SANTA CLARA VALLEY
HABITAT AGENCY

TO: Implementation Board

FROM: Edmund Sullivan, Executive Officer

SUBJECT: Approval of Agreement Burrowing Owl Tracking Study

RECOMMENDED ACTION: Authorize the Executive Officer to execute a not-to-exceed $49,394 2-year sole-source Professional Services Agreement with Talon Ecological Research Group to track western burrowing owls in the Santa Clara Valley Habitat Plan area.

BACKGROUND: The Habitat Plan includes the western burrowing owl as a covered species. The primary goal for burrowing owls is to establish a burrowing owl population in the permit area and the expanded permit area that is first stable, then increasing over time, while accounting for normal fluctuations in population levels.

The Habitat Agency is proposing to contract with Talon Ecological Research Group (Talon), our local western burrowing owl experts to do all the owl tracking work at four (4) sites. Talon will attach GPS tracking units (multiple manufacturers and types) to burrowing owls weighing <4% of the body mass of each owl with a backpack-style harness. Both males and females could be fitted with units.

In 2023, the Habitat Agency initiated a tracking study on burrowing owls in the Santa Clara Valley Habitat Plan area. During this pilot study year, the Habitat Agency set out to determine if tracking burrowing owls with the current tracking technology was feasible and achievable. Talon performed all pilot tracking work collecting insightful data. The cost of the one-year pilot was $21,681, an amount in which the Executive Officer is authorized to enter into and execute for and on behalf of the Habitat Agency. This second phase of the tracking study combined with the first phase pilot exceeds the Executive Officer's approval authority.

Therefore, the Habitat Agency is seeking Implementation Board approval to continue this study over the next two years (2024-2025). Talon will continue to deploy tracking units on multiple owls throughout the breeding and non-breeding seasons post soft release as part of the Juvenile Overwintering Project. The Habitat Agency will deploy a minimum of one tracking unit per release site (4 sites), but multiple tracked owls at each site is desired, to determine movement patterns, which is critical for understanding ecological needs for additional conservation efforts. This is the first-time burrowing owls have been tracked in this region.

The Talon team has been trapping and studying burrowing owls for over 20 years. They have been implementing the burrowing owl conservation strategy for the Habitat Agency since April of 2015. It was determined by the Habitat Agency Technical Advisory Committee, the Burrowing Owl Working Group, and staff that the Habitat Agency should continue this study to better understand population trends and owl movement within Santa Clara County.

As the Habitat Agency moves into year 11 of burrowing owl program implementation, the Habitat Agency believes Talon, who are the local burrowing owl experts and noted for their owl work in the region, are the most qualified and well-suited consultant to assist the Habitat Agency as the focus of the program shifts to releasing burrowing owls at Santa Clara County Parks Harvey-Bear property and the Peninsula Open Space Trust-Santa Clara Valley Open Space Authority Shappell property to establish new breeding colonies within the owl's historic range. Tracking owls is a critical component of this strategy shift. The Habitat Agency believes that changing consultants at this juncture would be disruptive and costly.

FISCAL IMPACT: The Professional Services Agreement with Talon for 2 years will have a fiscal impact not-to-exceed $49,394. The total fiscal impact of this tracking study (pilot plus 2 additional years) will be $71,075 if the Executive Officer is authorized to execute this agreement. The funds for this service agreement are set forth in the Adopted Fiscal Year 2022-23 Budget, Cost Center 3.6 – western burrowing owl management activities.

ATTACHMENTS:
Attachment A - Burrowing Owl Tracking Study Project Proposal

ATTACHMENT A

Burrowing Owl Tracking Study Project Proposal

Burrowing Owl Tracking Study
Project Proposal
February 2024

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PROJECT DESCRIPTION

In 2023, we initiated a tracking study on burrowing owls in the Santa Clara Valley Habitat Plan area. During this pilot study year, we set out to determine if tracking burrowing owls with the current tracking technology was feasible and achievable. We successfully deployed tracking units on several owls in 2023 and collected insightful data, therefore we are proposing to continue this study over the next two years (2024-2025). We will continue to deploy tracking units on multiple owls throughout the breeding and non-breeding seasons post soft-release as part of the Juvenile Overwintering Project. We will deploy a minimum of one tracking unit per release site (4 sites), but multiple tracked owls at each site is desired, to determine movement patterns, which is critical for understanding ecological needs for additional conservation efforts. This is the first-time burrowing owls have been tracked in this region.

