

LOCAL ASSISTANCE GRANT REPORT

Wildlife Recovery: Restoration and Monitoring for Portuguese Bend Reserve Rancho Palos Verdes, CA

Prepared for:
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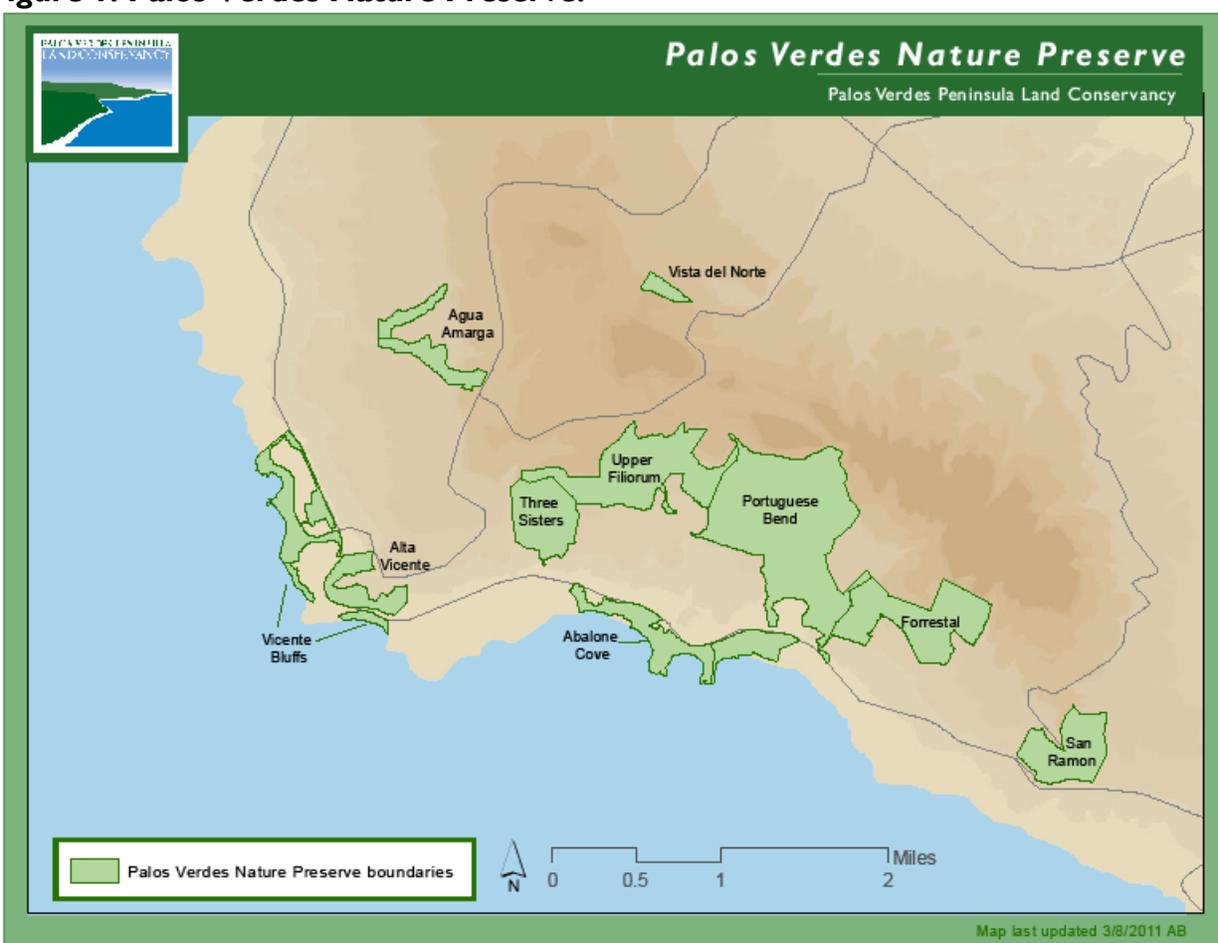
Prepared by:
Palos Verdes Peninsula Land Conservancy
Contact: Danielle LeFer

September 28, 2011

I INTRODUCTION

The Palos Verdes Nature Preserve encompasses approximately 1,400 acres and is located on the southern side of the Palos Verdes Peninsula in the City of Rancho Palos Verdes (RPV), California. PVPLC serves as the management agency for RPV (*Figure 1*). The Preserve was formed under a draft Natural Community Conservation Plan (NCCP) to maximize benefits to wildlife and vegetation communities while accommodating appropriate economic development within the City of Rancho Palos Verdes and region pursuant to the requirements of the NCCP Act and Section 10(a) of the ESA.

Figure 1. Palos Verdes Nature Preserve.

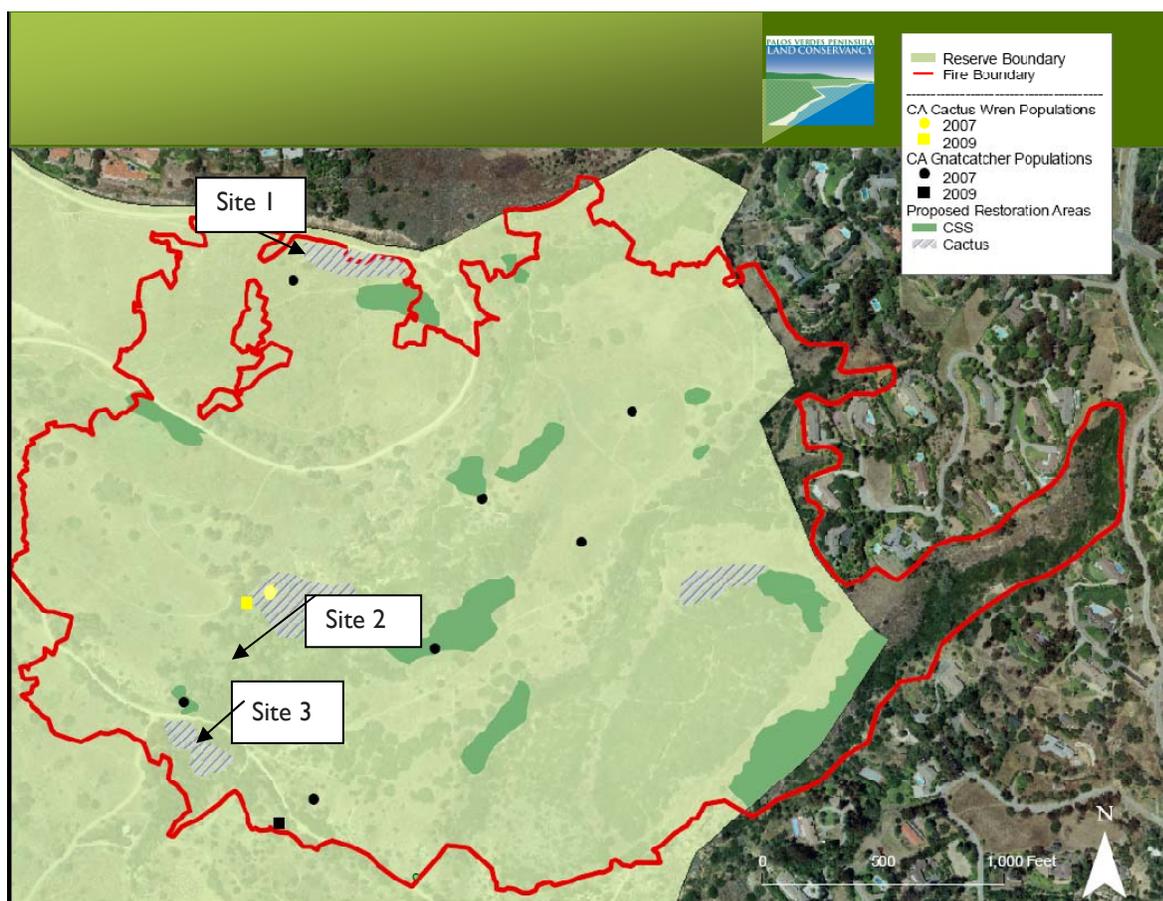


The 399-acre Portuguese Bend Reserve (Reserve) is the largest of the ten reserves that make up the Palos Verdes Nature Preserve (PVNP). As well as providing community-valued recreation, it contains important linkages for wildlife and valuable native habitat for sensitive species. On August 27, 2009, a 165-acre wildfire burned through the Portuguese Bend area (*Figure 2*). The burn area was centrally

located within the Reserve, affecting both native and non-native vegetation and known nesting sites of the threatened coastal California gnatcatcher (*Polioptila californica californica*) and the special status coastal cactus wren (*Campylorhynchus brunneicapillus*). Both birds are covered animal species recognized in the Rancho Palos Verdes NCCP.

