437035	3727826	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Fledglings	
233188313	7/23/2012	Limestone Cyn - Agua Chinon	LAC1005	PLG-PM	HY	U	New	437035	3727826	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Juvenile	
233188314	7/23/2012	Limestone Cyn - Agua Chinon	LAC1005	LGM-LBK	ASY	M	New	437035	3727826	filariid microfilariae Probably Avifilaris spp.	Neoscho(e)ngastia americana "Turkey Chiggers"	Fledglings	
233188315	7/23/2012	Limestone Cyn - Agua Chinon	LAC1008	MP-WO	ASY	M	New	436767	3728141		Neoscho(e)ngastia americana "Turkey Chiggers"	Paired	Blood specimen not analyzed
233188316	7/26/2012	El Toro FBI/FAA	ETC06	GN-YM	HY	U	New	436277	3726974		Neoscho(e)ngastia americana "Turkey Chiggers"	Juvenile	Blood specimen not analyzed
233188317	7/26/2012	El Toro FBI/FAA	ETC06	WK-MLG	HY	U	New	436277	3726974	None	Neoscho(e)ngastia americana "Turkey Chiggers"	Juvenile	
233188318	7/26/2012	El Toro FBI/FAA	ETC06	DBW-PM	ASY	F	New	436277	3726974		Neoscho(e)ngastia americana "Turkey Chiggers"	Fledglings	Blood specimen not analyzed
242111111	6/29/12	James Dilley Reserve	JD01	MpP-RY	HY	U	New	430319	3718377	None		Juvenile	Offspring of translocated wrens

*Banding Code Definitions:*

<i>Age Codes</i>	<i>Sex Codes</i>	<i>Color Band Codes (Right Leg-Left Leg)</i>		
AHY = After Hatch Year (adult)	F = Female	DB = Dark blue	M = Metal USFWS band	W = White
ASY = After Second Year	M = Male	GN = Medium Green	Mp = Metal USFWS band anodized purple	X = Missing color band
ATY = After Third Year	U = Unknown	K = Black	O = Orange	Y = Yellow
HY = Hatch year (juvenile)		LB = Light blue	P = Purple	
SY = Second Year		LG = Light green	R = Red	
TY = Third Year				

Appendix I - Table 7. Dominant plant communities and dominant plant species in cactus scrub vegetation at Nature Reserve of Orange County's 2012 Cactus Wren Study Sites.

Site	Dominant Plant Communities (in approximate Order of Dominance)	Dominant Plant Species/Substrate in Cactus Scrub only (in approximate Order of Dominance)
Aliso Canyon	Coastal Sage Scrub Grassland Riparian Woodland Chapparal Cactus Scrub	California sagebrush ( <i>Artemisia californica</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) Coastal prickly pear ( <i>Opuntia littoralis</i> ) Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount
Buck Gully	Coastal Sage Scrub Ruderal Disturbed Riparian Woodland Grassland Oak Woodland Cactus Scrub	California sagebrush ( <i>Artemisia californica</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) Laurel sumac ( <i>Malosma laurina</i> ) Black sage ( <i>Salvia mellifera</i> ) Black mustard ( <i>Brassica nigra</i> ) Lemonadeberry ( <i>Rhus integrifolia</i> ) Coastal prickly pear ( <i>Opuntia littoralis</i> ) Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount
Bommer Canyon/ Bommer Ridge Road	Coastal Sage Scrub Grassland Ruderal Cactus Scrub Riparian Woodland Oak Woodland Developed Disturbed	California sagebrush ( <i>Artemisia californica</i> ) Laurel sumac ( <i>Malosma laurina</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) Coastal prickly pear ( <i>Opuntia littoralis</i> ) Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount Black mustard ( <i>Brassica nigra</i> ) Red bush monkeyflower ( <i>Mimulus aurantiacus</i> ) Mexican elderberry ( <i>Sambucus mexicana</i> )
Boat Canyon	Disturbed (fire break zone) Coastal Sage Scrub Cactus Scrub	Bare ground Coastal prickly pear ( <i>Opuntia littoralis</i> ) Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount California sagebrush ( <i>Artemisia californica</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> )
Crystal Cove State Park	Coastal Sage Scrub Grassland Ruderal Cactus Scrub Riparian Woodland Oak Woodland	Laurel sumac ( <i>Malosma laurina</i> ) California sagebrush ( <i>Artemisia californica</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) Grasses and forbs Black mustard ( <i>Brassica nigra</i> ) Laurel sumac ( <i>Malosma laurina</i> )
Cattle Crest Trail	Coastal Sage Scrub Grassland	Laurel sumac ( <i>Malosma laurina</i> ) California sagebrush ( <i>Artemisia californica</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) Black sage ( <i>Salvia mellifera</i> )

Appendix I - Table 7 *continued* . Dominant plant communities and dominant plant species in cactus scrub vegetation at Nature Reserve of Orange County's 2012 Cactus Wren Study Sites.

Site	Dominant Plant Communities (in approximate Order of Dominance)	Dominant Plant Species/Substrate in Cactus Scrub only (in approximate Order of Dominance)
		Deerweed ( <i>Lotus scoparius</i> )
El Modena	Cactus Scrub Ruderal Coastal Sage Scrub Grassland	Coastal prickly pear ( <i>Opuntia littoralis</i> ) Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount Black mustard ( <i>Brassica nigra</i> ) California sagebrush ( <i>Artemisia californica</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) Laurel sumac ( <i>Malosma laurina</i> ) Lemonadeberry ( <i>Rhus integrifolia</i> )
El Morro Ridge Road	Coastal Sage Scrub Grassland Ruderal Cactus Scrub	Laurel sumac ( <i>Malosma laurina</i> ) California sagebrush ( <i>Artemisia californica</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) Coastal prickly pear ( <i>Opuntia littoralis</i> ) Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount
El Toro Conservation Area	Grassland Ruderal Developed Coastal Sage Scrub Cactus Scrub Riparian Woodland	Forbs and grasses Deerweed ( <i>Lotus scoparius</i> ) Coastal prickly pear ( <i>Opuntia littoralis</i> ) Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount California buckwheat ( <i>Eriogonum fasciculatum</i> ) California sagebrush ( <i>Artemisia californica</i> ) Bare ground
El Toro Road	Coastal Sage Scrub Cactus Scrub Riparian Woodland Grassland Ruderal Developed	Coastal prickly pear ( <i>Opuntia littoralis</i> ) Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount California buckwheat ( <i>Eriogonum fasciculatum</i> ) California sagebrush ( <i>Artemisia californica</i> ) Deerweed ( <i>Lotus scoparius</i> ) Black sage ( <i>Salvia mellifera</i> ) Lemonadeberry ( <i>Rhus integrifolia</i> ) Laurel sumac ( <i>Malosma laurina</i> )
Fox Run Trail	Coastal Sage Scrub Cactus Scrub	Laurel sumac ( <i>Malosma laurina</i> ) Coastal prickly pear ( <i>Opuntia littoralis</i> ) California sagebrush ( <i>Artemisia californica</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) Black sage ( <i>Salvia mellifera</i> )
Irvine Lake	Disturbed Grassland Coastal Sage Scrub	Coastal prickly pear ( <i>Opuntia littoralis</i> ) California sagebrush ( <i>Artemisia californica</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> )

Appendix I - Table 7 *continued* . Dominant plant communities and dominant plant species in cactus scrub vegetation at Nature Reserve of Orange County's 2012 Cactus Wren Study Sites.

Site	Dominant Plant Communities (in approximate Order of Dominance)	Dominant Plant Species/Substrate in Cactus Scrub only (in approximate Order of Dominance)
	Developed	Coyote Brush ( <i>Baccharis pilularis</i> )
	Ruderal	Lemonadeberry ( <i>Rhus integrifolia</i> )
	Cactus Scrub	Laurel sumac ( <i>Malosma laurina</i> )
	Oak Woodland	Needlegrass ( <i>Stipa</i> spp.)
Irvine Park	Coastal Sage Scrub	Coastal prickly pear ( <i>Opuntia littoralis</i> )
	Cactus Scrub	Laurel sumac ( <i>Malosma laurina</i> )
	Grassland	California sagebrush ( <i>Artemisia californica</i> )
	Developed	California buckwheat ( <i>Eriogonum fasciculatum</i> )
	Riparian Woodland	Deerweed ( <i>Lotus scoparius</i> )
	Oak Woodland	Black sage ( <i>Salvia mellifera</i> )
Limestone Agua Chinon	Developed (Avocado Orchard)	Coastal prickly pear ( <i>Opuntia littoralis</i> )
	Cactus Scrub	Coastal cholla ( <i>Cylindropuntia prolifera</i> )
	Coastal Sage Scrub	California buckwheat ( <i>Eriogonum fasciculatum</i> )
		Mexican elderberry ( <i>Sambucus mexicana</i> )
		California sagebrush ( <i>Artemisia californica</i> )
		Laurel sumac ( <i>Malosma laurina</i> )
		Lax-flowered Bushmallow ( <i>Malacothamnus fasciculatus</i> )
Limestone Cactus Hill	Grassland	Needlegrass ( <i>Stipa</i> spp.)
	Coastal Sage Scrub	Coastal prickly pear ( <i>Opuntia littoralis</i> )
	Cactus Scrub	Laurel sumac ( <i>Malosma laurina</i> )
	Oak Woodland	California sagebrush ( <i>Artemisia californica</i> )
		California buckwheat ( <i>Eriogonum fasciculatum</i> )
		Deerweed ( <i>Lotus scoparius</i> )
		Black sage ( <i>Salvia mellifera</i> )
Laguna Canyon "Triangle" (Highway 133, 73, and El Toro Road)	Coastal Sage Scrub	California sagebrush ( <i>Artemisia californica</i> )
	Grassland	Laurel sumac ( <i>Malosma laurina</i> )
	Cactus Scrub	Coastal prickly pear ( <i>Opuntia littoralis</i> )
	Oak Woodland	Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount
Laguna Laurel	Coastal Sage Scrub	Grasses
	Grassland	California sagebrush ( <i>Artemisia californica</i> )
	Cactus Scrub	California buckwheat ( <i>Eriogonum fasciculatum</i> )
		Black sage ( <i>Salvia mellifera</i> )
		Coastal prickly pear ( <i>Opuntia littoralis</i> )
		Coastal cholla ( <i>Cylindropuntia prolifera</i> )
Loma Ridge	Grassland	Grasses

Appendix I - Table 7 *continued* . Dominant plant communities and dominant plant species in cactus scrub vegetation at Nature Reserve of Orange County's 2012 Cactus Wren Study Sites.

