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Winter Burrowing Owl Banding Project

Final Report

For the Period September 2014 to March 2016



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Table of Contents

Summary	1
Introduction	1-2
Objectives	2-3
Methods	3-4
Results	4-7
Discussion	7-8
Acknowledgements	8-9
Citations	9-10
Appendix 1 - Tables	11-12
Appendix 2 - Photos	13-19

Summary. In September 2014, we initiated a preliminary study of wintering burrowing owls in the Santa Clara Valley Habitat Plan (SCVHP) HCP/NCCP area, including much of Santa Clara County and southern parts of Alameda and San Mateo Counties, at historical and current breeding sites (recent breeding sites) and along the west and east sides of the City of San Jose and Coyote Valley (foothill sites). These foothill sites of the Diablo and Santa Cruz ranges had not previously been regularly surveyed for burrowing owls in either breeding or non-breeding seasons.

The purpose of this work was to begin collecting data on the presence of wintering burrowing owls in the SCVHP area and to determine if owls in the non-breeding season (i.e., the wintering season from September 1-January 31) remained to nest in the following breeding season (February 1 to August 31) either at newly-located wintering sites or at recent breeding sites. We located and banded as many wintering owls as possible during the winters of 2014-2015 and 2015-2016. In the 2015 breeding season, we searched recent breeding sites as well as the foothill sites where winter owls had been observed to find as many banded owls as possible.

During the two winter seasons, we banded 24 and 23 owls, respectively. We found 11 owls at foothill sites and 65-70 at recent breeding sites in the first winter. In the second winter, the numbers were 17 at foothill sites and 66 at recent breeding sites. None of the owls in foothill sites were banded during a previous breeding season in the study area. Our breeding season surveys located 55-57 owls, all at recent breeding sites, except for three owls at two low-elevation foothill sites. These three owls disappeared by June; our surveys of foothill sites indicated no owls stayed into the breeding season to nest. Also, no owls banded at foothill sites in the winter moved to recent breeding sites in the next breeding season.

Three owls, two banded in the first winter at foothill sites and one at a breeding site, were absent in the next breeding season but returned the second winter to the sites where they stayed the winter before. Of the 52-54 owls observed during the breeding season at recent breeding locations, 20 owls stayed into the next winter. The majority of these banded owls either did not move an appreciable distance from their location to a winter location or moved under one mile. However, one juvenile owl moved 7.55 miles.

These early findings suggest that the SCVHP HCP/NCCP area attracts numerous winter migratory owls that then leave the region to breed elsewhere. All the owls we banded or observed in winter at foothill sites disappeared from those sites before nesting the next breeding season, as did some owls from recent breeding sites. However, recent breeding sites support a similar number of owls year round--approximately 52-54 in the breeding season and 65-70 in winter. The recent breeding sites not only support reproduction, but also owls resident year round and winter migrants.

Introduction. The burrowing owl (*Athene cunicularia*) population in the south San Francisco Bay area has declined precipitously in recent years. Since the surviving population clusters are located in areas likely to be developed in the next 50 years, the burrowing owl was selected as a covered species in the Santa Clara Valley Habitat Plan (SCVHP or the Plan), which is an HCP/NCCP (ICF 2012). The Plan's conservation strategy supports banding and monitoring migratory burrowing owls in the Plan area to determine habitat use and dispersal patterns for wintering owls. A goal of the conservation strategy is to expand natural populations of owls from existing breeding sites into unoccupied habitat.

Understanding the spatial relationship between wintering and breeding populations of owls in the Plan area may reveal opportunities to expand the breeding population.

While there has been much study of breeding burrowing owls in Santa Clara County (Trulio and Chromczak 2007; Barclay 2010), there has been no systematic study of the distribution, abundance or wintering-to-breeding season movements of wintering burrowing owls in the region.

Overall, information on the movements and ecology of wintering western burrowing owls is quite limited. In the late 1990s, Holroyd and Trefey (2002, 2011) began tracking migratory burrowing owls captured in the prairie provinces of Canada that were fitted with radio-transmitters. The data from this work showed owls were wintering along the Gulf Coast of Texas and further south into Mexico. Data from banded owls as well as later studies using geolocators (Holroyd and Trefey 2011, Stutchbury et al. 2009) and satellite transmitters (Holroyd and Trefey 2011; David Johnson, pers. comm.) have expanded our knowledge of where migratory burrowing owls go in the winter. In particular, these studies have shown owls from British Columbia, Washington state and Oregon come to the Bay Area and further south in California to winter.

