Final

TARGETED MONITORING PLAN RESOURCE-SPECIFIC MONITORING & MANAGEMENT

2024 Annual Report

Prepared for
Department of Parks and Recreation
County of San Diego
5500 Overland Avenue, Suite 410
San Diego, CA 92123
Contact: Ms. Jennifer Price

March 2025

ESA



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CONTENTS

2024 Annual Report

Page

Acronyms and Other Abbreviations ..... **v**

Executive Summary **ES-1**

Chapter 1. Introduction **1-1**
1.1 Purpose of the Project 1-1
1.2 Multiple Species Conservation Program Context 1-2

Chapter 2. Study Area Description **2-1**
2.1 Overview 2-1
2.2 Project Location 2-1

Chapter 3. Methods **3-1**
3.1 Overview 3-1
3.2 Vernal Pools and Alkali Playas 3-1
3.3 Rare Plant Monitoring 3-3
3.4 Rare Plant Focused Management 3-5
3.5 Harbison's Dun Skipper 3-7
3.6 Arroyo Toad 3-8
3.7 Northern Harrier 3-9
3.8 Least Bell's Vireo 3-10
3.9 Stephens' Kangaroo Rat 3-12
3.10 Pallid Bat 3-14
3.11 Townsend's Big-Eared Bat 3-15
3.12 Residual Dry Matter Monitoring 3-15
3.13 Regional Monitoring Efforts 3-16

Chapter 4. Results and Discussion **4-1**
4.1 Vernal Pools and Alkali Playas 4-1
4.2 Rare Plant Monitoring and Focused Management 4-51
4.3 Harbison's Dun Skipper 4-71
4.4 Arroyo Toad 4-74
4.5 Northern Harrier 4-83
4.6 Least Bell's Vireo 4-87
4.7 Stephens' Kangaroo Rat 4-92
4.8 Pallid Bat 4-100
4.9 Townsend's Big-Eared Bat 4-107
4.10 Regional MSP Wildlife Monitoring Results 4-109
4.11 Residual Dry Matter Monitoring 4-109

Chapter 5. References **5-1**

Page

Figures

Figure 1 Project Location 2-2
Figure 2 Vernal Pools and Alkali Playas Monitoring Results: Ramona Grasslands County Preserve 4-3
Figure 3 Vernal Pool Monitoring Results: Los Penasquitos Canyon County Preserve 4-21
Figure 4 San Diego Thornmint Monitoring Results: Simon County Preserve 4-54
Figure 5 San Diego Thornmint Monitoring and Management Results: Sycamore Canyon/ Goodan Ranch County Preserve 4-57
Figure 6 San Miguel Savory Monitoring and Management Results: Boulder Oaks County Preserve 4-60
Figure 7 Otay Tarplant Management Results: Furby-North County Preserve 4-62
Figure 8 Orcutt's Bird's-Beak Management Results: Tijuana River Valley Regional Park 4-65
Figure 9 Variegated Dudleya Management Results: Lusardi Creek County Preserve 4-66
Figure 10 Willowy Monardella Monitoring and Management Results: Sycamore Canyon/Goodan Ranch County Preserve 4-67
Figure 11 Harbison's Dun Skipper Monitoring and Management Results: Hellhole Canyon County Preserve 4-75
Figure 12 Arroyo Toad Monitoring Results: Ramona Grasslands County Preserve 4-77
Figure 13 Northern Harrier Monitoring Results: Tijuana River Valley Regional Park 4-85
Figure 14 Least Bell's Vireo Nest Monitoring and Management Results: Santa Margarita County Preserve 4-89
Figure 15 Stephens' Kangaroo Rat Monitoring Results: Ramona Grasslands County Preserve 4-94
Figure 16 Stephens' Kangaroo Rat Monitoring Results: Hellhole Canyon County Preserve 4-98
Figure 17 Pallid Bat and Townsend's Big-Eared Bat Monitoring Results: Hellhole Canyon County Preserve 4-101
Figure 18 Pallid Bat Monitoring Results: Mount Olympus County Preserve 4-102
Figure 19 Pallid Bat and Townsend's Big-Eared Bat Monitoring Results: Wilderness Gardens County Preserve 4-103
Figure 20 Residual Dry Matter Monitoring Results: Ramona Grasslands County Preserve 4-111

Tables

Table ES-1 2024 TMP Monitoring Results ES-2
Table ES-2 2024 TMP Management Results ES-4
Table 1 TMP Species and Habitats Monitored in 2024 1-2
Table 2 Vernal Pools and Alkali Playa Quantitative Monitoring Summary: Ramona Grasslands County Preserve 3-2
Table 3 Vernal Pools Quantitative Monitoring Summary: Los Peñasquitos Canyon County Preserve 3-3
Table 4 MSP Rare Plant Monitoring Survey Summary 3-3
Table 5 MSP Rare Plant Management Summary 3-5
Table 6 Harbison's Dun Skipper Survey Summary 3-7
Table 7 Arroyo Toad Survey Summary 3-8
Table 8 Northern Harrier Survey Summary 3-10
Table 9 Least Bell's Vireo Nest Monitoring Summary 3-11
Table 10 SKR Habitat Assessment Survey Summary 3-13
Table 11 Pallid and Townsend's Big-Eared Bat Survey Summary 3-14
Table 12 Additional Monitoring Survey Summary 3-17

Table 13 Vernal Pool and Alkali Playa Quantitative Native Flora Cover, Distribution, and Abundance Observed During Wet and Dry Season: Ramona Grasslands County Preserve 4-5
Table 14 Vernal Pool and Alkali Playa Quantitative Non-Native Flora Cover, Distribution, and Abundance Monitoring Results Observed During Wet and Dry Season: Ramona Grasslands County Preserve 4-11
Table 15 Vernal Pool and Alkali Playa Quantitative Fauna Abundance Observed During Wet and Dry Season: Ramona Grasslands County Preserve 4-18
Table 16 Vernal Pool Quantitative Native Flora Cover, Distribution, and Abundance Monitoring Results Observed During Wet and Dry Season: Los Peñasquitos Canyon County Preserve 4-23
Table 17 Vernal Pool Quantitative Non-Native Flora Cover, Distribution, and Abundance Monitoring Results Observed During Wet and Dry Season: Los Peñasquitos Canyon County Preserve 4-33
Table 18 Vernal Pool Quantitative Fauna Abundance Monitoring Results Observed During Wet and Dry Season: Los Peñasquitos Canyon County Preserve 4-39
Table 19 Vernal Pool and Alkali Playa Quantitative Monitoring Summary and Management Priorities: Ramona Grasslands County Preserve 4-46
Table 20 Vernal Pool Quantitative Monitoring Summary and Management Priorities: Los Peñasquitos Canyon County Preserve 4-49
Table 21 MSP 2024 Rare Plant Monitoring Summary 4-53
Table 22 San Diego Thornmint Invasive Non-Native Plant Control Management Priorities: Sycamore Canyon/Goodan Ranch County Preserve 4-59
Table 23 Willowy Monardella Additional Monitoring Data: Sycamore Canyon/ Goodan Ranch County Preserve 4-68
Table 24 Regional MSP 2024 Rare Plant Monitoring Results 4-70
Table 25 Regional Management Summary 4-71
Table 26 Observed Butterfly and Potential Nectar Sources: Hellhole Canyon County Preserve 4-72
Table 27 Harbison's Dun Skipper Habitat Enhancement Seed 4-73
Table 28 Arroyo Toad Habitat Assessment Results: Ramona Grasslands County Preserve 4-79
Table 29 Northern Harrier Nesting Survey Results 4-86
Table 30 Least Bell's Vireo Nest Monitoring Results: Santa Margarita County Preserve 4-88
Table 31 Brown-Headed Cowbird Detections: Santa Margarita County Preserve 4-88
Table 32 Brown-Headed Cowbird Trapping Results: Santa Margarita County Preserve 4-90
Table 33 SKR Monitoring Results: Ramona Grasslands County Preserve 4-92
Table 34 SKR Habitat Assessment Summary: Ramona Grasslands County Preserve 4-95
Table 35 SKR Monitoring Results: Hellhole Canyon County Preserve 4-96
Table 36 SKR Habitat Assessment Summary: Hellhole Canyon County Preserve 4-97
Table 37 Transect Acoustic Bat Survey Results 4-100
Table 38 Summary of 2024 Ramona Grasslands County Preserve RDM Results 4-110

Appendices

A. Vernal Pools and Alkali Playas Permanent Photographic Monitoring
B. Rare Plant Monitoring & Management – Permanent Photographic Monitoring & Representative Photographs
C. MSP Rare Plant Occurrence Monitoring Forms
D. Harbison's Dun Skipper Representative Photographs and Field Forms
E. Arroyo Toad Representative Photographs
F. Northern Harrier Representative Photographs and Survey Forms
G. Least Bell's Vireo USFWS 45-Day Report and Brown-Headed Cowbird Trapping Annual Report
H. Stephens' Kangaroo Rat Monitoring Memorandums
I. Bat Survey & Habitat Assessment Field Forms and Representative Photograph
J. Residual Dry Matter Monitoring Report

ACRONYMS AND OTHER ABBREVIATIONS

Acronym or Abbreviation	Definition
Blackhawk	Blackhawk Environmental, Inc.
Cal-IPC	California Invasive Plant Council
CBI	Conservation Biology Institute
CDFW	California Department of Fish and Wildlife (2013 and after)
County	County of San Diego
DPR	Department of Parks and Recreation
ESA	Environmental Science Associates
Field Maps	ArcGIS Field Maps mobile application
GPS	Global Positioning System
HDS	Harbison's dun skipper
lb/acre	pounds per acre
MBC	Mulligan Biological Consulting
mm	millimeter
MSCP	Multiple Species Conservation Program
MSP	Management and Monitoring Strategic Plan
NCCP	Natural Community Conservation Plan
RDM	residual dry matter
ROE	Right-of-Entry
SANDAG	San Diego Association of Governments
SDMMP	San Diego Management and Monitoring Program
SKR	Stephens' kangaroo rat
SR	State Route
TMP	Targeted Monitoring Plan
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
Wildlife Agencies	CDFW and USFWS

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EXECUTIVE SUMMARY

The County of San Diego (County) monitors and adaptively manages habitats and species covered by the Multiple Species Conservation Program (MSCP) to ensure MSCP biological conservation goals and conditions for species coverage are being met, as a requirement of the MSCP and the adopted South County MSCP Subarea Plan. The monitoring and adaptive management program is guided by the Targeted Monitoring Plan (TMP) (ESA and ICF 2015) and its subsequent updates (ESA and ICF 2022; ESA 2024a).

The TMP and subsequent updates were prepared by the County Department of Parks and Recreation (DPR), with review and input by the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife (collectively known as the Wildlife Agencies), along with review and input from U.S. Geological Survey (USGS) and San Diego Management and Monitoring Program resources experts. The TMP includes focused goals and objectives for target resources and detailed monitoring protocols, and it is intended to achieve the management directives for species per the adopted South County MSCP Subarea Plan Framework Management Plan (County of San Diego 2001). The TMP addresses monitoring and adaptive management within 31 parks and preserves for 23 plant and wildlife species and two habitat types, located in the South County Subarea Plan and draft North County MSCP Plan Areas.

TMP implementation in 2024 included habitat and resource-specific monitoring following the monitoring frequencies in the TMP and adaptive management following the recommendations from the 2023 TMP Annual Report (ESA and ICF 2022; ESA 2024a, 2024b). Resource-specific monitoring was conducted in 12 parks and preserves: Tijuana River Valley Regional Park, and Boulder Oaks, Furby-North, Hellhole Canyon, Lusardi Creek, Mount Olympus, Ramona Grasslands, Los Peñasquitos Canyon, Santa Margarita, Simon, Sycamore Canyon/Goodan Ranch, and Wilderness Gardens County Preserves. Resource-specific adaptive management was conducted in seven parks and preserves: Tijuana River Valley Regional Park and Boulder Oaks, Furby-North, Hellhole Canyon, Lusardi Creek, Ramona Grasslands, and Santa Margarita County Preserves.