Site	Dominant Plant Communities (in approximate Order of Dominance)	Dominant Plant Species/Substrate in Cactus Scrub only (in approximate Order of Dominance)
	Coastal Sage Scrub	Coastal prickly pear ( <i>Opuntia littoralis</i> )
	Oak Woodland	Mexican elderberry ( <i>Sambucus mexicana</i> )
	Ruderal	Lemonadeberry ( <i>Rhus integrifolia</i> )
	Cactus Scrub	Laurel sumac ( <i>Malosma laurina</i> )
Los Trancos Canyon	Coastal Sage Scrub	California sagebrush ( <i>Artemisia californica</i> )
	Ruderal	Laurel sumac ( <i>Malosma laurina</i> )
	Disturbed	California buckwheat ( <i>Eriogonum fasciculatum</i> )
	Riparian Woodland	Coastal prickly pear ( <i>Opuntia littoralis</i> )
	Cactus Scrub	Red bush monkeyflower ( <i>Mimulus aurantiacus</i> )
Muddy Canyon	Coastal Sage Scrub	Coastal prickly pear ( <i>Opuntia littoralis</i> )
	Grassland	Coastal cholla ( <i>Cylindropuntia prolifera</i> )
	Cactus Scrub	Lemonadeberry ( <i>Rhus integrifolia</i> )
	Riparian Woodland	California sagebrush ( <i>Artemisia californica</i> )
		Mexican elderberry ( <i>Sambucus mexicana</i> )
Mule Deer	Coastal Sage Scrub	California buckwheat ( <i>Eriogonum fasciculatum</i> )
	Ruderal	California sagebrush ( <i>Artemisia californica</i> )
	Grassland	Lemonadeberry ( <i>Rhus integrifolia</i> )
	Cactus Scrub	Laurel sumac ( <i>Malosma laurina</i> )
	Riparian Woodland	Coastal prickly pear ( <i>Opuntia littoralis</i> )
		Coastal cholla ( <i>Cylindropuntia prolifera</i> )
Newport Back Bay	Coastal Sage Scrub	California sagebrush ( <i>Artemisia californica</i> )
	Ruderal	Lemonadeberry ( <i>Rhus integrifolia</i> )
	Disturbed	California encelia ( <i>Encelia californica</i> )
	Developed	California buckwheat ( <i>Eriogonum fasciculatum</i> )
	Cactus Scrub	Coastal prickly pear ( <i>Opuntia littoralis</i> )
	Riparian Woodland	Coastal cholla ( <i>Cylindropuntia prolifera</i> )
	Grassland	Black mustard ( <i>Brassica nigra</i> )
		<i>Carpobrotus</i> spp.
Peter's Canyon	Coastal Sage Scrub	California sagebrush ( <i>Artemisia californica</i> )
	Ruderal	California buckwheat ( <i>Eriogonum fasciculatum</i> )
	Riparian Woodland	Black sage ( <i>Salvia mellifera</i> )
	Cactus Scrub	Black mustard ( <i>Brassica nigra</i> )
	Disturbed	Laurel sumac ( <i>Malosma laurina</i> )
	Grassland	Lemonadeberry ( <i>Rhus integrifolia</i> )
		Coastal prickly pear ( <i>Opuntia littoralis</i> )
		Coastal cholla ( <i>Cylindropuntia prolifera</i> )

Appendix I - Table 7 *continued* . Dominant plant communities and dominant plant species in cactus scrub vegetation at Nature Reserve of Orange County's 2012 Cactus Wren Study Sites.

Site	Dominant Plant Communities (in approximate Order of Dominance)	Dominant Plant Species/Substrate in Cactus Scrub only (in approximate Order of Dominance)
Prima Deshecha Landfill*	Ruderal Coastal Sage Scrub Disturbed Cactus Scrub	Cardoon ( <i>Cynara cardunculus</i> ) Grasses Coastal prickly pear ( <i>Opuntia littoralis</i> ) California sagebrush ( <i>Artemisia californica</i> )
Quail Hill	Coastal Sage Scrub Ruderal Grassland Cactus Scrub Disturbed	Coastal prickly pear ( <i>Opuntia littoralis</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) California sagebrush ( <i>Artemisia californica</i> ) Laurel sumac ( <i>Malosma laurina</i> ) Coastal cholla ( <i>Cylindropuntia prolifera</i> ) White sage ( <i>Salvia apiana</i> ) Mexican elderberry ( <i>Sambucus mexicana</i> )
Ridgeline*	Coastal Sage Scrub Cactus Scrub Ruderal Grassland	California sagebrush ( <i>Artemisia californica</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) Coastal prickly pear ( <i>Opuntia littoralis</i> ) Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount Mexican elderberry ( <i>Sambucus mexicana</i> ) Bare ground Lemonadeberry ( <i>Rhus integrifolia</i> ) Laurel sumac ( <i>Malosma laurina</i> ) Black sage ( <i>Salvia mellifera</i> ) Forbs and grasses
South Bommer Ridge	Coastal Sage Scrub Cactus Scrub	Laurel sumac ( <i>Malosma laurina</i> ) California sagebrush ( <i>Artemisia californica</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) Coastal prickly pear ( <i>Opuntia littoralis</i> ) Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount
Southern California Edison	Coastal Sage Scrub Cactus Scrub Grassland Riparian Woodland	Coastal prickly pear ( <i>Opuntia littoralis</i> ) Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount California buckwheat ( <i>Eriogonum fasciculatum</i> ) California sagebrush ( <i>Artemisia californica</i> ) Laurel sumac ( <i>Malosma laurina</i> ) Lemonadeberry ( <i>Rhus integrifolia</i> ) Grasses
Sand Canyon Reservoir	Coastal Sage Scrub Grassland Cactus Scrub	California sagebrush ( <i>Artemisia californica</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) Coastal prickly pear ( <i>Opuntia littoralis</i> )



Appendix I - Table 7 *continued* . Dominant plant communities and dominant plant species in cactus scrub vegetation at Nature Reserve of Orange County's 2012 Cactus Wren Study Sites.

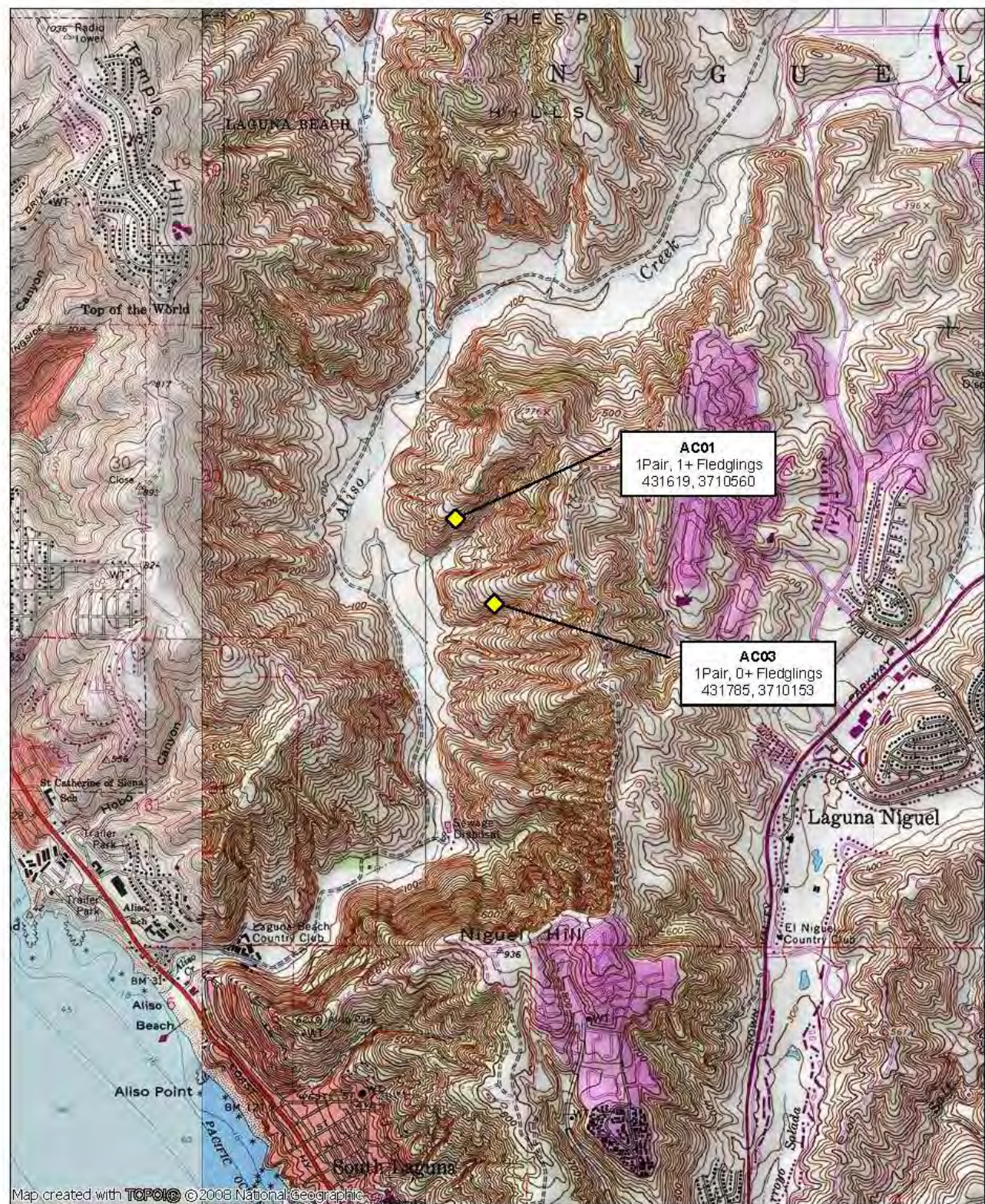
Site	Dominant Plant Communities (in approximate Order of Dominance)	Dominant Plant Species/Substrate in Cactus Scrub only (in approximate Order of Dominance)
	Ruderal	Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount
	Disturbed	Grasses and forbs Laurel sumac ( <i>Malosma laurina</i> ) Lemonadeberry ( <i>Rhus integrifolia</i> )
Saddle Creek South*	Coastal Sage Scrub	Coastal prickly pear ( <i>Opuntia littoralis</i> )
	Oak Woodland	Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount
	Cactus Scrub	Laurel sumac ( <i>Malosma laurina</i> )
	Chapparal	Lemonadeberry ( <i>Rhus integrifolia</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) California sagebrush ( <i>Artemisia californica</i> ) Black sage ( <i>Salvia mellifera</i> ) White sage ( <i>Salvia apiana</i> )
Shady Canyon	Coastal Sage Scrub	Laurel sumac ( <i>Malosma laurina</i> )
	Grassland	California sagebrush ( <i>Artemisia californica</i> )
	Ruderal	California buckwheat ( <i>Eriogonum fasciculatum</i> )
	Cactus Scrub	Black sage ( <i>Salvia mellifera</i> ) Deerweed ( <i>Lotus scoparius</i> ) Coastal prickly pear ( <i>Opuntia littoralis</i> )
Turtle Ridge	Coastal Sage Scrub	Laurel sumac ( <i>Malosma laurina</i> )
	Grassland	California sagebrush ( <i>Artemisia californica</i> )
	Cactus Scrub	California buckwheat ( <i>Eriogonum fasciculatum</i> )
	Ruderal	Coastal prickly pear ( <i>Opuntia littoralis</i> )
	Riparian Woodland	Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount
	Oak Woodland	Red bush monkeyflower ( <i>Mimulus aurantiacus</i> )
UC Irvine	Cactus Scrub	California buckwheat ( <i>Eriogonum fasciculatum</i> )
	Coastal Sage Scrub	California sagebrush ( <i>Artemisia californica</i> )
	Grassland	Coastal prickly pear ( <i>Opuntia littoralis</i> )
	Ruderal	Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount
	Disturbed (restoration)	California encelia ( <i>Encelia californica</i> )
	Developed	Mexican elderberry ( <i>Sambucus mexicana</i> ) Laurel sumac ( <i>Malosma laurina</i> )
Upper Newport Bay	Ruderal	California encelia ( <i>Encelia californica</i> )
	Coastal Sage Scrub	Coastal prickly pear ( <i>Opuntia littoralis</i> )
	Coastal Salt March	Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount
	Cactus Scrub	California sagebrush ( <i>Artemisia californica</i> ) Lemonadeberry ( <i>Rhus integrifolia</i> ) Poison oak ( <i>Toxicodendron diversilobum</i> )

Appendix I - Table 7 *continued* . Dominant plant communities and dominant plant species in cactus scrub vegetation at Nature Reserve of Orange County's 2012 Cactus Wren Study Sites.