To assist in the recovery of the 165-acre burn site, the PVPLC was granted a \$30,000 Local Assistance Grant from the California Department of Fish and Game to restore native habitat through non-native plant control and removal, supplemental native planting in areas of historic cactus scrub, and post-fire monitoring of vegetation and covered species.

Figure 2. Burn area and cactus scrub restoration sites at the Portuguese Bend Reserve.



Early implementation of recovery and restoration actions will greatly enhance long-term recovery of the vegetation and covered wildlife species. Focusing habitat enhancement on areas occupied by covered species will increase recruitment potential and facilitate recovery. Recovery will also be improved by minimizing competition to native plant communities from weedy species.

Monitoring post-fire recovery will be valuable in managing sensitive resource areas and guiding future restoration in fire-prone areas. The area affected by the wildfire has become an area of high management priority for restoration and enhancement. Post-fire vegetation maps of the Reserve will

greatly aid this project by providing information necessary to make science based decisions on habitat restoration priorities, such as species assemblages, targeted invasive species removals. Monitoring post-fire recovery will add to the long-term monitoring dataset and vegetation maps and drive future management goals in fire prone areas of the PVNP.

This report details restoration activities and post-fire monitoring that took place in the portion of Portuguese Bend Reserve affected by the 2009 fire, from Fall 2010 through September 2011.

2 ASSESSMENT OF BURN AREA

Three sites were selected for enhancement based on access, and the presence of remnant cactus habitat, which made it possible to more quickly increase cactus habitat size and quality. Cactus wren habitat could be increased in size through weed removal and cactus scrub enhancement (*Figure 2*).

3 INVASIVE PLANT SPECIES CONTROL

Staff identified focus areas to control invasive plants, to expose native plants and reduce seed rain.

- Staff weeded 1 acre of mustard in the Eagle's Nest area, and 0.5 acre on the western portion of Peacock Flats trail.
- Staff sprayed herbicide on several target plants in the burn area (castor bean and fennel).
- During four outdoor volunteer days (January 2011 through April 2011), volunteers removed 0.5 acre of fennel near Burma Road and Ailor Trail, exposing native vegetation.
- Three cactus scrub sites selected for enhancement were weeded prior to planting.

4 CACTUS SCRUB ENHANCEMENT

Photographs of the cactus scrub enhancement are located in Appendix I.

Site 1: Peacock Flat Trail

- 0.5 acre was cleared of mustard, exposing a remnant cactus patch, and 216 cactus planted: 100 *Opuntia littoralis*, 80 *Cylindropuntia prolifera* and 36 *Opuntia oricola*.

Site 2: Ishibashi Trail north of Burma Road Trail

- 0.5 acre was cleared and 210 cactus pads planted: 100 *Opuntia littoralis*, 80 *Cylindropuntia prolifera* and 30 *Opuntia oricola*.

Site 3: Toyon Trail and Water Tank Trail

- One acre of cactus scrub was planted near the Toyon Trail. The site was weeded, seeded and planted. Staff planted 1 acre of cactus scrub (200 *Opuntia littoralis*, 160 *Cylindropuntia prolifera*, 75 *Opuntia oricola*).
- One acre of cactus scrub was planted near the Water Tank Trail. Plants consisted of: 150 *Artemisia californica*, 273 *Opuntia littoralis* (80 gallon, 193 pads); 65 *Cylindropuntia prolifera* (60 gallon, 5 5gallon), 60 *Opuntia oricola* (gallon), 5 *Mirabilis californica* (gallon), 175 *Eriogonum cinereum* (4 in), 60 *Isomeris arborea* (30 gallon, 30 4in).

5 POST-FIRE RECOVERY MONITORING: VEGETATION

A vegetation monitoring effort took place in June 2011, to assess the growth of native plants and weeds in the post-burn area. The California Native Plant Society's Rapid Vegetation Mapping protocol was used to map community and stand level vegetation. The information will help guide future restoration and management efforts.

Training in CNPS field sampling protocol was conducted in June 2011. PVPLC staff member Ann Dalkey trained interns on the methodology of Rapid Assessment. Vegetation assessments were conducted from June 8 through July 27. Data were entered in August. Maps will be digitized and new vegetation maps produced in Fall 2011.

Preliminary results indicate much coastal sage scrub and cactus scrub was severely burned. However, resprouting has occurred in certain areas (ashy leaf buckwheat, lemonade berry, coyote bush). In some areas, cactus that was not completely destroyed is regenerating. In many areas, introduced species have proliferated (black mustard, fennel, non-native annual grasses).

6 POST-FIRE RECOVERY MONITORING: CACTUS WREN AND CALIFORNIA GNATCATCHER

A detailed report of the bird monitoring surveys is located in Appendix 2. Post-fire surveys took place in 2010 and 2011. Surveys followed USFWS protocols. Surveys were conducted between 25 April and 15 July. Surveys were conducted by federally permitted biologists. All surveys were conducted between 6 am and 1 pm to conform with protocol for presence/absence surveys of the California gnatcatcher (USFWS 1997). The biologist followed the routes previously established for 2006 and 2009 surveys, in order to make results comparable.

Results indicate that both species are still using the site, possibly in similar numbers as pre-fire. One major stand of cactus that had wrens burned, and has not recovered, but wrens may have moved to another part of the site.

Based on two years of data (2010 and 2011), the site continues to support numbers of both the cactus wren and the California gnatcatcher, although one of the two known active territories of cactus wren present in 2009 was apparently lost to the fire, which destroyed nearly the entire cactus patch that was being used by the birds. Surveys in 2011 found both species slightly more widely than those in 2010, suggesting that each may still be attempting to recolonize (or at least travel through) areas burned in 2009.

Appendix I

Cactus Scrub Enhancement Photographs

Site 1 Pre-enhancement



Site 1 Pre-enhancement



Site 1 Enhancement



Site 1 Enhancement



Site 2 Enhancement



Site 2 Enhancement



Site 3 Enhancement



Site 3 Enhancement



Site 3 Enhancement



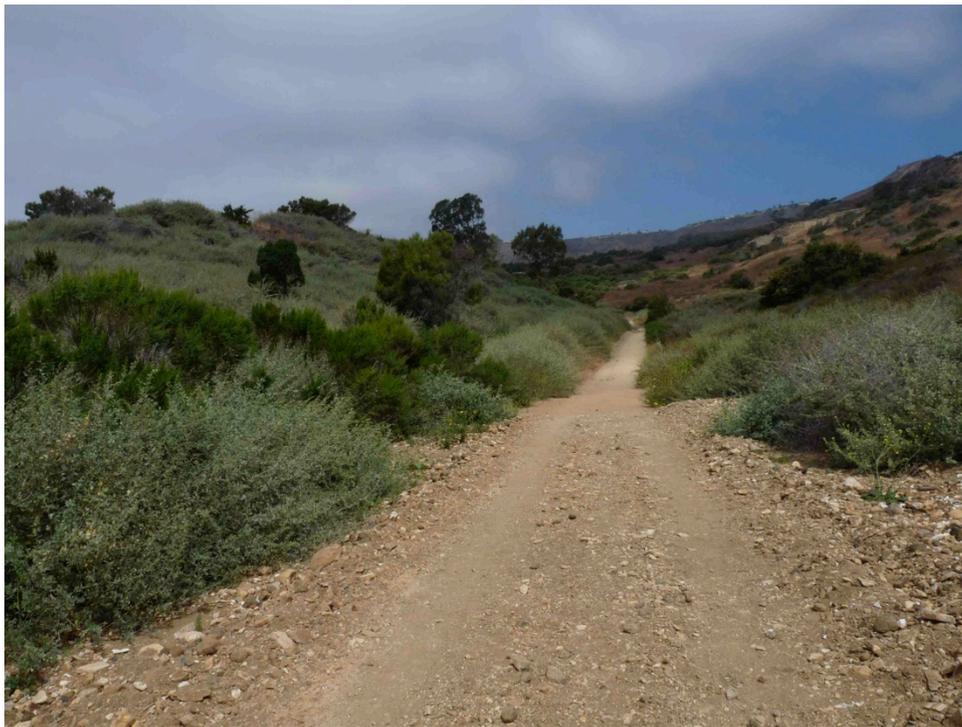
Appendix 2

Post-fire Survey for the California Gnatcatcher and the
Cactus Wren at the
Portuguese Bend Reserve, Palos Verdes Peninsula

Final Report

Post-fire Survey for the California Gnatcatcher and the Cactus Wren at the
Portuguese Bend Reserve, Palos Verdes Peninsula

Final Report



California gnatcatcher habitat dominated by quailbush *Atriplex lentiformis* and coyotebush *Baccharis pilularis* in lower portion of Portuguese Bend Reserve, 23 June 2010 (ph. by Daniel S. Cooper)

Prepared by:
Daniel S. Cooper
Cooper Ecological Monitoring, Inc.

