Palos Verdes Nature Preserve Survey for the California Gnatcatcher and the Cactus Wren
Palos Verdes Peninsula Land Conservancy
Los Angeles County

Final Report

Abalone Cove, Palos Verdes Peninsula (photo. by Daniel S. Cooper)

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Introduction and Summary

We report on a single-season survey of two sensitive bird species, the (coastal) California gnatcatcher *Polioptila californica californica* (Federally Threatened) and the coastal-slope population of the cactus wren *Campylorhynchus brunneicapillus* (formerly a Candidate for federal listing; now treated as a California Bird Species of Special Concern[1]) on the Palos Verdes peninsula in 2012. Our study area extended across 10 reserves covering a combined 1,225 acres managed by the Palos Verdes Peninsula Land Conservancy (Figures 1a and 1b). Our survey may be compared with previous surveys for these two birds conducted at most of the same sites in 2006 and 2009 (Dudek 2007, Hamilton 2009), as well as with more limited surveys conducted at Portuguese Bend reserve in 2010 and 2011 (CEM 2011).

In 2012, both California gnatcatcher and cactus wren were each present at 8 reserves, though not at the same ones. The California gnatcatcher was absent at Filiorum and was likely not resident at Agua Amarga and the Cactus wren was not detected at Vicente Bluffs. Vista del Norte had neither target species. Compared with previous surveys, the estimate of California gnatcatcher territories for 2012 (33) was lower than that of both 2006 (65) and 2009 (40), while numbers of cactus wren territories (38-48) were up from 2009 (18) and similar to counts made in 2006.

Methods

We (Daniel S. Cooper, TE 100008-2, SC-10615) conducted targeted surveys for the California gnatcatcher and the cactus wren at 10 reserves at the southwestern tip of the Palos Verdes peninsula (Figures 1a, 1b) across 17 survey days between 02 March and 12 June 2012. More than one site was visited on some days for a total of 58 survey hours (Table 1). We used a two-visit protocol, with one early-season visit during March and early April ("Round 1") and one late-season visit during May and early June ("Round 2"), spending between two and four days at each, depending on the size of the reserve and the amount of habitat present[2].

Following established protocol for California gnatcatcher surveys (USFWS 1997), visits were made between 6:00 a.m. and noon, typically beginning late morning when ambient morning temperatures were above 55 degrees F. Surveys were not conducted under extreme weather (temperature, wind) conditions. Taped vocalizations of each species were employed on all surveys, as outlined in guidelines provided by PVPLC and approved by U.S. Fish and

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[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.

[2] The 2006 reserve-wide surveys had used a 3-visit protocol; a reduction in effort for 2009 and 2012 was made per the NCCP guidelines for RPV.

Wildlife Service/Department of Fish and Game ("7.3.2 Animal Species Monitoring"). A "zigzag" walking route was used to cover each preserve, following as closely to the most recent (2009) survey as possible (Appendix A).

All surveys were carried out by Daniel S. Cooper (TE 100008-2; SC-10615). Cooper has extensive experience with California gnatcatcher surveys throughout Los Angeles and Ventura County, and conducted similar target bird surveys at the Portuguese Bend reserve in spring 2010 and 2011 for the Palos Verdes Peninsula Land Conservancy. The survey routes used in 2012 were intended to follow those used by previous surveyors (Dudek 2007, Hamilton 2009), with the addition of a new site added in 2012, Filiorum reserve, located between Three Sisters and Portuguese Bend. No more than 80 acres of coastal sage scrub was surveyed on any single day, following USFWS (1997) guidelines; several reserves contained only scattered patches of coastal sage scrub, or had inaccessible areas that could not be reached during the survey.

In addition to recording aural detections of both species, 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, as well as other sensitive species were noted. Basic weather conditions were observed at the start and end of each visit (Table 2). All observations of the two target species were recorded directly onto aerial photographs, with special attention paid to documenting the number and breeding/territorial status of each in notes. For each sighting of a target species, we recorded:

- Date and start time of sighting (sightings were typically very brief, so stop times were typically not recorded unless more than a few seconds);
- Sex/age of individual(s) (if known);
- Banding information (color-banded, metal-banded, etc.);
- Habitat type where found (only if not coastal sage scrub for California gnatcatcher or cactus scrub for cactus wren);
- Number of birds associated with individual (e.g., family group, pair, etc.); and
- Breeding activity observed

Locations of all target/special-interest species were transferred from field maps onto Google Earth maps and converted to digital files (.kmz). These are presented in Appendix B.

From these sightings, we estimated the number of territories for each reserve, cognizant that two visits were insufficient to provide a confident estimate of either territory boundaries. Therefore, our territory numbers should be treated as rough approximations, rather than indications of actual population estimates. To allow for the most useful comparisons with prior surveys, we follow Hamilton's (2009) definition of a "territory" to include any discrete location where a territorial bird (male, in the case of the gnatcatcher) or pair was present on at least one visit. Locations where we detected an unmated female (only one instance in 2012, a female California gnatcatcher at Agua Amarga) or a lone juvenile of either species away from adults were not considered "territories". In one case (Abalone Cove), we observed fresh cactus wren nests in four areas (one of which had at least two fresh nests), but aside from hearing a possible (distant) call note, did not detect adult cactus wrens here on either of the two survey dates. Since four of the five nests were somewhat clustered, all

within 100 meters of each other, these were counted as a single territory, though we acknowledge more pairs might have been present and detected on additional visits outside the established protocol. In mapping locations of birds, we noted movements with arrows on our field maps, but mapped only the site of initial detection on the digital maps (otherwise, they would be nearly impossible to read, particularly given multiple visits). However, in one case, a cactus wren recorded just south of the border of the Portuguese Bend reserve was later moving far to the northeast (toward known/mapped territories) during our brief observation period and so was not counted as maintaining own territory where first seen (nearly all sightings involved birds making short flights only).

Comparisons among years have limited validity due to differences in methodology and timing. The two-visit schedule and the survey timing (March – early June) were similar to Hamilton (2009), while Dudek (2007) used three visits, most done later in the summer (June through August). It is also unclear how intensive the cactus wrens surveys were in 2006; while the "2006 Initial Management and Monitoring Report" (Dudek 2007) described conducting "focused surveys" for Cactus Wren, the original survey report to USFWS (Dudek 2006) describes the same effort as a "focused presence/absence survey" for California gnatcatcher alone, and states only that "point locations of all observed San Diego cactus wrens…were mapped during the survey", presumably without a concerted effort to determine territory boundaries or the existence of paired versus single birds. As pointed out by Hamilton (2009), this may have led to an over-estimate of the number of unmated adults, or, at least complicates year-to-year comparisons. Hamilton also spent more time at each site, as he was also mapping habitat in addition to surveying birds. Finally, there exists inherent variability in estimates that rely on a small number of visits, so claims of species increasing or decreasing at a given site based on two or three visits must be made with caution[3]. However, changes in territory numbers and locations contribute to a baseline of observations that may be used to inform management decisions in future years.

[3] Atwood et al. (1998a) recommended a minimum of six visits during early spring and time of fledging to accurately determine territory size for the gnatcatcher, based on surveys on the Palos Verdes Peninsula.

Figure 1a. Reserves in the Palos Verdes Nature Preserve in Rancho Palos Verdes (indicated in top of legend) surveyed during this study in 2012. Figure courtesy PVPLC.

Figure 1b. Aerial view of reserves surveyed during this study. Clockwise, from upper left: L = Agua Amarga (formerly "Lunada Cyn."); N = Vista del Norte, U = Filiorum; C = Portuguese Bend (formerly "Canyons"); F = Forrestal; R = San Ramon; A = Abalone Cove (east and west); T = Three Sisters; B = Vicente Bluffs (upper and lower); V = Alta Vicente. Figure from Hamilton 2009, courtesy of PVPLC.