Site	Dominant Plant Communities (in approximate Order of Dominance)	Dominant Plant Species/Substrate in Cactus Scrub only (in approximate Order of Dominance)
Woods Canyon	Coastal Sage Scrub Cactus Scrub	Mexican elderberry ( <i>Sambucus mexicana</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) Grasses and forbs Bare ground  California sagebrush ( <i>Artemisia californica</i> ) Lemonadeberry ( <i>Rhus integrifolia</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) Coastal prickly pear ( <i>Opuntia littoralis</i> ) Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount Laurel sumac ( <i>Malosma laurina</i> ) Toyon ( <i>Heteromeles arbutifolia</i> )
Weir Canyon	Coastal Sage Scrub Grassland Cactus Scrub Oak Woodland Ruderal Disturbed	Coastal prickly pear ( <i>Opuntia littoralis</i> ) Coastal cholla ( <i>Cylindropuntia prolifera</i> ) Trace amount California sagebrush ( <i>Artemisia californica</i> ) Deerweed ( <i>Lotus scoparius</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) Laurel sumac ( <i>Malosma laurina</i> ) Lemonadeberry ( <i>Rhus integrifolia</i> )
Whiting Ranch	Coastal Sage Scrub Grassland Ruderal Cactus Scrub Oak Woodland Disturbed	Coastal prickly pear ( <i>Opuntia littoralis</i> ) California sagebrush ( <i>Artemisia californica</i> ) Deerweed ( <i>Lotus scoparius</i> ) California buckwheat ( <i>Eriogonum fasciculatum</i> ) Laurel sumac ( <i>Malosma laurina</i> ) Grasses and forbs Bare ground

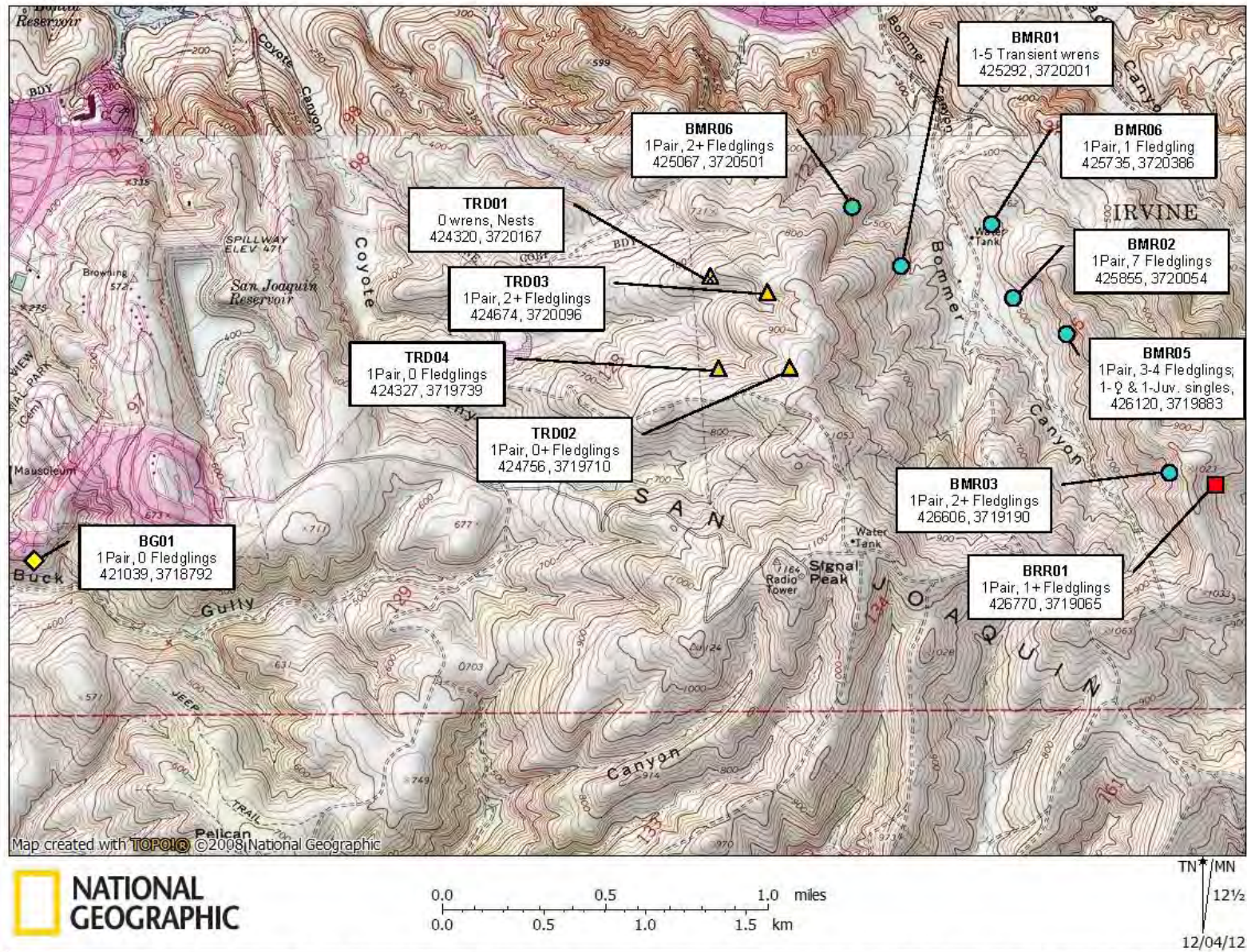
\* These territory is not at a NROC study study site.





**Aliso Canyon:** 2012 Cactus wren territories. 4 Adults, 1+ Juvs. detected. Habitat was Coast prickly-pear series within coastal sage scrub. San Juan Capistrano 7.5' quad.; T7S, R8W, Sec. 29. Field visits occurred 4 Apr. to 8 Aug. 2012.





Buck Gully, Turtle Ridge, Bommer Cyn., and Bommer Ridge Rd.: 2012 Cactus wren territories. BG-2 Adults; TRD-6 Adults & 2+ Juvs.; BMR-11 Adults & 15+ Juvs.; BRR-2 Adults & 1+ Juvs. Habitat was Coast prickly-pear series within coastal sage scrub or grassland. Laguna Beach 7.5' quad.; T6S, R9W. Field visits 13 Mar. to 31 Jul. 2012