Monitoring was conducted by Environmental Science Associates (ESA) for the following 6 MSCP and 8 draft North County MSCP-covered species and habitats in 2024:

- Vernal pool and alkali playa habitats (MSCP and draft North County MSCP)
- San Diego thornmint (*Acanthomintha ilicifolia*) (MSCP and draft North County MSCP)
- Willowy monardella (*Monardella viminea*) (MSCP)
- Harbison's dun skipper (*Euphyes vestris harbisoni*) (HDS)
- Arroyo toad (*Anaxyrus californicus*) (MSCP and draft North County MSCP)
- Northern harrier (*Circus hudsonius*) (MSCP and draft North County MSCP)

- Least Bell's vireo (*Vireo bellii pusillus*) (MSCP and draft North County MSCP)
- Stephens' kangaroo rat (*Dipodomys stephensi*) (SKR) (draft North County MSCP)
- Pallid bat (*Antrozous pallidus*) (draft North County MSCP)
- Townsend's big-eared bat (*Corynorhinus townsendii*) (draft North County MSCP)

Golden eagle (*Aquila chrysaetos*) and bald eagle (*Haliaeetus leucocephalus*) monitoring also occurred in 2024 consistent with the TMP. Results are included under separate cover in the *Ramona Grasslands Preserve 2023–2024 Raptor Surveys Summary Report* (ESA 2024c).

Adaptive management was conducted by ESA for the following 5 MSCP and 1 draft North County MSCP-covered species in 2024:

- San Miguel savory (*Clinopodium chandleri*) (MSCP)
- Otay tarplant (*Deinandra conjugens*) (MSCP)
- Orcutt's bird's-beak (*Dicranostegia orcuttiana*) (MSCP)
- Variegated dudleya (*Dudleya variegata*) (MSCP)
- Harbison's dun skipper
- Least Bell's vireo (MSCP and draft North County MSCP)

Table ES-1 provides a summary of 2024 TMP monitoring results, and **Table ES-2** provides a summary of 2024 TMP management results.

TABLE ES-1
2024 TMP MONITORING RESULTS

Species	County Park/Preserve	Monitoring Results
Vernal pools/Alkali playas: Quantitative monitoring	Ramona Grasslands	22 study locations monitored. All monitored study locations, except raap14, supported at least one floral indicator species during both wet and dry seasons. 14 of the monitored study locations supported at least one faunal indicator species. All monitored study locations supported invasive non-native plant species.
	Los Peñasquitos Canyon	45 study locations monitored. All monitored study locations supported at least one floral indicator species during both wet and dry seasons. 33 of the monitored study locations supported at least one faunal indicator species. Invasive non-native plant species were present in 24 of the monitored study locations.
San Diego thornmint	Simon	IMG plot: 2,200 individuals Total On-site Population: 2,260 individuals
	Sycamore Canyon/ Goodan Ranch[1]	IMG plots: 7,086 individuals Total On-site Population: 36,788 individuals
Otay tarplant[2]	Furby-North 1	IMG plot: 295 individuals Total On-site Population: 340 individuals
	Furby-North 2	IMG plot: 102 individuals Total On-site Population: 430 individuals

Species	County Park/Preserve	Monitoring Results
Willowy monardella[3]	Sycamore Canyon/ Goodan Ranch 1	IMG plot: 47 individuals Total On-site Population: 392 individuals
	Sycamore Canyon/ Goodan Ranch 2	IMG plot: 2 individuals Total On-site Population: 2 individuals
	Sycamore Canyon/ Goodan Ranch 3	IMG plot: 7 individuals Total On-site Population: 50 individuals
Harbison's dun skipper	Hellhole Canyon	Total individuals: 5 adults
Arroyo toad	Ramona Grasslands	Adult/Juveniles: 0 (25 metamorphs)[4] Larvae: 212 individuals (0)[4]
Northern harrier	Tijuana River Valley Regional Park	Territories: 2–4 Pairs: 2–4 Total Individuals: 4–6
Tricolored blackbird	Ramona Grasslands	Total individuals: (0)[5]
Least Bell's vireo	Santa Margarita	Territories: 15 Breeding Pairs: 15 Fledged Young: 35
Stephens' kangaroo rat	Ramona Grasslands	Habitat assessment: 10 of 28 sample plots with high potential 10 sample plots considered occupied based on sign
	Hellhole Canyon	Habitat assessment: 0 of 3 sample plots with high potential[5] 3 considered occupied based on sign[6]
Pallid bat	Hellhole Canyon	Roosting habitat assessment: suitable roosting habitat present (i.e., rocky outcrops, boulders, under bark or in tree cavities).
	Mount Olympus	Roosting habitat assessment: suitable roosting habitat present (i.e., rocky outcrops, boulders, under bark or in tree cavities, abandoned human-made structures).
	Wilderness Gardens	Roosting habitat assessment: suitable roosting habitat present (i.e., historic and unused buildings, rocky outcrops, under bark or in tree cavities).
Townsend's big-eared bat	Hellhole Canyon	Roosting habitat assessment: suitable roosting habitat present (i.e., boulder, rocky outcrops, tree hollows and cavities).
	Wilderness Gardens	Roosting habitat assessment: suitable roosting habitat present (i.e., historic and unused buildings, rocky outcrops, under bark or in tree cavities).

NOTES:

1. At the recommendation of the San Diego Management and Monitoring Program, San Diego thornmint monitoring efforts at Sycamore Canyon/Goodan Ranch County Preserve were reduced to five of the permanent monitoring plots (SYGOACIL01, SYGOACIL05, SYGOACIL06, SYGOACIL08, SYGOACIL10) starting in 2024.
2. Furby-North 1 = MSP Occurrence ID DECO13_3OMEA026_1. Furby-North 2 = MSP Occurrence ID DECO13_3OMEA040_1. Otay tarplant IMG monitoring results from Mulligan Biological Consulting (MBC) are provided in parentheses.
3. Sycamore Canyon/Goodan Ranch 1 = MSP Occurrence ID MOLIV_4SYCA006. Sycamore Canyon/Goodan Ranch 2 = MSP Occurrence ID MOLIV_4SYCA002. Sycamore Canyon/Goodan Ranch 3 = MSP Occurrence ID MOLIV_4SPCA006.
4. Arroyo toad monitoring results from the U.S. Geological Survey (USGS) are provided in parentheses.
5. Tricolored blackbird monitoring results from the San Diego Natural History Museum are provided in parentheses.
6. SKR occupancy at Hellhole Canyon County Preserve in fall 2024 was determined as "potentially occupied" based on the positive detection of one SKR in plot 2 in fall 2020 live-trapping surveys, positive kangaroo rat sign in plots 1, 2, and 3 during fall 2024 monitoring, the proximity of the three plots (within 150 feet of one another), and no factors that could reasonably be expected to entirely preclude SKR movement between the three plots.

TABLE ES-2
2024 TMP MANAGEMENT RESULTS

Species	County Park/Preserve	Management Results
Vernal pools/ Alkali playas	Ramona Grasslands	Management area: (14 pools and 4 alkali playas, totaling 2.23 acres)[1]
San Diego thornmint	Sycamore Canyon/ Goodan Ranch	Management area: (0.98 acre within and surrounding 11 monitoring plots)[2]
San Miguel savory	Boulder Oaks	Management area: 0.57 acre within and surrounding 1 monitoring plot
Otay tarplant	Furby-North	Management area: 0.30 acre within and surrounding 1 monitoring plot
Orcutt's bird's-beak	Tijuana River Valley Regional Park	Management area: 0.46 acre within and surrounding 2 monitoring plots
Variegated dudleya	Lusardi Creek	Management area: 0.75 acre within and surrounding 1 monitoring plot
	Sycamore Canyon/ Goodan Ranch	Management area: (0.04 acre within and surrounding 2 monitoring plots)[3]
Willowy monardella	Sycamore Canyon/ Goodan Ranch	Management area: (0.89 acre within 2 monitoring plots)[4]
Harbison's dun skipper	Hellhole Canyon	Management area: 1.2 acres
Least Bell's vireo[5]	Santa Margarita	BHCO trapped: 11 individuals

NOTES:

BHCO = brown-headed cowbird.

1. Vernal pool/alkali playa management results from RECON Environmental, Inc. are provided in parentheses.
2. San Diego thornmint management results from RECON Environmental, Inc. are provided in parentheses.
3. Variegated dudleya management results from RECON Environmental, Inc. are provided in parentheses.
4. Willowy monardella management results from RECON Environmental, Inc. are provided in parentheses.
5. Two BHCO traps were installed at Santa Margarita County Preserve in 2024.

CHAPTER 1
Introduction

1.1 Purpose of the Project

As a participant in the Multiple Species Conservation Program (MSCP) and the adopted South County MSCP Subarea Plan, the County of San Diego (County) is obligated to conduct biological monitoring of habitats and species covered by the MSCP to ensure that the MSCP biological conservation goals and conditions for species coverage are being met. The County Department of Parks and Recreation (DPR) prepared a Targeted Monitoring Plan (TMP) (ESA and ICF 2015) to provide detailed specifications for implementation of monitoring and adaptive management within 10 County-owned and managed conserved lands (parks and preserves) (Preserve Group 1) overseen by DPR. The TMP was revised in December 2022 (ESA and ICF 2022) to incorporate 10 additional parks and preserves (Preserve Group 2) and again in August 2024 (ESA 2024a) to incorporate 11 additional parks and preserves (Preserve Group 3). These 31 parks and preserves fall within the South County MSCP Subarea Plan Area and the draft North County MSCP Plan Area. The draft North County MSCP Plan Area preserves are included at this time due to the number of sensitive on-site resources that require their conservation and management. In total, the TMP addresses monitoring and adaptive management within 31 parks and preserves for 23 plant and wildlife species and two habitat types.

The TMP is an adaptive implementation plan that includes focused goals and objectives for target resources and detailed monitoring protocols and is intended to achieve the management directives for species per the adopted South County MSCP Subarea Plan Framework Management Plan (County of San Diego 2001). The regional framework that guides monitoring at the preserve level has been refined over time and is still evolving through a collaborative effort among U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW) (collectively known as the Wildlife Agencies), MSCP jurisdictions, and outside scientific experts. It is understood by all stakeholders (e.g., state and federal resource agencies, municipal and county agencies, land managers) that adaptive management is an iterative process in which lessons are learned and used to further refine priorities, goals, objectives, and monitoring methods.

The TMP addresses monitoring and management within the following 31 parks and preserves: El Monte County Park, Louis A. Stelzer County Park, San Luis Rey River Park, and Tijuana River Valley Regional Park and Barnett Ranch, Bottle Peak, Boulder Oaks, Del Dios Highlands, Dictionary Hill, El Capitan, Escondido Creek, Furby-North, Hellhole Canyon, Iron Mountain, Keys Creek, Lakeside Linkage, Lawrence and Barbara Daley, Los Peñasquitos Canyon, Lusardi Creek, Mountain Meadow, Mount Olympus, Oakoasis, Peutz Valley, Ramona Grasslands, Sage Hill, Santa Margarita, Simon, Skyline, Stoneridge, Sycamore Canyon/Goodan Ranch, and Wilderness Gardens County Preserves.

