



SAN JOSÉ-SANTA CLARA REGIONAL WASTEWATER FACILITY BUFFERLANDS BURROWING OWL MANAGEMENT

**YEAR 5 SUMMARY
REPORT: OCTOBER 2020
- DECEMBER 2021**

**Prepared for:
Santa Clara Valley Habitat
Agency**

**Prepared by:
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We also thank the Talon team for their work on the Supplemental Feeding Project, the Juvenile Overwintering Project, and the Banding Study at this site.

Grassroots Ecology did a great job establishing native plants in several areas on site this year, thank you!

Furthermore, we thank Kelly's Stump Removal Service, Inc. for supplying copious amounts of wood chips to suppress noxious weeds and for bobcat-operation aiding artificial burrow installation, as well as Long's Custom Disking Inc. for their ongoing vegetation management services.

Thank you all for continued funding and assistance in support of crucial burrowing owl management and research at the San José-Santa Clara Regional Wastewater Facility in Alviso.

INTRODUCTION

Since October 2016, the Santa Clara Valley Audubon Society (SCVAS) has monitored and managed the burrowing owl colony at the San José-Santa Clara Regional Wastewater Facility (RWF) in a portion of the "Bufferlands," an area south of the RWF facility (Figure 1). The management area is officially designated for burrowing owl conservation and encompasses approximately 201 acres of open grassland in Alviso, north of State Highway 237 and east of Disk Drive (Figure 1). The San Francisco Bay Bird Observatory (SFBBO) assisted with management until June 2021, since then Talon Ecological Research Group (Talon) has partnered with SCVAS to conduct the work under a renewed 5-year contract (2021–2026). This report represents a summary of management activities we conducted during Year 5 (October 2020–December 2021). We also provide descriptions of site conditions throughout the year and information for planned activities during Year 6 (January–December 2022).

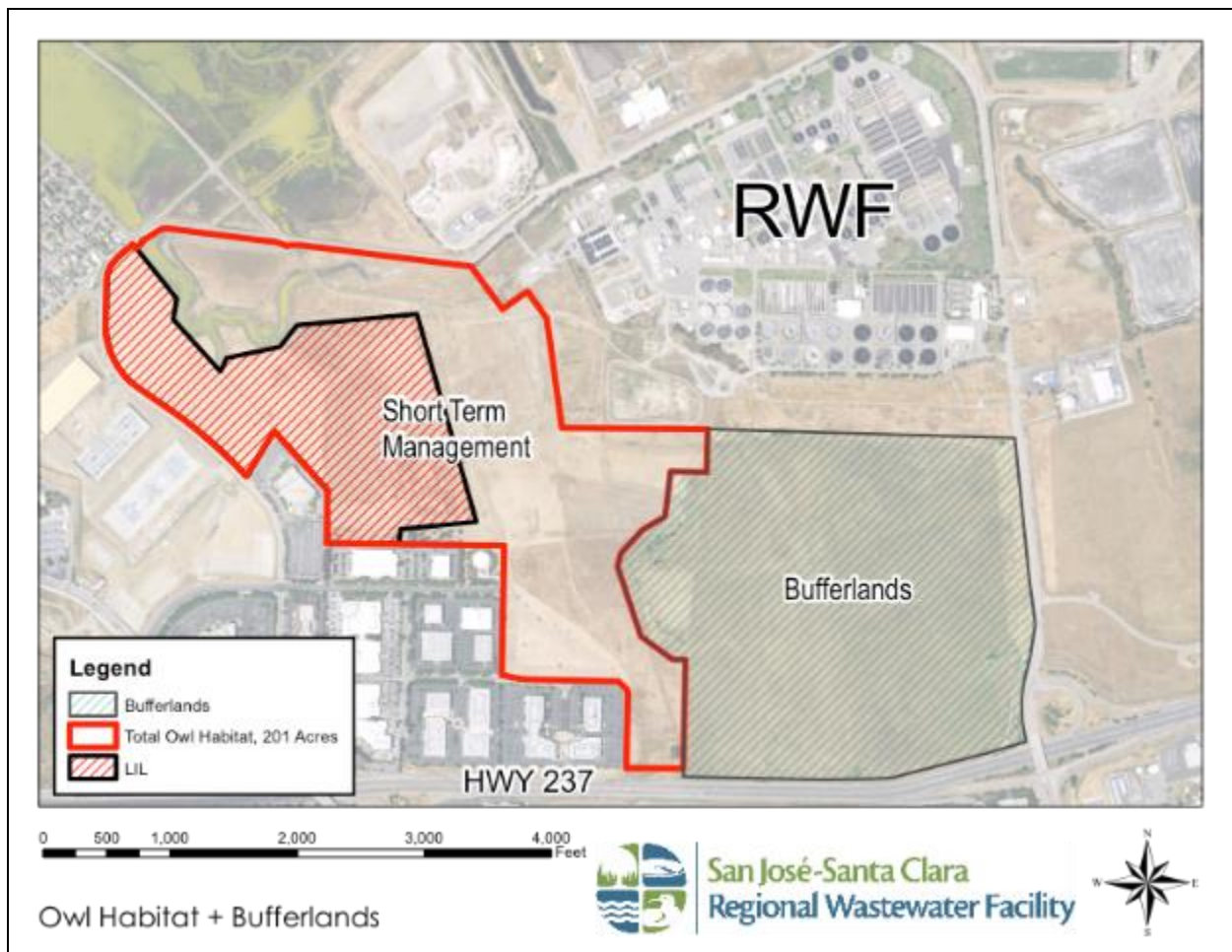


Figure 1. Burrowing owl management area at the San José-Santa Clara Regional Wastewater Facility (RWF) outlined in red. The remainder of the "Bufferlands" to the east is not managed for burrowing owls, but is surveyed. LIL = land in lieu. A portion of the area may be enrolled into the SCVHA reserve system in lieu of paying development fees.