In Santa Clara County, it has long been known that a number of owls are resident year round at sites where they breed, including Shoreline at Mountain View, Moffett Federal Airfield, Sunnyvale Baylands and the San Jose International Airport (Trulio 1997; Barclay 2011; Trulio and Higgins 2012). In some cases, owls remain at the locations where they bred or were fledged the previous breeding season. An 18-month study of burrowing owl diets at Santa Clara County sites showed owls were able to find both insect and vertebrate prey year-round (Trulio and Higgins 2012). Studies have also shown that migrants come to the San Francisco Bay Area and coastal California in the winter, but leave those sites by the next spring (Chandler, 2015). However, there are no systematic data on how many wintering owls come to Santa Clara County each winter, nor information on where they spend their time or where they go the next breeding season.

This research was designed to provide data to begin to fill gaps with respect to the wintering owls in Santa Clara County and adjacent southern Alameda and San Mateo Counties, with focused attention on the SCVHP area. Determining where owls may winter in the SCVHP area will help wildlife managers understand the relationship between wintering and breeding owls and identify important wintering sites that need to be protected, both to support owls that breed in California as well as others from around the west.

In addition, this work was designed to help determine if wintering owls might stay to breed, either at the sites where they wintered or at recent breeding sites. One aspiration is that this work would identify previously unknown breeding sites, as we planned to visit wintering sites not surveyed in the breeding season by researchers. As a longer-term management strategy, these data may also be used to evaluate wintering sites for enhancement to encourage wintering owls to stay and breed.

Objectives. This study investigated whether wintering burrowing owls occur outside historical and current breeding sites, which are the areas that have been surveyed in the winter for owls. We also examined whether owls banded during the wintering, non-breeding season (September 1- January 31) remained within the SCVHP area for the next breeding season (February 1 - August 31) either at their original banding locations or if

they moved to other locations in the Plan area. The data collected included:

1. Numbers and locations of wintering owls at suspected foothill sites surrounding the City of San Jose and Coyote Valley and at historical and current breeding sites (recent breeding sites) in the Plan area.
2. Numbers and locations of owls during the breeding season at recent breeding sites and at winter sites from the previous winter.
3. Identification and distances traveled of wintering owls staying to breed in the Plan area.
4. Identification of owls banded in the first winter that returned the next winter, but were not seen in the breeding season.

We conducted the research in three phases:

Phase 1: First winter location and banding. From September 1, 2014 to January 31, 2015, we conducted non-breeding season surveys and visited locations where biologists stated owls were seen. When owls were observed, we attempted to band them.

Phase 2: Breeding location and banding. Between February 1 and August 31, 2015, we conducted breeding season surveys at recent breeding sites and at wintering sites where we found owls. We looked for owls we had banded in the previous winter as well as previous breeding seasons. We banded as many unbanded owls as possible.

Phase 3: Second winter location and banding. From September 1, 2015 to January 31, 2016, we surveyed wintering sites where owls were seen in the previous winter as well as other areas where owls were reported. We looked for owls banded the previous winter and breeding season. We banded as many unbanded owls as possible.

Methods. This study was conducted in the SCVHP area, including the core area and the expanded study area for burrowing owls (Figure 1). We located wintering owls based on information from biologists and resource managers, Christmas Bird Count data, previous reports, and our own observations. To find owls at potential wintering locations, we conducted surveys in accordance with the California Department of Fish and Wildlife protocols for burrowing owl surveys (CDFG 2012, ICF 2012).