Table 1. Reserve acreage and total survey hours, 2012. Note that multiple sites were surveyed on some days (see Table 2).

Reserve	**Acres**	**Days surveyed**	**Time afield (all visits combined)**
Abalone Cove	64	3	7:10
Agua Amarga	59	2	5:05
Alta Vicente	55	2	4:35
Forrestal	155	4	8:40
Portuguese Bend	399	4	12:00
San Ramon	95	3	4:10
Three Sisters/Filiorum (combined)	300	4	10:35
Vicente Bluffs	84	2	4:40
Vista del Norte	14	2	1:05
TOTAL	**1,225**	**26**	**58 hours**

Table 2. Summary and description of survey effort in 2012 (wind <5 mph on each visit unless noted). Number of birds listed is the maximum number of adults encountered. Note that surveys on 19 Mar. and 08 June included two (adjacent) reserves.

Date	**Survey round**	**Time**	**Temp. start (F)**	**Temp. end (F)**	**Sky**	**Subarea, if applicable**	**# CAGN**	**# CACW**
Abalone Cove (A)								
4 March	1	08:00-10:00	68	68	Clear	East	5	0
22 March	1	09:20-11:50	55	58	Ptly Cldy	West	2	0
29 May	2	09:20-12:30	68	70	Clear	N/A	5	1
Agua Amarga (L)								
09 April	1	08:40-12:15	61	63	Clear	N/A	1	6
05 June	2	09:15-10:45	64	65	Clear	N/A	0	3
Alta Vicente (V)								
29 March	1	08:05-10:50	56	62	Clear	N/A	8	11
05 June	2	07:15-09:05	60	64	Clear	N/A	6	18
Forrestal (F)								
05 March	1	08:25-11:10	66	64	Ptly cldy	West	11	0
17 May	2	09:00-10:45	63	66	Ptly cldy	West	4	2
14 March	1	08:50-10:52	52	61	Ptly cldy	East	4	0
23 May	2	09:15-11:35	68	73	Ptly cldy	East	3	0
Portuguese Bend (C)								
2 March	1	08:00-11:50	53	68	Clear	South	5	5
18 May	2	07:25-11:00	59	68	Ptly cldy	South	6	1
12 March	1	10:00-12:40	52	61	Ptly cldy	North	0	0
22 May	2	07:30-09:25	63	68	Fog	North	0	1
San Ramon (R)								
04 March	1	10:10-11:00	72	79	Clear	Middle	2	0

03 April	1	09:00-10:25	64	67	Clear	Upper/Lower	0	2[4]
14 May	2	06:55-08:50	57	64	Clear	N/A	2	2
Three Sisters (T)								
19 March	1	08:20-11:30	50	55	Clear	N/A	4	7
08 June	2	07:55-10:10	63	65	Ptly cldy	Northeast	0	3
12 June	2	06:00-08:00	61	63	Overcast	(Remainder)	1	7
Filiorum (U)								
19 March	1	08:20-11:30	50	55	Clear	Northwest	0	5
02 April	1	08:48-11:55	65	72	Clear	N/A	0	6[5]
08 June	2	07:55-10:10	63	65	Ptly cldy	N/A	0	6
Vicente Bluffs (B)								
13 March	1	09:50-12:48	57	61	Ptly cldy	N/A	10	0
14 May	2	09:20-11:00	64	72	Clear	N/A	5	0
Vista del Norte (N)								
03 April	1	11:00-11:40	65	65	Clear	N/A	0	0
22 May	2	07:05-07:30	62	62	Clear	N/A	0	0

[4] Does not include single cactus wren detected south of reserve (Ocean Trails).

[5] Includes single bird seen just off southern boundary of property in cactus scrub (where nest also present).

Results

Maps showing all locations of California gnatcatcher and cactus wren observations, including nests, from the 2012 survey are provided in Appendix B, and are detailed in a table in Appendix C. To summarize differences between the 2006, 2009 and 2012 surveys, the number of California gnatcatcher territories estimated for the reserves dropped between 2009 and 2012 (from 40 to 33), to a point roughly half that which was estimated in 2006 (65) (Table 3). However, the number of cactus wren territories appears to have increased roughly two-fold from 2009, to a level more on par with counts in 2006, particularly when birds at Filiorum, which wasn't sampled in 2006 or 2009, are omitted from the total (total minus Filiorum listed in parentheses in Table 3).

The 2012 survey did not detect breeding California gnatcatchers at Agua Amarga (single female in 2012, vs. 3 territories in 2009 and 4 in 2006). The number of gnatcatcher territories declined in San Ramon; down from 7 in 2006 to 2 in 2009 to just one in 2012. Gnatcatcher territories declined at Three Sisters (8 in 2006, 4 in 2009, 2 in 2012), despite considerable recent habitat restoration. The severe decline of pairs at Vicente Bluffs, where 10 territories in 2009 were replaced by just 3 in 2012 is a somewhat special case, since the habitat here is almost entirely comprised of planted and irrigated restoration vegetation; the gnatcatcher estimate in 2006, prior to the full maturation of this habitat, was roughly the same as that in 2012 (4 pairs then, 3 pairs today). Countering these trends, increases in gnatcatchers from 2009 were noted only at Abalone Cove (up to 5 pairs in 2012 from 3 in 2009) and at Forrestal (up to 9 pairs in 2012, from 5 in 2009), and numbers remained roughly the same at Portuguese Bend (6 pairs in 2012 vs. 7 in 2009). Counts of gnatcatcher pairs were lower in 2012 than in 2006 at every site that supported the species in 2006.

For cactus wren, higher totals in 2012 were partially due to the addition of Filiorum to the list of sites surveyed, where as many as 9 territories were noted (including two likely territories just outside the boundaries that probably intersected the preserve border), making this new acquisition (by PVPLC) among the most productive for this species on the peninsula. Elsewhere, 2012 counts of cactus wren territories surged at Alta Vicente, where an estimated 13 territories were active (contrast this with 2009, when Alta Vicente had just 4 territories). Notably, cactus wrens were observed at Abalone Cove in 2012, where none were observed in 2009. Interestingly, birds here were only noted during round 2, when no fewer than six (fresh) nests were detected on 29 May. Numbers of cactus wren territories dropped only at Forrestal, a relatively minor site (2 territories in 2009 vs. 1 in 2012).

Just one brown-headed cowbird was noted during the 2012 survey, a male in the residential area adjacent to Forrestal reserve on 23 May.

Table 3. Estimates of territories of California gnatcatcher and cactus wren, by reserve. Note that Dudek (2007) conducted three visits during the survey, while Hamilton and Cooper made two.

	California Gnatcatcher			Cactus Wren		
	Dudek 2007	Hamilton 2009	Cooper 2012 (this study)	Dudek 2007	Hamilton 2009	Cooper 2012 (this study)
Abalone Cove	8	3	5	9 ad.	0	3
Agua Amarga	4	3	1	4 ad.	4	6
Alta Vicente	8	5	5	4 pr., 7 ad.	4	13
Forrestal	12	5	9	6 ad.	2	1
Portuguese Bend	14	7	6	4 ad.	2	3
San Ramon	7	3	1	10 ad.	1	2[6]
Three Sisters	8	4[7]	2	7 pr., 1 ad.	5	10
Filiorum	N/A	N/A	0	N/A	N/A	9[8]
Vicente Bluffs	4	10	4	0	0	0
Vista del Norte	0	0	0	0	0	0
TOTAL	**65**	**40**	**33**	**11 pr. + 41 adults**	**18**	**48 (38)[9]**

Discussion

The following is a more detailed description of observations of California gnatcatcher and cactus wren by site, with reference to results from prior surveys.