In 2023, we found no observed negative impacts on the owls we tagged and recaptured for unit removal (5 out of 7). (Phillips et al. 2024).

Combining tracking technology with already existing management programs offers a unique opportunity for answering key questions on burrowing owl movement and thus supporting the efficacy of the Juvenile Overwintering Project and Captive Breeding Program. The goals and objectives of this project are to 1) detect movement patterns of breeding burrowing owls released as part of the Juvenile Overwintering Project and Captive Breeding Program in the Santa Clara Valley Habitat Plan area to discern additional conservation management actions necessary to protect the species, 2) define foraging areas, home ranges, and distance from natal burrows, 3) determine dispersal patterns of owls that move from release sites to potentially new sites, 4) determine habitat utilization differences between males and females, 5) differentiate movements patterns and foraging distances between established (wild) owls and recently released owls, 6) outline potential foraging areas that would benefit from protection and management, 7) better understand the impacts from urbanization pressures and habitat loss, as well as identify potential threats to the viability of the population, and 8) test different types of transmitters to determine the most effective units.

Conducting this study on movement patterns is critical for understanding ecological needs for additional conservation efforts. Combining tracking technology with already existing management programs offers a unique opportunity for answering key questions on burrowing owl movement and thus supporting the efficacy of the Juvenile Overwintering Project and Captive Breeding Program. This research project provides essential information about unknown habitat use to better assess, and hopefully alleviate, some of the threats to the declining population.

TIMELINE

Tracking units will be deployed on both soft-released and established (wild) burrowing owls during 2024 and 2025. Units will be attached to owls prior to removing hacking enclosures during the breeding seasons, as well as post releases. Owls will be tracked for the duration of a unit's battery life. Tracking will continue after releases to determine potential dispersal or movement away from release sites.

METHODS

We will attach GPS tracking units (multiple manufacturers and types) to burrowing owls weighing <4% of the body mass of each owl with a backpack-style harness. Both males and females could be fitted with units; however, we will preferably outfit males because 1) they spend more time outside burrows so the solar-powered units can charge properly, compared to females who spend much more time in underground burrows especially during incubation and brooding, and 2) males typically forage more during the incubation and brooding periods, therefore more data can be collected on foraging (Hennessy et al. 2015).

Ecotone PICA GPS-UHF solar data loggers weighing ~5 (https://www.ecotone-telemetry.com/index.php/en/products/gps-uhf), Cellular Tracking Technology (CTT) 5g Flicker Cellular GPS units (https://celltracktech.com/products/flickergl-4-bk), both solar and non-solar, and Ornitela 6g OrniTrack solar (https://www.ornitela.com/6g-transmitter) transmitters may be attached with a 0.1 inch (2.5 mm) tubular Spectra strap where two ribbons go over the head, cross at the breast at the top of the keel (glued together), and under each wing to connect to the loops or tubes (tied and glued) at the bottom and top of the transmitter. We will attach the transmitters one or two days prior to release

from the hacking enclosures, so that the unit's battery life holds as much charge as possible at the time of release. Attaching each transmitter will take no longer than 45 minutes.

In 2023, Colleen Wisinski, Conservation Program Manager of the Burrowing Owl Recovery Program at the San Diego Zoo Wildlife Alliance, assisted us with and trained us in the attachment technique of the units on the first two owls. Ryan Phillips attached all other units independently in 2023 and will continue in 2024 and 2025. We will track a minimum of one owl at each of the four release sites, but ideally multiple individuals will be tracked at each site. The release sites include Shoreline at Mountain View, San Jose-Santa Clara Regional Wastewater Facility in Alviso, OSA-POST reintroduction site in Coyote Valley, and SCCP reintroduction site in the south county.