Prepared for:
Palos Verdes Peninsula Land Conservancy
916 Silver Spur Rd., Suite 207
Rolling Hills Estates, CA 90274

September 26, 2011

Summary

We report on a two-year survey of two sensitive bird species, the (coastal) California gnatcatcher *Poliophtila californica californica* ("CAGN"; Federally Threatened), and the coastal-slope population of the cactus wren *Campylorhynchus brunneicapillus* ("CACW"; formerly a Candidate for federal listing; now treated as a California Bird Species of Special Concern¹), at the Portuguese Bend Reserve (c. 400 acres; Palos Verdes Peninsula Land Conservancy). Our intent was to assess the distribution and approximate population size of both taxa following a large (165-acre) wildfire in August 2009 that affected a large proportion of the reserve, mostly in the north (Figure 1). Our survey may be compared with previous surveys for these two birds conducted at the site in 2006 and 2009 (both pre-fire; Dudek 2006, Hamilton 2009); however, because of the lower effort afforded to our post-fire surveys than previous ones, direct comparisons must be made with caution. Based on two years of data (2010 and 2011), we find that the site continues to support numbers of both the cactus wren and the California gnatcatcher, although one of the two known active territories of cactus wren present in 2009 was apparently lost to the fire, which destroyed nearly the entire cactus patch that was being used by the birds. Surveys in 2011 found both species slightly more widely than those in 2010, suggesting that each may still be attempting to recolonize (or at least travel through) areas burned in 2009. In addition to these bird data, we mapped locations of three sensitive plant species (all CNPS 4.2 species) encountered during the 2009 survey, Hubby's phacelia *Phacelia hubbyi*, a phacelia that may be South Coast branching phacelia *Phacelia ramosissima* var. *australitoralis*, and Catalina mariposa-lily *Calochortus catalinae*, and took notes on other bird and wildlife species, as well as patches of unburned vegetation within the 2009 burn area.

Introduction

The Portuguese Bend site is located at the southwestern tip of the Palos Verdes Peninsula, and includes rugged ridges and slopes between the southern end of Crenshaw Dr. and Palos Verdes Dr. South, running along the top of coastal bluffs. The unburned habitat is a mix of naturally-occurring coastal sage scrub dominated by California sagebrush *Artemisia californica* with a strong component of ashleaf buckwheat *Eriogonum cinereum*, as well as a sumac scrub with lemonadeberry *Rhus integrifolia* and toyon *Heteromeles arbutifolia* on more mesic/poorly-drained sites, interspersed with large areas of non-native vegetation (incl. Maltese star thistle *Centaurea mellitensis*, wattle *Acacia* sp.). Small areas of planted native (or mixed native/non-native) vegetation were observed in the southern area, including dense, monotypic expanses of quailbush *Atriplex lentiformis* and apparently planted/hydro-seeded coast buckwheat *Eriogonum fasciculatum* and (non-native) statice *Limonium perezii* (esp. along pipeline route). Additional non-native plants observed in 2011 (likely seeded) included moss verbena *Verbena*

¹ In 2008, coastal populations of the cactus wren north of southern Orange County were deemed distinct from those in southern Orange County (termed *C. b. sandiegensis*) by the most recent publication of California Bird Species of Special Concern (Shuford and Gardali 2008). However, this view is not widely held within the ornithological community, and due to their extreme isolation and a life history that is essentially identical with coastal-slope populations to the south into San Diego County, we, as well as regulatory agencies like the Calif. Dept. of Fish and Game (CDFG; L. Comrack, pers. comm., April 2008), treat the Palos Verdes birds as a sensitive species under state law. In addition, CDFG requires that all playback surveys for the cactus wren in coastal-slope Los Angeles Co. (and Ventura Co.) be conducted under a Memorandum of Understanding reserved for special-status species.

tenuisecta, observed commonly along the “Toyon Trail”. Regrowth in the 2009 burn area was generally sparse in 2010, and dominated by coastal lotus *Lotus salsuginosus* and, on the April visit, by arroyo lupine *Lupinus succulentus* and sticky phacelia *Phacelia viscida*. By 2011, little open ground remained and the area supported a dense growth of wild oat *Avena* sp., prickly ox-tongue *Picris echioides*, fennel *Foeniculum vulgare*, and Maltese star thistle. Large expanses in the central portion of the reserve (Ishibashi Trail) had virtually no native vegetation (e.g., California sagebrush), but dozens of volunteering Brazilian pepper *Schinus terebinthifolius*.

Following past efforts (Hamilton 2009), we divided the Portuguese Bend site into two areas, northern and southern, using the lower portion of a dirt utility road (“Burma Road Trail”) as the dividing line between the two areas (Figure 1). This utility road rough corresponds to the boundary of the August 2009 fire, with the area uphill of the road mostly burned, and that downhill mostly unburned.

Methods

Surveys were conducted by Daniel S. Cooper over four visits in 2010 and five in 2011 between 25 April and 15 July (Table 1) under federal permit TE100008-1². All surveys were conducted between 6:00 a.m. and 1:00 p.m. to conform with protocol for presence/absence surveys of the California gnatcatcher (USFWS 1997)³. Robert A. Hamilton (TE799557) accompanied Cooper on the 26 April and the 03 May 2010 survey, and we attempted to replicate the methods and survey route used by Hamilton (2009) as faithfully as possible.⁴ The route was walked slowly and deliberately on each day, and recorded calls of the California gnatcatcher and the cactus wren were broadcast occasionally during the initial visits in 2010. In subsequent visits (23 June and 14 July 2010 and 2011), no recordings of either species were played; however, Cooper would periodically “pish”, or imitate a typical songbird alarm call, at stops along the route, which was occasionally helpful in eliciting calls of both the gnatcatcher and the cactus wren. Visual scans (using Leica 8x42 Ultravid binoculars) were made of all cactus habitat for cactus wren nests, and sightings of the brown-headed cowbird *Molothrus ater*, a known parasite of songbird nests, were recorded as well. Basic weather conditions were recorded at the start and end of each visit (Table 1).

² U.S. Fish and Wildlife protocol (USFWS 1997) requires that presence/absence surveys for the California gnatcatcher on NCCP lands (including habitat on the Palos Verdes Peninsula) be conducted a minimum of three times between Feb. 15 and Aug. 30; in addition, the southern portion of the site exceeded the recommended 100-acre limit for daily surveys outlined in the USFWS protocol. However the surveys performed herein were non-protocol surveys intended simply to quickly assess the status of known populations, and not to determine presence/absence at the site.

³ Though Hamilton (2009) only made two visits each to each area (northern and southern), we added a third visit (14 July) in 2010 to the southern area improve our confidence in our estimate of the 2010 California gnatcatcher population.

⁴ Cooper's permit was under renewal at the time of the first two surveys of 2010, and therefore technically inactive. Playback surveys for the cactus wren (in 2010; recordings were not used in 2011) were conducted under Hamilton's Memorandum of Understanding with the California Dept. of Fish and Game.