Abalone Cove

Two of the three territories of California gnatcatchers Hamilton (2009) noted in the western portion of Abalone Cove were near birds detected in 2012: a pair along the road to the preschool on 22 Mar., and another in apparently landscaped/"restored" California sagebrush on the westernmost of the two main peninsulas on 29 May. A third pair found in 2009 to the northeast of the latter site was not detected in 2012 ("CAGN 'C'"; see Figure 14 in Hamilton 2009), though our survey found at least one pair on the eastern portion of the site near one detected in 2006 but where none was found in 2009. Otherwise, gnatcatcher observations in 2006 corresponded closely to those in 2012, with the notable exception of our not finding birds at the far western portion of the reserve adjacent to the main parking/picnic area (Figures 6h in Dudek 2007). Based on the aerial photos, this bluff area – located on steep

[6] At least one cactus wren territory was located southeast of San Ramon reserve, within city open space; this was mapped but not counted, since this area supports several pairs that will probably be censused separately in the future (unlike habitat adjacent to Filiorum, which was on private property).

[7] A fifth wren territory was just off the northeastern boundary of Three Sisters, land now part of Filiorum.

[8] Includes two probable territories off the southern boundary.

[9] Number in parenthesis excludes counts from Filiorum, which was not included in 2009 surveys.

slopes above the beach – has been heavily invaded with non-native shrubs and trees) and may no longer support suitable habitat for the gnatcatcher.

Abalone Cove territories of California gnatcatcher (white) and cactus wren (yellow).

Cactus wren was undetected entirely at Abalone Cove in 2009 as well as during Round 1 surveys in 2012, but in late May, multiple fresh nests were detected (6) as well as 1-2 singing birds (Figure 2b), suggesting that wrens either moved in from elsewhere late in the season, or had been extremely secretive in the months prior; either way, they are assuredly not extirpated from the site, as had been surmised by Hamilton (2009). Incidentally, one nest was only about 5 meters off the beach sand, a situation not noted at any other site during 2012. While no cactus wrens were observed in the eastern portion of the site in 2012, a vocal individual was observed briefly near the southern border of Portuguese Bend reserve on 18 May, where it presumably held a territory. Interestingly, cactus wren observations in 2006 closely matched those in 2012, with the same three areas used (Dudek 2007, Figures 6h and 6i).

Agua Amarga

As in 2009, all gnatcatcher/wren observations were made in the southern "arm" of the reserve, which supports the majority of the suitable habitat for both species. The only sighting of a California gnatcatcher in 2012 was of a lone female on 9 April near the southeastern edge of the reserve (located between two individuals/pairs mapped in 2009). Future surveys are necessary to determine if the species remains on the site. If no gnatcatchers are currently present, it may re-colonize in the future, as ample habitat remains. In 2006, gnatcatchers were mainly recorded in the southern arm of the reserve, but one was found in the northern arm, in coastal sage scrub that still exists (Dudek 2007, Figure 6c).

Singing cactus wrens were again noted along the north slope of the main canyon (as they were in 2006 and 2009), with the addition in 2012 of 1-2 singing birds along the southern lip of the canyon, apparently using non-native giant yucca (*Yucca elephantipes*) as singing perches.

Agua Amarga territories of cactus wren (yellow).

Alta Vicente

While numbers of California gnatcatcher, and locations of their detection, remained largely unchanged from 2009 to 2012 (4-5 territories in both years) and were observed using similar areas as in 2006 (Dudek 2007, Figure 6f), a notable find for this species in 2012 was an active nest with four nestlings on 05 June built well into the main restoration area on the lower part of the site (see Appendix B for map of location). A (separate) family group of adults accompanied by begging fledglings was seen on the same day at the edge of the same restoration area just to the west (Appendix B).

For cactus wren, at least 7 areas with fresh nests, as well as multiple pairs and singles beyond these nest locations, yielded an estimate of as many as 13 territories. At least two older nests placed in an isolated clump of cactus within the restoration area at the far southwestern corner of the site indicated even more potential habitat for additional territories. More surveys would be necessary to refine the estimate of pairs/territories here, but it is almost certainly much higher than the four territories found in 2009. In 2006, birds were using areas similar to those found in 2012 (see Figure 6f in Dudek 2007).

Alta Vicente territories of California gnatcatcher (white) and cactus wren (yellow).

Forrestal

We encountered single or paired California gnatcatchers in several areas of Forrestal, but many of these were found only on the first of the two visits. Assuming each of these represents a discrete territory, we estimated 9 territories, which was roughly intermediate between the 5 mapped in 2009 and the 12 in 2006. As a note, the pair far up the eastern canyon on 14 March was in atypical habitat (small patch of sagebrush within high, dense lemonadeberry *Rhus integrifolia* but was in nearly the same spot as a bird/birds found in 2006 (see Figures 6l and 6m in Dudek 2007).

The sole cactus wren territory found in 2012 at Forrestal was a pair actively nest-building during the Round 2 survey in mid-May (the species was missed entirely here in Round 1); it may have been the same pair found just west of here in 2009, which had no birds or nests in 2012. The territory at the southeastern end of the reserve found in 2006 and 2009 was not active in 2012 (no birds/nests), and no gnatcatchers were in this southern-most area either. Notably, loud leaf-blowers and/or tree-trimming operations were recorded in the adjacent neighborhood on both visits in 2012, making aural detections (of any species) difficult. It is possible the birds were less active during periods of loud noise, or we simply could not hear their calls above the ambient noise level.

Forrestal territories of California gnatcatcher (white) and cactus wren (yellow).

Portuguese Bend

The estimated five California gnatcatcher territories in 2012 were in roughly the same areas as those recorded 2009-2011, although birds were not found at the far southeastern corner ("Klondike Canyon" area) as they had been (Hamilton 2009, CEM 2011). Compared to the 2006 survey, birds have been essentially eliminated from the entire northern portion of Portuguese Bend, presumably following an August 2009 burn here.

Cactus wrens were again found in the southeastern corner of the reserve, but aside from some older nests, were absent from the lower Burma Rd. area where they had been found in 2006 and 2009 (and sporadically in 2010/11; see CEM 2011). However, the 2012 survey document an apparent re-colonization event, of a territory in the northwestern corner of the reserve ("CCW4"; see Figures 6j, 6k and 6l in Dudek 2007).

Portuguese Bend territories of California gnatcatcher (white) and cactus wren (yellow). A third territory of cactus wren to the north is visible on the map of Three Sisters/Filiorum.