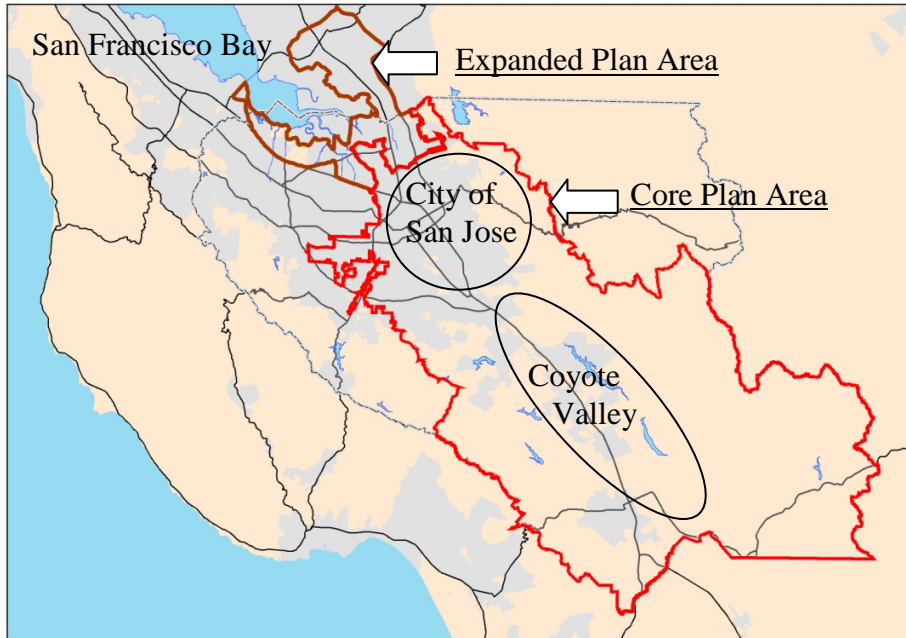
We also conducted winter surveys at historical and current breeding sites (recent breeding sites) in the Plan area, which are sites we regularly survey during the breeding season. These recent breeding sites included Shoreline Regional Wildlife Area in the City of Mountain View, NASA Ames Research Center at Moffett Field, the San Jose/Santa Clara Regional Wastewater Facility, several isolated sites in the cities of San Jose and Santa Clara, the Warm Spring Unit of the Don Edwards San Francisco Bay National Wildlife Refuge, Byxbee Park in Palo Alto and Sunnyvale Baylands Park and Landfill Site in the City of Sunnyvale (Appendix 1A). All these sites supported one or more pairs of nesting owls for one or more breeding seasons in the last ten years, except Byxbee Park and the Sunnyvale sites which have not supported breeding owls since 2004 and 2006, respectively.

The foothills of the Diablo Range on the east side of the City of San Jose and the Coyote Valley and the Santa Cruz foothills on the west side of the Coyote Valley are significant parts of the SCVHP, and these foothills were a focus of this study. Biologists and land managers told us of potential wintering owl locations at Sierra Vista Open Space Preserve, Coyote Ridge Open Space Preserve (former UTC property), Tulare Hill, Laguna

Avenue, Coyote Ridge, and Sargent Ranch (Appendix 1A).

After we surveyed sites and confirmed the presence of burrowing owls, we attempted trapping at active sites. During site visits and trapping sessions, GPS coordinates were taken at each specific location where owls were observed, resighted, and/or captured.

Figure 1. The Santa Clara Valley Habitat Plan area with Core Plan Area (large irregular polygon) and Expanded Plan Area for burrowing owls (small irregular polygon).



Trapping methods consisted of using either a 1-way door bubble trap, if the owl retreated into the burrow, or a spring trap (bow-net) with a caged live mouse as bait to trigger the trap mechanism, if the owl was above ground. We placed an MP3 player and speaker that broadcasted the owl's primary call within the spring trap. The call often stimulated a reaction from the owls, attracted them to the traps and contributed to trapping success.

All traps were monitored from a distance using a scope or binoculars. When owls were caught, we quickly removed owls from the trap, placed each owl in a sock to keep the owl contained, banded with metal bi-colored alphanumeric Acraft bands (left leg) and metal USGS bands (right leg), and collected morphometric measurements, including weight, wing cord length and tarsus measurement. Owls were released at their capture location.

During the breeding season, we visited recent breeding and wintering sites. To locate owls, we conducted walk-through transect surveys with at least three people, examined burrows, and broadcasted primary calls. We identified owls by resighting unique alphanumeric band codes on all banded burrowing owls with binoculars and spotting scopes. We observed all banded adults to identify their sex as determined by gender-based behavior/morphology. Owls were considered males if they stood guard at a burrow

entrance, gave the primary call, delivered food to the mate, or had plumage bleached with sun exposure. Female owls were those that remained underground for long periods of time, had dark plumage, or received food from their mate.