The Ecotone data loggers are UHF's (Figure 1) therefore they require data upload to a short-range base station. Base stations will be installed at each primary burrow the tagged owl is using, which will allow the transmitter to turn off and save battery life when the tagged owl is stationary at the burrow. The transmitter will collect multiple GPS points per day (ideally between 30 minutes after dusk and 30 minutes before dawn, but it depends on the unit's battery life and drain). The GPS fix schedule can be changed remotely using either the base station or software, so if the data collection schedule needs to be adjusted this does not require recapturing the owls. There is also a long-range base station/receiver that can be used to locate the tagged owls within a range of 200 meters and up to 3 kilometers in open areas. To reduce field data collection time and overall cost of the project we will not purchase any new Ecotones and only use the ones we already have.

The CTT Flicker transmitters (Figure 1) use the global cellular network as a means of data transmission. The added GPS receiver in the unit stores up to 420 GPS fixes and when it is in cellular range it transmitted fixes through the towers. Therefore, these units collect both cellular (low accuracy) and GPS data (high accuracy). Data is automatically uploaded to the CTT application and data is viewed and uploaded from there. Units will be set to obtain 1-3 fixes per night every 3-4 hours since these transmitter's batteries drain quicker than the Ecotones, but they will be adjusted daily as solar power fluctuates each day.

The Ornitela GPS transmitters use the global cellular network as a means of data transmission like the CTT's. A fully charged battery is sufficient for logging 300 positions without additional recharge. The internal battery is a lithium-polymer that has under and over charge protection. It has a solar charger with a high-efficiency multi-junction solar panel. Data collection can be programmed remotely (computer), and GPS logging intervals range from 1 second to 48 hours. The unit can store up to 2,000,000 positions. These transmitters are new to the market but have been tested on owls and are ideal for burrowing owls. We have not used these types of transmitters yet, but they look promising and a good option for burrowing owls.

After the tracking unit battery life is low or drained, we will attempt to trap each owl and remove the tracking unit. For trapping, we will use a lightweight bow net lured with a live mouse in a protective cage with a callback MP3 player and speaker, a walk-in trap placed at the burrow entrance, or if an owl is using a burrow that has access to the nest chamber, we would block the burrow entrance and extract it from the nest chamber by hand. Transmitters will ideally be removed and placed on another owl after tracking an individual for multiple months or obtaining more than 50 positions.

Currently, we have one transmitter (1 Ecotone) that is ready for deployment. Two additional transmitters (CTT) need to be refurbished, as the battery has drained, and two units (Ecotones) are currently on owls that we hope, but are not guaranteed, to retrieve during the 2024 breeding season. We will be able to reuse solar transmitters throughout the year and between years and can potentially

tag multiple owls with the same transmitter to obtain a greater sample size, as we did at Shoreline during 2023 with 3 different owls (Figure 2). We plan to attach a minimum of six new transmitters to owls at a given time, and a minimum of one owl per release site. Ideally, the goal is to track 10-15 owls in a year.

Figure 1. Burrowing owls with fitted backpack harness in 2023 study. Left: Cellular Tracking Technology solar tracking unit. Right: Ecotone Telemetry solar tracking unit.