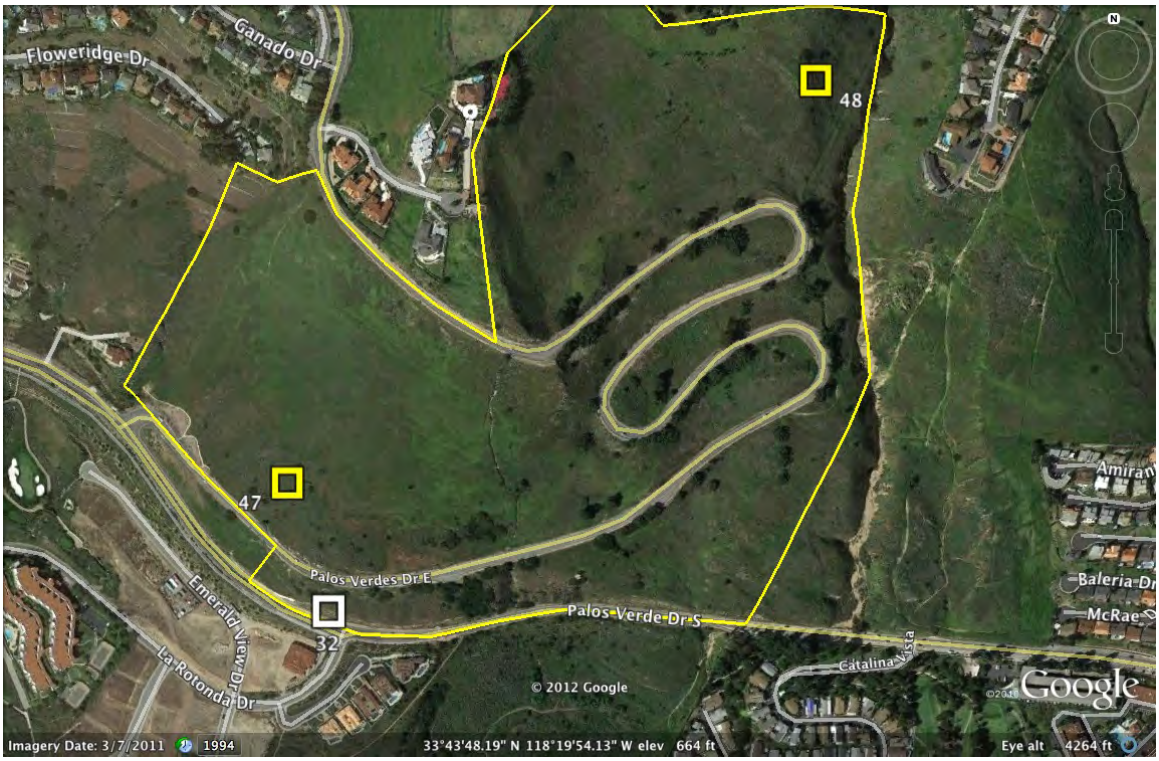
San Ramon

Just one pair of California gnatcatchers was observed in 2012, in the lowermost section of the reserve along Palos Verdes Dr. East, an area that held up to three pairs in 2009. Gnatcatchers were very widespread in the reserve in 2006, in central and northern areas that support very little coastal sage scrub today.

The northern of the two cactus wren territories found in 2012 was in an area where one was also present in 2006 (but not in 2009). As with other sites, multiple nests at the southern territory (#47, below), were noted only during Round 2 surveys in late spring, when birds either moved onto the site or became suddenly active.

As a note, traffic noise was very loud in the southern portion of this reserve regardless of time of morning, and as with the southern edge of Forrestal, noise may have hindered

additional detections of both species (principally from Palos Verdes Dr. South), or may be actually reducing habitat quality here.



San Ramon territories of California gnatcatcher (white) and cactus wren (yellow).

Three Sisters

Based on our detection of just two California gnatcatcher territories, this species has apparently declined at Three Sisters. Both 2012 territories were in areas relatively close to territories previously documented in 2009 ("CAGN 'A'", "CAGN 'B'"; see Figure 21 in Hamilton 2009), in the northern portion of the reserve. However, the 2006 survey found the species much more widespread, with birds observed in five locations in the lower half of the reserve, including along the southern border near Barkentine Ave., where none was observed in either 2009 or 2012.

Cactus wren locations in 2006 were generally similar to those in 2012; however, the 2012 survey found cactus wrens in the southern half of the reserve, where they were not found in 2009.

The apparent decline of California gnatcatcher is hard to explain, particularly given the large amount of habitat restoration at the reserve. It is possible that large areas of restored vegetation are in a very early successional stage, and have several years to go before they reach the "waist-high" scrub favored by the gnatcatcher. Although a large number of acacia trees were removed from the western portion of the reserve, the continued maturation of large acacia shrubs on the southern half of the reserve may be reducing habitat quality for the species.

Filiorum

As this new site was added in 2012, numbers cannot be compared with those of prior years. The discovery of a sizable population of cactus wren here (7 territories; 9 if birds on adjacent private lands are included) is encouraging; however these birds were not widespread, but largely restricted to the western edge of the reserve. The absence of gnatcatcher here is difficult to explain, because the coastal sage scrub where the cactus wrens were found appears suitable for this species. Hamilton (2009) found a pair or family group at the extreme eastern boundary of Three Sisters near the border of Filiorum, where we found none in 2012.

Vicente Bluffs

One of the biggest surprises of the 2012 survey was the drastic drop in California gnatcatcher territories at this restored site, which had 9-10 territories in 2009 (Hamilton

2009, Fig. 15), and just four in 2012. Thus, the current estimate is exactly the same as that in 2006, which is six years after the restoration plantings were completed here (D. LeFer, via email). It is possible that the high number of gnatcatchers in 2009 occurred when the planted vegetation reached an ideal density and height for the gnatcatcher in 2009.

Cactus wren was unrecorded at Vicente Bluffs in all three surveys, 2006-2012.

Vicente Bluffs territories of California gnatcatcher (white) and cactus wren (yellow).

Additional notes

The apparent declines in gnatcatcher territories and increases in cactus wren territories should be interpreted with caution. These were based on as few as four visits, over four years, for many reserves, which is far too few to make claims of population trends. So, while these surveys are probably sufficient for presence/absence information – such as that neither species has colonized Vista del Norte reserve, or that California gnatcatcher may be nearing extirpation at Agua Amarga – numbers of both species vary naturally annually, and from decade to decade. Atwood et al. (1998b) noted population swings of c. 50% during annual surveys on the peninsula from 1993-1997, ranging from a high of 56 in 1994 to a low of 26 pairs the following year (1995); our 2012 estimate of 33 pairs fits within this range, as does Hamilton's in 2009 (40 pairs) which used similar methodology. Therefore, only through repeated surveys over multiple years will we be able to assess trends with any confidence. Many natural factors, such as winter temperatures and rainfall, may affect productivity, and as the peninsula is now an urban area, anthropogenic factors, including construction and landscaping noise and mere human presence at small, heavily used (by people) sites, may skew detections of individual birds.

The observed declines may be cause for some concern in the reserves where either gnatcatchers or wrens are now very rare or absent after being more numerous on prior years' surveys. For gnatcatcher, these would at least include Agua Amarga, Three Sisters, and San Ramon. For cactus wren, these would include Abalone Cove, Forrestal, and San Ramon. Of course, this begs the question, are the target species truly rare at these sites now, or did surveys just not detect them? Perhaps directed searches at places like San Ramon – at various times of year until the next three-year survey – could start to answer this question.

The possibility that cactus wrens could increase while gnatcatchers would decline may be due, at least in part, to the local habitat preferences of each. The gnatcatcher favors lush, high thickets of California sagebrush (*Artemisia californica*) or nearby quailbush (*Atriplex lentiformis*) (pers. obs.), while the cactus wren favors cactus patches free of weeds and vines, with large barren areas of soil needed for ground-foraging. Aside from factors that would affect both species (for example, a local increase in a predator such as the Cooper's Hawk *Accipiter cooperii*), climatic phenomena such as a particularly dry winter would result in "better" cactus wren habitat and "worse" California gnatcatcher habitat (and vice-versa).

However, at least for the cactus wren, given how many sites had wrens apparently absent during Round 1 surveys in early spring which then "attracted" nesting wrens by Round 2, the timing of surveys may be extremely important in declaring a species present or absent (or recolonized/extirpated). Hamilton surveyed only four sites during May (2009), and none past 19 May, a period in which we observed many new cactus wren nests being built. By contrast, most of the Dudek surveys in 2006 were in June and July, even extending into August. It is possible that for whatever reason, cactus wrens are more detectable in late spring and mid-summer.