After taking GPS coordinates at breeding locations, we used Google Earth maps to calculate the distance owls travelled from their non-breeding locations.

Results and Findings. We surveyed for owls at 19 sites during winter observations and 17 sites in the breeding season in the study area (Figures 2 and 3; Appendix 1A). During winter 2014-15, we observed a total of 76-81 burrowing owls with 11 owls observed at foothill sites and 65-70 owls observed at recent breeding sites. The next winter, we observed 83 owls, 17 at foothill sites and 66 at recent breeding sites (Figure 4; Appendix 1A). In the second winter, we added two additional sites over what we surveyed the first winter. We banded a total of 24 owls in the first winter and 23 the second winter. None of the owls we observed in the first winter at the foothill sites were previously banded. We resighted 13 and 20 banded owls, the first and second winters respectively, at recent breeding sites.

During the breeding season, we observed 55-57 adult owls, all at recent breeding sites except for three owls seen at foothill sites early in the breeding season. These three owls were absent when we returned during June, when breeding owls are expected to be present.

Other key findings of the study included:

1. The elevations of the foothill sites where winter owls were found varied from approximately 259 to 2044 ft. The elevations of the recent breeding sites varied from 1 to 61 ft.
2. Two of 11 owls banded at foothill wintering sites and one owl banded at a recent breeding site during the first winter, who were not observed during the next breeding season, returned the second winter.
3. No owls banded in the breeding season were found at foothill wintering sites.
4. No owls, banded or otherwise, were found at the historic wintering sites during the breeding season.
5. The number of owls at recent breeding sites was greater in the winter than during the breeding season (65-70 owls in winter versus 52-54 owls in the breeding season), with approximately the same number of owls both winters. Thus, recent breeding sites support a significant number of owls year-round in the SCVHP area.
6. Twenty banded owls observed during the 2015 breeding season were resighted in winter 2015-16. Thus, at least 20 of the 66 wintering owls (30%) had been present at recent breeding sites the previous breeding season.
7. Three banded owls moved 0.16, 1.78 and 2.41 miles, respectively, within the study area between winter 2014-15 and the 2015 breeding season (Appendix 1B). Of the 20 banded owls observed during the 2015 breeding season and again in winter 2015-16, most did not move ($n=10$) or moved under a mile ($n=9$). One juvenile owl moved 7.55 miles from Shoreline in Mountain View to the Warm Springs Unit of the refuge on the other side of the bay (Appendix 1B).
8. We visited two sites outside the study area, Stanford University lands and Bair Island-Don Edwards San Francisco Bay National Wildlife Refuge. We found between 1-3 owls during each winter, but no owls during the breeding season.

Figure 2. Number of burrowing owls observed at winter and breeding sites within SCVHP Core Study Area. In parentheses are numbers of owls observed in Winter 2014-15, Breeding Season 2015, and Winter 2015-16.