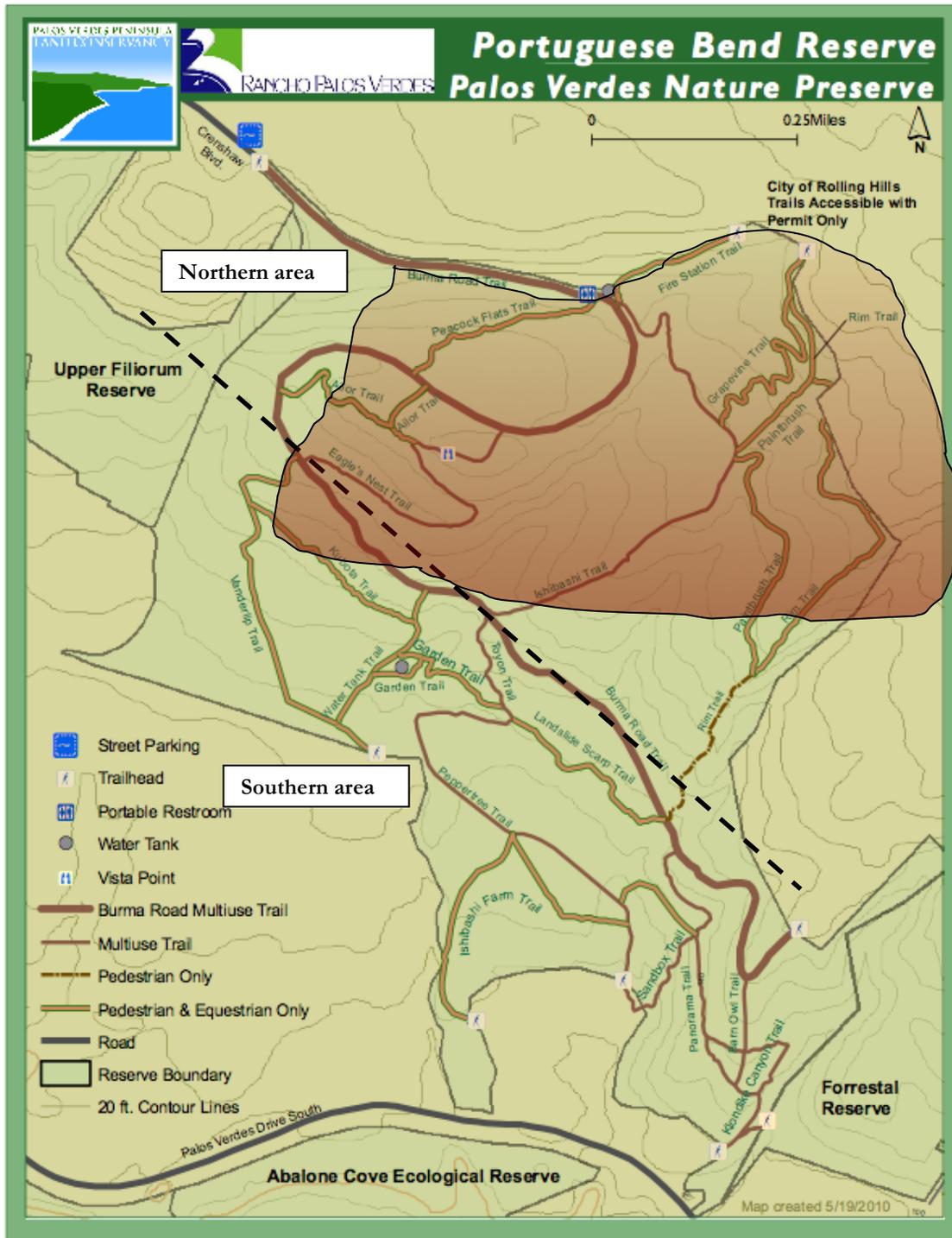


Figure 1. Trail map, Portuguese Bend Reserve. Dashed line marks the northern/southern boundary used by this survey as well as by Hamilton (2009). Red polygon denotes rough boundary of 2009 fire zone.

Table 1. Summary and description of survey effort, 2010-2011 (wind <3 mph on each visit).

Date	Year	Time	Temp. start (F)	Temp. end (F)	Sky	Area covered	Max. # CAGN	Max. # CACW
26 April	2010	08:10-10:30	60	67	Overcast	North	0	0
03 May	2010	08:50-11:40	63	70	Clear	South	6	2
23 June	2010	07:10-11:10	63	71	Overcast	Both	6	1
14 July	2010	07:35-11:15	70	76	Clear	South	18	0
25 April	2011	08:30-10:45	59	76	Ptly cldy	South	4	0
02 May	2011	08:20-10:30	72	85	Clear	South	5	4
12 May	2011	11:30-13:00	68	71	Clear	North	0	0
08 July	2011	08:50-11:50	68	79	Clear	South	20	1
15 July	2011	08:45-10:30	63	65	Ptly cldy	North	4	0

All observations of our two target birds, as well as locations of sensitive plant species and notable vegetation, were recorded on an aerial photo, and these observations were transferred onto digital maps using Google Earth. We kept day lists of all other bird species, as well as mammal and reptile species.

Part I. Target bird surveys (California gnatcatcher, cactus wren)

Results

California gnatcatcher

In 2010, we detected the California gnatcatcher on three of the four visits, and on each of the three visits to the southern area of the site (Figure 2). All gnatcatchers observed were within the southern area, with the exception of three birds – possibly a family group – located along the southern border of the northern area (just inside the 2009 burn zone) on 14 July. In 2011, we detected the California gnatcatcher on four of the five visits, and again on each of the three visits to the southern area of the site (Figure 3). On 15 July 2011, we observed gnatcatchers for the first time well into the northern portion of the reserve, at the three-way intersection of Burma Road Trail with the Fire Station Trail and the Peacock Flats Trail. On this day, two or three birds were heard calling (typical “mew” call) at this intersection briefly, and were not seen. Notably, a pair of California gnatcatcher was observed building a nest on 02 May 2011 (after a bird was seen with nesting material in the same area on 25 April), noted by a violet marker in Figure 3a.

While we feel our two or three visits were insufficient to estimate population size, reproductive success, or even territory number or location for gnatcatchers on the reserve, we nonetheless assigned each observation to the 14 “usage areas” identified by Dudek in prior surveys in 2006, and thus identify 11 usage areas active in 2010-11 (Table 2). Within these usage areas, we recorded a daily maxima of 18-20 individuals in both 2010 and 2011 (data not available for previous studies). Of course, since many of our observations were made late in the season (July), it is not possible to determine whether these were actual breeding territories, or simply areas of the reserve occupied by birds that nested elsewhere. Though the age/sex of these birds could not be determined, but it is likely many of the birds observed in July were dispersing juveniles.



Figure 2. Map of all 2010 California gnatcatcher (CAGN) sightings.

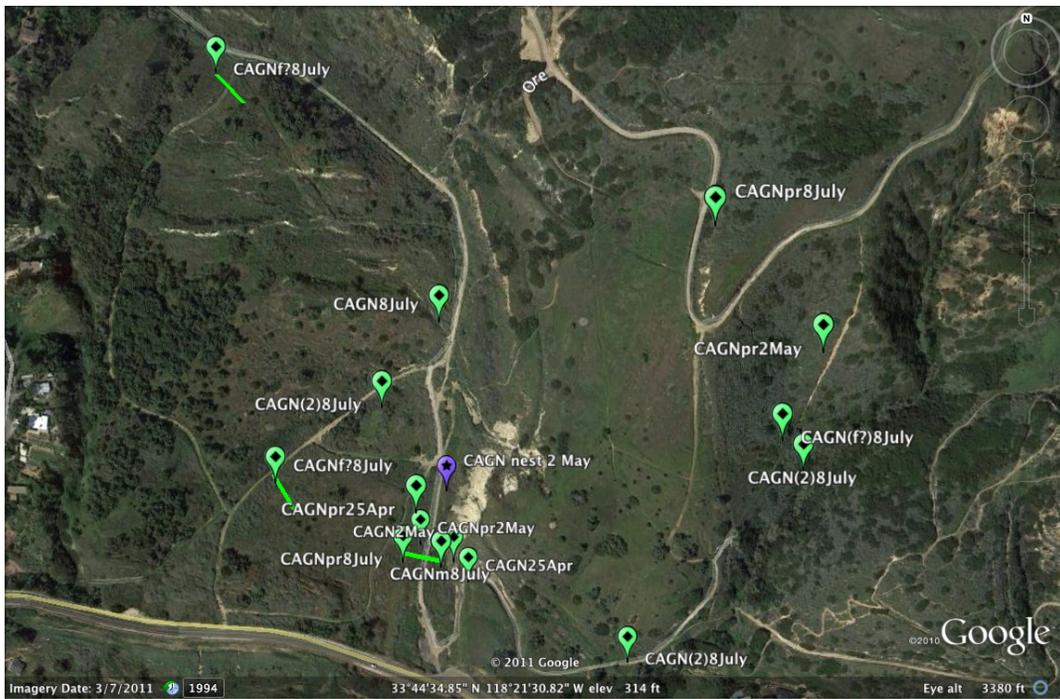


Figure 3a. Map of 2011 California gnatcatcher sightings, southern area. Location of nest shown with a violet pin.