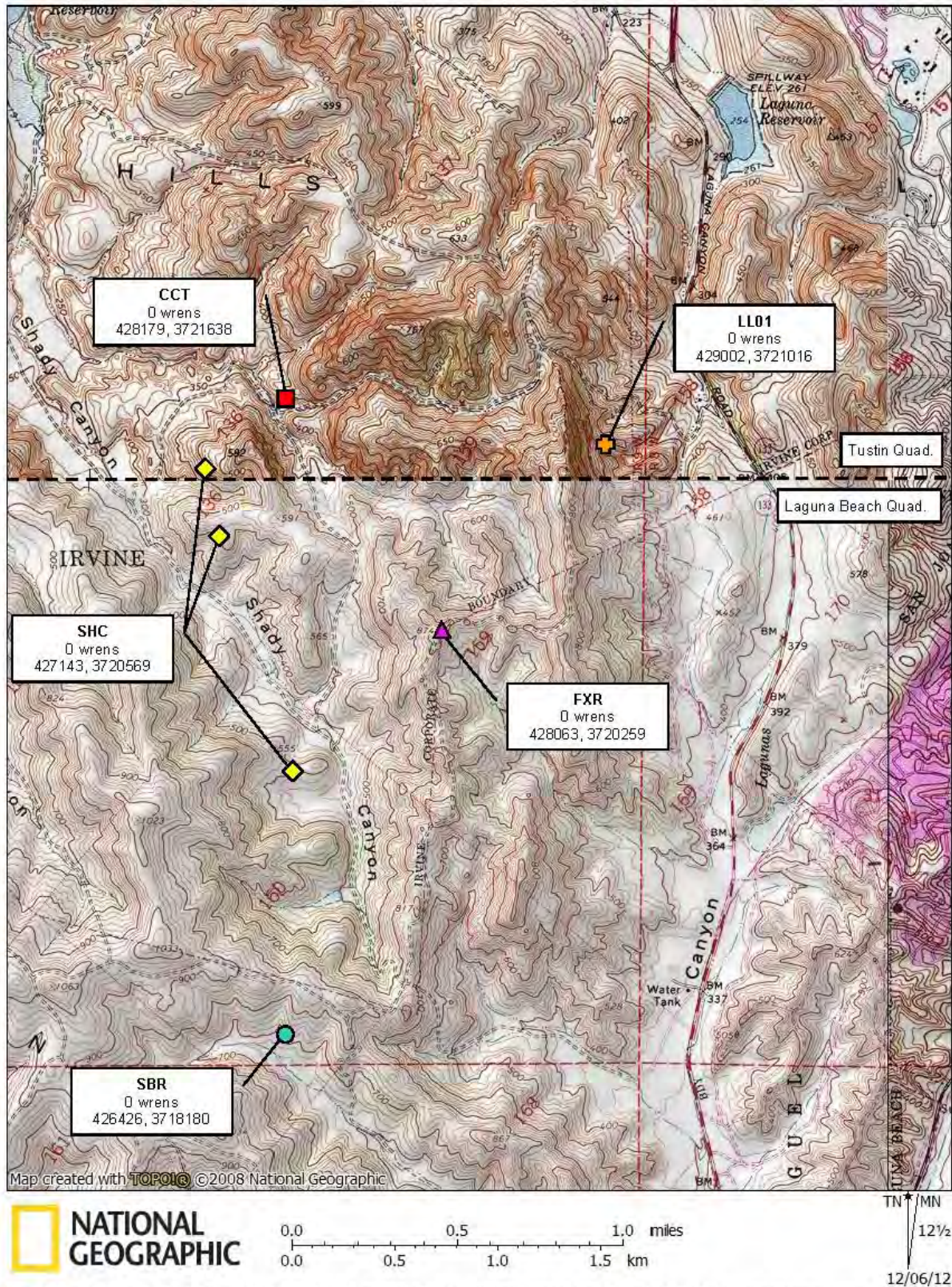


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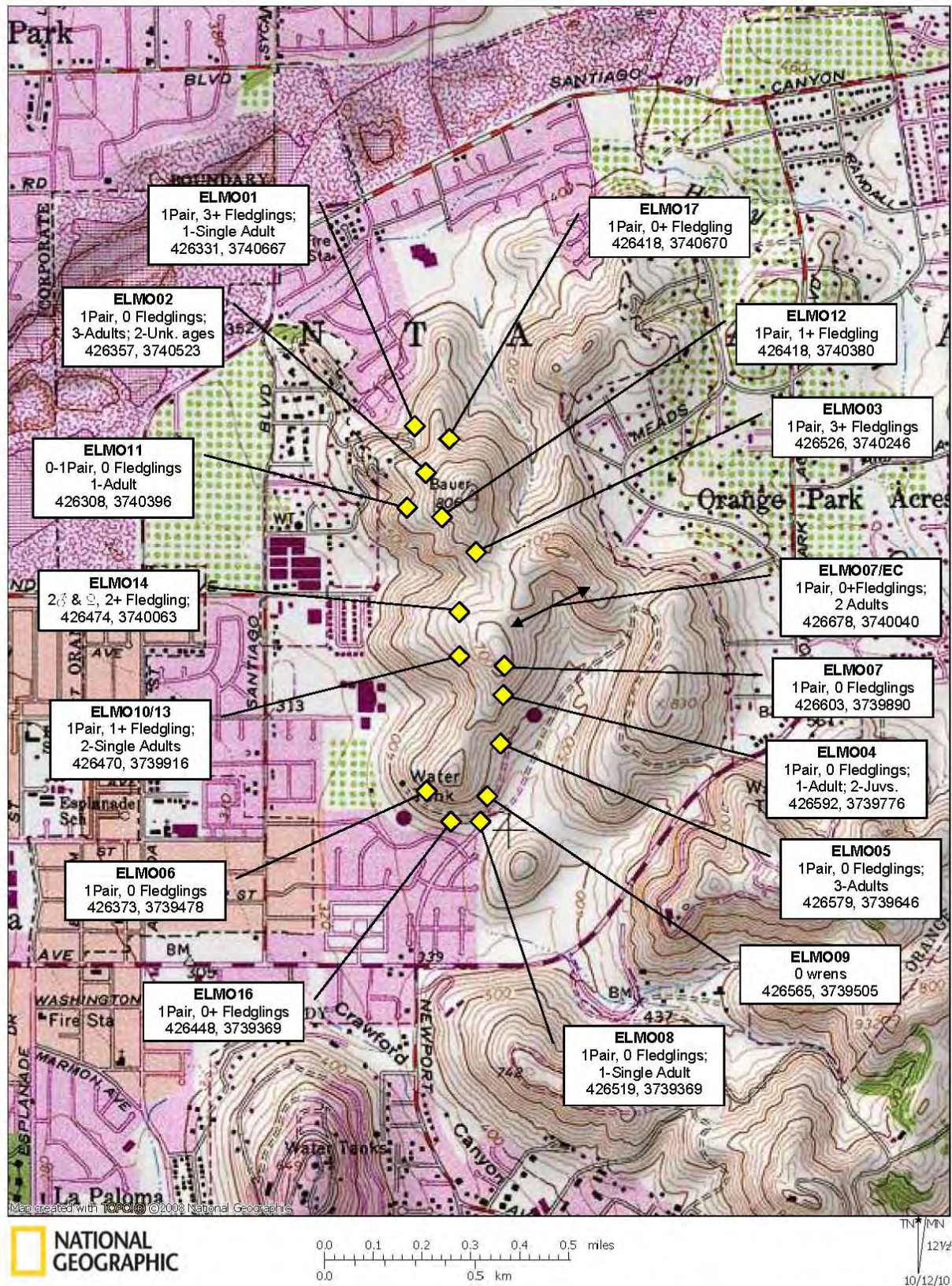
**Boat Canyon, Crystal Cove State Park, El Moro Ridge Road, and Muddy Canyon:** 2012 Cactus wren territories. BTC-2 Adults & 2+ Juvs.; CCSP-8 Adults & 7+ Juvs.; ERR-1 Roost nest; MCN-4-5 Adults & 2+ Juvs. Habitat was Coast prickly-pear series within coastal sage scrub, Laguna Beach 7.5' quad. T7S, R9W. Field visits 20 Mar. to 9 Aug. 2012





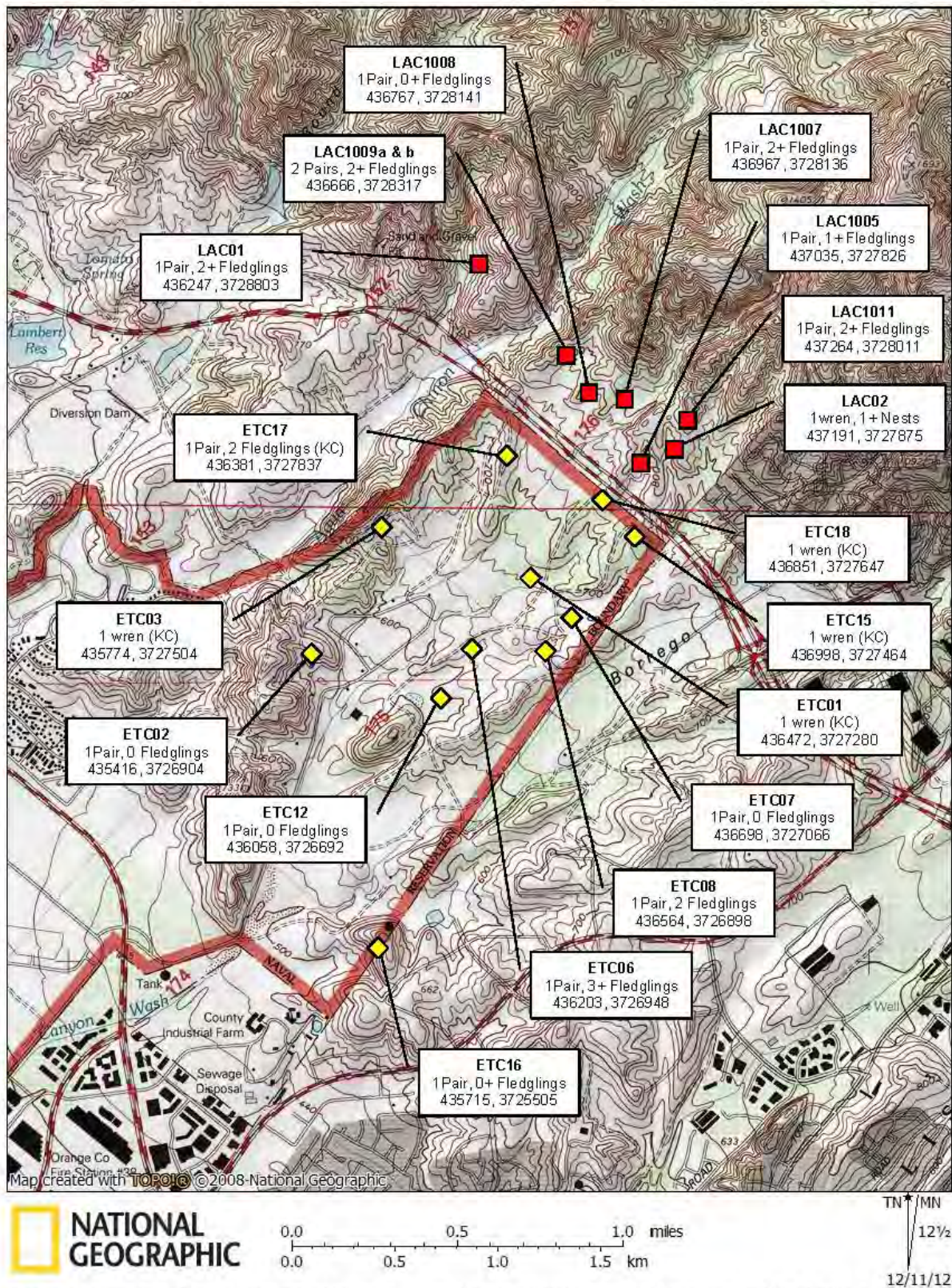
Cattle Crest Trail, Fox Run Trail, Laguna Laurel, Shady Canyon, and So. Bommer Ridge: 2012 Cactus wren survey sites. No wrens detected during survey visits. There was a roost nest at LL01 in 2011, but not 2012. Habitat was Coast pricklypear series within coastal sage scrub. Laguna Beach 7.5' quad. and Tustin 7.5' quad.; T6S, R9W. Field visits 4 Apr. to 10 Aug. 2012.



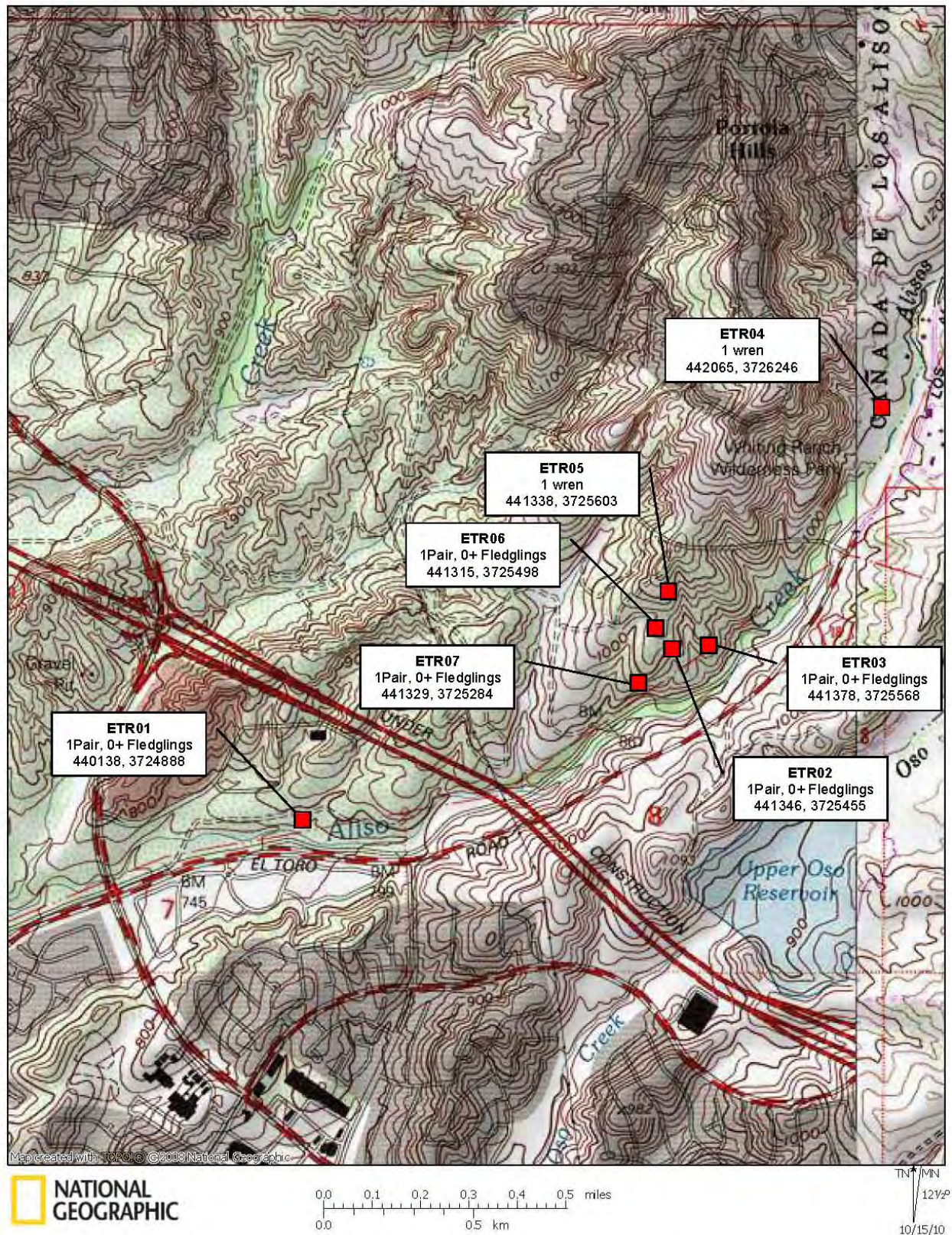


El Modena: 2012 Cactus wren territories. 48 Adults & 9+ Juvs. detected; Coast prickly-pear series; Orange 7.5' quad.; T4S, R9W, Sec. 23/26; Field visits occurred 28 Mar. to 29 Aug. 2012.