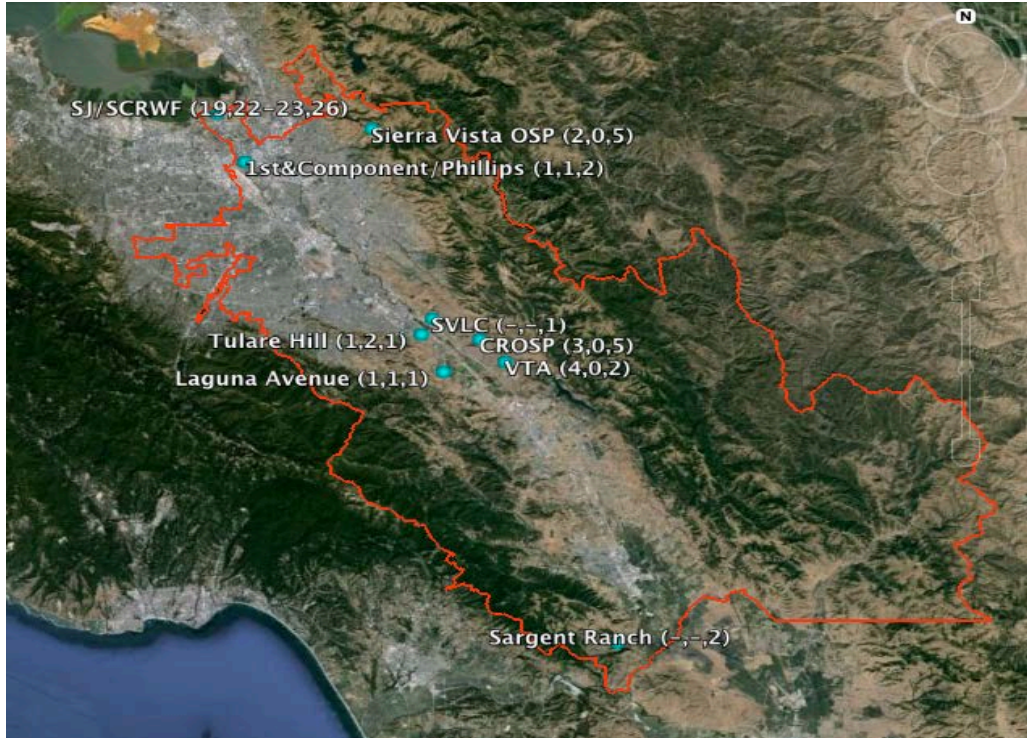


Figure 3. Number of burrowing owls observed at winter and breeding sites within SCVHP Expanded Study Area. In parentheses are numbers of owls observed in Winter 2014-15, Breeding Season 2015, and Winter 2015-16.

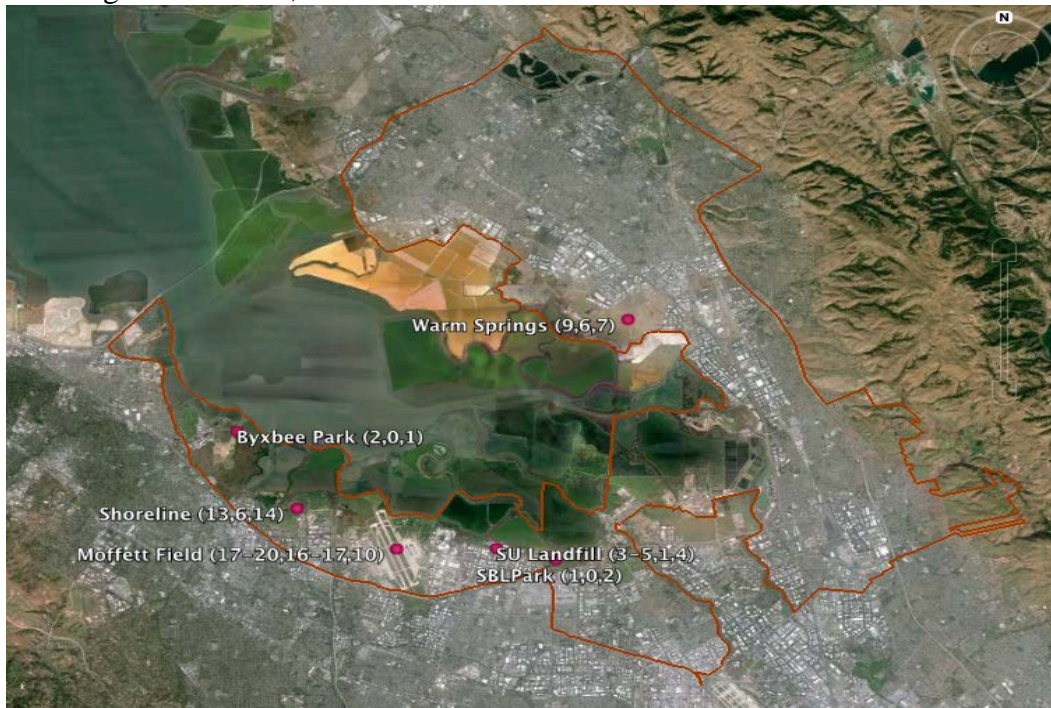
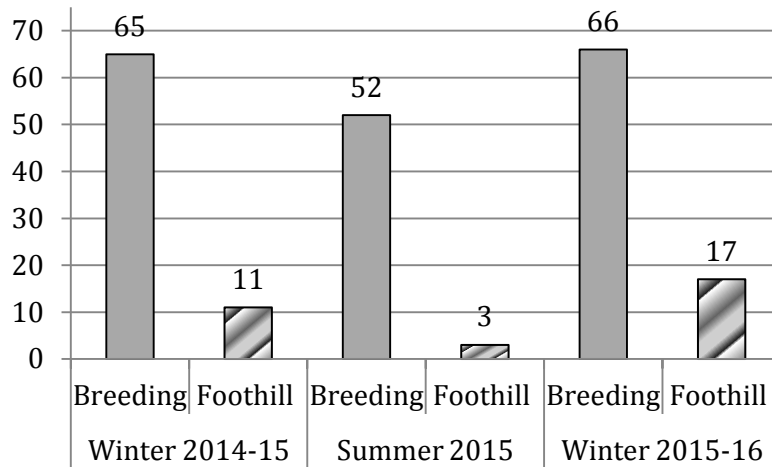