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APPENDICES

Appendix A. Approximate walking routes taken by surveyor (Cooper) in 2012. Different colors represent routes taken on different survey days.

Figure A-1. Agua Amarga (left), Vista del Norte (right).

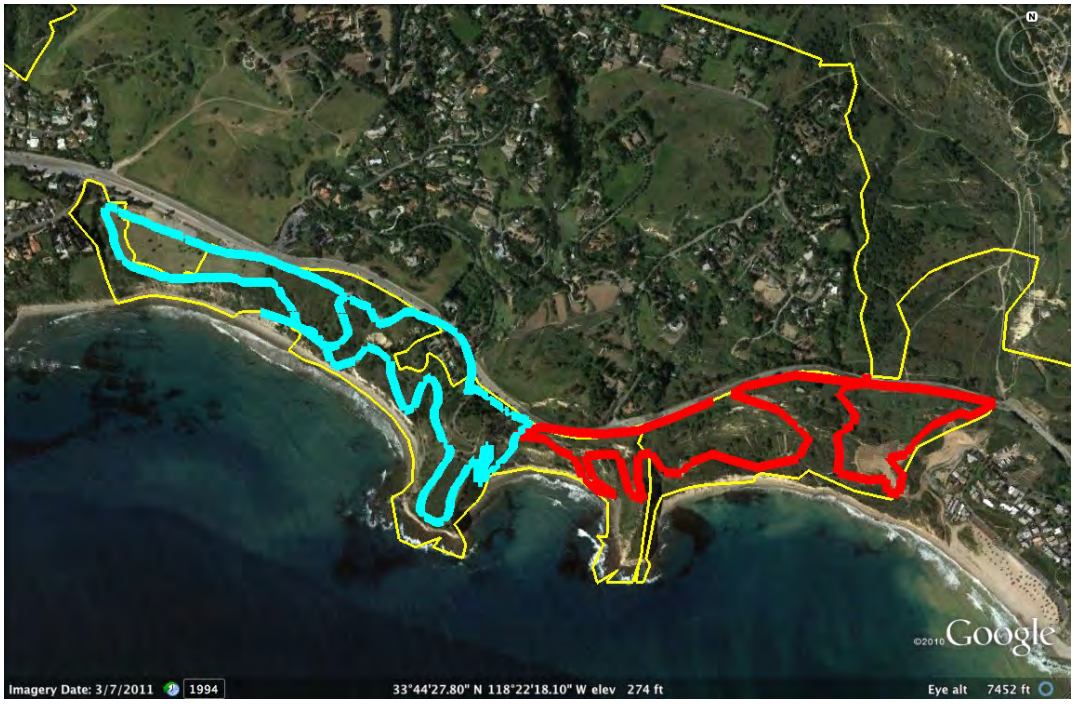

Figure A-2. Abalone Cove ("west" = blue; "east" = red).

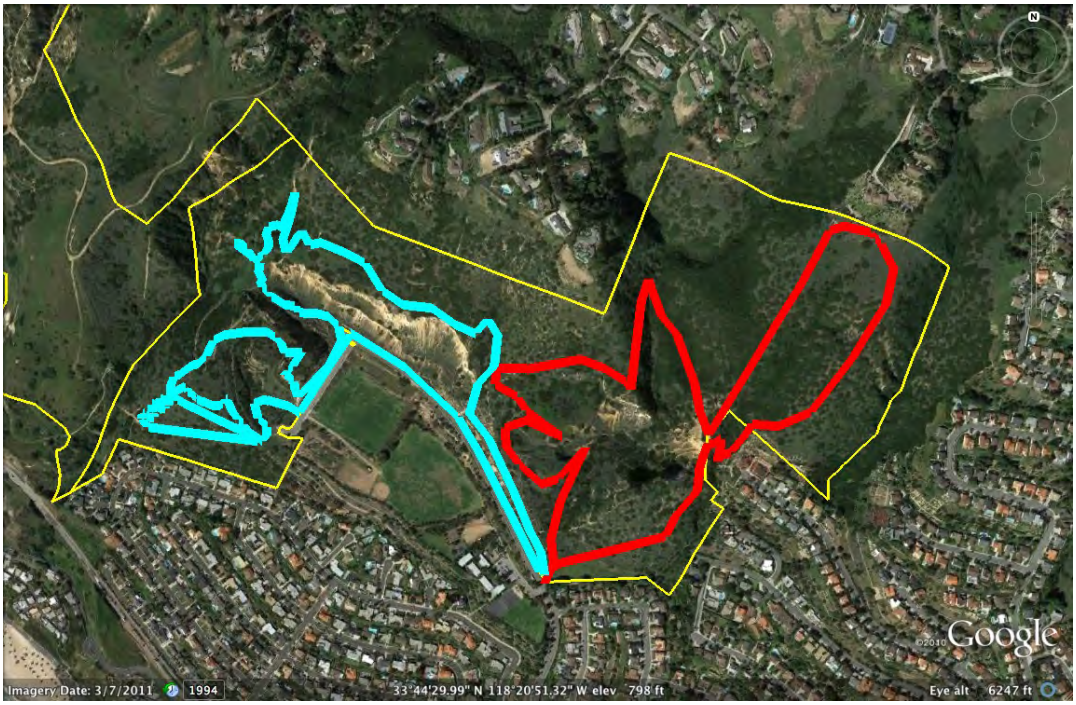

Figure A-3. Forrestal ("west" = blue; "east" = red).

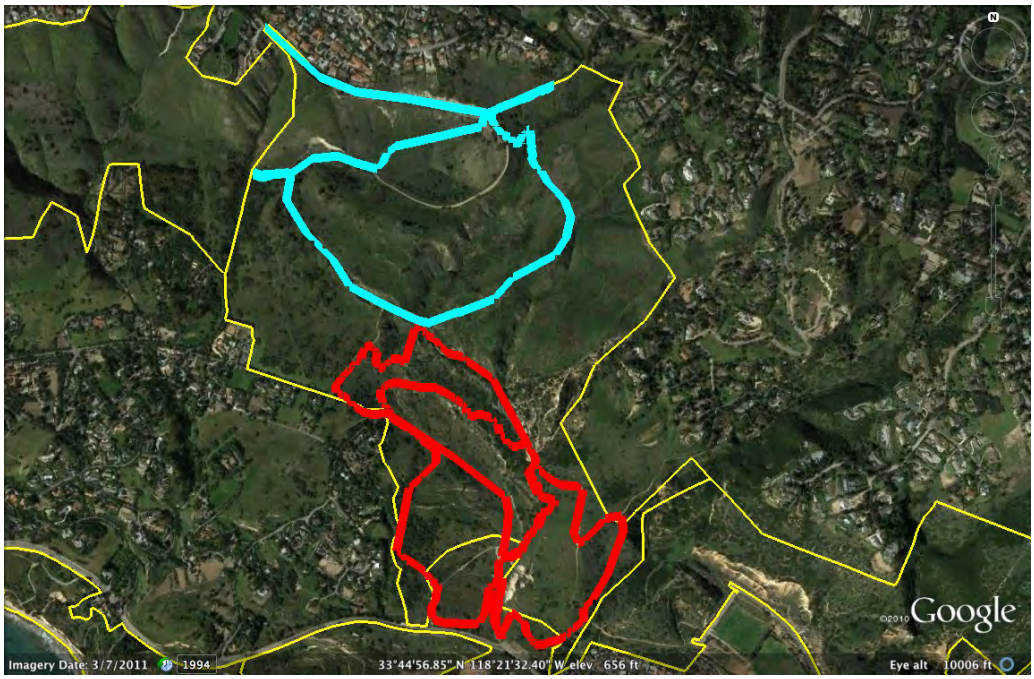

Figure A-4. Portuguese Bend ("north" = blue; "south" = red).