MANAGEMENT ACTIVITIES

This site includes regionally important nesting and wintering habitat for burrowing owls. As during Year 1–4 of this contract, we continued the following activities to enhance long-term viability of the burrowing owl colony within the 201-acre management area:

Monthly Surveys

We conducted monthly surveys for burrowing owls, usually starting at 7 am during the summer and 8 am during other times of the year. Surveyors included SCVAS biologists Philip Higgins and Sandra Menzel, and, from October 2020 through June 2021, varying SFBBO biologists. Starting in July 2021, Talon biologist Ryan Phillips, Grant Huber, and occasionally Andrew Bradshaw participated in the surveys. We walked straight-line transects spaced approximately 10 to 20 meters apart, depending on vegetation height and visibility. We scanned all areas for burrowing owl presence and inspected ground squirrel burrows for signs of burrowing owl activity, such as whitewash, regurgitated pellets, feathers, prey remains, decoration, and bedding material. We recorded all burrowing owl observations, noting location, number of individuals, age and sex (if discernible), banding status, band number (if readable), behavior, and type of burrow used (artificial or natural). We also recorded locations of satellite burrows when owls flushed from their original burrows.

Juvenile Burrowing Owl Overwintering and Release

Three single males and three pairs were soft-released at RWF as part of the Juvenile Burrowing Owl Overwintering Project in 2021. This independent project was funded by the Habitat Agency and implemented by Talon.

On 26 February, we soft-released three single males into a single hacking enclosure (Figures 2–4). These males were kept in the enclosure until March 12 and were fed two mice each, daily. Upon removal of the enclosure, two males remained on site and paired up with females. One male successfully produced five young with a female that hatched at Moffett. The other released male did not reproduce.

On 19 March, three pairs were soft-released into three separate hacking enclosures (Figures 2–4). Two of the enclosures were removed on 16 April, after we observed six eggs in Enclosure 1 and four eggs in Enclosure 2. We did not observe eggs in Enclosure 3, even after delaying removal of the enclosure until 1 May. The female in this enclosure was a rehabilitated owl from the Silicon Valley Wildlife Rescue Center. As a rescue, her age was unknown; possibly she was past reproductive age. None of these three released pairs produced offspring, even though two of the females had laid eggs.

The only other pair that successfully reproduced at RWF during 2021 produced four young. This was the second year in a row that this pair successfully reproduced at this site. The female was released as part of the Juvenile Overwintering Project in 2020, as described in the next paragraph, while the male hatched at RWF. Last year, three female burrowing owls were released at RWF as part of the Juvenile Overwintering Project. They were released into one hacking enclosure on 21 February 2020. After the enclosure was removed on March 6, one of the females was never resighted post-release; the two others found mates and remained on site for the breeding season.

Nest Burrow Surveys

During the monthly surveys at the height of the breeding season (April–July), we conducted focused nest burrow surveys, observing each known nest burrow for approximately 20–30 minutes through a scope. We determined nesting phenology at each burrow, the minimum number of young per pair, and the banding status/band number of the adults. This year, we observed a total of 12 adults forming six pairs during the breeding season (Figure 2). Of those six pairs, two successfully produced a total of nine young. We observed the first young of the year in late May.

Motion-triggered Trail Cameras

In conjunction with an independent Burrowing Owl Banding Study conducted by Talon under contract with the Habitat Agency, motion-triggered trail cameras were installed at each active nest burrow. The resulting photographs (e.g., Figure 5) helped determine breeding phenology and provided crucial information for the banding effort. The images revealed from which burrow owlets had emerged, brood size, and approximate age of owlets. The images also aided in determining the banding status and identification of previously banded adults.



Figure 2. Motion-triggered trail cameras installed at nest burrows provided valuable information during the breeding season.

Supplemental Feeding

In 2017, Talon initiated an independent Supplemental Feeding Study funded by the Habitat Agency for nesting burrowing owls at Shoreline Park and Moffett Field. In 2018, Talon included RWF in the study and fed six out of a total of nine pairs and their offspring at this site. Each year since 2019, Talon supplementally fed adults and their offspring at all active nest burrows at RWF. Detailed information on this work is contained in the Burrowing Owl Supplemental Feeding Study – Phase II report (Talon Ecological Research Group, unpublished report November 2021).



Figure 3. Burrowing owl nest burrow and soft-release enclosure locations in the burrowing owl management area of the Bufferlands at the San José-Santa Clara Regional Wastewater Facility, 2021.



Figure 4. Construction of hacking enclosures for the soft-release of three single males and three pairs of burrowing owls as part of the Juvenile Overwintering Project in spring of 2021.



Figure 5. Three single males inside a hacking enclosure during soft-release as part of the Juvenile Overwintering Project in February 2021.

Vegetation Management

Long's Custom Disking Inc. conducted a partial mowing to a height of approximately 6 inches starting on 1 May 2021 (Figure 6). This task took approximately three days to complete. Due to draught conditions and minimal vegetative growth during spring and summer, a second mowing was not conducted until October (Figure 7). In addition to mowing, Long's also sprayed herbicide (Polaris) on ~25 mounds, two long berms, and a flat area (Figure 8) starting in late February and finishing in early March. Last year, they sprayed an estimated 29 mounds. We met with the contractor prior to each mowing/spraying event to discuss areas of concern (exclusion areas) for nesting burrowing owls and directed/monitored mowing around nest burrows.