Figure 4. Minimum numbers of adult burrowing owls observed each season at recent breeding sites and foothill sites.



Discussion. This was a preliminary investigation into the presence of wintering burrowing owls and the relationship of those owls to breeding owls in the Santa Clara Valley Habitat Plan (SCVHP) HCP/NCCP area. We found numerous owls wintering in our region, both at historic and current breeding sites which have been well surveyed during the breeding season for at least 18 years (Trulio and Chromczak 2007), and at sites in foothills of the Diablo and Santa Cruz ranges which have not been regularly surveyed.

The owls we observed and banded at the foothill sites in the winter did not stay long enough into the breeding season to nest. In addition, we did not find any of the wintering owls from the foothill sites at historic or current nesting sites during the breeding season. Thus, it appears that the owls wintering in the foothills were from outside the region and they left to breed elsewhere. These results are supported by the work of Holroyd and Trefry (2002, 2011) and recent satellite telemetry work by Courtney Conway and David Johnson (pers. comm.), which show that owls breeding or fledged in British Columbia, Washington state and Oregon migrate south to winter in northern, central and southern California. The three owls we observed both winter seasons, but not during the breeding season--two owls at foothill sites and one owl at a recent breeding site--also support the contention that a number of owls are winter migrants. Interestingly, in the second winter, all three of these owls returned to the same location, perhaps even the same burrows, where they wintered in the season before.

The fact that we found no breeding owls at the higher elevation sites where owls wintered is supported by DeSante et al. (2007) and Wilkinson and Siegel (2010), who found that nesting owls throughout California were infrequently found at elevations above 200 ft (61 m). An exception to this finding are the owls at the Altamont Pass, located in the Diablo Range, which breed at elevations of 440-600 ft (135-185 m) (Smallwood et al. 2007, Smallwood and Neher 2008). Since we examined very few foothill sites in the breeding season, a more thorough survey for burrowing owls in the breeding season throughout the entire elevation range of the foothills in the study area could reveal nesting owls.

The recent breeding areas are low elevation sites that have been surveyed regularly

for many years. Together, these breeding sites support the only nesting owls we found in the SCVHP area and they also appear to support winter migrants. For example, while nesting adults were last observed at Sunnyvale's water treatment plant in 2006, owls regularly return to this site in the winter. One banded owl was observed both winters on the Sunnyvale Landfill site, but not during the breeding season. Data also show many year-round residents. In winter 2015-2016, 20 of the 66 owls we observed at the recent breeding areas in the winter had been seen at these sites the previous breeding season, showing the importance of these sites not only to nesting owls, but to year-round residents and, as noted above, to winter migrants.

Distances owls moved between the breeding season and the following winter show that owls remaining in the region into the winter stay at their breeding locations or move under a mile. However, some owls can disperse many miles. Three owls from the first winter, not seen during the breeding season, returned to essentially the same burrows the second winter, indicating that burrowing owls may show winter site fidelity between years.

This study indicates that the SCVHP area is an important area for winter migratory burrowing owls, both at high and low elevation sites. Future study will seek to quantify the distribution and abundance of wintering owls in the foothill sites from the valley floor to the ridgelines. In addition, we did not find a connection between owls wintering in the foothills and recent breeding sites. Nor did we find any owls breeding at the foothill winter sites. It may be that owls only winter at foothill sites. However, in the next two breeding seasons, we will use standard survey protocols to look for breeding owls that may be occurring at lower elevation foothill sites. Finally, our results show the extreme importance of the current and historic breeding sites to nesting, resident and winter migratory owls. When owls are evicted from such valuable areas, not only is the local population reduced, but breeding potential is harmed and habitat for wintering owls from other regions is decreased. Successful management of burrowing owls in the Santa Clara Valley Habitat Plan HCP/NCCP area will have far-reaching beneficial effects for the long term survival of burrowing owls.