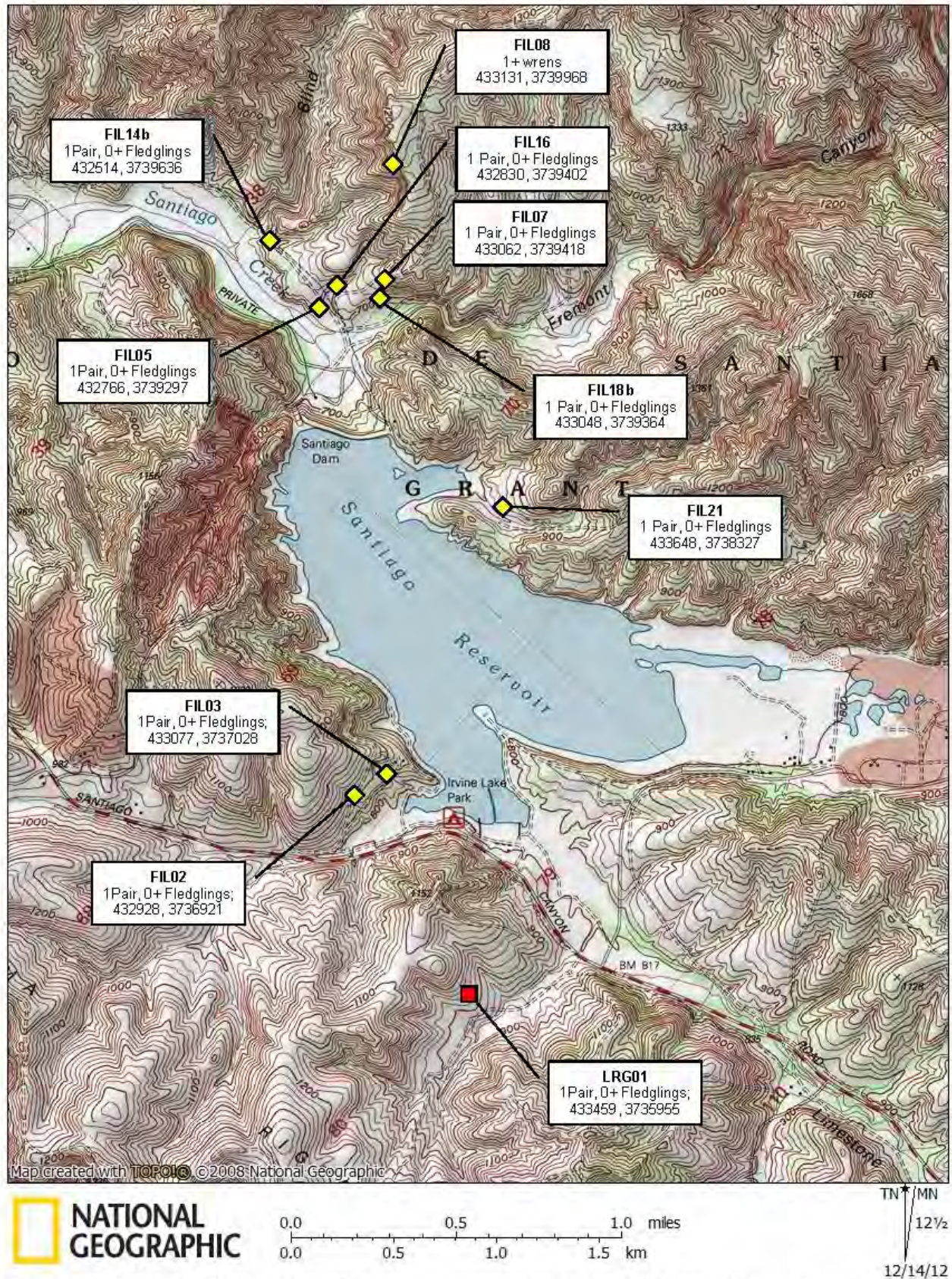






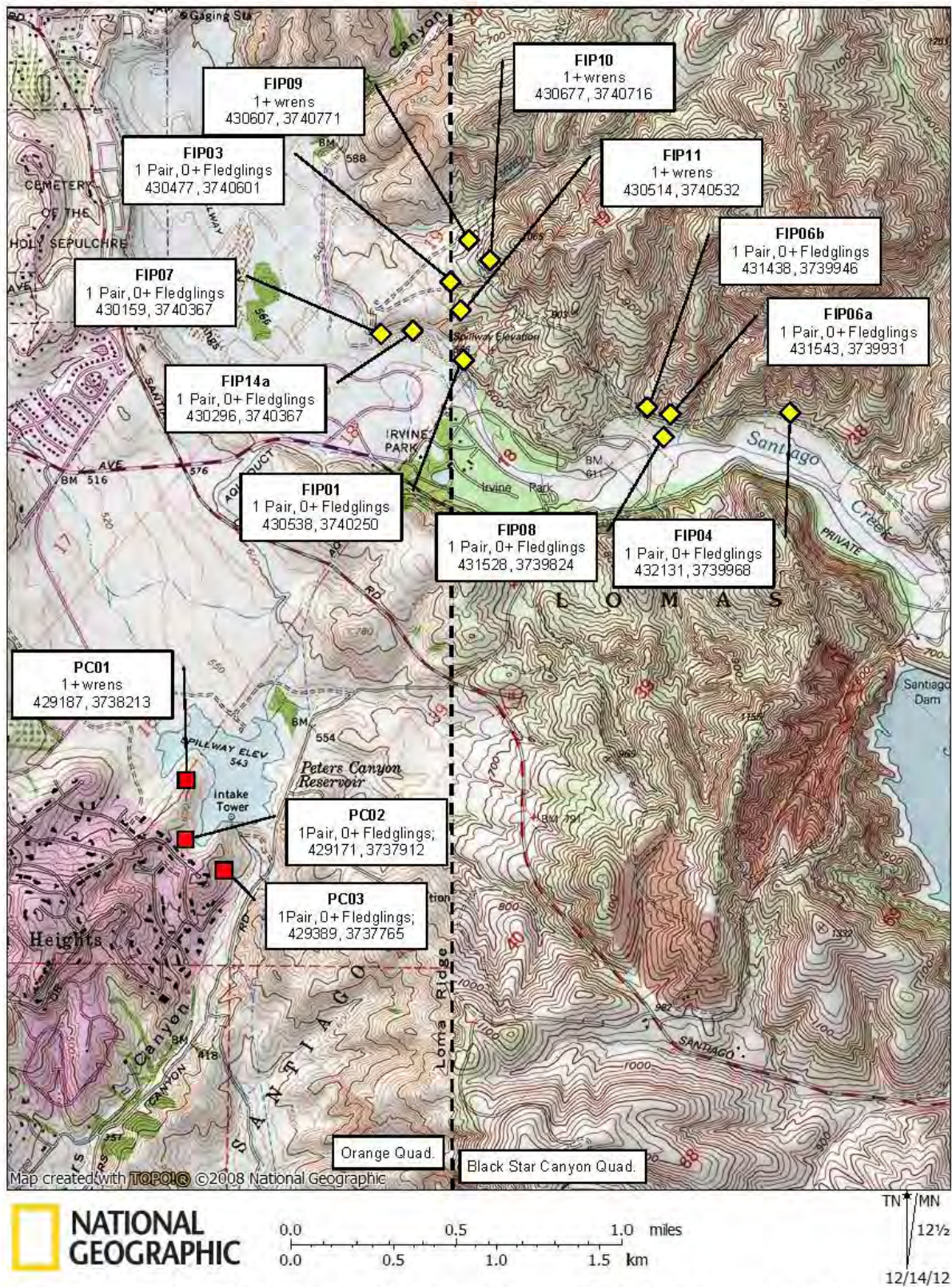
El Toro Road (Aliso Creek): 2012 Cactus wren by territories. 12 Adults and 0 Juvs. detected. El Toro 7.5' quad.; T6S, R7W, Sec. 5/8. Habitat was Coast prickly-pear series. Field visits 23 Mar. to 26 Jul. 2012.





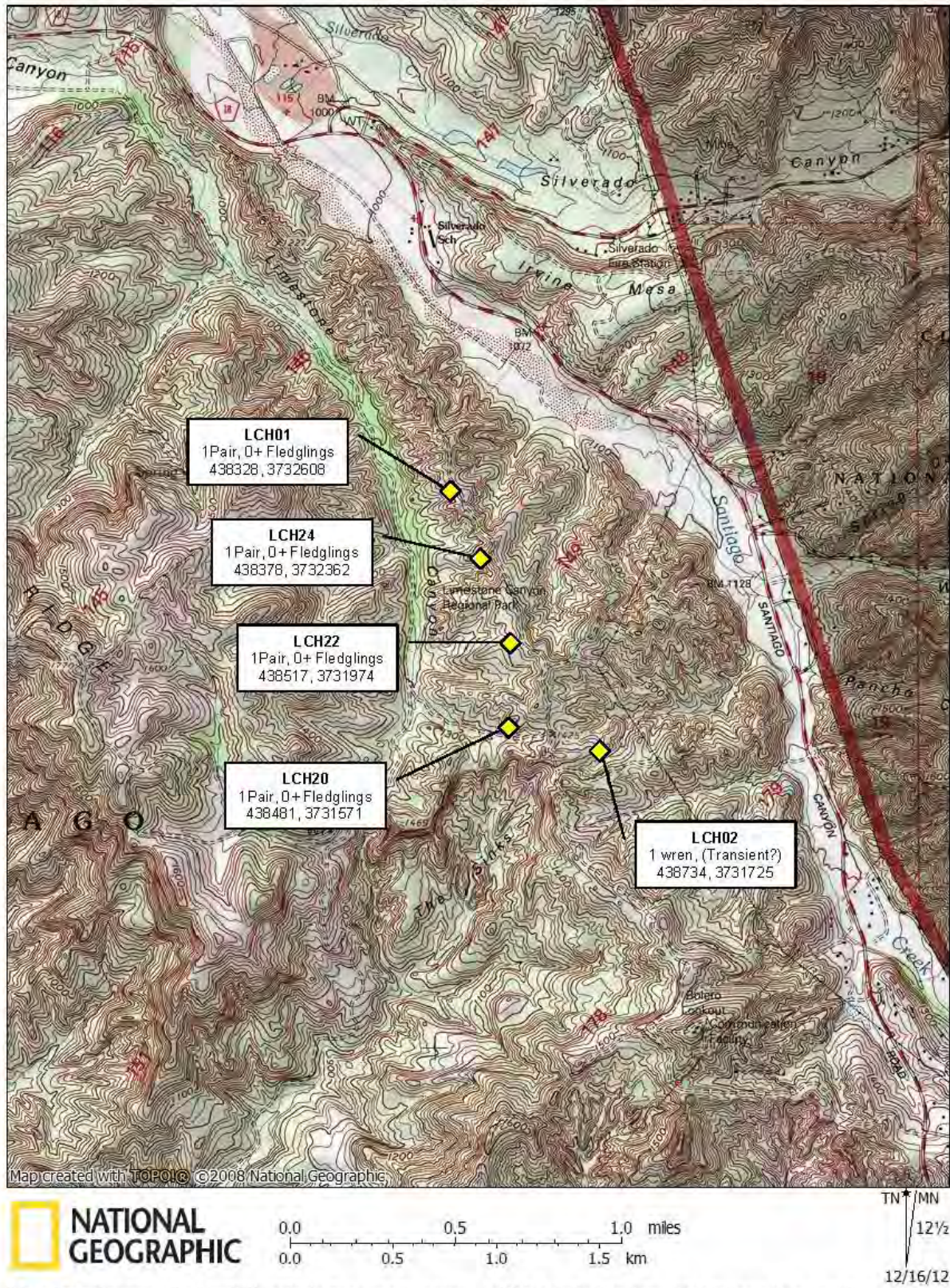
Fremont Cyn-Irvine Lake and Loma Ridge: 2012 Cactus wren territories. FIL-17+ Adults & 0+ Juvs.; LRG-2 Adults & 0+ Juvs.  
Habitat was Coast prickly-pear series. Black Star Canyon 7.5' quad; T4/5S, R8W. Field visits 7 Mar. to 17 Jun. 2012.