Figure 6. Area mowed in May 2021. Priority mow areas outlined in yellow.



Figure 7. Areas mowed in October 2021.



Figure 8. Areas where herbicide was applied in February and March 2021. Outlined in red are areas with several mounds in each, in yellow are berms, and outlined in blue is a flat area.

Spraying herbicides on mounds and berms (Figure 8) this year to control invasive weed species and grasses helped enormously throughout the 2021 breeding season. Even some of the mounds that were treated with herbicide the last two years were less overgrown throughout this breeding season, whereas weed-whacked or hand-pulled mounds needed ongoing management. Spraying was especially helpful because we were only able to recruit volunteers for vegetation management once in 2021 due to COVID-19 restrictions.

Stinkweed, mustard, and pepperweed were especially pervasive in some areas this year. These plant species thrived throughout the dry season and area spreading. Pepperweed is a perennial plant species, and it reached the edge of an area containing mounds with artificial burrows and with burrows that have been occupied by burrowing owls in the past. Mowing does not control the spread of this species and spraying the whole area would be too expensive.

Yellow Starthistle Suppression

To contain the spread of yellow starthistle, we continued collaboration with a local tree removal company that delivered wood chips to the site free of charge. Kelly's Stump Removal, Inc. (<https://www.kellysstumpremoval.com>), based in Sunnyvale, delivered numerous loads of wood chips, and spread the piles with a bobcat (Figure 9) covering a large area that was previously overgrown with starthistle.



Figure 9. Kelly's Stump Removal, Inc delivered numerous truckloads of mulch and spread the material with a bobcat covering a large area that was previously overgrown with yellow starthistle. (Photograph taken in November 2020)

Vegetation Management Volunteer Engagement

Continued COVID-19 restrictions limited larger gatherings and only two volunteer workdays took place during Year 5. Philip Higgins recruited volunteers in November 2020 to install artificial burrows, and again in November 2021 to remove weedy vegetation (Figure 10). We conducted vegetation management throughout the growing season without volunteers.



Figure 10. Volunteers helped removing invasive, non-native vegetation. (Photograph taken on 20 November 2021)

Artificial Burrow Installation

We installed two artificial burrow complexes on 29 November 2020 and eight additional complexes on 11 November 2021. Each complex contained two separate burrows constructed of an irrigation valve box for a nesting chamber and a 6-foot long piece of 6-inch diameter irrigation pipe. We cut a slot along the entire bottom of the pipe to permit burrowing owls to walk on the ground and not the pipe to access the nesting chamber. Kelly's Stump Removal, Inc. excavated the holes with a bobcat. In November 2020, volunteers assisted with back filling the soil once the nest chambers and tunnels were installed. In November 2021, the Talon team worked with the bobcat operator to assist with the backfilling. Six of these 10 artificial burrows were installed to accommodate soft-release of burrowing owls as part of the Juvenile Overwintering Project.



Figure 11. Excavation for installing an artificial burrow complex. (Photograph taken in November 2020)



Figure 12. Volunteers helped to install two artificial burrow complexes. (Photograph taken on 29 November 2020)

Native Plant Areas

During Year 1 of this contract, we planted a small area with native plants along the fence line just north of the gate at Nortech Parkway. We continued watering and weeding established plants. Watering was challenging because there is no water source on site. We watered the plants solely by carrying water containers into the site. We continued to add plants and also seeded different species including three native grasses (purple needlegrass, California brome and red fescue), California poppies, hookers evening primrose, annual sunflower, slender sunflower, and Bolanders sunflower.

In early 2021, we collaborated with Grassroots Ecology (grassrootsecology.org) to establish additional native plant areas. During spring they seeded/planted test plots in three areas with a wide variety of species (Figure 13).



Figure 13. Installation of three planting areas by Grassroots Ecology in spring of 2021.

Habitat Enhancement for Prey Population

We added about 15 small piles consisting of larger pieces of bark around the native plant area to provide habitat for burrowing owl prey species. We have observed numerous lizards under the pieces of bark. We also added three brush piles with pine branches along the fence line near the native plant area.

Bird Species Diversity – Other Sensitive Species

The RWF Bufferlands provide nesting habitat for other grassland bird species such as golden eagle (*Aquila chrysaetos*), white-tailed kite (*Elanus leucurus*), and American kestrel (*Falco sparverius*), as well as foraging habitat for northern harrier (*Circus cyaneus*) and loggerhead shrike (*Lanius ludovicianus*). Of these species, the harrier and shrike are California Species of

Special Concern (CSSC) while the golden eagle and white-tailed kite are considered Fully Protected by the California Department of Fish and Wildlife. Other CSSC species observed at RWF in winter include Vaux's swift (*Chaetura vauxi*), and possibly Alameda song sparrow (*Melospiza melodia pusillula*) and Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), but the latter two are difficult to identify to subspecies in the field.

For a fourth year in a row, a pair of golden eagles nested in a palm tree adjacent to the management area. This year the pair did not produce offspring. The palm tree is located in the Bufferlands northeast of the Nortech gate, approximately 30 feet outside of the management area. Generally, palm trees are unusual substrates for golden eagle nests.

POPULATION TRENDS

Breeding Season

Data for this population were collected opportunistically from 1996–2013 and then more consistently since 2014. The number of adult owls observed during the breeding season has fluctuated between a low of two adults in 2012 and a high of 35–37 adults in 2017 (Figure 14). In 2021, two of six pairs were successful and produced a total of nine young. Productivity was 1.5 young/pair which was lower than the average productivity of 3.1 young/pair (2015–2021) at this breeding site. Last year, two of three pairs were successful and produced a total of nine young. Productivity in 2020 was 3.0 young/pair.