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UTC Lands: Nicholas Kautzman and Maddy Willett, ARCADIS
Stanford University Lands: Esther Cole and Annette Potvin
Laguna Avenue: Ryan Phillips, Independent Biologist
Sargent Ranch: Verne Freeman, Freeman & Assoc.; Vince Scheidt, Independent Biologist

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Appendix 1. Tables

Appendix 1A. Summary of Sites Surveyed, Site Characteristics and Numbers of Birds Observed each Season

Site Surveyed	SCVHP Core or Expanded Area	Foothill Site, Known Breeding Site or Other	Site Ownership	Elevation (ft)	# of Birds - 2014 - 2015 Non-Breeding Season	# of Birds- 2015 Breeding Season	# of Birds - 2015 - 2016 Non-Breeding Season
Coyote Ridge (SVLC)	Core	Foothills-East side of Coyote Valley	Silicon Valley Land Conservancy	547	-	-	1
Coyote Ridge (VTA)	Core	Foothills-East side of Coyote Valley	Valley Transit Authority	1034-1147	4	0	2
Coyote Ridge Open Space Preserve (UTC)	Core	Foothills-East side of Coyote Valley	Santa Clara Valley Open Space Authority	1255-1305	3	0	5
Tulare Hill Ecological Preserve	Core	Foothills-East side of Coyote Valley	Silicon Valley Land Conservancy	471	1	2	1
Laguna Avenue	Core	Foothills-East side of Coyote Valley	Private ownership	259	1	1	1
Sargent Ranch	Core	Foothills-West side of Coyote Valley	Private ownership	341-447	-	-	2
Sierra Vista Open Space Preserve	Core	Foothills-East side of San Jose	Santa Clara Valley Open Space Authority	1961-2044	2	0	5
First Street & Component Drive	Core	Current Breeding	City of San Jose	31	1	1	2
San Jose/Santa Clara Regional Wastewater Facility (SJ/SCRWF)	Core	Current Breeding	City of San Jose	2-8	19	22-23	26
Meadow Fair Park	Core	Historic Breeding	City of San Jose		0	0	0
Santa Clara University CalTrain Corridor	Core	Historic Breeding	City of Santa Clara		0	0	-
Tasman Drive Levi Stadium & PG&E substation	Expanded	Historic Breeding	City of Santa Clara		0	0	0
Mission Community College	Expanded	Historic Breeding	City of Santa Clara		0	0	0
Sunnyvale Baylands Park	Expanded	Historic Breeding	County of Santa Clara	2-5	1	0	2
Sunnyvale Landfill Site & Water Pollution Control Plant	Expanded	Current Breeding	City of Sunnyvale	15-61	3-5	1	4
Moffett Field/NASA Ames Research Center	Expanded	Current Breeding	NASA ARC/Federal	1-29	17-20	16-17	10
Shoreline at Mountain View Regional Wildlife Area	Expanded	Current Breeding	City of Mountain View	17-43	13	6	14
Byxbee Park	Expanded	Historic Breeding	City of Palo Alto	11	2	0	1
Warm Springs Unit - Don Edwards San Francisco Bay National Wildlife Refuge	Expanded	Current Breeding	US Fish & Wildlife Service	9-13	9	6	7
Bair Island - Don Edwards San Francisco Bay National Wildlife Refuge	Outside SCVHP	Other - Bay edge	US Fish & Wildlife Service CA Department of Fish & Wildlife	1-5	1	-	1
Palo Alto - Stanford University Lands	Outside SCVHP	Other - Santa Cruz foothills	Stanford University	348	2-3	0	1

Appendix 1B. Twenty-four banded burrowing owls identified during LAG 2015/2016 Non-Breeding Season Survey and Band Detection. Approximate distances moved between 2014-2015 non-breeding or 2015 breeding season location and 2015-2016 non-breeding season location.