Figure A-5. San Ramon

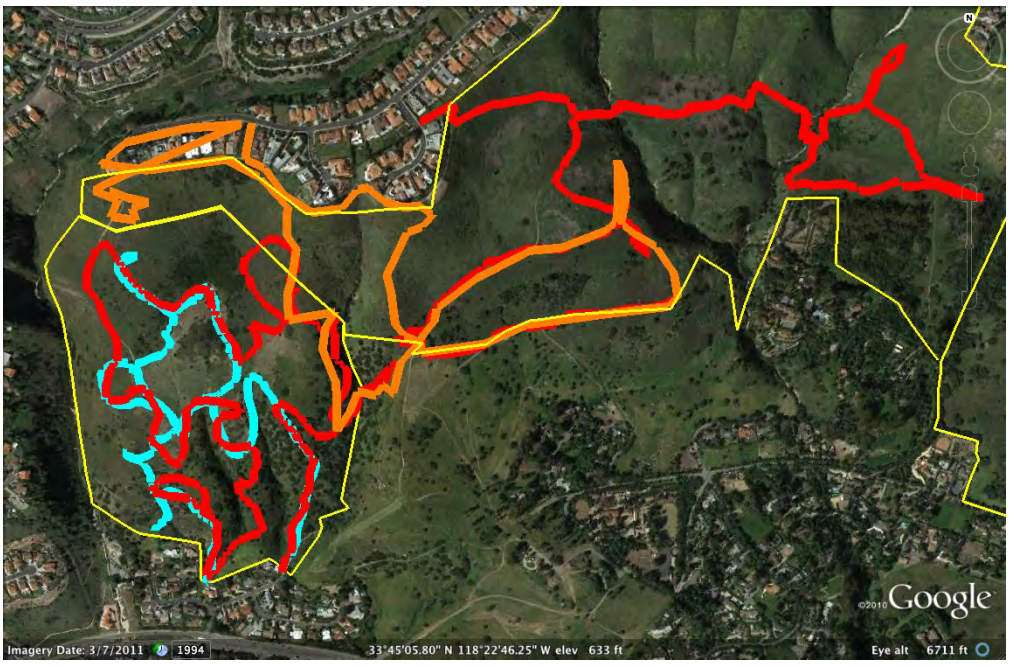

Figure A-6. Three Sisters (red/blue; at left) and Filiorum (orange/red; at right).

Figure A-7. Vicente Bluffs (upper) and Alta Vicente (lower).

Appendix B. Maps of all California gnatcatcher/cactus wren detections, 2012. Green pins represent gnatcatchers, pink pins represent cactus wrens. Round 1 surveys (March-April) indicated with a diamond icon; Round 2 surveys (May-June) indicated with a star icon. Please refer to Appendix C for additional details on each.

Figure B-1. California gnatcatcher and cactus wren observations, Abalone Cove.

Figure B-2. California gnatcatcher and cactus wren observations, Agua Amarga.

Figure B-3. California gnatcatcher and cactus wren observations, Alta Vicente.

Figure B-4. California gnatcatcher and cactus wren observations, Forrestal.

Figure B-5. California gnatcatcher and cactus wren observations, lower Portuguese Bend (and upper Forrestal). See Figure B-7 for an additional cactus wren observation.

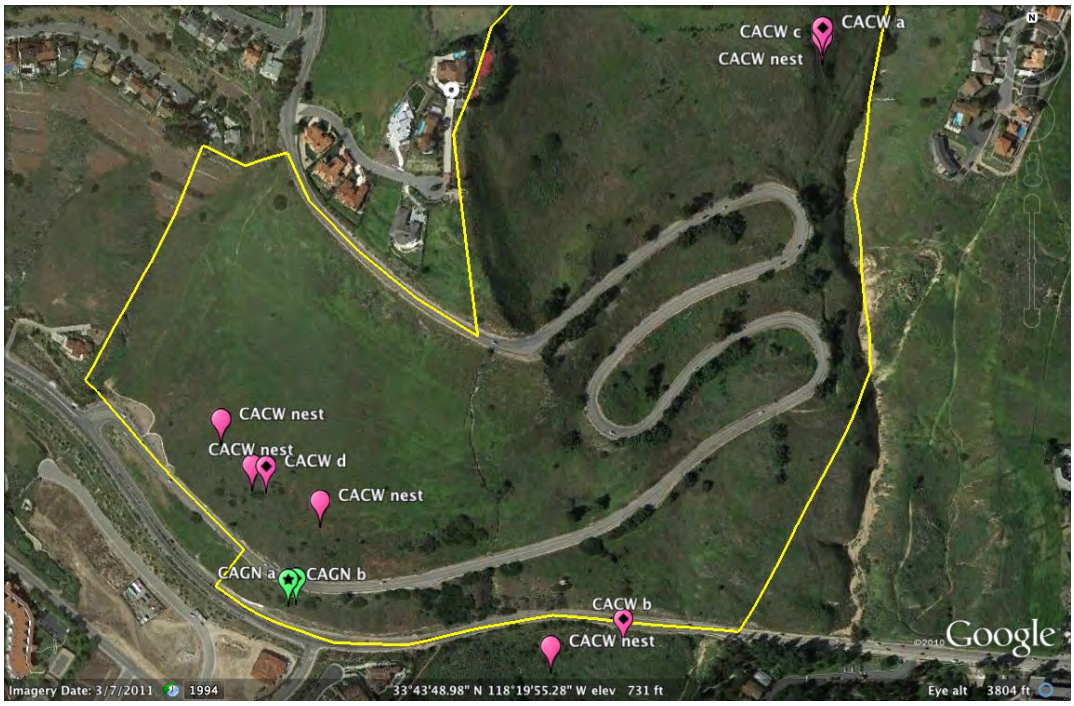

Figure B-6. California gnatcatcher and cactus wren observations, San Ramon.

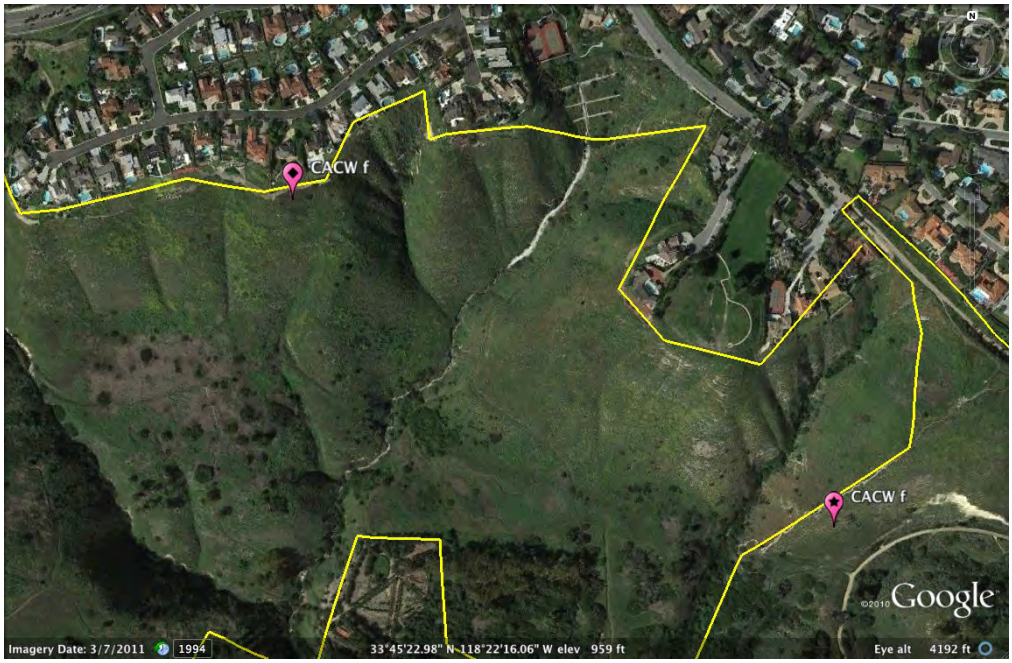

Figure B-7. California gnatcatcher and cactus wren observations, upper Portuguese Bend/east Filiorum.