Of the six pairs breeding at RWF in 2021, three pairs were released as part of the Juvenile Overwintering project. Additionally, three single males were released, two of which remained on site and paired up with females. One of the two pairs that reproduced successfully in 2021 was comprised of a female that was released at RWF as part of the Juvenile Overwintering Project in 2020, while the male hatched at RWF in 2019.

Last year, three female burrowing owls were released at RWF as part of the Juvenile Overwintering Project in February 2020. 2021 and 2020, were the least productive years, with nine young each year since consistent data collection began in 2014. In 2019, four of five pairs were successful and produced a total of 21 young. In 2018, nine pairs were observed, seven of which were successful, and produced a total of 22 young (Santa Clara Valley Audubon Society 2018–2020).

Monthly Survey Results

The number of owls we observed during monthly surveys fluctuated throughout the year. This natural variability was similar to that observed at adjacent colonies. An unusual difference in this colony compared to neighboring colonies is the decrease in the number of burrowing owls during winter. The populations of burrowing owls at both Shoreline and Moffett Field increase during the winter (they usual peak during November–January) when migratory burrowing owls arrive on site. In contrast, the colony at RWF does not appear to experience this influx of migratory owls. The population actually decreases each winter, then increases again as the breeding season approaches (Figure 15).

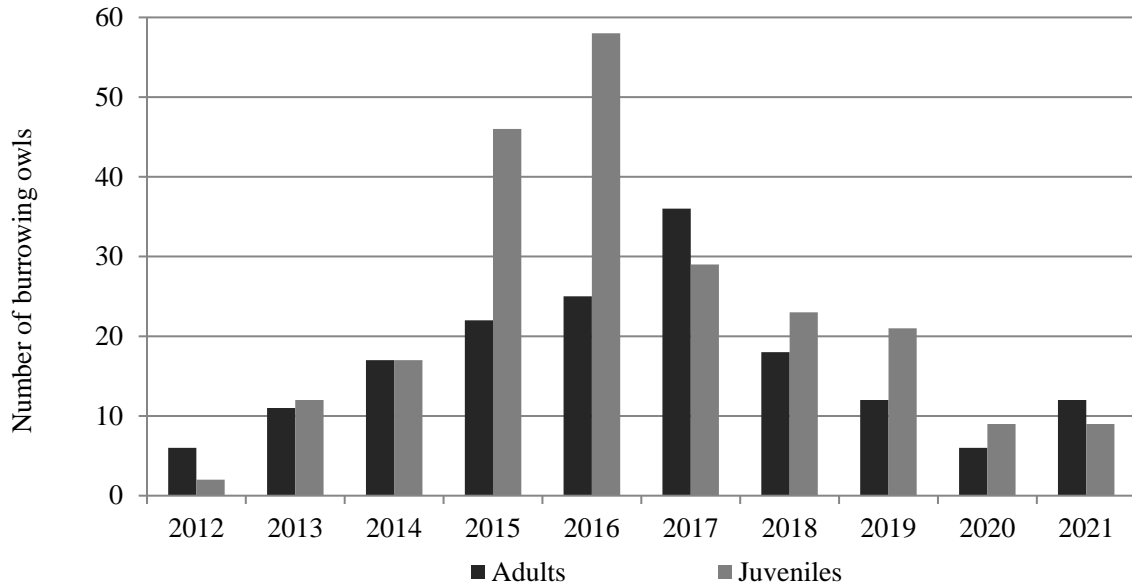


Figure 14. Annual counts of the number of nesting burrowing owls and their young in the burrowing owl management area of the Bufferlands at the San José-Santa Clara Regional Wastewater Facility (RWF), 2012–2021.

Table 1. Annual breeding burrowing owl population data, 2012–2020, for the burrowing owl management area of the Bufferlands at the San José-Santa Clara Regional Wastewater Facility (RWF).

Year	# Adults	# Pairs	# Successful pairs	Breeding success (%)	# Young	Avg. # young/successful pair	Avg. # young/all pairs
2012	6	3	2	67	3	1.5	1
2013	10–12	5–6	4	80	12	3	2.4
2014	16–18	8–9	5	63	17	3.5	2.1
2015	22–23	10	9	90	46	5.1	4.6
2016	25–26	13	12	92	58	4.8	4.5
2017	35–37	17	9	53	29	3.2	1.7
2018	18	9	7	78	22	3.1	2.4
2019	12	5	4	80	21	5.3	4.2
2020	8*	3	2	67	9	4.5	3.0
2021	12**	6	2	33	9	4.5	1.5

*Three single females released as part of the Juvenile Burrowing Owl Overwintering Project.