Following the TMP resource-specific monitoring frequencies and the management recommendations from the 2023 TMP Annual Report, resource-specific monitoring and management was conducted in 12 parks and preserves identified in the 2024 TMP: Tijuana River Valley Regional Park, and Boulder Oaks, Furby-North, Hellhole Canyon, Lusardi Creek, Mount Olympus, Ramona Grasslands, Santa Margarita, Simon, Sycamore Canyon/Goodan Ranch, Los Peñasquitos Canyon, and Wilderness Gardens County Preserves (ESA and ICF 2022; ESA 2024b). Los Peñasquitos Canyon County Preserve was included in TMP 2024 monitoring efforts to collect baseline vernal pool inventory information to support the finalization of TMP Preserve Group 3 Update (ESA 2024a).

Table 1 presents the monitoring conducted by Environmental Science Associates (ESA) for the following 10 MSCP- or draft North County MSCP-covered species and habitats in 2024.

TABLE 1
TMP SPECIES AND HABITATS MONITORED IN 2024

TMP Species/Habitat	Covered by		Monitored
	MSCP	Draft North County MSCP	
Vernal pool and alkali playa habitat	✓	✓	✓
San Diego thornmint (*Acanthomintha ilicifolia*)	✓	✓	✓
Willowy monardella (*Monardella viminea*)	✓		✓
Harbison's dun skipper (*Euphyes vestris harbisoni*)			✓
Arroyo toad (*Anaxyrus californicus*)	✓	✓	✓
Northern harrier (*Circus hudsonius*)	✓	✓	✓
Least Bell's vireo (*Vireo bellii pusillus*)	✓	✓	✓
Stephens' kangaroo rat (*Dipodomys stephensi*)		✓	✓
Pallid bat (*Antrozous pallidus*)		✓	✓
Townsend's big-eared bat (*Corynorhinus townsendii*)		✓	✓

The goal of resource-specific monitoring is to collect high-quality data to inform trends in occurrences and populations, evaluate the current habitat conditions, assess threats, and provide adaptive management recommendations to ensure that the conservation goals of the MSCP and draft North County MSCP are being met. The goal of focused adaptive management is to enhance suitable habitat and support the persistence of MSCP- and draft North County MSCP-covered species and habitats.

1.2 Multiple Species Conservation Program Context

The MSCP is a comprehensive habitat conservation planning document and one of several subregional habitat conservation programs in San Diego County that contribute to the preservation of regional biodiversity. Agencies participating in the MSCP include the County, other local jurisdictions within San Diego County (e.g., City of San Diego, City of Chula Vista), and the Wildlife Agencies. The County and other local jurisdictions implement the MSCP through subarea plans, which describe specific implementing mechanisms for the MSCP. The MSCP Plan and subarea plans serve as a multiple species Habitat Conservation Plan pursuant to Section 10(a)(1)(B) of the federal Endangered Species Act and a

Natural Community Conservation Plan (NCCP) pursuant to the California NCCP Act of 1991 (amended in 2001) and the state Endangered Species Act.

The South County MSCP Subarea Plan was adopted in October 1997 and covers 23 vegetation communities and 85 species (County of San Diego 1997). The County is preparing the draft North County MSCP for the northwestern unincorporated areas of the county and the draft East County MSCP for the eastern unincorporated areas of the county.

Species-specific management and monitoring requirements for the MSCP are summarized in **Table 3-5** of the MSCP Plan. In addition, the assurances and obligations to implement the South County MSCP Subarea Plan have been established in the Implementing Agreement (County of San Diego 1998), signed by the County and the Wildlife Agencies.

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CHAPTER 2
Study Area Description

2.1 Overview

During the 2024 reporting period, ESA performed resource-specific monitoring and management in the following 12 parks and preserves identified in the TMP: Tijuana River Valley Regional Park, Boulder Oaks, Furby-North, Hellhole Canyon, Lusardi Creek, Mount Olympus, Ramona Grasslands, Santa Margarita, Simon, Sycamore Canyon/Goodan Ranch, Los Peñasquitos Canyon, and Wilderness Gardens County Preserves (**Figure 1**).

Boulder Oaks, Lusardi Creek, and Sycamore Canyon/Goodan Ranch County Preserves are located entirely within the South County MSCP Subarea Plan Area and are monitored and managed in accordance with the Implementing Agreement (County of San Diego 1998). Portions of Ramona Grasslands County Preserve are located within the MSCP and draft North County MSCP Plan Area. Hellhole Canyon, Simon, Mount Olympus, Santa Margarita, and Wilderness Gardens County Preserves are located completely within the draft North County MSCP Plan Area. These preserve areas will be monitored and managed in accordance with the draft North County MSCP Plan upon adoption and are included in the TMP at this time due to the number of sensitive on-site resources that require conservation and management. Furby-North County Preserve and Tijuana River Valley Regional Park are located within the City of San Diego MSCP Subarea Plan Area and are monitored and managed in accordance with the County's Implementing Agreement (County of San Diego 1998). Los Peñasquitos Canyon County Preserve also falls within the City of San Diego MSCP Subarea Plan Area.

2.2 Project Location

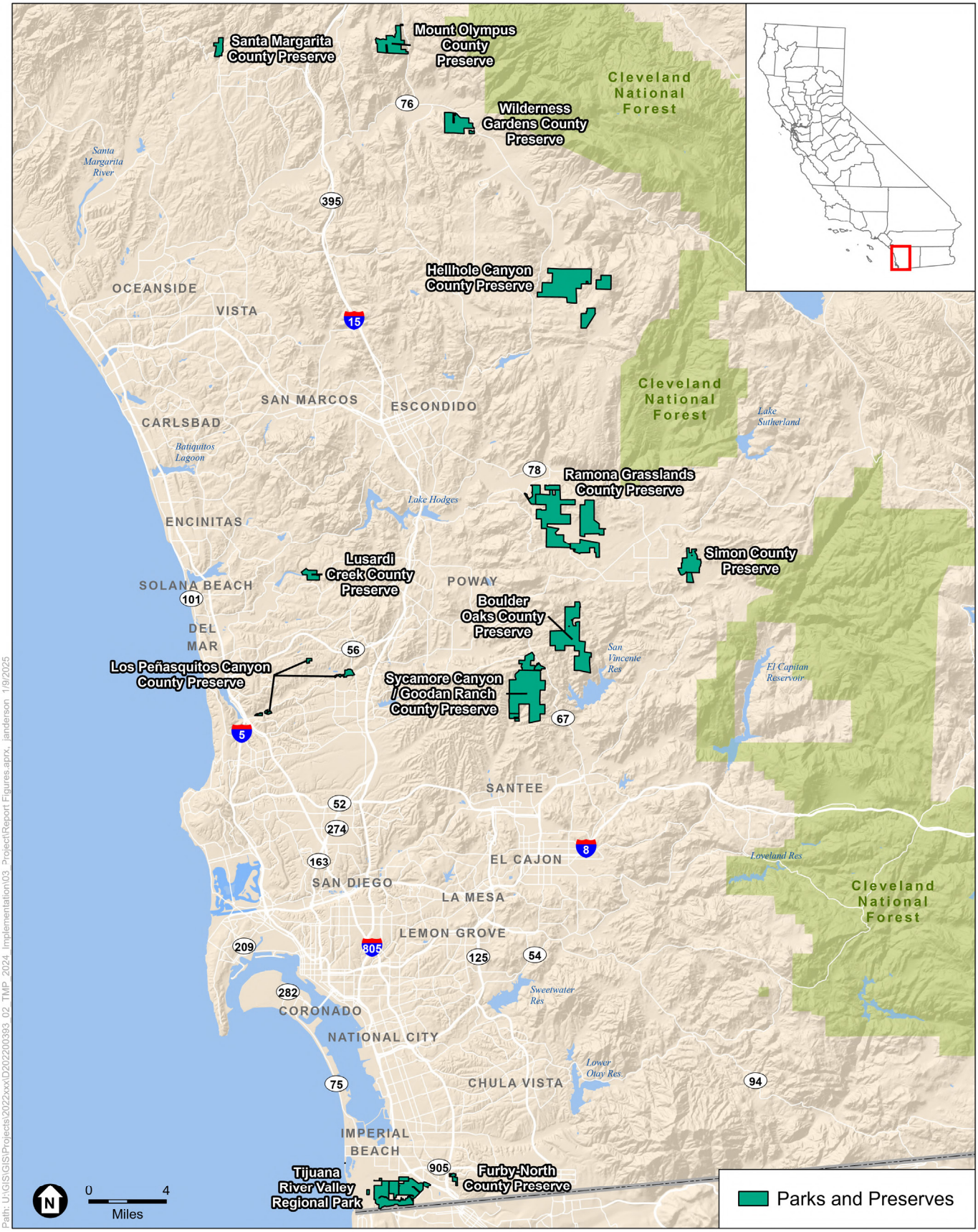
Descriptions of the 12 park and preserve locations monitored and managed in 2024 are provided below.

2.2.1 Boulder Oaks County Preserve

Boulder Oaks County Preserve is located south of the unincorporated township of Ramona, between State Route (SR) 67 and Mussey Grade Road, in central San Diego County. It is located just north of the San Vicente Reservoir, extending east from Iron Mountain and north of Fosters Canyon, and is bisected by Foster Truck Trail.

2.2.2 Furby-North County Preserve

Furby-North County Preserve is located in the southern portion of the city of San Diego MSCP Subarea Plan, near the U.S.–Mexico border in Otay Mesa, directly south of SR 905 and east of Interstate 805.



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SOURCE: ESRI; SanGIS, 2024.

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management

Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 1

Project Location

ESA

2.2.3 Hellhole Canyon County Preserve

Hellhole Canyon County Preserve is located northeast of Escondido within Valley Center, an unincorporated community of San Diego County. This acreage consists of the contiguous preserve, as well as five non-contiguous additions. It is in northeastern San Diego County in the Peninsular Geomorphic Range and consists of two main mountains, Rodriguez Mountain and an unnamed mountain, as well as Hell Creek.

2.2.4 Los Peñasquitos Canyon County Preserve

Los Peñasquitos Canyon County Preserve is a preserve in the northern portion of the city of San Diego, in between Rancho Peñasquitos, Sorrento Hills, and Mira Mesa—west of Interstate 15. It consists of seven parcels: five parcels are located along Sorrento Valley Boulevard, east of Interstate 805; one parcel north of Park Village Drive; and one parcel east of Black Mountain Road, south of Canyonside Recreation Center.

2.2.5 Lusardi Creek County Preserve

Lusardi Creek County Preserve is located along the northern boundary of the city of San Diego, slightly southeast of Rancho Santa Fe, an unincorporated community of San Diego County. It is in western San Diego County in the Lusardi Creek Valley, just north of San Dieguito Road, west of Del Sur and South of Artesian Road, within the San Dieguito River Watershed.

2.2.6 Mount Olympus County Preserve

Mount Olympus County Preserve comprises two non-contiguous parcels. It is located south of Temecula, just east of Rainbow, an unincorporated community of San Diego County. It is located north of SR 76, south of SR 79, east of Interstate 15, and west of the Cleveland National Forest.

2.2.7 Ramona Grasslands County Preserve

Ramona Grasslands County Preserve is west of Ramona, an unincorporated community of San Diego County. It is in west-central San Diego County in the western portion of Santa Maria Valley within the San Dieguito Watershed.

2.2.8 Santa Margarita County Preserve

Santa Margarita County Preserve is in northern San Diego County, west of Interstate 15 and north of SR 76. The preserve is located just east of the northeastern portion of Camp Pendleton Marine Corps Base and is directly west of Sandia Creek Drive and the southern portion of the preserve is bisected by De Luz Road.

2.2.9 Simon County Preserve

Simon County Preserve is located within Ramona, an unincorporated community of San Diego County, east of State Route 67, and within the San Dieguito and San Diego River Watersheds. The preserve is bound by access points from Woods Hill Lane to the north, Arena Way to the east, and Bassett Way to the south.

2.2.10 Sycamore Canyon/Goodan Ranch County Preserve

Sycamore Canyon/Goodan Ranch County Preserve is located just east of Marine Corps Air Station Miramar and approximately 2 miles north of Santee within an unincorporated area of San Diego County. It is in the coastal foothills of the Peninsular Ranges in south-central San Diego County within the Peñasquitos and San Diego Watersheds.