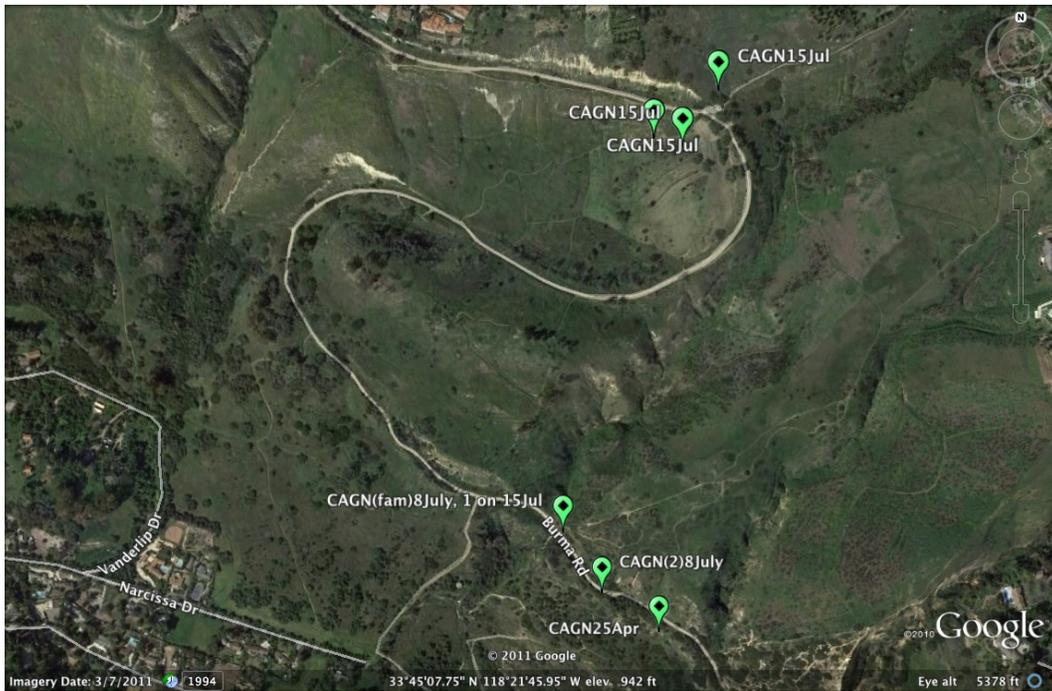


Figure 3b. Map of 2011 California gnatcatcher sightings, including northern area.

Table 2. Location of 14 pairs of California gnatcatcher (“CCG”) reported by Dudek (2006), and their representation in surveys by Hamilton (2009) and Cooper (2010-11; this study). Names (e.g., “CCG1”) follow Dudek (*Ibid*, sheets 10-12); an additional 8 locations where individual (i.e., unpaired) birds, including juveniles, were found by Dudek in 2006, but not in subsequent years, are not listed.

Name	Description	Area	Trail	Hamilton 2009	Cooper 2010	Cooper 2011
CCG1	Pair	North	Peacock Flats Tr.	Not found	Not found	2 birds on 15 July
CCG2	Pair	North	Burma Rd., lower hairpin	Not found	Not found	Not found
CCG3	Pair/nest	South	Vanderlip Tr.	Not found	Not visited	Not visited (poor habitat)
CCG4	Pair	South	Landslide Scarp Tr.	Lone adult (CAGN "F") nearby	1 adult on 14 July	Lone adult on 25 Apr.
CCG5	Pair + 3 juvs	South	Burma Rd. @ Sandbox Tr.	Pair/family (CAGN "A") and lone adult (CAGN "G") nearby	Pair nearby on 03 May	Not found
CCG6	Pair + 1 juv	South	Burma Rd. east of Sandbox Tr.	<i>See above</i>	<i>See above</i>	Pair nearby on 08 July
CCG7	Pair	South	Klondike Cyn. Tr. (lower)	Pair/family (CAGN "B")	Male nearby on 03 May, 23 June	3 on 08 July

				nearby		
CCG8	Pair	South	Klondike Cyn. Tr. (upper)	<i>See above</i>	<i>See above</i>	Pair on 02 May
CCG9	Pair + 1 juv	South	Peppertree Tr. (lower)	Pair/family (CAGN "D")	Family on 23 June, 1 nearby on 14 July.	Not found
CCG10	Pair + 2 juvs	South	Peppertree Tr. (middle)	Not found	2 on 14 July	Female-type on 08 July
CCG11	Pair	South ⁵	Burma Rd. south of Ishibashi Tr.	Lone adult (CAGN "F") nearby	Family (?) on 14 July	Male with juv. on 08 July
CCG12	Pair	South	South of watertank	Not found	Pair nearby on 03 May; birds on 23 June (2), 14 July (1)	Not found
CCG14	Pair + 1 juv	North	Ishibashi Tr.	Not found	Not found	Not found
CCG15	Pair + 2 juvs	South	Ishibashi Farm Tr. @ Sandbox Tr.	Lone adult (CAGN "E") nearby	Family on 14 July	One on 08 July
N/A ⁶	N/A	South	South of Sandbox Tr., near parking area at lower gate.	Pair/family (CAGN "C")	Family on 14 July	Pair/nest on 25 Apr., 02 May
N/A	N/A	South	Northwest of parking area, lower gate	Not found	Male on 03 May	2 on 08 July
N/A	N/A	South	West of parking area, lower gate	Not found	1 on 14 July	1 (female?) on 08 July
Total pairs/"usage areas"	14	N/A	N/A	7	11	11

Cactus wren

In 2010 we found the cactus wren in just one small area of the site, in dense, cactus-rich coastal sage scrub at the extreme eastern edge of the southern area, within the Klondike Canyon drainage adjacent to the Forrester Reserve. Two birds, an apparent pair, were detected here on 03 May 2010, and a single bird was here on 23 June. In addition, we (Hamilton and Cooper) clearly heard (but could not see) a calling cactus wren ("*chugga-chugga*" call) from a slope near the center of the southern area (see Figure 4) on 03 May, possibly coming from a small, isolated cactus patch within non-native grassland east of the Sandbox Trail. While what was possibly this bird was heard very briefly on 14 July (by Cooper), no visual confirmation was obtained, and due to the distance at which this sound was heard, and the prevalence of the northern mockingbird *Mimus polyglottos* here, a known mimic of cactus wren calls, we do not consider this a cactus wren territory. Therefore, we estimate a maximum of one (1) active cactus wren territory at the Portuguese Bend Reserve for 2010 (Klondike Cyn.), with potentially two separate "usage areas" (Klondike Cyn., Sandbox Tr.) (Table 3).

⁵ This location falls on the border of the northern and southern areas, but because it is contiguous with unburned habitat to the south (and very little habitat remained in 2010 north of here), we include with the southern area.

⁶ "N/A" indicates locations surveyed by Hamilton (2009) and in this study that were located just south of the preserve boundary north of Palos Verdes Dr. South.

In 2011, we again found an active territory of a pair of cactus wren in the southeastern corner of the site in the Klondike Cyn. area (Figure 5), observing a pair with one bird entering a nest carrying food here on 02 May 2011. On that same day (02 May), we observed a cactus wren calling west of here from atop a telephone pole along the Sandbox Trail, and later in the day, watched either this same bird or a different individual as it called and foraged along a sage scrub-covered slope uphill of here, north of the Burma Rd. Trail. While either bird could have been one of the birds from the Klondike Canyon area foraging widely, it is also possible that one or even two additional territories were present in the upper part of the Sandbox Trail, a steep area with stands of cactus that was not thoroughly surveyed in either 2009, 2010 or 2011⁷. While the cactus wren observed in the Klondike Cyn. area on 08 July was upslope from the known pair/nest (Figure 5), the cactus scrub in this area is continuous (as opposed to patchy, as it is elsewhere on the reserve), and it is likely this was one of the birds in the same pair observed earlier in the season.

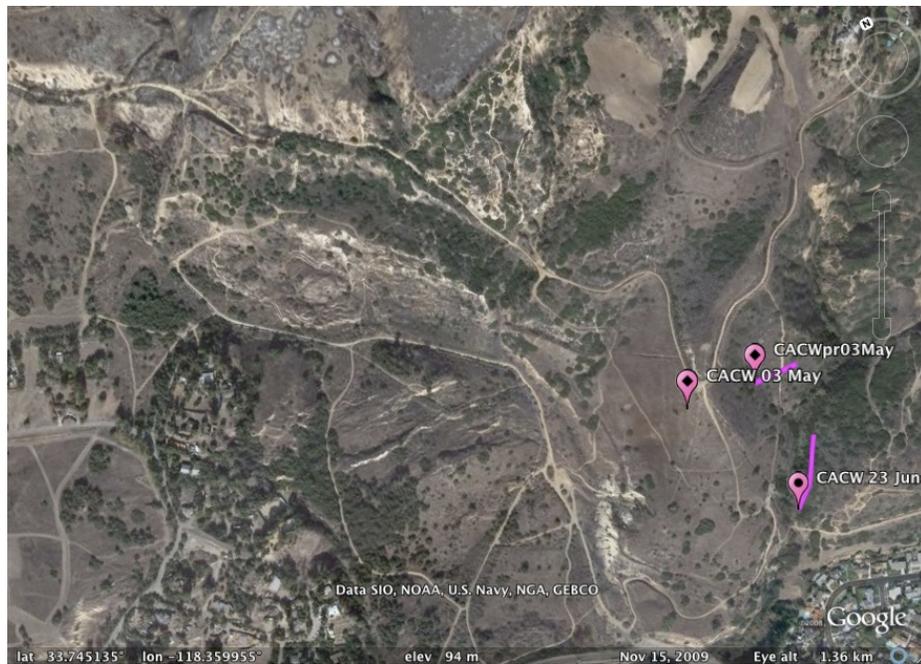


Figure 4. Map of 2010 cactus wren (CACW) sightings, which suggest a single territory in the southeastern corner of the reserve.