**Three single males and three pairs released as part of the Juvenile Burrowing Owl Overwintering Project.

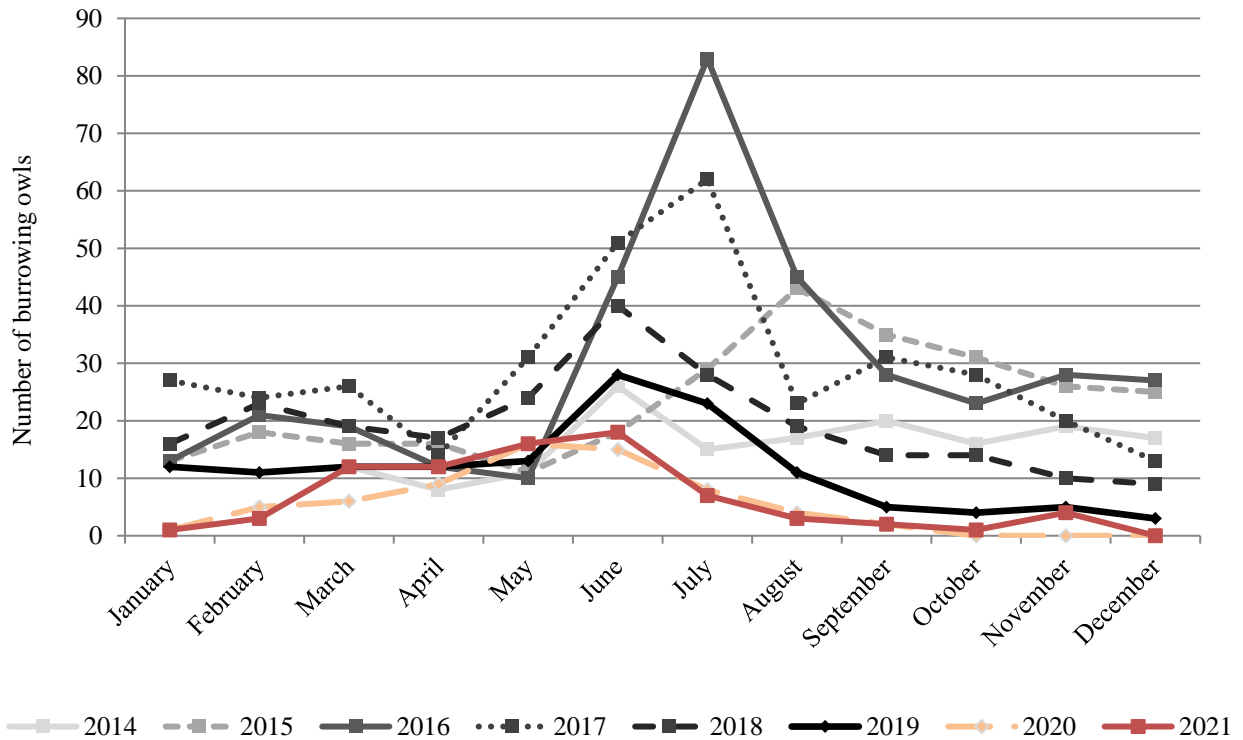


Figure 15. Counts of the total number of burrowing owls (adults and juveniles) observed each month at the San José-Santa Clara Regional Wastewater Facility Bufferlands management area, 2014–2021.

Burrowing Owl Fatalities

During Year 5, mortality rates, and/or burrowing owls whose fate was unknown, have been high. Without finding a carcass and or a feather pile it is difficult to determine if some owls simply moved off site or if they were killed. The pair of burrowing owls released at Enclosure #1 went missing by June 2021. Trail camera photos revealed that the female at Enclosure #3 was carried away by an opossum; it is unknown if the opossum killed the owl or scavenged the carcass. The male at this burrow was no longer seen on camera after the female was depredated. The female at nest burrow #50 was not observed after June.

SITE CONDITIONS

California Ground Squirrel Distribution and Abundance

California ground squirrels were patchily distributed throughout the management area, with large areas devoid of ground squirrel activity/burrows adjacent to areas where squirrels were abundant. Our general observation was that abundance was about the same as last year, although we did not conduct a formal assessment or count. Increasing abundance and density of ground squirrels through active management would be beneficial for burrowing owls in certain areas of the site.

Predator Abundance

We have observed a variety of burrowing owl predators in the management area, including red-tailed hawks, golden eagles, peregrine falcons, barn owls, great-horned owls, cats, skunks, and coyotes (Table 2). With increasing development around the management area, we are anticipating an increase in predation events, as described in the section *Surrounding Development* below.

Table 2. Predatory species of burrowing owls observed during monthly surveys of Year 5 (October 2020–December 2021).

Species	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Golden eagle	1	1	1	2	2	1	1	2	2	2	2	2	1	2	
Red-tailed hawk	1	1	1	2	3	1	1	1	1	4	2	1	1	1	
Norther harrier						1		1	1	1					
Peregrine falcon			2			1				1		1	1		1
Merlin	2														
American crow	4	2	4	2		4	6							8	6
Common raven		2	1			4			4	4	2		2	2	
Barn owl			1												
Great-horned owl											1			1	
Coyote		1	1					1		1					1
Striped skunk															1
Feral cat	1		1					3	1	1	1	1	1	1	1
California raccoon													1		
Virginia opossum									1						

Prey Abundance

The abundance of prey items for burrowing owls at this site is unknown. Castings show that owls mainly feed on invertebrates, including earwigs, grasshoppers, and beetles. Brush and rock piles were installed to provide microhabitats for prey species and some areas of the site were left unmowed to provide suitable habitat for prey species that prefer taller vegetation. Areas around the slough are never mowed and the area along the eastern side of the site from the railway tracks to the overflow basin is also left unmowed. These unmowed areas provide ideal conditions for rodent species like California voles and western harvest mice.

Surrounding Development and Anticoagulant Rodenticides

In 2017, open space west of the management area was developed. Large building complexes now stand west of Disk Drive adjacent to the Cisco site, as well as west of North First Street.

Additional construction is proposed west of Coyote Creek at the former Cilker Orchard. These developments diminish adjacent burrowing owl foraging habitat. The tall buildings and light posts west of the Cisco site provide perches for raptors that prey on burrowing owls, such as red-tailed hawks and golden eagles, regularly observed at this location. Additionally, trees were planted along the buildings that offer additional perches for raptors. These developments may also attract mammalian predators including feral cats, raccoons, opossums, and rats.