2.2.11 Tijuana River Valley Regional Park

Tijuana River Valley Regional Park is located in the southern portion of the city of San Diego MSCP Subarea Plan, within the southwestern portion of San Diego County. It is bounded by Sunset Avenue to the north, the U.S.–Mexico Border to the south, Border Field State Park and the Tijuana River National Estuarine Research Preserve to the west, and Dairy Mart Road and the San Ysidro community to the east.

2.2.12 Wilderness Gardens County Preserve

Wilderness Gardens County Preserve comprises six contiguous parcels and one separate parcel. It is located at 14209 Highway 76, Pala, an unincorporated community of San Diego County. It is immediately south of SR 76/Pala Road, between Pauma Ridge Road and Pala Mission Road, within northwestern San Diego County in the San Luis Rey River Valley adjacent to Pala Mountain.

CHAPTER 3
Methods

3.1 Overview

Specific monitoring and management methods are described below. Areas monitored and/or managed are depicted in figures provided in Chapter 4, *Results and Discussion*. All data was collected using the ArcGIS Field Maps mobile application (Field Maps); data sheets for all surveys can be found in referenced resource-specific appendices. The final report and collected data will be submitted to the San Diego Management and Monitoring Program (SDMMP), consistent with the reporting requirements in the TMP (ESA and ICF 2022; ESA 2024a).

For the purposes of this report, non-native plant species are species that were introduced to California after European contact and as a direct or indirect result of human activity, as defined by the California Invasive Plant Council (Cal-IPC). Invasive non-native plant species are species rated by Cal-IPC in the Invasive Plant Inventory Database (Cal-IPC 2023) because they are not native, and once introduced can establish, quickly reproduce and spread, and cause harm to native vegetation communities, the environment, economy, and/or human health. Once invasive non-native plant species spread into wildland ecosystems, they can hybridize with native plant species, displace native plant and wildlife species, alter biological communities, and/or alter ecosystem processes (Cal-IPC n.d.).

3.2 Vernal Pools and Alkali Playas

3.2.1 Quantitative Monitoring

ESA biologists conducted quantitative monitoring of vernal pools and alkali playas during the 2024 wet and dry seasons within Ramona Grasslands County Preserve and the Los Peñasquitos Canyon County Preserve. The wet season is defined as the period when vernal pools and alkali playas are saturated and inundated during the rainy season (generally November–March). The dry season occurs in late spring and early summer when vernal pools and alkali playas are dry. Both phases of vernal pool and alkali playas are important to detect indicator species as well as to document species abundance and distribution within the pools and playas throughout plant and animal lifecycles. Vernal pool indicator species followed those listed in the *Revised Final City of San Diego Vernal Pool Habitat Conservation Plan* (City of San Diego 2019). Floral indicator species (plant species) and faunal indicator species (wildlife species) are species that rely heavily on vernal pools for breeding and development. Incidental observations of MSCP or other special-status species observed outside monitoring plots were recorded. Quantitative monitoring of vernal pools and alkali playas followed the methods in the TMP, which included the following steps:

- Conduct photo monitoring at each pool or playa during both wet and dry season monitoring visits to track the habitat quality (hydrology, disturbance) and plant cover of the pool or playa.

- Maintain a plant species inventory list of all plants, including vernal pool floral indicator species, associated with each vernal pool and alkali playa during each visit to record early (wet) and late (dry) season vernal pool plants.
- Estimate percent cover of all plant species detected, including vernal pool floral indicator species, and grouping into the following classes to track changes in cover over time: <25%, 25–49%, 50%+.
- Assign a distribution class for each plant species: solitary (occurring as single plants widely dispersed within the pool or playa), patches (occurring as small groups or clumps scattered within the pool or playa), or carpets (occurring as dense stands within the pool or playa).
- Assign an abundance class for each plant species: 0–50 individuals, 51–100 individuals, or 101–500+ individuals.
- Maintain a vernal pool faunal indicator species inventory list associated with each vernal pool and alkali playa during the early (wet) season visits and assign an abundance class for each faunal indicator species: 0–50 individuals, 51–100 individuals, or 101–500+ individuals.

Ramona Grasslands County Preserve

ESA biologists conducted quantitative monitoring at 22 study locations within Ramona Grasslands County Preserve: p7, p13, p14, e45, e48, e52, e53, e56, e58, e59, e61, e62, e63, e77, ev3, c3e, c20, Cagney Swale, raap4, raap6, raap14, and raap17. Monitoring details, including date, survey type, and field personnel, are listed in **Table 2**.

TABLE 2
VERNAL POOLS AND ALKALI PLAYA QUANTITATIVE MONITORING SUMMARY:
RAMONA GRASSLANDS COUNTY PRESERVE

2024 Survey Date	Survey Type	Name of Biologists
April 11	Wet	Brenda McMillan, Bailey Setzler
April 12	Wet	Brenda McMillan, Bailey Setzler
April 16	Wet	Brenda McMillan, Bailey Setzler
May 6	Dry	Brenda McMillan, Bailey Setzler
May 7	Dry	Brenda McMillan, Bailey Setzler, Stefanie Lehner
May 8	Dry	Brenda McMillan, Bailey Setzler
June 4	Dry	Brenda McMillan, Bailey Setzler

Los Peñasquitos Canyon County Preserve

ESA biologists conducted a baseline inventory of vernal pools within a 30-acre parcel of Los Peñasquitos Canyon County Preserve to identify vernal pool complexes and areas that exhibited ponding and supported vernal pool indicator species, map vernal pool basins, and establish a north-facing photo point using a Global Positioning System (GPS) prior to conducting quantitative monitoring. A seasonally flooded depression was identified and mapped as a vernal pool if one or more vernal pool indicator species was observed (City of San Diego 2019). Any human-made seasonally flooded depressions (e.g., road ruts) were mapped as a vernal pool if one or more vernal pool floral indicator species was observed (City of San Diego 2019). ESA biologists conducted quantitative monitoring at 45 study locations within

Los Peñasquitos Canyon County Preserve. Monitoring details, including date, survey type, and field personnel, are listed in **Table 3**.

TABLE 3
VERNAL POOLS QUANTITATIVE MONITORING SUMMARY: LOS PEÑASQUITOS CANYON COUNTY PRESERVE

2024 Survey Date	Survey Type	Name of Biologists
April 2	Wet	Brenda McMillan, Bailey Setzler
April 3	Wet	Brenda McMillan, Bailey Setzler
April 4	Wet	Brenda McMillan, Bailey Setzler
April 9	Wet	Brenda McMillan, Bailey Setzler
April 29	Dry	Brenda McMillan, Stefanie Lehner
April 30	Dry	Brenda McMillan, Bailey Setzler
May 1	Dry	Brenda McMillan, Bailey Setzler
May 2	Dry	Brenda McMillan, Bailey Setzler
June 3	Dry	Brenda McMillan, Bailey Setzler

3.3 Rare Plant Monitoring

ESA biologists conducted resource-specific monitoring in 2024 for two of the eight TMP rare plant species. Rare plant monitoring followed the most current Management and Monitoring Strategic Plan (MSP) Rare Plant Monitoring Protocol prepared by SDMMP (SDMMP 2022). Additional data was collected for willowy monardella (*Monardella viminea*) at Sycamore Canyon/Goodan Ranch County Preserve, as required by the TMP. Incidental observations of MSCP or other special-status species observed outside monitoring plots were recorded. Monitoring details, including species, dates, number of monitoring plots, preserve name, and field personnel, are listed in **Table 4**.

TABLE 4
MSP RARE PLANT MONITORING SURVEY SUMMARY

Species	Plot Establishment Date	2024 Monitoring Date	# of Permanent Monitoring Plots	County Preserve	Names of Biologists
San Diego thornmint	April 26, 2016	May 1	1	Simon	Dillon Travis and Stefanie Lehner
San Diego thornmint	April 22, May 4–5, 2016; and May 4, 2017	May 7–9	5	Sycamore Canyon/ Goodan Ranch	Dillon Travis, Amy Orduño-Baez, and Karla Alcaraz
Willowy monardella	July 7, 2015; June 22, 2016; June 9, 2021	June 20	3	Sycamore Canyon/ Goodan Ranch	Adrienne Lee and Dillon Travis

Established permanent monitoring plots were monitored for each species. The history of monitoring plot establishment is as follows:

- **San Diego thornmint**. One permanent monitoring plot was established for San Diego thornmint (*Acanthomintha ilicifolia*) within Simon County Preserve by the Conservation Biology Institute (CBI) in 2016. Ten permanent monitoring plots were established for San Diego thornmint within Sycamore Canyon/Goodan Ranch County Preserve by ICF in 2016, and an eleventh permanent monitoring plot was added by ICF in 2017. In February 2024, SDMMP recommended reducing the monitoring effort for San Diego thornmint at the Sycamore Canyon/Goodan Ranch County Preserve. Permanent monitoring plots were reduced from 11 to 5 in 2024.
- **Willowy monardella**. One permanent monitoring plot was established for willowy monardella within Sycamore Canyon/Goodan Ranch County Preserve by ICF in 2015, a second permanent monitoring plot was established by CBI in 2016, and a third permanent monitoring plot was established by ESA in 2021.

Monitoring of special-status plant occurrence status within the permanent monitoring plots followed the MSP 2023 Rare Plant Monitoring Protocol (SDMMP 2022), which included the following steps:

- Map the perimeter of the current extent of the occurrence with submeter-accuracy GPS and Field Maps and estimating or counting and recording the number of plants within the current mapped extent. If the previously mapped current extent was still an accurate representation of the 2024 extent of the occurrence, no remapping occurred.
- Conduct photo monitoring by taking a picture from the previously established permanent photo point facing toward the center point of the plot. The photo followed the angle and direction of the previous year's photograph, when applicable.
- Conduct a habitat assessment within the permanent monitoring plot using the MSP – 2023 Rare Plant Occurrence Monitoring Form to identify and record number of target plants per plot; phenological stages of plants; evidence of herbivory, disease, and stunted growth; and associated species.
- Conduct a threats assessment within the current maximum extent of the occurrence and adjacent 10-meter buffer.
- Provide management recommendations for the site using the MSP – 2023 Rare Plant Occurrence Monitoring Form.

Additional data specified in the TMP was collected for one rare plant species, willowy monardella.

- **Willowy monardella**. The height, width, and length in meters of each willowy monardella cluster within the monitoring plot was recorded. A cluster is defined as plants within 0.5 meters of each other (Rebman and Dossey 2006). The plants were then classified as a seedling, juvenile, mature, or adult based on the following categories:
  - Seedling: lacks multiple stems and is less than 4 inches tall
  - Juvenile: lacks multiple stems and is more than 4 inches tall
  - Mature: more than 4 inches tall and has less than 20 stems
  - Adult: more than 4 inches tall and has more than 20 stems

3.4 Rare Plant Focused Management

ESA biologists conducted resource-specific management in 2024 for four of the eight TMP rare plant species. Rare plant focused management followed TMP management recommendations (ESA and ICF 2022). Management details, including species, dates, preserve name, and approximate acreage managed, are listed in **Table 5**. Additional details are included in the following sections.

TABLE 5
MSP RARE PLANT MANAGEMENT SUMMARY

Species	2024 Management Date	County Park/Preserve	Acres Managed
San Miguel savory	April 8 and 12	Boulder Oaks	0.57
Otay tarplant	April 2 and July 17	Furby-North	0.30
Orcutt's bird's-beak	May 10, May 14, and July 25	Tijuana River Valley Regional Park	0.46
Variegated dudleya	April 3, April 22, and June 27	Lusardi Creek	0.75

3.4.1 San Miguel Savory Focused Management

The control of invasive non-native plant species is a primary concern for San Miguel savory (*Clinopodium chandleri*) management. The TMP recommends overall invasive non-native plant cover be kept to less than 20 percent cover (ESA and ICF 2022). Focused management was conducted in response to 2023 TMP monitoring results and adaptive management recommendations for Boulder Oaks County Preserve (ESA 2024b).