Acraft Band COLOR	Acraft Band CODE	Sex	PHASE 1	PHASE 2	PHASE 3	14/15 Winter Site - to - 2015 Breeding Site		2015 Breeding Site - to - 15/16 Winter Site		14/15 Winter Site - to - 15/16 Winter Site		Migratory Status
			2014/2015 NON-BREEDING Site Location	2015 BREEDING Site Location	2015/2016 NON-BREEDING Site Location	Distance Moved (mile)	Distance Moved (feet)	Distance Moved (mile)	Distance Moved (feet)	Distance Moved (mile)	Distance Moved (feet)	
black-over-green	0A	male		ALV10	ALV10			0.00	0			resident
black-over-green	0P	female	SBLP4	ALV39	ALV19	2.41	12,704	0.06	342			resident
black-over-green	1B	unknown		ALV2	ALV2			0.00	0			resident
black-over-green	1C	unknown		ALV1	ALV49			0.75	3,958			resident
black-over-green	1N	male		ALV39	ALV39			0.00	0			resident
black-over-green	2H	unknown		ALV2	ALV2			0.00	0			resident
black-over-green	2V	male		ALV4	ALV4			0.00	0			resident
black-over-green	3D	unknown		ALV39	ALV39			0.00	0			resident
black-over-green	3V	unknown		ALV1	ALV1			0.00	0			resident
black-over-green	3W	male		ALV2	ALV2			0.00	0			resident
black-over-green	4M	unknown		ALV1	ALV1			0.00	0			resident
black-over-green	4W	unknown		ALV2	ALV3			0.06	293			resident
black-over-green	4X	unknown	SVOSP1		SVOSP1					0.00	0	winter resident
black-over-green	5C	female		ALV1	ALV1			0.00	0			resident
black-over-green	5U	unknown	SH68		SH68					0.00	0	winter resident
red-over-black	3B	male		MO108	MO85			0.09	488			resident
red-over-blue	2A	male	BX10	SH195	SH205	1.78	9,379	0.11	606			resident
red-over-blue	2H	unknown	SU25		SU25					0.00	0	winter resident
red-over-blue	2V	unknown		SH156	WSfield3-1			7.55	39,864			resident
red-over-blue	3X	unknown		SH156	SH32			0.93	4,902			resident
red-over-blue	4A	unknown		SH156	SH128			0.03	184			resident
red-over-blue	5B	male			SH154						(mortality)	resident
red-over-blue	6U	female		SH156	SH128			0.03	184			resident
red-over-blue	7R	male	SH84	SH226	SH227	0.16	847	0.07	346			resident

LEGEND

SITE: **SU**=Sunnyvale Landfill, **SBLP**=Sunnyvale Baylands Park, **SH**=Shoreline, **MO**=Moffett Field, **ALV**=Alviso (SJ/SCRWF) **WS**=Warm Springs Unit, **SVOSP**=Sierra Vista Open Space Preserve, **TH**=Tulare Hill Ecological Preserve, **SR**=Sargent Ranch **CROSP**=Coyote Ridge Open Space Preserve (UTC), **VTA**=Valley Transportation Authority, **SVLC**=Silicon Valley Land Conservancy

Appendix 2: Photographs from Wintering Burrowing Owl Banding Project

Photo 1: Spring trap with MP3 player hidden under mesh, positioned for capture on Coyote Ridge Open Space Preserve.



Appendix 2: Photographs from Wintering Burrowing Owl Banding Project

Photo 2: Burrowing owl captured inside spring trap during trapping session at Moffett Field.



Appendix 2: Photographs from Wintering Burrowing Owl Banding Project

Photo 3: Burrowing owl chicks captured inside 1-way door bubble trap during trapping session at Warm Springs.



Appendix 2: Photographs from Wintering Burrowing Owl Banding Project

Photo 4: Banding process at Warm Springs Unit of Don Edwards San Francisco Bay National Wildlife Refuge (Debra Chromczak).



Appendix 2: Photographs from Wintering Burrowing Owl Banding Project

Photo 5: Burrowing owl during banding process at Shoreline Regional Wildlife Area (Philip Higgins).



Appendix 2: Photographs from Wintering Burrowing Owl Banding Project

Photo 6: Banded burrowing owl at San Jose/Santa Clara Regional Wastewater Facility.



Appendix 2: Photographs from Wintering Burrowing Owl Banding Project

Photo 7: Burrowing owl observed at Tulare Hill Ecological Preserve on March 13, 2015.