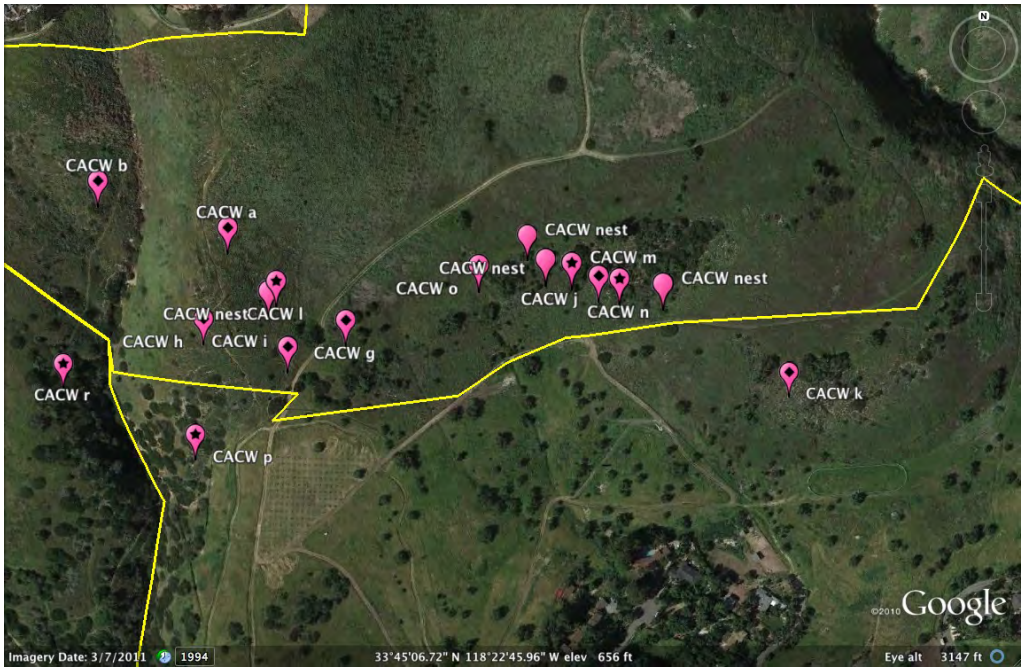

Figure B-8. California gnatcatcher and cactus wren observations, southern Filiorum.

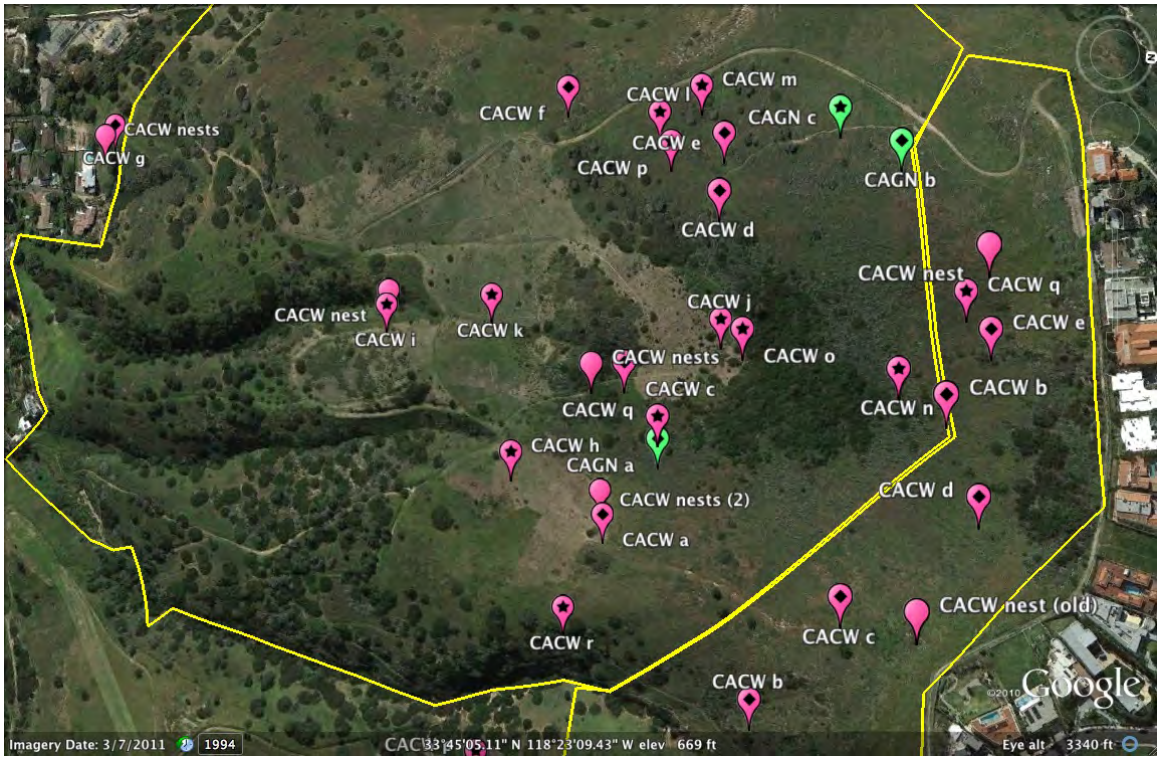

Figure B-9. California gnatcatcher and cactus wren observations, Three Sisters/Filiorum. Note east-west orientation.

Figure B-10. California gnatcatcher and cactus wren observations, Vicente Bluffs.

Appendix C. List of all California gnatcatcher ("CAGN" shaded) and coastal cactus wren (CACW) observations during 2012 survey, by reserve.
"Status": P = pair; S = single; F = Family group; J = juvenile; m/f = male/female

Subarea	Date	Species	Status	Time	Notes
Abalone Cove					
Subarea	**Date**	**Species**	**Status**	**Time**	**Notes**
East	04 Mar.	CAGN a	P	08:20	
East	04 Mar.	CAGN b	Sm	09:00	
East	04 Mar.	CAGN c	S	08:50	
East	29 May	CAGN d	P	10:12	
West	22 Mar.	CAGN e	P	11:18-11:35	
West	29 May	CAGN f	P	10:50	
West	29 May	CAGN g	Sm	11:20	
West	29 May	CACW a	S	11:10	Perched at top of bluff, flew down to nest.
Alta Vicente					
Subarea	**Date**	**Species**	**Status**	**Time**	**Notes**
	29 Mar.	CAGN a	P	08:15	
	29 Mar.	CAGN b	P	09:12	Male moved downslope; female stayed on road, tame.
	29 Mar.	CAGN c	P	09:35	
	29 Mar.	CAGN d	P	09:40	
	05 June	CAGN e	F	07:30	Pair feeding 3 fledglings
	05 June	CAGN f	F	07:54	Pair attending nest; 4 nestlings
	05 June	CAGN g	P	08:00-08:10	
	29 Mar.	CACW a	S	08:15	
	29 Mar.	CACW b	S	08:15	
	29 Mar.	CACW c	S	08:30, 09:20	Quiet; "chuck" call only
	29 Mar.	CACW d	S	08:30	Heard from a distance
	29 Mar.	CACW e	S	08:30	Heard from a distance
	29 Mar.	CACW f	S	08:45	
	29 Mar.	CACW ff	S	09:10	Foraging
	29 Mar.	CACW g	P	09:21	Nest-building on fenceline
	29 Mar.	CACW h	S	09:40	
	29 Mar.	CACW i	S	10:19	
	29 Mar.	CACW hh	P	10:27	
	29 Mar.	CACW ii	P	10:27	
	05 June	CACW j	P	07:16	Flew just to east across trail
	05 June	CACW k	S	07:19	
	05 June	*CACW l*	*P*	*07:19*	*Flew east, with eggshell; same as CACW k?*
	05 June	CACW m	S	07:30	Flew with nesting material from nest to top of mesa
	05 June	CACW n	J?	07:40	"growling" call
	05 June	*CACW o*	*S*	*08:00*	*Same as CACW r?*
	05 June	CACW p	S	08:00	
	05 June	CACW q	S	08:00	Foraging in restoration area
	05 June	CACW r	S	08:10	
	05 June	CACW s	S	08:13	
	05 June	CACW t	P	08:22	
	05 June	*CACW u*	*S*	*08:22*	*= one of CACW t pair; carrying food to nest*
	05 June	CACW v	S	08:22	
	05 June	CACW w	S	08:40	