ESA biologist Brenda McMillan flagged San Miguel savory individuals on April 8, 2024, in preparation for focused management. ESA subconsultant Habitat West conducted focused management for San Miguel savory at the Boulder Oaks County Preserve within the BOCLCH02 monitoring plot maximum extent and an additional area northwest of the monitoring plot's maximum extent for a total of a 0.57-acre management area on April 12, 2024. To prevent the encroachment of invasive non-native perennial veldtgrass (*Ehrharta calycina*) on the San Miguel savory population, an additional management area northwest of the monitoring plot was delineated around a dense population of perennial veldtgrass. ESA biologist Mark Dodero met Habitat West staff on-site on April 12, 2024, to orient the field crew, identify and discuss San Miguel savory avoidance strategies, and provide management recommendations. Target invasive non-native plants included perennial veldtgrass. Non-native plants within 12 inches of San Miguel savory plants and the additional management area were carefully removed by hand. All biomass was manually collected, bagged, and properly disposed of at an approved off-site facility.

3.4.2 Otay Tarplant Focused Management

The control of invasive non-native plant species is a primary concern for Otay tarplant (*Deinandra conjugens*) management. The TMP recommends overall invasive non-native plant cover be kept to less than 20 percent and thatch to be removed (ESA and ICF 2022). Focused management was conducted in response to 2023 TMP monitoring results and adaptive management recommendations for Furby-North County Preserve (ESA 2024b).

ESA subconsultant Habitat West conducted focused management for Otay tarplant at the Furby-North County Preserve within the DECO13_3OMEA026_1 monitoring plot maximum extent for an 0.30-acre management area on April 2, 2024, and July 17, 2024. ESA biologist Mark Dodero met Habitat West staff on-site to orient the field crew, identify and discuss Otay tarplant avoidance strategies, and provide management recommendations. Spring management in April consisted of carefully hand-pulling invasive non-native grasses and herbs, including crown daisy (*Glebionis coronaria*) and black mustard (*Brassica nigra*), directly adjacent to Otay tarplant individuals. Summer management in July consisted of hand-pulling additional crown daisy and black mustard plants. Once hand-pulling was completed, Habitat West staff used line trimmers to remove thatch and invasive non-native grasses to 2 inches from the ground within the monitoring plot's maximum extent. The biomass was manually collected, bagged, and properly disposed of at an approved off-site facility.

3.4.3 Orcutt's Bird's-Beak Focused Management

The control of invasive non-native plant species is a primary concern for Orcutt's bird's-beak (*Dicranostegia orcuttiana*) management. The TMP recommends invasive non-native grasses and forbs control within suitable Orcutt's bird's-beak habitat (ESA and ICF 2022), and SDMMP recommends controlling invasive non-native plant species to less than 20 percent cover. Focused management was conducted in response to 2023 TMP monitoring results and adaptive management recommendations for Tijuana River Valley Regional Park (ESA 2024b).

ESA biologist Mark Dodero flagged Orcutt's bird's-beak individuals on May 10, 2024, at monitoring plot COOR7_1TIRI009_1 in preparation for focused management. On May 14, 2024, ESA biologist Mark Dodero met Habitat West staff on-site at monitoring plot COOR7_1TIRI009_1 to orient the field crew, identify and discuss Orcutt's bird's-beak avoidance strategies, and provide management recommendations. Additional Orcutt's bird's-beak individuals (approximately 545 individuals) were detected on May 14, 2024, north of monitoring plot COOR7_1TIRI009_1 and focused management was extended to this new site using the same methods described below. Management was not conducted at monitoring plot COOR7_1SMGU006_1 on May 14, 2024, due to high runoff flows from Smuggler's Gulch. Management occurred at both monitoring plots and the newly mapped location north of monitoring plot COOR7_1TIRI009_1 on July 25, 2024, and consisted of carefully hand-pulling invasive non-native grasses and herbs, including tocalote (*Centaurea melitensis*) adjacent to Orcutt's bird's-beak individuals. The biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. ESA subconsultant Habitat West conducted focused management for Orcutt's bird's-beak at the Tijuana River Valley Regional Park within the COOR7_1TIRI009_1 and COOR7_1SMGU006_1 monitoring plots maximum extents in 2024 for a total of an 0.46-acre management area.

3.4.4 Variegated Dudleya Focused Management

The control of invasive non-native plant species is a primary concern for variegated dudleya (*Dudleya variegata*) management. The TMP recommends maintaining less than 20 percent ground cover of invasive non-native plant species in the vicinity of the variegated dudleya population (ESA and ICF 2022). Focused management was conducted in response to 2023 TMP monitoring results and adaptive management recommendations for Lusardi Creek County Preserve (ESA 2024b).

ESA subconsultant Habitat West conducted focused management for variegated dudleya at Lusardi Creek County Preserve on April 3, April 22, and June 27, 2024, within the LCDUVA01 monitoring plot maximum extent and within all three herbivory enclosures for a total of an 0.75-acre management area. ESA biologist Mark Dodero met Habitat West staff to orient the field crew, identify and discuss variegated dudleya avoidance strategies, and provide management recommendations. Management consisted of hand-pulling invasive non-native plant species within the three herbivory enclosures to reduce the amount of standing biomass from invasive non-native plants and encourage native plant recruitment. Once hand-pulling was completed inside the herbivory fencing, Habitat West staff manually removed or used line trimmers to remove tufted wallaby grass (*Rytidosperma caespitosum*), purple false brome (*Brachypodium distachyon*), artichoke thistle (*Cynara cardunculus*), and fountain grass (*Cenchrus setaceum*) within the maximum extent. No herbicide was applied during maintenance. All biomass was manually collected, bagged, and properly disposed of at an approved off-site facility.

3.5 Harbison's Dun Skipper

3.5.1 Harbison's Dun Skipper Adult Flight Surveys

ESA and Blackhawk Environmental, Inc. (Blackhawk) biologists conducted two adult surveys for Harbison's dun skipper (*Euphyes vestris harbisoni*) (HDS) during the 2024 flight season (between May 15 through June 30) (**Table 6**). Surveys were conducted at the two locations previously surveyed in 2021–2023. Surveys focused on immediate areas surrounding host plant San Diego sedge (*Carex spissa*) patches and worked outward to nearby potential nectar sources. Surveys were conducted in appropriate weather (sunny or partly sunny, 20˚C–35˚C, and modest wind speeds of less than 15 mph) (Marschalek and Deutschman 2015). Potential nectar sources and all butterfly species observed during surveys were recorded. A habitat and threats assessment was conducted concurrently with the first adult flight survey, following the *Rare Butterfly Management and Conservation Planning* report (Marschalek and Deutschman 2016) to assess tree species, composition of tree canopy, percent of canopy that is thinning, percent of dead trees, and percent of trees with fire damage; general health conditions of San Diego sedge were also documented (if leaves were green, green with brown tips, or mostly brown); presence of flowing and standing water; and threats to habitat such as drought, climate change, human intrusion, pesticide use, altered hydrology, altered fire regime, invasive non-native plant species and competition from native cattail (*Typha* spp.), and tree pests such as gold-spotted oak borer (*Agrilus auroguttatus*) and shothole borer (*Euwallacea* sp.).

TABLE 6
HARBISON'S DUN SKIPPER SURVEY SUMMARY

Survey Type	2024 Survey Date	Survey Times	Start Weather Conditions	End Weather Conditions	Names of Biologists
Adult Flight Surveys	May 28	1045–1350	Temp: 77.8°F 0% Cloud Cover Wind Speed: 0.8 mph	Temp: 81.5°F 0% Cloud Cover Wind Speed: 0.5 mph	Kris Alberts*, Dillon Travis
	June 17	1000–1355	Temp: 71°F 0% Cloud Cover Wind Speed: 1.5 mph	Temp: 80°F 0% Cloud Cover Wind Speed: 1 mph	Kris Alberts*, Brennan Mulrooney

NOTE:
* Blackhawk Environmental, Inc. staff.

3.5.2 Harbison's Dun Skipper Focused Management

Focused management for HDS was conducted in response to 2023 TMP adaptive management recommendations for Hellhole Canyon County Preserve (ESA 2024b). On May 16, 2024, ESA biologist Mark Dodero visited the HDS management sites previously seeded in October 2023 to check for germination of native nectar plant species and mapped additional potential seeding areas. ESA and subconsultant Habitat West returned to Hellhole Canyon County Preserve from November 4–6 and 27, 2024, where ESA biologists Mark Dodero and Dillon Travis oriented Habitat West staff by walking the 2023 management areas and new 2024 management areas, delineated seeding areas based on proximity to San Diego sedge and presence of grassy open habitat where seed could establish, discussed native habitat avoidance strategies, and identified appropriate native mulch material. Once areas were delineated, Habitat West removed non-native grasses and forbs via hand tools and line-trimmers in all management areas. Native plants were carefully avoided and left in place. Seeding occurred with local native nectar sources along Hell Creek within the newly mapped management areas, and reseeding occurred in select 2023 management areas. The seed was lightly raked into the top 0.25 inch of soil. Once the seed was applied, the seeded areas were covered with light natural organic mulch (less than 80 percent cover) sourced from the surrounding habitat.

3.6 Arroyo Toad

ESA conducted surveys for arroyo toad (*Anaxyrus californicus*) along the Santa Maria Creek within the Ramona Grasslands County Preserve. The surveys were conducted in accordance with the U.S. Geological Survey (USGS) Aquatic Species and Habitat Assessment Protocol Rivers, Streams and Creeks-Paper (USGS 2020), and timed to fall within the accepted range (i.e., March 15–July 1) outlined in the Survey Protocol for the Arroyo Toad (USFWS 1999). Incidental observations of MSCP-covered species or other special-status species were recorded. Survey dates and field personnel are listed in **Table 7**.

TABLE 7
ARROYO TOAD SURVEY SUMMARY

2024 Survey Date	Survey Times	Start Weather Conditions	End Weather Conditions	Names of Biologists
May 13	1035–1510	Temp: 73°F Partly cloudy/variable	Temp: 75°F Partly cloudy/variable	Robert Sweet Brennan Mulrooney
May 14	0931–1526	Temp: 72°F Clear/few clouds	Temp: 75°F Clear/few clouds	Robert Sweet Dillon Travis
May 15	0830–1449	Temp: 56°F Cloudy or overcast	Temp: 70°F Cloudy or overcast	Robert Sweet Karla Alcaraz
May 16	0829–1340	Temp: 61°F Cloudy or overcast	Temp: 75°F Clear/few clouds	Dillon Travis Bailey Setzler Alissa Lun

ESA biologists conducted habitat assessment and presence/absence surveys along previously established USGS survey reaches within the Santa Maria Creek on May 13–16, 2024. ESA surveyed 18 of the 23 reaches (i.e., 22–24, 26–28, 30, 33, 35–38, 40–42, 45, 52, and 53) along the Santa Maria Creek (survey

area), while USGS surveyed the remaining 5 reaches (i.e., 25, 29, 34, 39, and 44). Each survey reach is 250 meters in length and is separated into two smaller 125-meter segments (i.e., A and B). The habitat assessment and presence/absence survey documented the quality and extent of suitable arroyo toad habitat and the total number/life stage of arroyo toad clutches observed along each reach. All suitable habitat (i.e., potential breeding pools) was documented in accordance with the USGS protocol and inspected for the presence and quantity of arroyo toad individuals and clutches, as well as the presence and quantity of any potential predator species such as the American bullfrog (*Lithobates catesbeianus*; larvae, sub-adults, and/or adults), red swamp crayfish (*Procambarus clarkii*), and red-eared slider turtle (*Trachemys scripta* ssp. *elegans*). Perennial invasive non-native vegetation observed along each reach (e.g., tamarisk [*Tamarix ramosissima*]) was also mapped.