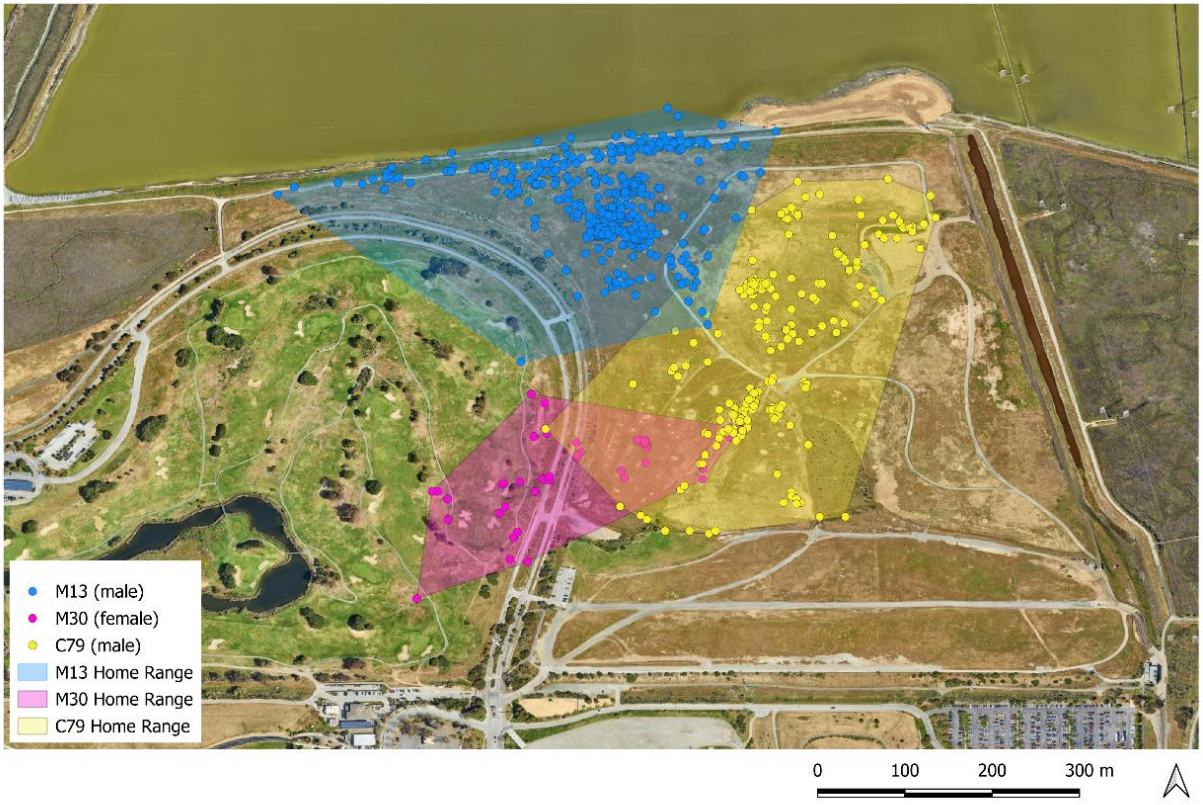

Figure 2. An example of multiple burrowing owls tracked at a single site (Shoreline) in 2023.

STUDY AREAS-RELEASE SITES

The release sites (Figure 3, red stars) include Shoreline at Mountain View, San Jose-Santa Clara Regional Wastewater Facility in Alviso, OSA-POST reintroduction site in Coyote Valley, and SCCP reintroduction site in the south county. However, if a release site is added in 2025 then we will also include that site for tracking.