	05 June	CACW x	P	08:40	
Agua Amarga					
Subarea	**Date**	**Species**	**Status**	**Time**	**Notes**
	09 Apr.	CAGN a	Sf	09:29	
	09 Apr.	CACW a	S	09:09	
	09 Apr.	CACW b	S	10:00	Flying west
	09 Apr.	CACW c	S	10:15	
	09 Apr.	CACW d	S	10:15	
	09 Apr.	CACW e	P	10:20	2 birds flying from east
	09 Apr.	CACW f	S	11:50	On *Yucca elephantipes*; 2nd CACW possibly heard to west. CACW possibly heard here on 05 June.
	05 June	CACW g	P	09:55	
	05 June	CACW h	S	09:55	
Forrestal					
Subarea	**Date**	**Species**	**Status**	**Time**	**Notes**
West	05 Mar.	CAGN a	P	08:35-08:50	
West	05 Mar.	CAGN b	S	08:55	
West	05 Mar.	CAGN c	P	09:05	2 more CAGN heard to west during observation, possibly a/b
West	05 Mar.	CAGN d	Sm	09:55	Territorial, flying from perch to perch but no female detected.
West	05 Mar.	CAGN e	P?	10:10	Territorial male calling; 2nd calling bird engaged in fight/chase
West	05 Mar.	CAGN f	Sf	10:15	
West	05 Mar.	CAGN g	P	10:40	
West	05 Mar.	CAGN h	Sm	11:00	Flew down to recording, then back up.
East	14 Mar.	CAGN i	P	09:00	
East	14 Mar.	CAGN j	P?	10:00	2 birds calling 30 m apart.
West	17 May	CAGN k	P	09:00	
West	17 May	CAGN l	F	09:20	
East	23 May	CAGN m	Sm	09:17, 11:00	Silent/tame
East	23 May	CAGN n	Sm	10:00	Scolding/tame
West	17 May	CACW a	P	09:50	Nest-building
Portuguese Bend					
South	2 Mar.	CAGN a	S	08:00	
South	2 Mar.	CAGN b	P	08:44	
South	2 Mar.	CAGN c	P	11:15	
South	4 Mar.	CAGN d	S	08:00	Found during Abalone Cove survey
South	18 May	CAGN e	Sm	08:00	Carrying food (white grub)
South	18 May	CAGN f	Sf	08:15	Flew to north 20 m; silent
South	18 May	CAGN g	Sm	08:20	Carrying food, flying across road.
South	18 May	CAGN h	Sm	08:42	Flew in from west; silent
South	18 May	CAGN i	Sm	09:00	Carrying food to west of trail
South	18 May	CAGN j	Sm	10:30	Territorial, calling
South	2 Mar.	CACW a	P	09:30	
South	2 Mar.	CACW b	S	09:30	
South	2 Mar.	CACW c	S	09:30	
South	2 Mar.	CACW d	S	09:30, 10:20	
South	18 May	CACW e	S	11:30	Flew from across road, continued east up canyon.
North	22 May	CACW f	P	08:45	
Vicente Bluffs					
Subarea	**Date**	**Species**	**Status**	**Time**	**Notes**
	13 Mar.	CAGN a	P	10:00	

	13 Mar.	*CAGN b*	*P*	*10:10*	*Same as CAGN a?*
	13 Mar.	CAGN c	S?	10:12	Scold/pishing call
	13 Mar.	CAGN d	P	10:30	
	13 Mar.	CAGN e	P	11:13	
	13 Mar.	CAGN f	Sm	11:26	Flew in from north, returned
	14 May	CAGN g	Sm	09:30	Time approx.
	14 May	CAGN h	Sf	10:00	Time approx.
	14 May	CAGN i	Sm	10:00	Time approx.
	14 May	CAGN j	Sm	10:30	Time approx.; flew north with apparent fecal sac.
San Ramon					
Subarea	**Date**	**Species**	**Status**	**Time**	**Notes**
	04 Mar.	CAGN a	P	10:15	
	14 May	CAGN b	P?	08:45	Time approx.; two birds.
	03 Apr.	CACW a	P	09:15	
	03 Apr.	CACW b	S	10:10	Just off southern boundary
	14 May	CACW c	S	07:10	Time approx.
Three Sisters					
Subarea	**Date**	**Species**	**Status**	**Time**	**Notes**
	19 Mar.	CAGN a	P	09:45	
	19 Mar.	CAGN b	P	10:20	
	12 June	CAGN c	J, Sf	07:00	
	19 Mar.	CACW a	S	09:25	
	19 Mar.	CACW b	S	09:40	
	19 Mar.	CACW c	P	09:45-09:55	
	19 Mar.	CACW d	S	10:00	
	19 Mar.	CACW e	S	10:15	Time approx.
	19 Mar.	CACW f	S	10:35	
	19 Mar.	CACW g	S	11:10	
	08 June	CACW r	S	09:40	Heard from Filiorum
	12 June	CACW h	F	06:15	Also recorded 08 June
	12 June	CACW i	S	06:29	
	12 June	CACW j	S	06:35	
	12 June	CACW k	J	06:35	
	12 June	CACW l	J, S(f?)	06:54	
	12 June	CACW m	S	06:54	
	12 June	CACW n	S	07:00	
	12 June	CACW o	J (3)	07:15	
	12 June	CACW p	S	07:10, 07:16	
	12 June	CACW q	S	07:20	
Filiorum					
Subarea	**Date**	**Species**	**Status**	**Time**	**Notes**
	19 Mar.	CACW a	S	09:00-09:20	
	19 Mar.	CACW b	S	09:00-09:20	
	19 Mar.	CACW c	P	09:30	
	19 Mar.	CACW d	S	09:30	
	19 Mar.	CACW e	S	10:05	
	2 Apr.	CACW f	S	09:15	Time approx.
	2 Apr.	CACW g	S	10:27-10:35	
	2 Apr.	CACW h	S	10:35	
	2 Apr.	*CACW i*	*S*	*10:35*	*Same as CACW g?*
	2 Apr.	CACW j	S	10:48	
	2 Apr.	CACW k	S	10:55	Off southern boundary
	8 June	CACW l	S	08:18	Nest-building
	8 June	CACW m	F	08:30	

	8 June	CACW n	S	08:35	Nest-building
	8 June	CACW o	S	09:00	Flew northeast, carrying food
	8 June	CACW p	S	09:10	
	8 June	CACW q	S	09:56	