For each segment along each survey reach, survey start information (i.e., date, weather, surveyors, and locational coordinates) was documented and upstream/downstream photographs were taken. Suitable habitat was characterized and included the documentation of substrate along the bed and banks, the presence and extent of aquatic and emergent vegetation/algae along the bed and banks, the vegetation community type (including the presence and extent of an overhead canopy), dominant plant species, etc. An assessment of potential disturbances, natural and human-made (e.g., high flows, livestock), observed within each survey area was noted as well. Water quality measurements were taken along each segment that included temperature (°F), pH, conductivity, channel width and depth (meter), transparency, channel surface water velocity (meters/second), etc.

While conducting the habitat assessment, ESA biologists traversed the survey area sufficiently to achieve full-visual coverage of suitable habitat and to document the presence/absence and prevalence of arroyo toad. For each arroyo toad detection, the estimated number and size of individuals, including size class (i.e., adult, juvenile, metamorphs, larvae, or egg strand) were recorded. Any special-status aquatic wildlife species (e.g., two-striped garter snake [*Thamnophis hammondii*], western pond turtle [*Emys marmorata*], arroyo chub [*Gilia orcuttii*]) incidentally observed during surveys were noted and recorded, as well).

3.7 Northern Harrier

ESA biologists conducted four nesting surveys, once a month for 4 months (April–July 2024), within the Tijuana River Valley Regional Park to document northern harrier (*Circus hudsonius*) individuals and breeding behavior. If nest sites were detected, the habitat was characterized and nest success was noted, if feasible. Incidental observations of MSCP-covered species or other special-status species were recorded on Field Maps and the Fulcrum mobile applications. Survey dates, weather conditions, and field personnel names are provided in **Table 8**.

Surveys were conducted during the morning hours and under weather conditions conducive for raptor surveys (e.g., no heavy fog, high winds, or precipitation). ESA biologists focused on survey areas with low scrub and/or vegetation and previously documented northern harrier usage areas within the Tijuana River Valley Regional Park. ESA biologists scanned these areas with binoculars and spotting scopes before walking along trails or dirt access roads to cover as much of the Tijuana River Valley Regional Park as feasible. ESA biologists reviewed the 2023 TMP Annual Report to ensure all known northern harrier locations were recorded and documented in 2024 (ESA 2024b).

TABLE 8
NORTHERN HARRIER SURVEY SUMMARY

2024 Survey Date	Survey Number	Survey Times	Start Weather Conditions	End Weather Conditions	Names of Biologists
April 3	1	0700–1015	Temp: 55°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 0 mph; Wind Direction: N/A	Temp: 68°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 2 mph; Wind Direction: SE	Jaclyn Catino-Davenport, Brennan Mulrooney
May 2	2	0640–1218	Temp: 57°F, 100% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 5 mph; Wind Direction: SE	Temp: 68°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 5 mph; Wind Direction: SW	Brennan Mulrooney, Karla Alcaraz
June 4	3	0637–1249	Temp: 60°F, 100% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 2 mph; Wind Direction: S	Temp: 67°F, 80% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 4 mph; Wind Direction: SW	Brennan Mulrooney, Alissa Lun
July 2	4	0610–1058	Temp: 63°F, 100% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 1 mph; Wind Direction: W	Temp: 70°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 2 mph; Wind Direction: SW	Brennan Mulrooney, Jaclyn Catino-Davenport

ESA biologists conducted the threats assessment monitoring during the June and July surveys, using the northern harrier threat assessment form created by AECOM and SDMMP during the county-wide 2021 survey effort (AECOM 2022). The threats assessment survey included an evaluation of potential threats to northern harrier nest success, breeding and foraging habitat, and/or potential management recommendations.

3.8 Least Bell's Vireo

3.8.1 Least Bell's Vireo Nest Monitoring

ESA biologists conducted a nest monitoring study with weekly surveys from April 4 through July 30, 2024, to locate least Bell's vireo (*Vireo bellii pusillus*; vireo) territories and determine breeding status of pairs in suitable habitat within the Santa Margarita County Preserve (**Table 9**). Monitoring followed the USFWS *Least Bell's Vireo Survey Guidelines* issued January 19, 2001 (USFWS 2001) and *The Status and Management of the Least Bell's Vireo and Southwestern Willow Flycatcher within the Prado Basin, California, 1986–1999* (Pike et al. 1999). Nest monitoring surveys were led by ESA biologist Florence Chan (TE ES06873C-2) and assisted by Alissa Lun, Brennan Mulrooney, Dillon Travis, Mary Cozy, and Stefanie Lehner. Nest monitoring was conducted between 6:05 a.m. and 12:57 p.m. within suitable weather conditions: overcast to clear skies, winds up to 7 miles per hour, and temperatures between 47°F and 85°F. Three additional 9-day nest checks were conducted to determine fledgling success on July 8, July 15, and July 19, 2024.

All vireo detections were recorded and plotted to estimate the location and extent of habitats utilized and mapped. Data pertaining to vireo status, GPS location, movement, behavior, nest placement, nest status,

age, and sex of the bird, as well as any leg bands, were noted and recorded. The results of the survey passes were reviewed and territories assigned for each pair or solitary male. A central point was used to indicate the territory. Any threats detected during surveys were documented.

In accordance with the USFWS *Least Bell's Vireo Survey Guidelines* (USFWS 2001), observations of brown-headed cowbirds (*Molothrus ater*) were recorded and GPS locations taken for any individuals detected within vireo territory during each survey, and incidental observations of southwestern willow flycatcher (*Empidonax trallii extimus*) and yellow-billed cuckoo (*Coccyzus americanus*) were recorded. Additionally, incidental observations of other special-status species were also recorded.

TABLE 9
LEAST BELL'S VIREO NEST MONITORING SUMMARY

2024 Survey Date	Time (start/end)	Wind (mph) (start/end)	Temperature (F) (start-end)	Cloud Cover Percentage (start/end)	Names of Biologists
April 4	0656–1202	1 / 5	52°–59°	100–90	Florence Chan, Brennan Mulrooney
April 10	0700–1200	0 / 3–5	47°–78°	0–0	Florence Chan, Brennan Mulrooney
April 17	0715–1200	1–5 / 3–5	52°–75°	0–10	Florence Chan, Stephanie Lehner
April 24	0640–1240	1–3 / 3–5	56°–69°	100–30	Florence Chan, Brennan Mulrooney
May 1	0700–1245	1–3 / 1–3	57°–73°	100–0	Florence Chan, Brennan Mulrooney
May 8	0630–1248	1–3 / 2–7	53°–74°	95–74	Florence Chan, Brennan Mulrooney
May 15	0644–1247	1–2 / 2–5	65°–68°	100–100	Florence Chan, Brennan Mulrooney, Alissa Lun
May 22	0629–12425	1–3 / 1–3	60°–72°	100–10	Florence Chan, Mary Cozy
May 29	0635–1237	1–2 / 3–7	58°–73°	100–0	Florence Chan, Brennan Mulrooney
June 5	0612–1205	1–3 / 3–5	61°–77°	100–0	Florence Chan, Brennan Mulrooney
June 12	0605–1116	1–3 / 3–5	58°–74°	100–0	Florence Chan, Brennan Mulrooney
June 19	0610–1205	1–3 / 1–3	56°–80°	100–0	Florence Chan, Brennan Mulrooney
June 26	0610–1117	1–3 / 3–5	68°–79°	90–0	Florence Chan, Brennan Mulrooney
July 3	0608–1100	1–3 / 1–3	65°–80°	0–0	Florence Chan, Dillon Travis
July 8*	1022–1051	1–3 / 2–4	72°–78°	0–0	Florence Chan, Brennan Mulrooney
July 10	0617–1130	1–3 / 1–3	62°–85°	100–0	Florence Chan, Brennan Mulrooney
July 15*	1040–1115	1–5 / 1–3	77°–77°	0–0	Florence Chan, Brennan Mulrooney
July 17	0615–1145	1–3 / 3–6	60°–60°	100–40	Florence Chan, Brennan Mulrooney
July 19*	1045–1135	1–3 / 1–3	78°–81°	0–0	Florence Chan, Brennan Mulrooney
July 24	0612–1040	1–3 / 2–6	69°–83°	0–0	Florence Chan, Brennan Mulrooney
July 30	0646–1105	1–2 / 3–7	55°–78°	0–0	Florence Chan, Brennan Mulrooney

NOTE:
* 9-Day Nest Check

3.8.2 Brown-Headed Cowbird Trapping

A brown-headed cowbird trapping program was implemented on Santa Margarita County Preserve in 2022 to reduce the threat and impact of brown-headed cowbird brood parasitism on least Bell's vireo. The trapping program was initiated in response to detections of least Bell's vireo nest parasitism incidentally observed during 2021 TMP surveys (ESA 2022) and was recommended to continue in 2023 and 2024 based on 2022 and 2023 brown-headed cowbird trapping results (ESA 2023; ESA 2024b). TW Biological Services, LLC, personnel installed and assembled two traps on April 1, 2024, in the same general locations as those in 2022 and 2023: along the Santa Margarita River within riparian habitat that provides suitable nesting habitat for least Bell's vireo within the preserve. Trap 1 was located approximately 0.1-mile northwest of the intersection of De Luz Road and Sandia Creek Drive. This trap was placed adjacent to a trail at the north end of the preserve's staging area. Trap 2 was placed approximately 0.5-mile north of the De Luz Road/Sandia Creek Drive intersection a short distance west of the road. Both traps were placed behind brush to obscure view by the public, but in locations that were easily accessible by vehicle.

TW Biological Services, LLC, personnel activated traps on April 1, 2024. On activation, the traps were furnished with fresh water, seed, perches, shade, and live decoy cowbirds. The right primary wing feathers of both male and female decoy cowbirds were clipped for identification and prevention of accidental escape or release back into the wild. This practice also greatly diminishes their likelihood of survival in the wild should they escape. A sign was placed on each trap providing trap information and contact phone numbers. GPS coordinates for trap locations were recorded.

Traps were checked daily, during daylight hours, from April 1 to June 30, 2024. This was done to record trap capture events, release non-target wildlife species incidentally captured, add or remove cowbirds to maintain the 2:3 (male:female) decoy ratio, provide fresh seed and water, and repair trap damage if needed. Information recorded for all newly captured cowbirds included capture location, date, sex, and age. Newly captured cowbirds not used as decoys were removed daily and humanely euthanized off-site. All other non-target birds captured were released unharmed at the trap sites. On June 30, 2024, both traps were deactivated and later dismantled and removed from the preserve on July 6, 2024.

3.9 Stephens' Kangaroo Rat

3.9.1 Habitat Assessments

SKR habitat monitoring at Ramona Grasslands County Preserve and Hellhole Canyon County Preserve was conducted in October 2024. Specific monitoring protocols followed those outlined in the TMP for SKR monitoring at both preserves (ESA and ICF 2022). This methodology follows the methodology used by USGS for SKR monitoring at Camp Pendleton (Brehme et al. 2016). Incidental observations of MSCP-covered species or other special-status species were recorded.