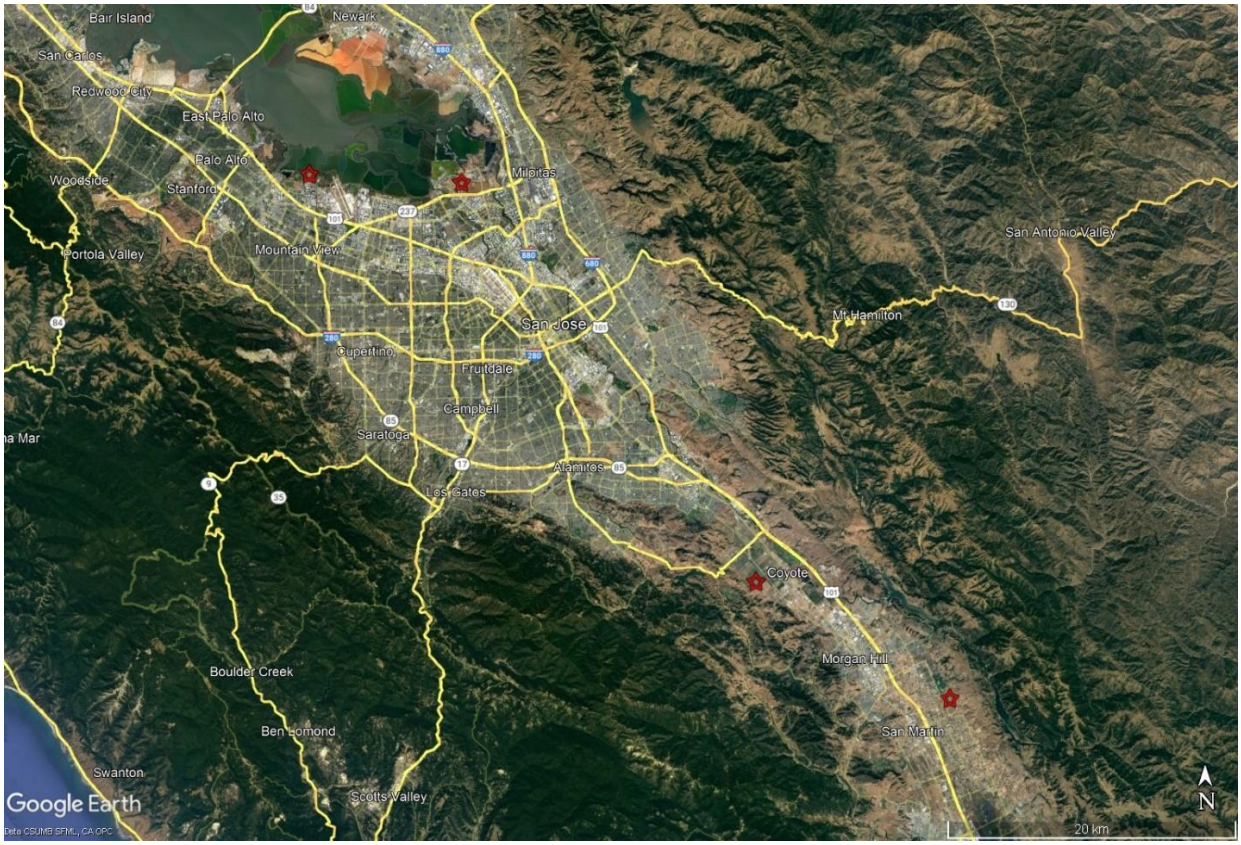

Figure 3. Red stars denote sites included in the burrowing owl tracking study.

BUDGET

In the budget below, we estimate the total cost for two years (2024 and 2025) of this project. The labor tasks include trapping and tagging to attach transmitters to owls and remove transmitters from owls, field data collection, data analysis, correspondence, report writing, insurance, and overhead. The two-year total is $49,394 with cost for Year 1 (2024) not to exceed $27,197 and Year 2 (2025) $22,197. To assist with saving funds, no new Ecotone transmitters will be used to reduce field data collection, as well as tagging owls during initial releases while in enclosures to reduce increased trapping hours.

Year 1 (2024):

TASKS/LABOR	RATE and QUANTITY	COST
Trapping and tagging (attachment/removal)	$95/hr- 100 hours (2-4 pax)	$9,500.00
Field data collection	$95/hr- 10 hrs (1 pax)	$950.00
Data analysis (mapping, statistical)	$95/hr- 15 hrs (1 pax)	$1,425.00
Correspondence	$95/hr- 10 hrs (1 pax)	$950.00
Report writing	$95/hr- 20 hrs (1 pax)	$1,900.00
Overhead	10% of tasks total	$1,472.00
Subtotal		$16,197.00
EQUIPMENT		
CTT Flicker GPS solar transmitter	$1,600 each x 2	$3,200.00
Ornitela Ornitrack-6 solar transmitter	$1,400 each x 4	$5,600.00
Transmitter refurbishment	$500 x 4	$2,000.00
Tagging/Harness material	$150 x 1	$150.00
Data storage hard drive	$50 x 1	$50.00
Subtotal		$11,000.00
TOTAL for 2024		**$27,197.00**

Year 2 (2025):

TASKS/LABOR	RATE and QUANTITY	COST
Trapping and tagging (attachment/removal)	$95/hr- 100 hours (2-4 pax)	$9,500.00
Field data collection	$95/hr- 10 hrs (1 pax)	$950.00
Data analysis (mapping, statistical)	$95/hr- 15 hrs (1 pax)	$1,425.00
Correspondence	$95/hr- 10 hrs	$950.00
Report writing	$95/hr- 20 hrs	$1,900.00
Overhead	10% of tasks total	$1,472.00
Subtotal		$16,197.00
EQUIPMENT		
Ornitela Ornitrack-6 solar transmitter	$1,400 each x 2	$2,800.00
CTT Flicker GPS solar transmitter	$1,600 each x 2	$3,200.00
Subtotal		$6,000.00
TOTAL for 2025		**$22,197.00**

TOTAL for 2 years (2024 and 2025) $49,394.00

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