⁷ This area was left out of Hamilton's 2009 survey, possibly due to difficulty in accessing the habitat here and in an effort to faithfully replicate that study, we also left it out of our survey route.

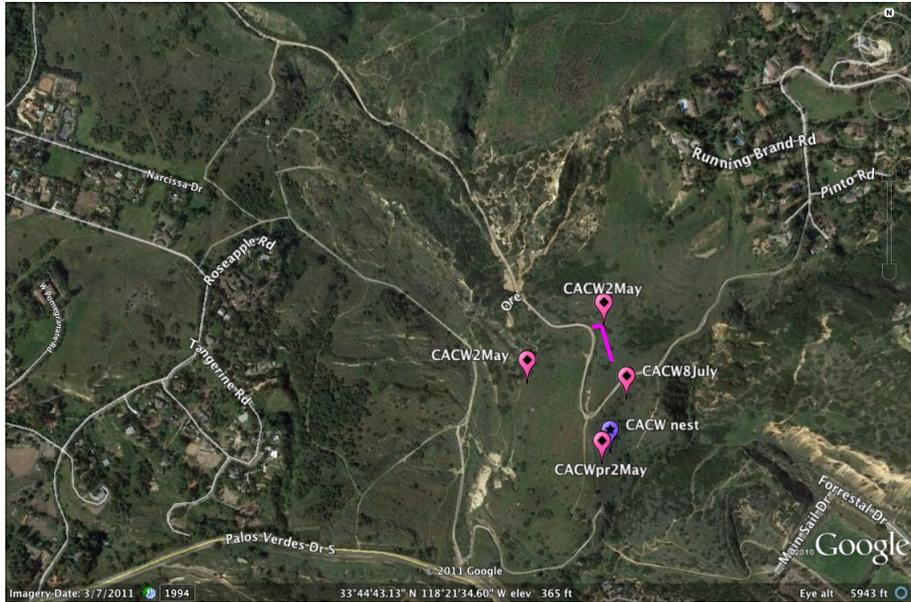


Figure 4. Map of 2011 cactus wren (CACW) sightings. Location of nest shown with a violet pin.

Table 3. Summary of individual pairs/territories of coastal cactus wren (“CCW”), by survey year.

Pair name (2006)	Description	Area	Location	Hamilton 2009	Cooper 2010	Cooper 2011
CCW1	Adult	South	Burma Rd. no. of Barn Owl Tr.	Not found	Not found	Adult on 02 May
CCW2	Adult	South	" "	Not found	Not found	Adult on 02 May
CCW3	Adult	North	E. of Eagle's Nest Tr.	CACW "A" (pair)	Not found (habitat burned)	Not found (habitat burned)
CCW4	Adult	North	Burma Rd., lower hairpin	Not found	Not found (habitat burned)	Not found (habitat burned)
N/A	N/A	South	Klondike Cyn. Tr. (lower)	CACW "B" (Pair)	Pair on 03 May, 1 nearby on 23 June (not visited 14 July)	Pair/nest on 02 May, 1 on 08 July
N/A	N/A	South	Panorama Tr. (lower)	Not found	Single calling bird on 03 May ⁸	Not found

⁸ See text; possibly a northern mockingbird imitation.

Table 4 presents a summary of observations of both California gnatcatchers and coastal cactus wrens observed on all three surveys (as well as negative observations of the brown-headed cowbird). Note our term “usage area”, which reflects the uncertainty in determining whether an actual breeding territory was present, given both the low number of visits and the relatively high number of observations late in the season, when juveniles would be out of the nest and resembling adults.

Table 4. Comparison of 2010 and 2011 results and effort with prior surveys.

	Dudek 2006	Hamilton 2009	Cooper 2010	Cooper 2011
Date range	15 June - 18 Aug.	1 Apr. - 15 May	26 Apr. - 14 July	25 April – 15 July
# Days	6	4	4	5
# Hours (total)	29:50	18:55	12:30	10:40
# California gnatcatcher territories/usage areas	14 ⁹	7 ¹⁰	11 ¹¹	11
# California gnatcatchers observed (daily max.)	N/A	N/A	18	20
# Cactus wrens territories/usage areas	3-4 ¹²	2	1-2	2-3
# Cactus wrens observed (daily max.)	N/A	N/A	2	3-4
# Brown-headed cowbird	N/A	0	0	0

Discussion

Due to differences in data presentation and interpretation in the three time periods presented by the three surveys of the reserve (Dudek 2006, Hamilton 2009, and this study), it is difficult to accurately compare results across years. For example, both Dudek and

⁹ Two of these territories (incl. pairs and family groups) were within 200 meters of other territories, and may represent duplicate counting. One territory found by Dudek (2006) was in an area not visited by Cooper (this survey).

¹⁰ Reported by Hamilton (2009) as “7 territories”; however, a review of the maps in the report shows a four paired birds and 3 “lone adults”, which Hamilton also considered territories (pers. comm.); by contrast, Dudek (2006) did not consider single birds to represent territories.

¹¹ We did not map or count territories; these estimates represent “usage areas” (summarized in Table 2).

¹² Reported by Dudek (2006) as “four lone adult” birds, at least some of which were probably actually paired, or at least involved males attempting to hold territories (see Hamilton 2009). Two of the four were observed fairly close to one another, so could have been a mated pair.

Hamilton presented a numerical estimate for number of territories, but used different criteria to determine territories, and did not report counts of individuals, or daily maxima, as we have (Hamilton based the identification of “territories” on the presence of single birds, in addition to pairs; neither Dudek nor we considered single birds as territories). So, due to the comparatively less time we spent at the site, it was not possible to estimate the number of territories of either the California gnatcatcher or cactus wren on the reserve in 2010-11; however, thanks to maps provided by previous surveys, we were able to compare the locations of “usage areas” (e.g. trails and landmarks) where birds were detected in previous years and where they were found on our survey, to at least provide a rough metric of comparison. While some of these usage areas may well have been breeding territories in 2010-11 (particularly those at which we observed birds on both visits), considering all areas where we found birds as “territories” could easily over-estimate the number of breeding pairs present. Because young birds are so difficult to identify from adults in the field (particularly after mid-summer, when adults are molting), we urge caution when evaluating all reported estimates of “territories” using non-standard methods, particularly when not supported by spot-maps over multiple dates, or other relevant data.

Still, given that we observed 18-20 individual California gnatcatchers on single visits in both 2010 and 2011, we could infer that the status of the species sitewide in 2010-11 breeding season was potentially similar to that of 2009 prior to the fire, when seven territories were estimated, regardless of the differences in reporting. Direct comparison of our effort with the 2006 survey is difficult, given that Dudek spent three times as much time/effort as we, employed multiple observers (presumably able to survey the entire reserve simultaneously), and covered much more area than either Hamilton (2009) or we did. However, given the fact that the 2006 survey was conducted prior to the fire’s eliminating most of the coastal sage scrub habitat in the northern portion of the reserve, and that it detected gnatcatchers in areas that are no longer covered by coastal sage scrub (e.g., the Ishibashi Trail), it seems likely that a post-fire decline has occurred at least in the northern reserve. However, a much more intensive survey effort would be needed to confirm this conclusion; for example, USFWS guidelines require at least six visits per 80 acres of gnatcatcher habitat during March – June to detect mere *presence* of the gnatcatcher, while we used only two visits to each potential territory each year.

The timing of the three surveys (2006, 2009 and 2010-11) was also slightly different; our most recent (2010-11) survey was conducted during a somewhat later window than that in 2009, due to an initial delay in getting started in spring 2010 (we used similar late start date in 2011 for consistency between years). Both the 2009 and the 2010-11 surveys also ended earlier than the 2006 survey, which included two visits in August. For this reason, it is likely that the late dates of some of the 2006 surveys would inflated any estimate of the number of gnatcatcher territories on the site that year, as we found young-of-the-year (closely resembling adult birds) to be common here by mid-summer in both 2010 and 2011. Even comparing usage areas between years is problematic, since a survey that devoted more hours observing birds (as in 2006) would presumably find birds more widely, particularly if non-breeding/dispersing birds were included in the estimate of usage areas.