- **Ramona Grasslands County Preserve.** Monitoring plots were initially established within SKR Management Areas 1 and 2 within Grazing Management Units 2A, 2B, and 3A, and the 3-acre SKR Management Area 3 on the preserve in 2016, following an adapted methodology used by USGS for SKR monitoring at Camp Pendleton (Brehme et al. 2016). A 50- by 50-meter grid pattern was overlain onto a georeferenced aerial map over each of the core SKR monitoring areas (areas monitored for continued SKR presence and distribution), and 28 plots were established. Of these 28 plots, 16 were determined to be permanent sampling plots that have been monitored since 2016: A1-1

to A1-6, A2-1, A2-6, A2-7, 3A-1, 3A-6, 3A-7, 3A-8, A3-1, A3-2, and A3-3. The 2024 SKR monitoring effort sampled these 16 permanent sampling plots for consistency with previous monitoring efforts and 12 randomly selected plots—6 within the SKR monitoring areas and 6 within the SKR discovery areas (areas monitored to determine if SKR colonization is occurring)—for a total of 28 sampling plots (ESA and ICF 2022).

- **Hellhole Canyon County Preserve.** Baseline SKR trapping surveys were conducted in 2020 within the northeastern portion of the Sierra Verde Addition of Hellhole Canyon County Preserve and confirmed SKR presence in one of the three trapping plots (ESA 2021). Per the TMP (ESA and ICF 2022), the 2024 SKR monitoring effort sampled the same three sampling plots established during the 2020 baseline trapping surveys due to the limited size of suitable SKR habitat within Hellhole Canyon County Preserve. In accordance with the TMP, monitoring protocols followed an adapted methodology used by USGS for SKR monitoring at Camp Pendleton (Brehme et al. 2016).

All monitoring plots were located in the field using the cellular ArcGIS FieldMaps application. Representative photographs were taken from the southeast corner of each plot, facing northwest. The biologists then walked systematic transects through each plot, searching for kangaroo rat sign (e.g., burrows, scat, tracks, tail drags, runways, caching/foraging craters, and dust-bathing sites) until 100 percent coverage of the plot was achieved. All SKR sign were recorded on electronic survey forms using the Survey123 application. SKR presence or absence within a given plot was determined solely on whether SKR sign was observed within the plot.

Habitat assessment forms were completed on the Survey123 application for each plot, specifically noting habitat characteristics critical to SKR habitat suitability, including percent bare ground, living herb density, shrub/tree density, percentage of dead plant litter, gopher or ground squirrel density, obstruction factor, types of disturbance, and land use. These assessment variables were modeled after field forms used by Brehme et al. (2016) (adapted from a field form in Montgomery et al. 2008). Based on the quality of potentially suitable SKR habitat and the density of apparent kangaroo rat sign, each plot was assigned an SKR-potential rating (e.g., High Potential, Moderate Potential, Low Potential, or No Potential). Survey dates, times, weather conditions, and field personnel names for these surveys are included in **Table 10**.

TABLE 10
SKR HABITAT ASSESSMENT SURVEY SUMMARY

Preserve	2024 Survey Date	Survey Times	Start Weather Conditions	End Weather Conditions	Name of Biologists
Ramona Grasslands	October 17	0850–1450	Temp: 62°F 100% Cloud Cover Wind Speed 0–0 mph	Temp: 67°F 100% Cloud Cover Wind Speed: 2–8 mph	Kris Alberts* Dillon Travis
	October 18	0845–1235	Temp: 63°F 40% Cloud Cover Wind Speed: 0–2 mph	Temp: 70°F 20% Cloud Cover Wind Speed: 2–6 mph	Kris Alberts* Dillon Travis
Hellhole Canyon	October 9	1000–1130	Temp: 84°F 0% Cloud Cover Wind Speed: 0–0 mph	Temp: 87°F 0% Cloud Cover Wind Speed: 0–0 mph	Kris Alberts* Dillon Travis

NOTE:
* Blackhawk Environmental, Inc. staff.

3.10 Pallid Bat

3.10.1 Roosting & Foraging Habitat Threat Assessment

ESA biologists determined potential roosting and foraging areas (e.g., tree cavities, rocky cliffs, outcrops, and natural caves) for pallid bats (*Antrozous pallidus*) within Hellhole Canyon, Mount Olympus, and Wilderness Gardens County Preserves, based on review of aerial maps and daytime visual threat assessments, while conducting transect acoustic monitoring. The daytime visual threat assessment of potential roosting and foraging habitat was conducted prior to and coinciding with the setup of transect acoustic equipment, using the Section VI of the 2020 Rare Plant Occurrence Monitoring (SDMMP 2020). Visual roosting and foraging habitat threat assessment surveys were conducted in July 2024 (**Table 11**).

TABLE 11
PALLID AND TOWNSEND'S BIG-EARED BAT SURVEY SUMMARY

Survey Type	2024 Survey Date	County Preserve	Start Weather Conditions	End Weather Conditions	Names of Biologists
Roosting and Foraging Habitat Threat Assessment / Transect Acoustic Survey	July 3	Mount Olympus	Temp: 75.4°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 1.2 mph; Wind Direction: SW	Temp: 72.0°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 0.9 mph; Wind Direction: SW	Jaclyn Catino-Davenport, Karla Alcaraz
Roosting and Foraging Habitat Threat Assessment / Transect Acoustic Survey	July 10	Hellhole Canyon	Temp: 86.2°F, 30% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 1.0 mph; Wind Direction: W	Temp: 76.8°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 0.0 mph; Wind Direction: --	Jaclyn Catino-Davenport, Karla Alcaraz
Roosting and Foraging Habitat Threat Assessment / Transect Acoustic Survey	July 11	Wilderness Gardens	Temp: 79.7°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 1.7 mph; Wind Direction: NW	Temp: 72.9°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 0.9 mph; Wind Direction: NW	Karla Alcaraz, Amy Orduño-Baez

Transect acoustic monitoring was conducted using one Wildlife Acoustics Inc. SM4 bat echolocation detector with a SMM-U2 microphone mounted 8 to 10 feet above the ground and secured onto a backpack and one Wildlife Acoustics Inc. Echo Meter Touch Pro 2 echolocation detector carried at handlevel by the biologist. The SM4 detector was programmed to turn on at solar sunset and default settings were modified to trigger recording at 8 kilohertz. The Echo Meter Touch Pro 2 detector was manually turned on at solar sunset and set to record and identify bat acoustics for North American species. Transect routes were selected during the day, recorded on Field Maps, and began up to 30 minutes after solar sunset. Transect routes and data collection occurred for up to 1 hour. Bat calls were automatically recorded by the units during the transect monitoring period.

The recorded bat calls were processed using SonoBat Version 30 and the region and subregion classifiers for southwest California. Manual vetting of automatically identified calls consisted of reviewing subsets of calls for each species, as well as reviewing individual calls and comparing them to a reference library of bat calls. Where initial manual review indicated automated misclassifications of call groups (e.g., groupings by minimum frequency, species, season, or time of night), these groups were manually reviewed and identified to most likely species. Many bat species have overlapping call

repertoires; therefore, not all bat calls can be conclusively identified to a species. Identifications for inconclusive calls were deferred to the most likely species based on a combination of automatic species identification, survey-specific trends noted during manual call review, and species expected to occur based on known seasonal and geographic distribution.

3.11 Townsend's Big-Eared Bat

3.11.1 Roosting and Foraging Habitat Threat Assessment

ESA biologists determined potential roosting and foraging areas (e.g., tree cavities, rocky cliffs, outcrops, and natural caves) for Townsend's big-eared bats (*Corynorhinus townsendii*) within Hellhole Canyon and Wilderness Gardens County Preserves, based on review of aerial maps and daytime visual threat assessments while conducting transect acoustic monitoring. The daytime visual threat assessment of potential roosting and foraging habitat was conducted prior to and coinciding with the setup of transect acoustic monitoring, using the Section VI of the 2020 Rare Plant Occurrence Monitoring (SDMMP 2020). Visual roosting and foraging habitat threat assessment surveys were conducted in July 2024 (**Table 11**).

Transect acoustic monitoring was conducted using one Wildlife Acoustics Inc. SM4 bat echolocation detector with a SMM-U2 microphone mounted 8 to 10 feet above the ground and secured onto a backpack and one Wildlife Acoustics Inc. Echo Meter Touch Pro 2 echolocation detector carried at hand level by the biologist. The SM4 detector was programmed to turn on at solar sunset and default settings were modified to trigger recording at 8 kilohertz. The Echo Meter Touch Pro 2 detector was manually turned on at solar sunset and set to record and identify bat acoustics for North American species. Transect routes were selected during the day, recorded on Field Maps, and began up to 30 minutes after solar sunset. Transect routes and data collection occurred for up to 1 hour. Bat calls were automatically recorded by the units during the transect monitoring period.

The recorded bat calls were processed using SonoBat Version 30 and the region and subregion classifiers for southwest California. Manual vetting of automatically identified calls consisted of reviewing subsets of calls for each species, as well as reviewing individual calls and comparing them to a reference library of bat calls. Where initial manual review indicated automated misclassifications of call groups (e.g., groupings by minimum frequency, species, season, or time of night), these groups were manually reviewed and identified to the most likely species. Many bat species have overlapping call repertoires; therefore, not all bat calls can be conclusively identified to a species. Identifications for inconclusive calls were deferred to the most likely species based on a combination of automatic species identification, survey-specific trends noted during manual call review, and species expected to occur based on known seasonal and geographic distribution.

3.12 Residual Dry Matter Monitoring

Ramona Grasslands County Preserve is managed under the *Ramona Grasslands, Santa Ysabel, and Boulder Oaks Preserves Grazing Management Plan* (Grazing Management Plan) (ESA 2019). The Grazing Management Plan designates grazing management units and associated target residual dry matter (RDM) values within the preserve to monitor the effects of cattle grazing on the land to support the conservation management goals and objectives. RDM acts as soil protection from the compacting and

erosive effects of rains and can help conserve initial rainfall soil moisture to facilitate germination of the next season's annual plants. Annual RDM monitoring is a method used to quantify the impact of cattle grazing on grasslands from year to year, to determine if natural community or species-specific RDM targets are achieved, and to provide land managers with information to make grazing management adjustments to maintain a sustainable rangeland. Samples were collected and RDM was measured following the University of California Division of Agriculture and Natural Resources' *Guidelines for Residual Dry Matter Management on Coastal and Foothill Rangelands in California* recommendations (Bartolome et al. 2002). RDM was monitored at 58 monitoring plots within management units 1A, 2A, 2B, 3A, 3B, 3C, 3D, 3E, 4A, and 4B.

Sampling was conducted on September 11 and 12, 2024, by ESA biologists Amy Orduño-Baez, Brenda McMillan, Dillon Travis, and Karla Alcaraz. A sampling hoop with a 13.25-inch interior diameter (hoop area is 0.96 square feet) was tossed randomly and sampled three times within each of the designated monitoring plots. Biomass (i.e., RDM) samples were obtained by collecting all aboveground biomass, including vegetation and thatch, from within the hoop using gardening shears or by gathering manually; samples were then stored in paper bags. Biomass collections did not include tree leaves (e.g., oaks [*Quercus* spp.]) or summer annuals such as doveweed (*Croton setiger*) and tarplant (*Centromadia* spp., *Holocarpha* spp.), as referenced in the RDM methodology (Bartolome et al. 2002). Additionally, woody shrubs (e.g., scrub oak [*Quercus berberidifolia, xacutidens*]) were not collected. Native species seen in the vicinity of the RDM plots were also recorded at the time of sampling, as well as any incidental observations of special-status species or invasive non-native species encountered while traveling to each RDM plot.

ESA biologists processed the samples in the ESA office located at 2355 Northside Drive, Suite 100, San Diego, California 92108. All samples were air-dried and weighed in grams using a digital scale. Biologists excluded the weight of paper bags. The weights of the three biomass samples from each of the vegetation monitoring plots were averaged and then converted to pounds per acre (lb/acre) by a multiplication of 100 (Bartolome et al. 2002). The average lb/acre for each management unit was then calculated by averaging all RDM plots within a management unit. The average lb/acre for a given management unit was compared to the target RDM values established for each management unit.