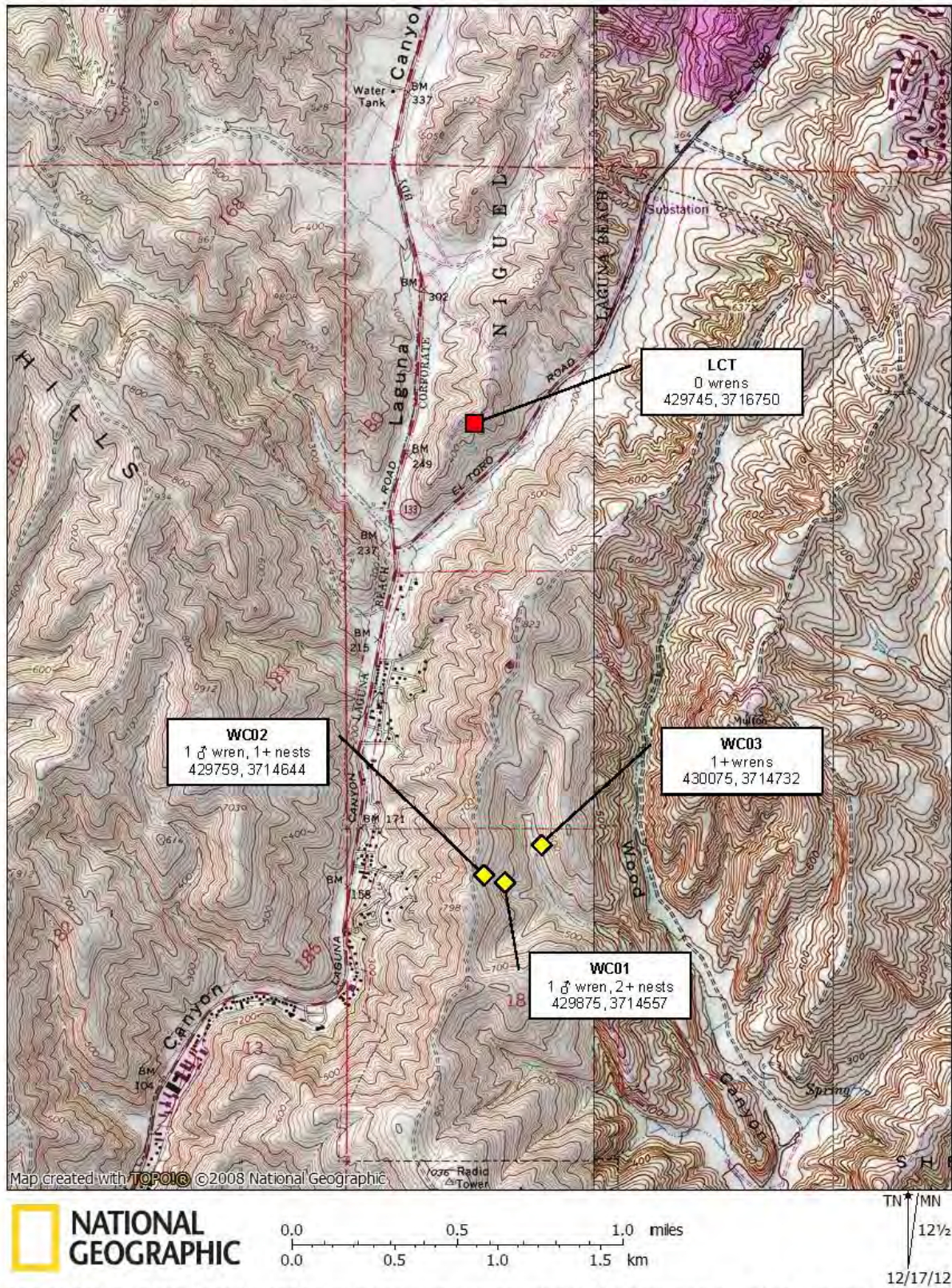


Fremont Cyn-Irvine Park and Peter's Canyon: 2012 Cactus wren territories. FIP-19+ Adults & 0+ Juvs; PC-4+ Adults & 0+ Juvs. Habitat was Coast prickly-pear series. Orange 7.5' quad and Black Star Canyon 7.5' quad.; T4S, R8/9W. Field visits 14 Mar. to 7 Aug. 2012.







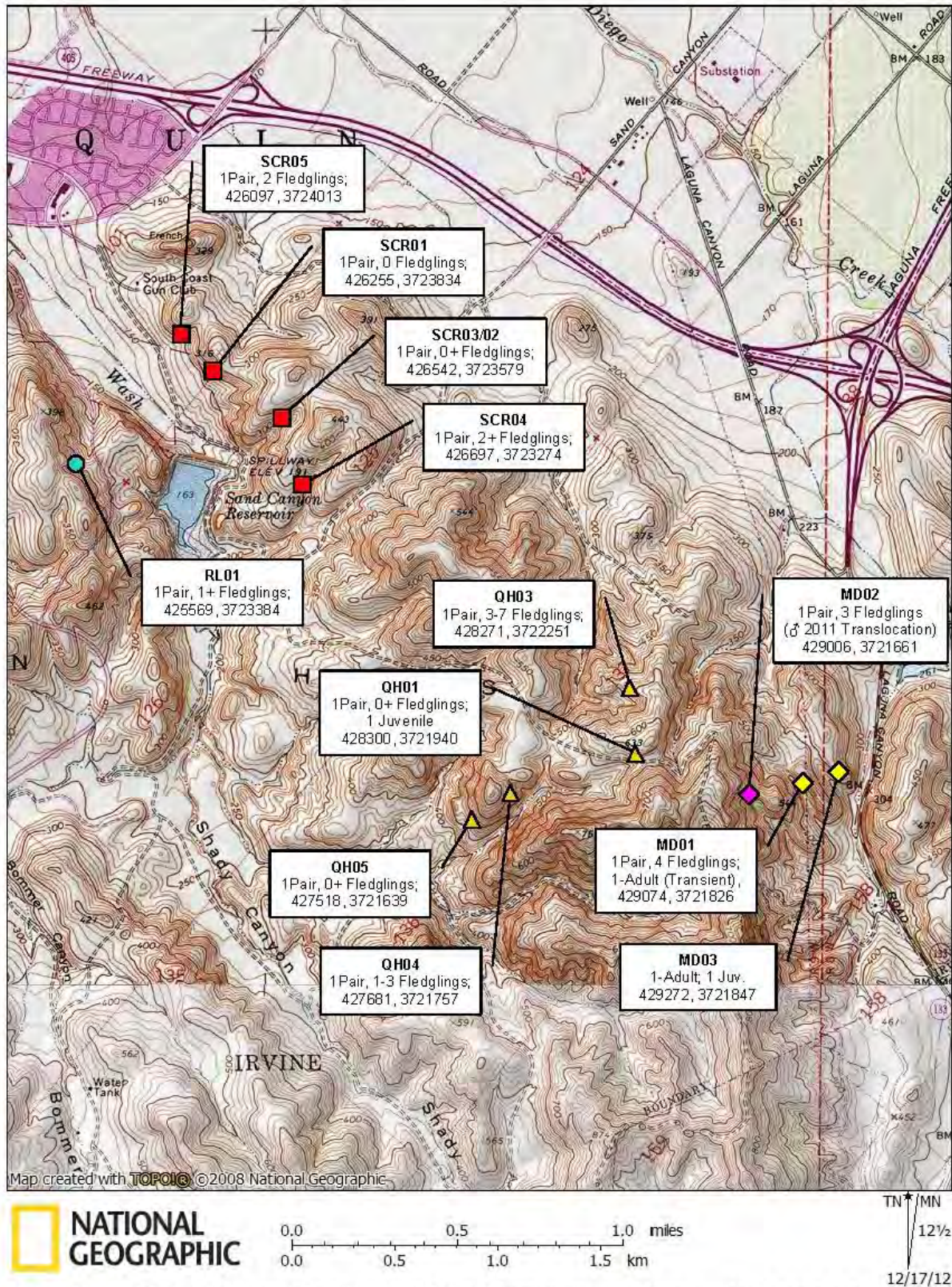


**Laguna Canyon Triangle and Wood Canyon: 2012 Cactus wren territories.** LCT-0 Wrens; WC-3 Adults & 0 Juvs. Habitat was Coast prickly-pear series within coastal sage scrub. Laguna Beach 7.5' quad.; T7S, R8W. Field visits 10 Apr. to 16 Aug. 2012.