Still, a decline in gnatcatcher numbers in the northern area of the reserve has almost certainly occurred, as no birds was detected in two of the three California gnatcatcher territories/usage areas reported by Dudek in the northern area in 2006 in either 2009, 2010

or 2011 (CCG2 and CCG14; see Table 3). However, it is not clear that the fire directly caused this decline, as although both of these areas burned in late 2009, the 2009 survey – which was conducted prior to the fire – did not find birds here. Elsewhere on the reserve, a pair found in 2006 was in an area not visited by Cooper in 2010-11 (CCG3, near the “Vanderlip Trail” in the far west), so its current status cannot be assessed. However, this area is now extensively invaded by non-native shrubs like wattle *Acacia* sp., and contains little – if any – coastal sage scrub. Interestingly, of the ten pairs found in 2006 in the southern area that were re-visited by our survey in 2010-11, we found at least one individual California gnatcatcher at or near all of them, suggesting that the overall *distribution* of gnatcatchers from 2006 might not be appreciably different today (at least in the southern area), even if the estimate of territory numbers – the result of a much more subjective process and one that was not attempted during our survey – differed.

Factors that might make such a comparison difficult, even with more visits, are due to inconsistencies in data-reporting in the three studies, and lack of standardization in survey methods as would be required by USFWS protocol surveys to determine presence/absence. For example, neither Dudek (2006) nor Hamilton 2009 reported dates of each sighting or daily total counts, but rather presented them all together on the same map. This is especially difficult to overcome when interpreting boundaries between pairs/territories; four gnatcatcher pairs in the southern area reported by Dudek in 2006 were within 200 meters of each other in continuous coastal sage scrub habitat (CCG5, 6, 7 and 8), but because there were no dates or times associated with them, it is impossible to know if these represent duplicate counts of the same pairs made on different days, or four separate territories. If they *were* duplicates, this would reduce the total number of 2006 territories in the southern area from 11 down to seven, a number comparable to the territory estimate in 2009. Therefore, while it seems clear that territories have been lost in the northern area since 2006 (no gnatcatchers were found here in either 2009 or 2010), it is less clear that they have declined in the southern area or even overall; our visits were simply too few to confirm this.

Interestingly, birds were detected by Hamilton (2009) and Cooper (this study) in three areas where undetected (or unreported) by Dudek in 2006 (Table 2, see bottom of table)¹³. While this suggests that areas used by gnatcatchers may shift around from year to year, with so few visits, and a lack of coverage in 2010-11 early in the breeding season during territory establishment, it is difficult to conclude that each sighting of a pair or even a family group represents a definite territory, much less a “new” one. It is also possible that Dudek never visited these “new” areas, as they are located just outside the reserve boundary.

As for the effects of the 2009 fire on the California gnatcatcher, although most of the northern area burned in August 2009 (i.e., between the surveys by Hamilton and Cooper), the fact that Hamilton did not find gnatcatchers in the northern area in early 2009 suggests that these territories had become inactive prior to the fire; or, it is possible that the sightings from 2006 were of transient/post-breeding individuals and not actual breeding territories; observations of late-season birds, presumably dispersing, in this northern area in 2011 may support this latter scenario.

¹³ The survey route used by Dudek (2006) in the southern area differed from that of Hamilton (2009) and Cooper (this study); comparably little coverage was made in 2006, presumably because the southernmost section of the reserve area is outside the legal boundaries of PVPLC ownership.

For the cactus wren, four birds/territories were estimated for the site in 2006¹⁴, two widely separated territories were identified in 2009, and just one definitive territory (with a pair at a nest) was detected in 2010-11, located in Klondike Canyon on the eastern edge of the reserve (although one or two additional usage areas were noted). One of the locations where a cactus wren was observed in 2006, and where a pair was present on territory again in 2009 (CCW3 in Table 3, in the southern part of the northern area, east of the Eagle's Nest Trail and just north of the Burma Rd./Ishibashi Tr. intersection) burned in August 2009, eliminating essentially all live cactus here by the time of the 2010 survey (Figure 5). We found no wrens here on any of the four visits in 2010 nor in 2011¹⁵, and consider this territory eliminated.

Interestingly, the 2011 survey located two birds (not necessarily paired) along the lower portion of the Burma Rd. Trail (near the Sandbox Trail), which corresponds almost exactly to locations of two birds documented in 2006. Oddly, the 2006 survey did not record cactus wren in the Klondike Canyon area where birds were present in 2009, 2010 and 2011. Single wrens observed west of the lower hairpin of Burma Rd. in 2006 (Dudek) and near the lower Panorama Tr. in 2010 (Figure 4) are difficult to interpret, as they were not seen near large patches of cactus, and apparently were not paired.

However, as with the gnatcatcher, because of the low number of visits to the cactus patches at the site, it was not possible to tell whether the "Sandbox Trail bird(s)" present in 2006 and 2011 represent a breeding territory or not. Searching during multiple visits early in the breeding season, e.g., February – April, would be necessary to determine presence/absence of this species, as birds can be silent/inactive for long periods of time (pers. obs.). However, it is clear that the cactus wren remains very rare on the reserve at this point, and future sightings anywhere on the property should be followed up with visits to detect and confirm new territories, particularly in areas away from Klondike Canyon.

¹⁴ Based on the map provided by Dudek (2006), two of the four cactus wrens observed were close enough to be considered potentially a mated pair, meaning that three territories were present; Hamilton (2009) discusses the challenges in interpreting the 2006 cactus wren data.

¹⁵ Located near the border of the northern and southern areas, this cactus patch was surveyed on all four visits in 2010.



Figure 5. Burned cactus scrub (red arrow) at site of 2006 and 2009 observations of cactus wren(s), just east of Eagle's Nest Trail (ph. 26 April 2010, D.S. Cooper).

Part II. Observations of vegetation, other wildlife

Sensitive plants

Three sensitive plants (CNPS 2010) were noted incidentally during surveys, and mapped (Figure 6). They are:

Hubby's phacelia *Phacelia hubbyi* (formerly *Phacelia cicutaria* var. *hubbyi*)
CNPS 4.2 (limited distribution)



This distinctive annual, with its "pigtail" inflorescences, was found to be a common plant on the steepest slopes of the property, dominant along the uppermost trail down from Crest Rd. (at left, on 26 April 2010), where it was found to form a monoculture in late April and May. Formerly considered a variety of the widespread caterpillar phacelia *Phacelia cicutaria*, it is now considered to be a distinct species, with a very small range, mainly from Santa Barbara to Los Angeles County, including the Channel Islands, at low elevations.

South Coast branching phacelia *Phacelia ramosissima* var. *australitoralis*
CNPS 4.2 (limited distribution)



This localized form of a more widespread perennial is found in coastal environments in southern California from Santa Barbara County south, however, it may not actually represent a distinct form, and may be removed from the CNPS list (A. Sims, via email). Two populations occur at Portuguese Bend, both in the southern area. The total extent is much less than 1 acre, but plants appeared in robust condition and were blooming on 14 July 2010 (when discovered, at left). This is a common species on relict coastal dune systems in the

Los Angeles area (pers. obs.), and probably elsewhere on sandy soils on the Palos Verdes Peninsula.

Catalina mariposa-lily *Calochortus catalinae*
CNPS 4.2 (limited distribution)



This lily is restricted to heavy clay soils within a variety of open habitats on the coastal slope from San Luis Obispo County south. It is (or was) especially common on the Palos Verdes Peninsula, and large fields of several thousand plants were observed primarily in the lower portion of the 2009 burn area (at left, on 26 April 2010). These were not observed in spring 2011, by which time non-native grasses had thoroughly invaded the site. A handful of plants were also present along the upper portion of the steep trail into Klondike Cyn. (2010 and

2011), and are probably more widespread on the property. It is absent where weeds and non-natives are dominant, and appears to strongly favor undisturbed (from grading/discing) soils, though it can persist (and even thrive) with occasional fires.