Furthermore, the destruction of the adjacent habitat pushes more predatory wildlife species, such as coyotes and large raptors, onto the Bufferlands. More species on this island of grassland habitat will thus compete for limited resources, including prey items such as small rodents.

Use of anticoagulant rodenticides in the neighboring urbanized areas is of concern to burrowing owl survival. We saw numerous bait boxes at buildings along Nortech Drive containing 0.005% Bromadiolone, a potent second-generation anticoagulant rodenticide, 4-hydroxycoumarin derivative and vitamin K antagonist, often called a "super-warfarin" for its added potency and tendency to accumulate in the liver of the poisoned organism. Such rodenticides can cause secondary poisoning. During the 2018 breeding season, two burrowing owl pairs closest to the new developments failed to produce fledglings. One female was predated by a red-tailed hawk at the nest burrow, the cause for the other pair's failure is unclear. In 2019, six nestlings were orphaned at the same nest location; the fate of their parents was unknown. Fortunately, we were able to capture all six orphans and transfer them to the Wildlife Care Center at the Peninsula Humane Society in Burlingame where they were cared for as part of the Juvenile Burrowing Owl Overwintering Project. The Cisco site has not been occupied by breeding burrowing owls in 2020 and 2021.

LAND USE AND OTHER DISTURBANCES

Headwaters Project

Soil from the project site has been deposited in a large area (~15 acres) just east of the management area diminishing burrowing owl breeding, roosting, and foraging habitat. Numerous ground squirrel burrows were covered with soil. Vehicles are frequently moving back and forth on the soil pile which created potential disturbance throughout the year. This tall soil pile provides perching opportunities for burrowing owl predators. The soil pile was created less than 500 ft from an active golden eagle nest, and this disturbance may have contributed to nest failure this year. Although we observed the pair throughout the breeding season, we did not observe any eaglets.



Figure 16. Soil deposit area (~15 acres) for the Headwaters Project.

Independence Day Fireworks

During our monthly survey of the Cisco site on 9 July 2021, we found beer bottles and cans near the fence line as well as some fireworks debris, most likely left over from July 4th celebrations. The amount of garbage was less than in previous years.

After 4 July 2017 and 2018, we found a lot of fireworks debris and alcohol bottles within the Cisco site near the homes on Grand Boulevard. Both years, the fence had been cut for access to the site. To prevent/reduce similar incidences in 2019, we asked for assistance. In early July 2019, Cathy Correia spoke with the San Jose Police Department captain of this area and informed him of activities on 4 July in previous years. He was aware of the illegal firework show in the neighborhood and suggested contacting him on the 4th to request patrolling the area. Although he could not assign officers specifically to the area, he mentioned that U.S. Fish and Wildlife Service (USFW) would likely have a ranger stationed on the road outside of the Don Edwards Education Center with a small fire truck. During our survey the day after Independence Day in 2019 and 2020, we were pleased to find that the fence had not been breached and we found very little debris. However, both years we detected small burnt areas from grass fires within the Cisco site; likely a result of fireworks.

Draft EIR for 237 Industrial Center - File Nos. C15-054 and SP 16-053

The approximately 64.5-acre proposed project site west of Coyote Creek at the former Cilker Orchard is currently primarily fallow farmland with a few structures. According to the City of San José's website (<https://www.sanjoseca.gov/your-government/departments/planning-building-code-enforcement/planning-division/environmental-planning/environmental-review/completed-eirs/237-industrial-center>), the project includes two development options: "Option 1 proposes approximately 1.2 million square feet of light industrial development and

Option 2 proposes a 436,880 square foot data center with a PG&E substation to provide the electrical needs for the data center on approximately 26.5 acres of the site and approximately 728,000 square feet of light industrial development.”

The Draft EIR (<https://www.sanJoseca.gov/home/showpublisheddocument?id=20857>) shows on *Figure 2.0-4 Off-Site Utilities Improvements* (Figure 14) potential ground disturbance within the management area from the terminus of Nortech Parkway westward. This disturbance could have significant impacts to nesting and/or wintering burrowing owls.



Figure 17. Off-Site Utilities Improvements as shown in Draft EIR for 237 Industrial Center (File Numbers C15-054 and SP 16-053) could significantly impact burrowing owls at the San José-Santa Clara Regional Wastewater Facility Bufferlands management area.

Water Leaks

In December 2020, we detected a water leak which appeared to originate at the Jubilee Church facility. The leak resulted in significant flooding and ponding within the Cisco site along the eastern fence line. We notified City staff and they conducted a site visit the same day and confirmed that the water leak was potable water and that the source of the water leak had already been addressed.

In January, we detected a second water leak to the east of the Jubilee Church. The ponding area was located immediately adjacent to the landscaped area of the church. We notified City staff and the church’s grounds crew checked their irrigation system to determine the source of the water leak. The leak was fixed and the ponding water receded.

Drone

During our monthly survey in June 2021, we found a drone approximately 10 feet from an active nest burrow at enclosure #3. Flying drones near active burrows might cause burrowing owls to flush. Flushing from the safety of the burrow may lead to predation. Persistent disturbance may lead to nest abandonment.



Figure 18. A drone was detected near an active nest burrow at enclosure #3 in June 2021.