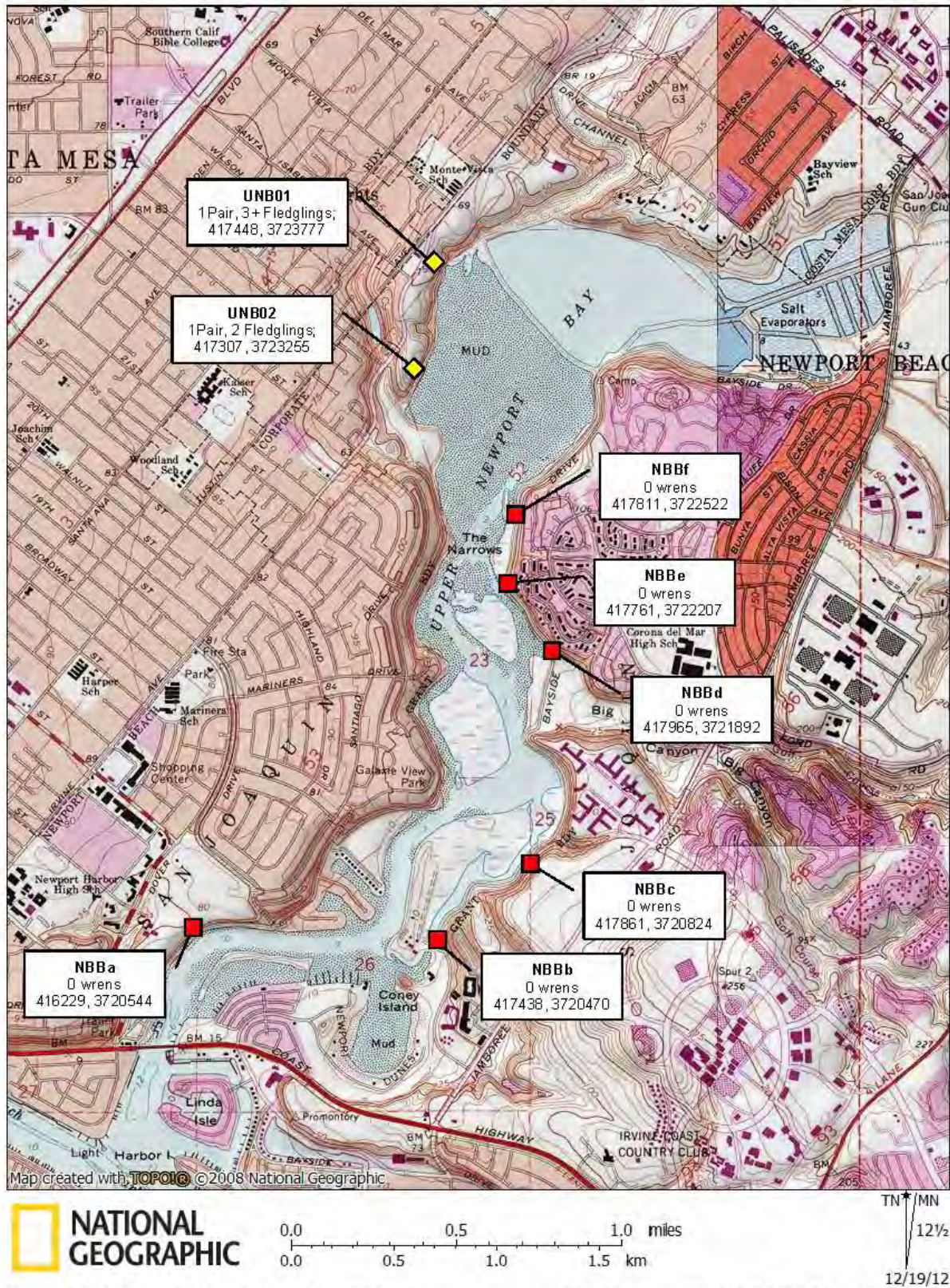




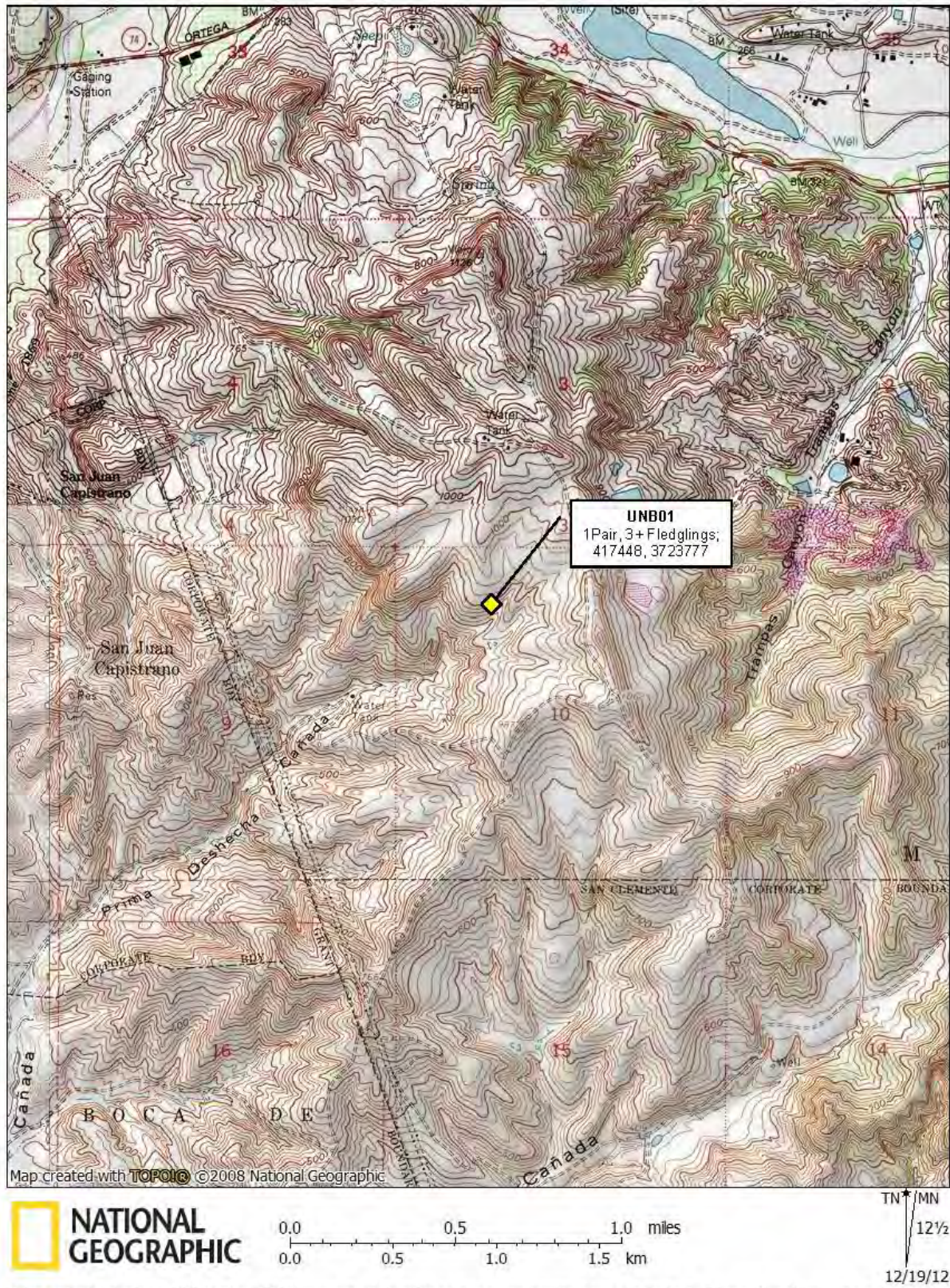


Mule Deer, Quail Hill, Sand Canyon Reservoir, and Ridgeline: 2012 Cactus wren territories. MD-5 Adults & 8 Juvs.; QH-8 Adults & 5-12 Juvs.; SCR-8 Adults & 4+ Juvs.; RL-2+ Adults & 1+ Juvs. Habitat was Coast prickly-pear series within coastal sage scrub and grassland. Tustin quad 7.5' quad; T6S, R9W. Field visits 9 May to 8 Aug. 2012.