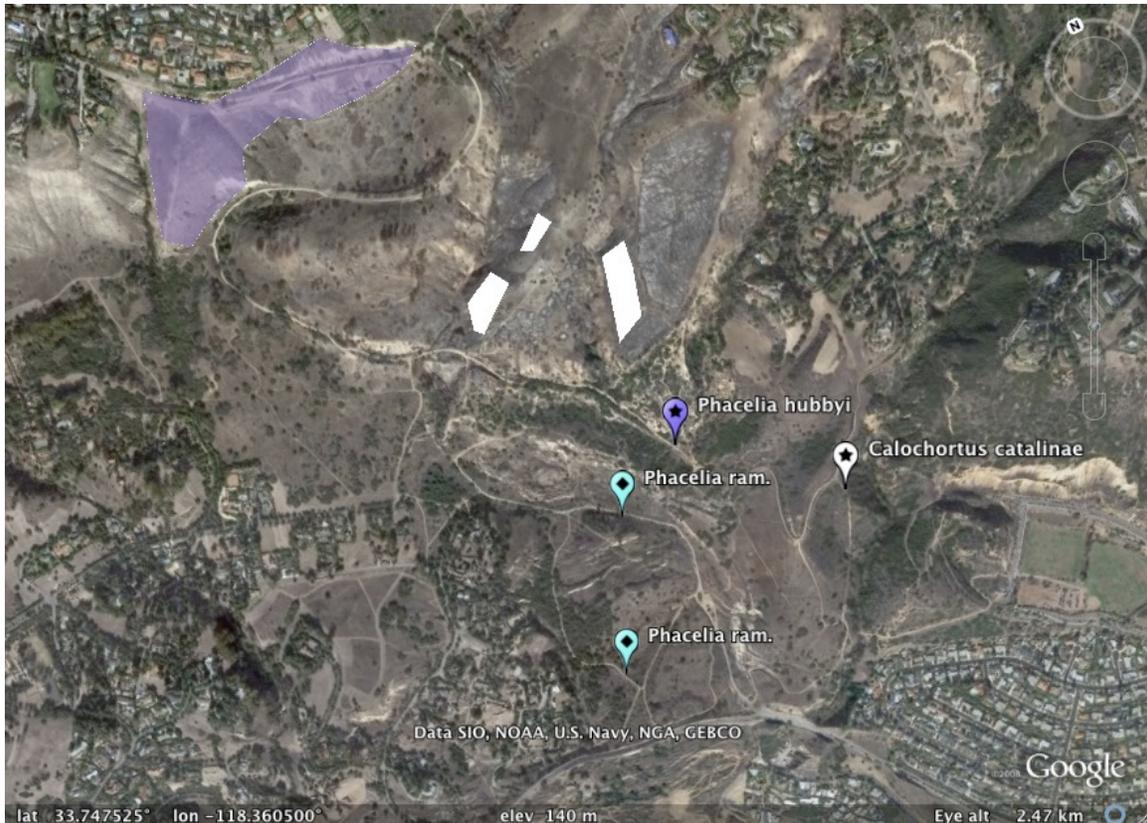


Figure 6. Locations of sensitive plants detected incidentally at Portuguese Bend (this study), including *Phacelia hubbyi* (violet; note also large polygon at upper left), *Phacelia ramosissima* var. *australitoralis* (blue) and *Calochortus catalinae* (white).

Unburned habitat remnants

While most of the northern portion of the Portuguese Bend Reserve was burned in the August 2009 fire, several areas of unburned vegetation within the fire footprint were documented. The largest was a southeast-facing slope near the uppermost portion of the reserve itself, which featured high-quality coastal sage scrub habitat with ashleaf buckwheat, purple sage *Salvia leucophylla* and California sagebrush (Figure 7). While we were surprised to not have detected the California gnatcatcher in this patch, neither prior studies detected it here either, possibly due to its isolation from other occupied habitat.

Farther south, areas of unburned coastal sage scrub as well as "mesic scrub" (high, dense scrub with a strong component of giant wildrye *Leymus condensatus* and poison-oak *Toxicodendron diversiloba*) was encountered along the Burma Rd. Trail, and the southern of the two hairpins (Figure 7). Finally, small discrete patches of coastal sage scrub persisted along the roadside here, to the south, and to the north within the northern of the two hairpins of Burma Rd. Trail (Figure 7). It should be noted that even within the most intensely burned portions of the 2009 fire zone, we observed vigorous sprouting by native plants, including annual forbs, perennial subshrubs (esp. ashleaf buckwheat) and larger crown-sprouting shrubs such as lemonadeberry.



Figure 7. Major areas of unburned native vegetation within Portuguese Bend Reserve, summer 2010. Large yellow polygon denotes the most intact patch of coastal sage scrub, in the northern portion of the reserve.

Wildlife and "non-target" birds

We observed one species of mammal commonly in 2010 and 2011, the Audubon's cottontail *Sylvilagus auduboni*¹⁶ (Figure 8), which is common to abundant in larger blocks (>100 acres) of open space in the Los Angeles (pers. obs.). In 2011, we added California ground squirrel *Spermophilus beecheyi*, a single on 8 July, and the non-native eastern fox squirrel *Sciurus niger* (one on 25 April).

We found the western fence-lizard *Sceloporus occidentalis* to be common at the site in both 2010 and 2011, and encountered a single individual side-blotched lizard *Uta stansburiana* in the large patch of coastal sage scrub near the top of the northern area on 26 April 2010, but none in 2011. We found single individuals of southern Pacific rattlesnake *Crotalus oregonus helleri* on 26 April 2010 (Figure 9), 12 May 2011 and 15 July 2011, a striped racer *Coluber lateralis* on 02 May, and a Pacific gopher snake *Pituophis catenifer* on 12 May 2011 (Figure 10).



Figure 8. Audubon's cottontail, showing the fluffy white tail, "salt-and-pepper" pelage, and chestnut tone on the nape and limbs that distinguishes this species from the brush rabbit, previously reported (in error).

¹⁶ Dudek (2006) reported the brush rabbit (*Sylvilagus bachmani*) and no Audubon's cottontail, clearly in error; the brush rabbit is a rare species found in remote foothill sites at the edges of the Los Angeles Basin (e.g., western Santa Monica Mountains, *pers. obs.*).



Figure 9. Southern Pacific rattlesnake, Ishibashi Trail, 12 May 2011.



Figure 10. Gopher snake, Burma Rd. Trail, 12 May 2011.

In addition to the California gnatcatcher and the cactus wren, two bird species observed are considered sensitive by Calif. Dept. of Fish and Game, Cooper's hawk *Accipiter cooperii* and Southern California rufous-crowned sparrow *Aimophila ruficeps*, both formerly Bird Species of Special Concern, since "downlisted" to WatchList status. A pair of Cooper's hawks were observed on 03 May 2010 over Klondike Canyon, and may be nesting in the area, possibly near Forrestal Reserve; singles were in the lower area on 25 Apr. 2011, and a pair was at the northern edge of the reserve on 15 July 2011. Up to three singing rufous-crowned sparrows were seen on the site in 2010 and four in 2011, and the species is almost certainly a breeding resident on the reserve.

We made several observations of breeding birds, including:

Red-tailed hawk *Buteo jamaicensis*: Occupied nest near Peppertree Tr. on 03 May 2010 (at least one young bird heard and seen thereafter).

Cooper's hawk *Accipiter cooperii*: Pair over Klondike Cyn. (03 May 2010, 15 July 2011).

Mourning dove *Zenaidura macroura*: Nest-building on 23 June 2010.

Common raven *Corvus corax*: Pair on 2, 12 May and 8 July 2011.

Bushtit *Psaltriparus minima*: Nest-building (26 April 2010), family groups on subsequent visits.

Bewick's wren *Thryomanes bewickii*: Family group on 23 June 2010.

House wren *Troglodytes aedon*: Adult with begging juvenile (fully-grown) on 23 June 2010.

Common yellowthroat *Geothlypis trichas*: Family group on 23 June, 14 July 2010, 8 July 2011.

California towhee *Pipilo crissalis*: Family groups on 23 June 2010; 12 May, 8 and 15 July 2011.

Spotted towhee *Pipilo maculatus*: Food-carrying on 12 May 2011.

Song sparrow *Melospiza melodia*: Family groups on 23 June, 14 July 2010, 8 July 2011.

Indigo bunting *Passerina cyanea*, lazuli bunting *P. amoena*: A mixed pair (male indigo with female lazuli) was observed and photographed on 23 June 2010 near the center of the northern area of the reserve. This pairing has been documented before in California (Rowe and Cooper 1997), but is apparently unprecedented on the Palos Verdes Peninsula (*vide* K. Larson); even lazuli bunting, the "expected" species of this species pair, is a scarce and irregular nester on the coast of Los Angeles County (absent here 2011!).

Lesser goldfinch *Spinus tristis*: Family groups on 23 June 2010, 12 May 2011.

Hooded oriole *Icterus cucullatus*: Family groups on 23 June 2010.

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