SURVEYS AT RWF EAST

On 4 December 2020, 12 August 2021, and 9 November 2021, we surveyed the area to the east of the burrowing owl management area within the Bufferlands/RWF facility (Figures 19–21). We detected wintering owls in these areas in previous years and breeding burrowing owls have been observed in the overflow basin and along Zanker Road in the past as well. Dispersal of owls nesting in, or fledging from, the management area to areas adjacent to the east is probable.

During our survey on 4 December 2020, we detected four burrows with sign of recent burrowing owl activity (Figure 19). On 12 August 2021, we detected one burrowing owl on the wing and two burrows with sign of recent burrowing owl activity (Figure 20). On 9 November, we observed two burrowing owls and five burrows with sign of recent use (Figure 21).

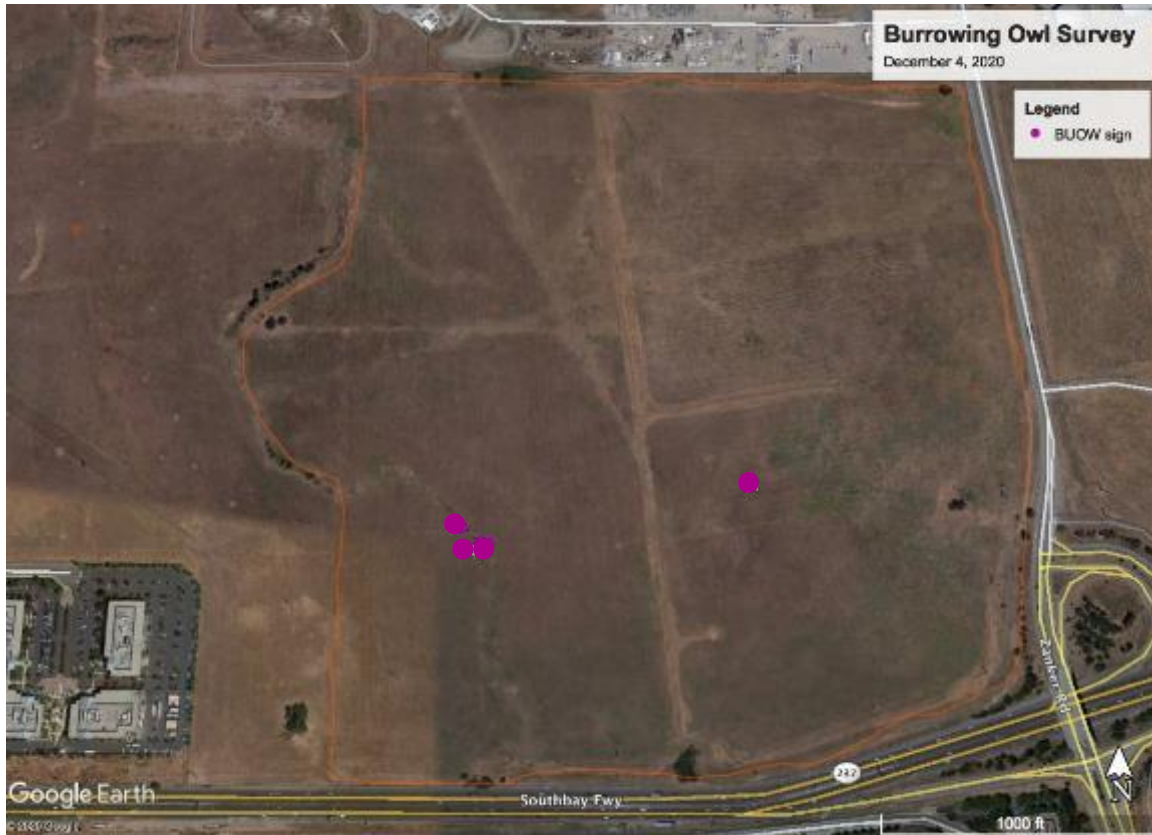


Figure 19. Observations during a survey for burrowing owls in areas to the east of the burrowing owl management area within the Bufferlands/RWF facility on 4 December 2020.



Figure 20. Observations during a survey for burrowing owls in areas to the east of the burrowing owl management area within the Bufferlands/RWF facility on 12 August 2021.



Figure 21. Observations during a survey for burrowing owls east of the burrowing owl management area within the Bufferlands/RWF facility on 9 November 2021.

PLANNED MANAGEMENT ACTIVITIES FOR YEAR 6

Vegetation Management

We will continue with vegetation management, including tractor mowing, weed whacking, hand pulling, mulching, and herbicide application.

Tractor Mowing

We will create maps outlining areas for mowing. Long’s will mow the flat areas and larger berms twice during Year 6, once early in the breeding season (weather permitting in March 2021), and once later in the breeding season (May or June 2022).

Soil Mound Management

We will use various means to manage vegetation on the mounds. Once the COVID-19 pandemic is under control, we will hopefully be able to have volunteers help us hand-pull weedy vegetation at unoccupied mounds once or twice a month during workdays. At occupied mounds, only biologists will either weed whack or hand pull vegetation as needed. In the meantime, we will conduct limited vegetation management on our own. After we pull or cut vegetation, we will ensure that burrow entrances are free of debris.

Herbicide Application

We will create a map outlining mounds, berms, and artificial burrows that are flush in the ground to be sprayed with herbicides. Weather permitting, spraying will occur in January 2022.

Perennial pepperweed will be targeted with a specific herbicide during 2022 to reduce the spread of this highly invasive species.

Brush and Rock Piles

The addition of several more rock and brush piles would potentially enhance prey abundance on site (personal observation at other sites). The rock and brush piles should be placed along the fence line, as shown in Figure 22. These areas are not suitable for nesting burrowing owls due to the proximity to tall trees and fences that provide prime perching areas for avian predators of burrowing owls. Instead, these areas would be ideal locations for enhancing the prey base of burrowing owls and creating a buffer between buildings and the managed grasslands.