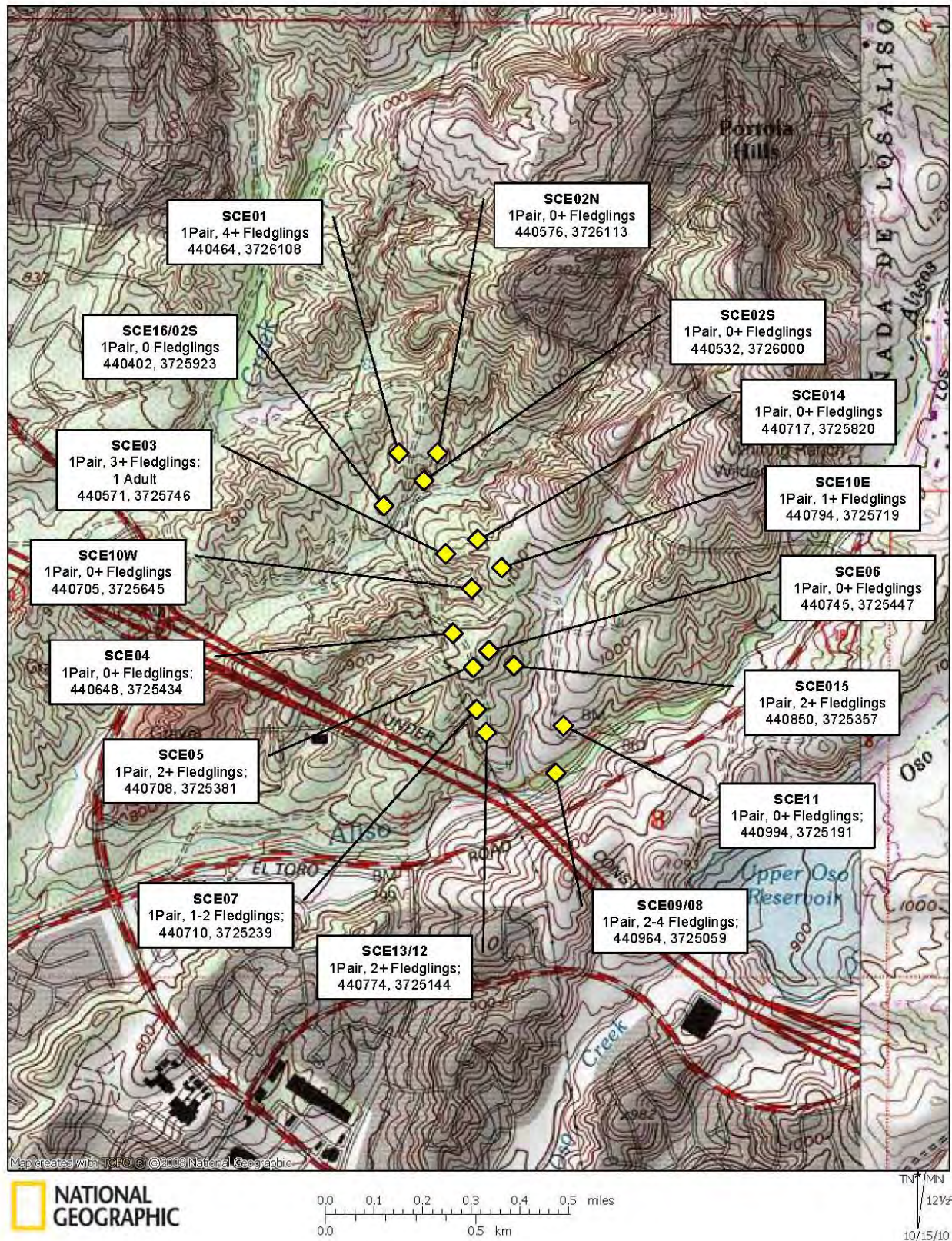






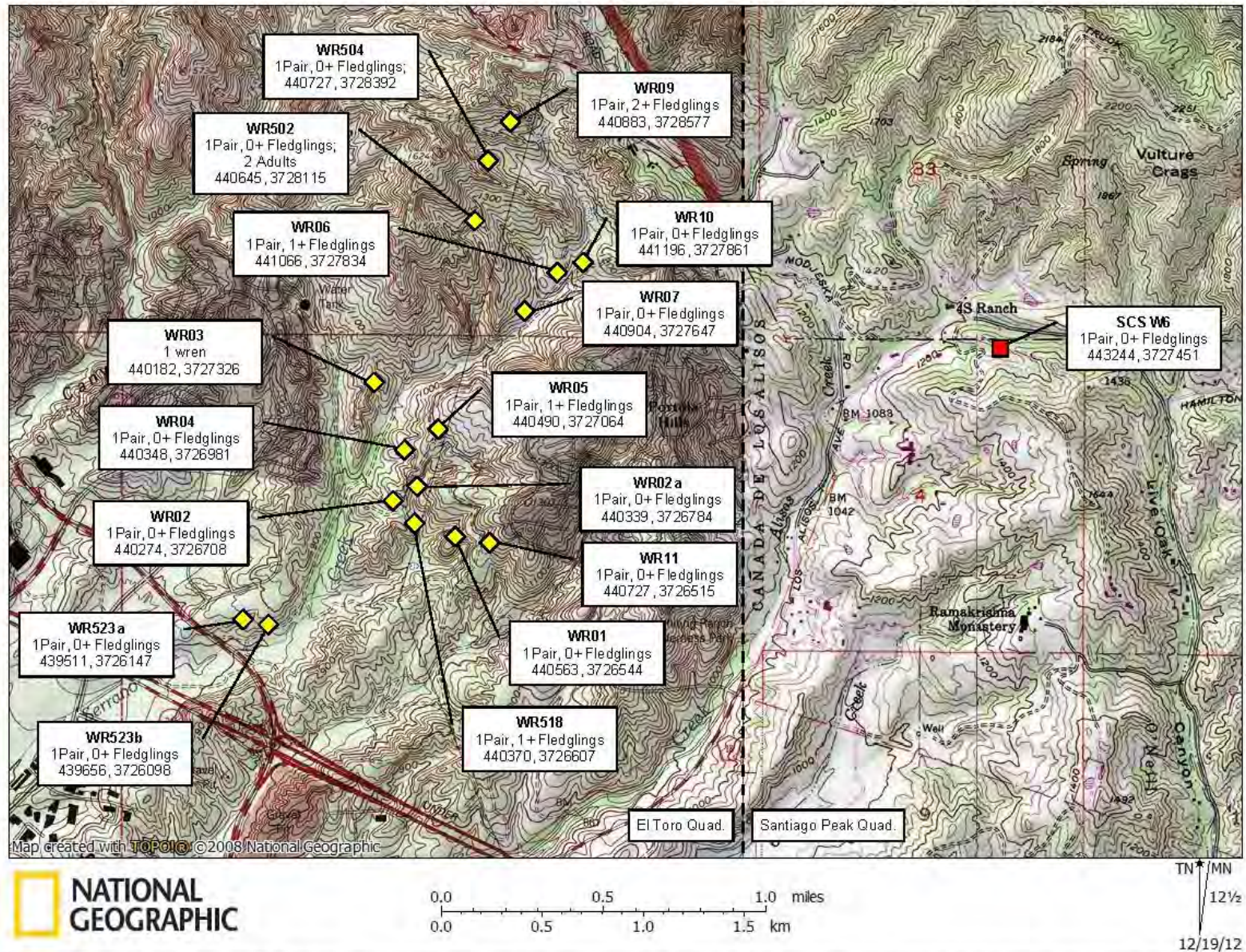






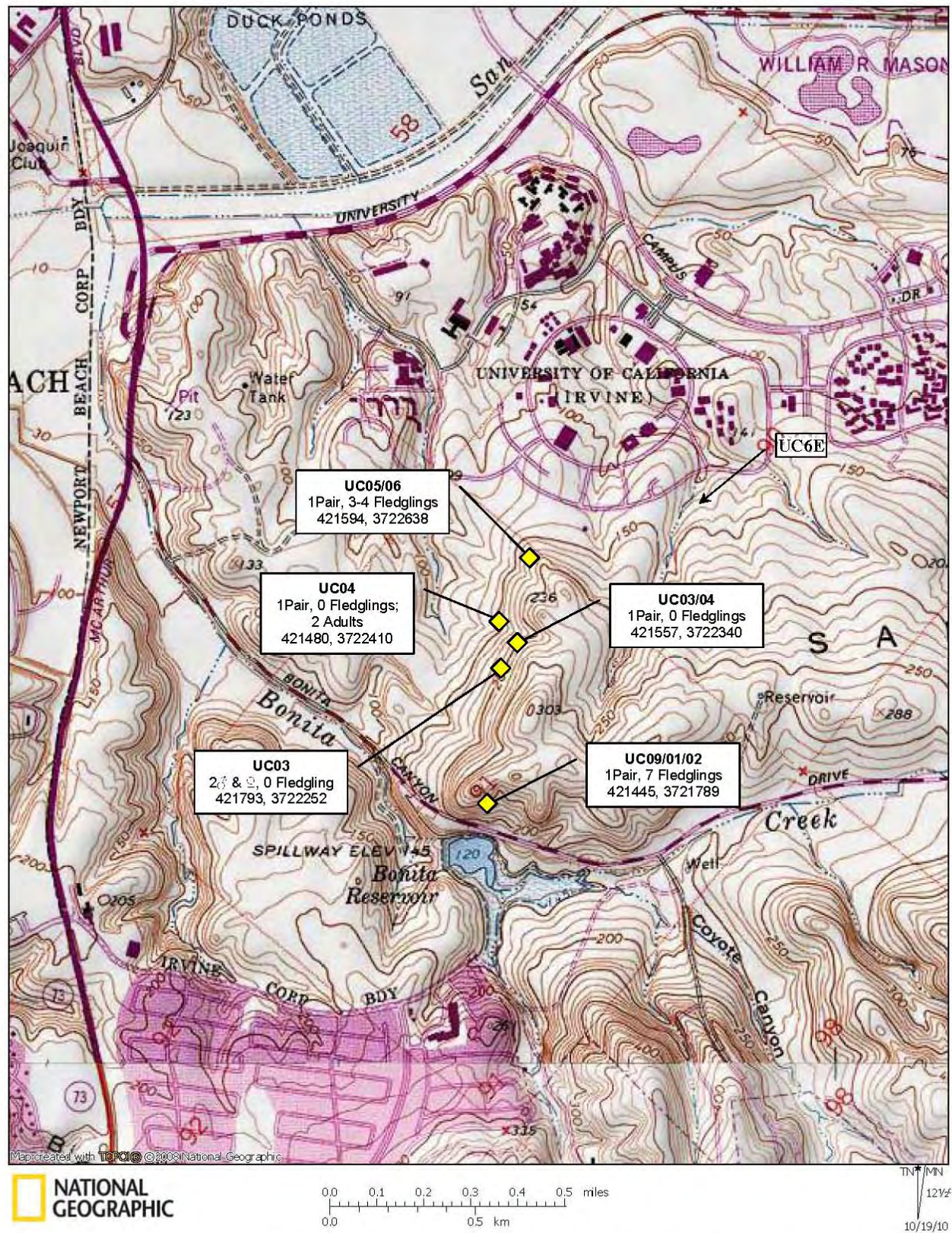
**Southern California Edison:** 2012 Cactus wren territories. 33 Adults and 20+ Juvs. detected. Habitat was Coast prickly-pear series. El Toro 7.5' quad.; T6S, R7W, Sec. 5/8. Field visits 10 Mar. to 16 Jul. 2012.





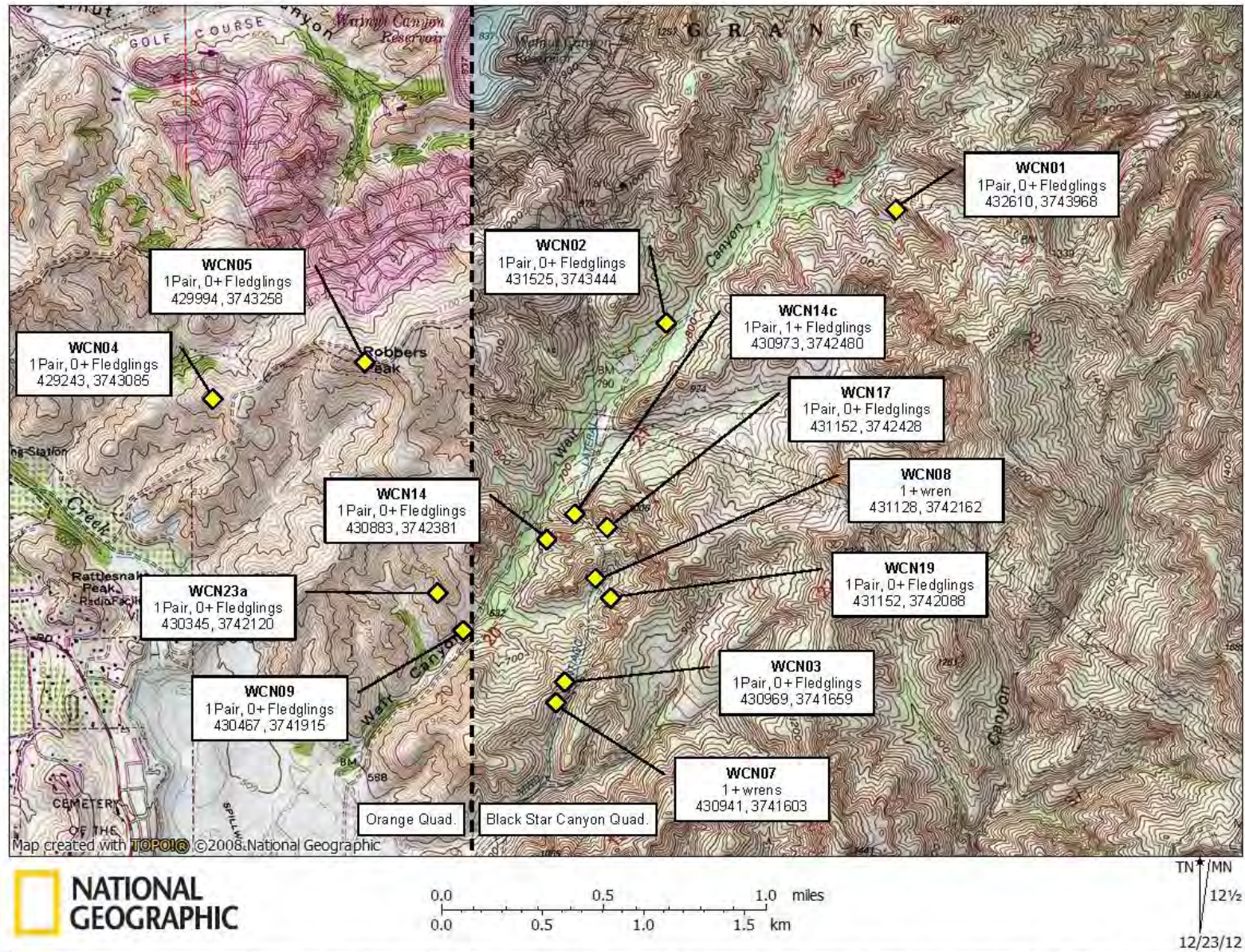
Whiting Ranch and Saddle Creek So. (non-NROC site): 2012 Cactus wren territories. WR-33 Adults & 5+ Juvs.; SCS W6-2 Adults & 0+ Juvs. Habitat was Coast prickly-pear series within coastal sage scrub or grassland. El Toro 7.5' quad. and Santiago Peak 7.5' quad.; T5/6S, R7W. Field visits 13 Mar. to 27 Jul. 2012.





**UC Irvine:** 2012 Cactus wren territories. 13 Adults and 10-11 Juvs. Tustin 7.5' quad.; T6S, R9W, Sec. 20. Habitat was patches of Coast prickly-pear series within coastal sage scrub and grassland. Field visits occurred 23 Feb. to 24 Jul. 2012.





Weir Canyon: 2012 Cactus wren territories. 24+ Adults & 1+ Juvs. Habitat was Coast prickly-pear series within coastal sage scrub or grassland. Orange 7.5' quad. and Black Star Canyon 7.5' quad.; T4S, R8W. Field visits 14 Mar. to 1 Jun. 2012.