Figure 22. Proposed locations of additional rock and brush piles.

Palm Tree Removal

As previously noted, we recommend removing two palm trees north of Nortech Parkway (Figure 23) during the non-breeding season (September 1–January 31). These trees provide prime perches for raptors that prey on burrowing owls. Predatory birds could also use the trees as nest structures. Burrowing owls have used burrows adjacent to one of the trees. Palm tree removal is planned for January 2022.



Figure 23. Palm trees recommended for removal outlined in orange.

Fence post removal

In February 2018, with the help of volunteers, we removed a section of a 6-foot tall chain link fence running between the RWF bufferlands and the Cisco mitigation site; the fence posts still remain in place. This fence is within the management area and is not an external fence line. We removed the fence for two reasons: a) reducing disturbance to nesting burrowing owls near the narrow existing opening in the fence line, and b) eliminating an obstacle for mowing tall vegetation along the fence line.

Previously, only one narrow opening existed at the southern end of this fence line, limiting access for foot traffic, a mower, and other vehicles. Until 2019, active nest burrows were located near the opening and removal of the fence now allows foot and/or vehicular traffic to give these burrows a wider berth and thus avoid disturbance. Tall mustard currently grows along the still existing fence line and along the remaining fence post because a mower cannot mow the vegetation near this line. The tall mustard on both sides of the fence creates a wall between the two management areas. This wall creates ideal habitat for predators to hide in and/or move along, and prevents burrowing owls from easily and safely moving between the two areas. We are planning on removing the fence posts in January/February 2022 and hopefully also remove the remaining fence up to the beginning of the slough to allow the mower to cut all tall vegetation.

Table 3. Summary and approximate timing of burrowing owl management priorities for Year 6 (January–December 2022).

Management task	Timing
Tractor mowing	1 st mowing in March, 2 nd mowing May/June (timing will be based on vegetative growth)
Weed whacking/hand pulling vegetation on soil mounds	Prior to 2022 burrowing owl breeding season and ongoing as necessary
Herbicide application	January 2022
Brush and rock pile installation	On-going/as material becomes available
Plant native vegetation islands	During rainy season
Remove remaining fence posts/fencing along Cisco site	January/February 2022
Removal of palm trees	January 2022

OTHER INDEPENDENT PROJECTS AT RWF

The projects listed below are all independent projects conducted at the RWF Bufferlands, funded by the Habitat Agency.

Juvenile Burrowing Owl Overwintering Project

As part of the Juvenile Burrowing Owl Overwintering Project, Talon installed four additional artificial burrow complexes flush in the ground on existing raised areas in the center of the management area. These artificial burrows will be used for the release of 1–3 single females and five pairs in February/March 2022.

Supplemental Feeding Project

In 2022, Talon will continue to supplementally feed all burrowing owls on site during the breeding season.

Banding Study

During the 2022 breeding season, Talon will continue the banding study which includes identifying previously banded adults, and banding juveniles and unbanded adult burrowing owls at this site.

Call-Broadcast Sound Systems

In early 2020, Talon received funding from the Habitat Agency and from private donors to purchase two custom-built call-broadcast sound systems from MurreMaid (<http://www.murremaid.com/>). The purpose of these solar-powered units is to automatically broadcast burrowing owl calls at certain time intervals to provide a “social attraction” cue

thought to attract or retain burrowing owls at particular locations. These units have been successfully used by the San Diego Zoo Institute for Conservation Research (<https://institute.sandiegozoo.org/species/burrowing-owl>) to help retain relocated burrowing owls at their new location. These sound systems have also been used by researchers seeking to attract colonial tern species to sites in the South Bay Salt Pond Restoration Project (Hartman, et al. 2019). We used the units during the soft-release of the three female owls from the Juvenile Overwintering Project in 2020 and three males in 2021, enticing these owls to stay on site. We will deploy the units again during soft-releases of overwintered owl in 2022.

Pollinator/Prey Plants Project

Grassroots Ecology, under Talon’s supervision, will create additional areas for seeding native plants and planting perennials of several different species. The native plants are intended to provide cover and an additional food source to attract and increase the prey base for burrowing owls with special emphasis on rodents. Furthermore, the plants are intended to support native pollinator species.

OTHER SUGGESTIONS

Surveys at RWF East

We recommend continuing the surveys of the RWF lands adjacent to the east of the management area (Figure 19–21). Considering the proximity to the burrowing owl population in the management area, regularly surveying these areas would enable us to monitor potential dispersal of owls nesting in, or fledging from, the management area. We may also detect migrating wintering owls. We suggest surveying these areas, if appropriate, at least two times per year; once during the breeding season (April/May) and once during winter (November/December). If we detect burrowing owls in this area during the breeding season, we would like to get permission to install motion-triggered trail cameras for additional observation. We would have to access the area regularly to retrieve data cards. If breeding pairs are present, we also ask to be granted access for supplemental feeding without requiring an escort.

Inter-Agency Communication

We continue to be available to provide information regarding the protection of burrowing owls and other natural resources at the Bufferlands at any time. We can meet at the site or discuss existing or upcoming challenges on the phone. With the goal of increasing the protection of burrowing owls and their habitat, we should be included in Inter-Agency communications between the Habitat Agency, the City of San José, Santa Clara Department of Public Works, PG&E, and other agencies regarding any activities/disturbances within the management area. It is important that we can provide our expertise on how activities may affect burrowing owls.