3.13 Regional Monitoring Efforts

DPR coordinated with regional monitoring partners regarding monitoring activities to reduce duplication of efforts and to minimize impacts on the species. Through DPR-issued Right-of-Entry (ROE) Permits, conservation partners—including AECOM and Mulligan Biological Consulting (MBC) contracted by San Diego Association of Governments (SANDAG), USGS, and the San Diego Natural History Museum—performed monitoring activities for species included in the TMP on parks and preserves in 2024. Monitoring details, including species, preserve name, dates, methodology, and monitoring entity, are listed in **Table 12**.

TABLE 12
ADDITIONAL MONITORING SURVEY SUMMARY

Species	County Preserve	2024 Survey Date	Methodology	Monitoring Entity
Parish's brittlescale	Ramona Grasslands	July 19	MSP Rare Plant Monitoring Protocol	AECOM
Otay tarplant	Furby-North	May 14 and 21	MSP Rare Plant Monitoring Protocol	MBC
Baja California oatgrass*	Furby-North	April 18	MSP Rare Plant Monitoring Protocol	MBC
Arroyo toad	Ramona Grasslands	June 20 and 24	USGS Aquatic Species and Habitat Assessment Protocol	USGS
Tricolored blackbird	Ramona Grasslands	April 30	SDMMP San Diego County Tricolored Blackbird Breeding Surveys and Habitat and Threat Assessments Protocol	San Diego Natural History Museum

NOTE:
* Baja California oatgrass is not a species covered under the TMP.

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CHAPTER 4
Results and Discussion

4.1 Vernal Pools and Alkali Playas

4.1.1 Quantitative Monitoring

Quantitative monitoring was conducted in Ramona Grasslands County Preserve and Los Peñasquitos Canyon County Preserve during an above-average winter and spring rainfall year. The first measurable rain event occurred on January 22, 2024, which resulted in 2.73 inches of rain, respectively (NOAA 2024). Due to contract timing, ESA's first quantitative monitoring visit at Los Peñasquitos Canyon County Preserve was conducted on April 2, 2024, and at Ramona Grassland County Preserve on April 11, 2024. Field forms and representative photographs of vernal pools and alkali playas at Ramona Grasslands County Preserve and vernal pools at Los Peñasquitos Canyon County Preserve are provided in **Appendix A,** *Vernal Pools and Alkali Playas Permanent Photographic Monitoring*.

4.1.1.1 Ramona Grasslands County Preserve

Quantitative monitoring at Ramona Grasslands County Preserve consisted of documenting the presence of vernal pool and alkali playa plant species and estimating their cover, distribution, and abundance, and documenting vernal pool faunal indicator species and estimating their abundance across 22 study locations (p7, p13, p14, e45, e48, e52, e53, e56, e58, e59, e61, e62, e63, e77, ev3, c3e, c20, Cagney Swale, raap4, raap6, raap14, and raap17). Locations of the vernal pools and alkali playas monitored in 2024 at Ramona Grasslands County Preserve are shown in **Figure 2**. Due to the size of Cagney Swale, this study location was monitored at three monitoring points (CS01, CS02, and CS03). Cagney Swale did not have a dry season in 2024; therefore, data collected during the dry season survey represents species observed along edges of the water or within saturated soil conditions. Cover, distribution, and abundance of native plant species within each pool during wet and dry seasons are summarized in **Table 13**; cover, distribution, and abundance of non-native plant species within each pool during wet and dry seasons are summarized in **Table 14**. In addition, faunal vernal pool indicator species observed within each pool during the wet and dry season surveys are summarized in **Table 15**.

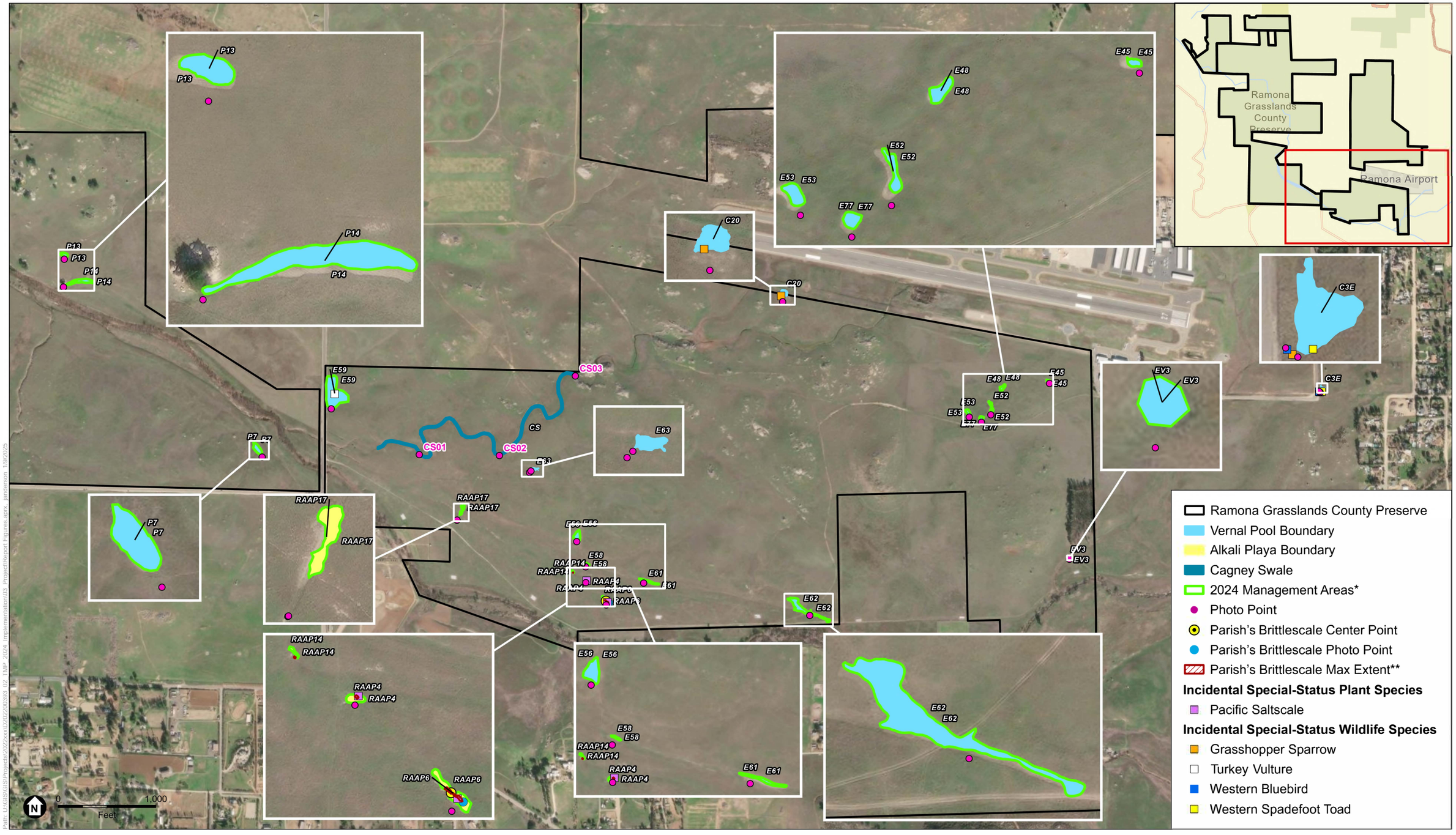
Twenty-three vernal pool floral indicator species were observed among the 22 study locations within the preserve during quantitative monitoring, with toad rush (*Juncus bufonius*) and pale spikerush (*Eleocharis macrostachya*) as the most common. Floral indicator species observed within each vernal pools ranged from 5 to 12 species over the course of the wet and dry season surveys. Vernal pool indicator plant species within each alkali playas ranged from 0 to 5 species over the course of the wet and dry season surveys. Floral indicator species that were observed within the alkali playas over the course of the wet and dry season surveys included Pacific saltscale (*Atriplex pacifica*), Coulter's saltbush (*Atriplex coulteri*),

toad rush, dwarf peppergrass (*Lepidium latipes*), and coastal plantain (*Plantago elongata*). The Cagney Swale supported 1 to 3 floral indicator plant species over the course of the wet and dry season surveys.

Forty-eight native plant species were observed among the 22 study locations within the preserve during quantitative monitoring. Native plant diversity, including floral indicator species, in each vernal pool ranged from 6 to 20 observed species over the course of the wet and dry season surveys. Native plant diversity, including floral indicator species, in each alkali playa ranged from 1 to 8 observed species over the course of the wet and dry season surveys. A total of 8 native plant species, including 3 vernal pool indicator species, were observed among the three monitoring locations within Cagney Swale over the course of the wet and dry season surveys. Within the Cagney Swale monitoring locations, pale spikerush was the most common native plant species recorded.

Invasive non-native plant species were detected in all 22 study locations, with a total of 28 invasive non-native plant species observed. The most common invasive non-native plant species encountered within the study locations during surveys were hare barley (*Hordeum murinum* ssp. *leporinum*), grass poly (*Lythrum hyssopifolium*), Italian rye grass (*festuca perennis*), red-stem filaree (*Erodium botrys*), and oat (Avena sp.). Observed invasive non-native plant species in each vernal pool ranged from 6 to 16 species over the course of the wet and dry season surveys. Invasive non-native plant species observed within each alkali playa ranged from 6 to 13 species over the course of the wet and dry season surveys. Soft brome (*Bromus hordeaceus*), Italian rye grass, hare barley, and Boccone's sand-spurrey (*Spergularia bocconi*) were the most common invasive non-native plant species observed in the alkali playas. A total of 9 invasive non-native plant species were observed among the three monitoring locations within Cagney Swale over the course of the wet and dry season surveys.

Faunal indicator species were observed in 16 of the 22 study locations. The maximum number of faunal indicator species observed within a study location was 4 species. No faunal indicator species were observed within the alkali playas during any of the surveys. Seed shrimp and unknown species of tadpoles/toads were observed within Cagney Swale over the course of the wet and dry season surveys. The most common aquatic faunal indicator species observed over the course of the wet and dry season surveys in vernal pools and the Cagney Swale were seed shrimp. Fairy shrimp were visually identified in vernal pools e48, ev3, and c3e. Dip-netting was not conducted to confirm species, but San Diego fairy shrimp (*Branchinecta sandiegonensis*) was positively identified within the preserve in vernal pools ev3, e59, e61, and the Cagney Swale during USFWS protocol surveys during 2022 TMP monitoring surveys (ESA 2023). No other fairy shrimp species, including the more regionally abundant versatile fairy shrimp (*Branchinecta lindahli*), were detected during the 2022 TMP monitoring surveys (ESA 2023). Based on the 2022 survey results, it is likely that the fairy shrimp observed in vernal pools e48, ev3, and c3e this year are San Diego fairy shrimp. Baja California tree frog (*Pseudacris hypochondriaca hypochondriaca*), western spadefoot toad (*Spea hammondii*), and unknown species of tadpoles, froglets, and toadlets were also observed in vernal pools and in the Cagney Swale study locations. Some vernal pools such as p7 and e59 were important resting and foraging areas for wading birds such as American wigeon (*Mareca americana*), western cattle-egret (*Ardea ibis*), and Wilson's snipe (*Gallinago delicata*). Incidentally observed special-status wildlife species included western spadefoot toad, grasshopper sparrow (*Ammodramus savannarum*), turkey vulture (*Cathartes aura*), and western bluebird (*Sialia mexicana*) (**Figure 2**).



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SOURCE: ESRI, 2021; ESA, 2024; AECOM, 2024
**NOTE: 2024 Management areas provided by RECON Environmental, Inc.*
***NOTE: IMG monitoring results provided by AECOM.*

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management
Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 2
Vernal Pools and Alkali Playas Monitoring Results
Ramona Grasslands County Preserve

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TABLE 13
VERNAL POOL AND ALKALI PLAYA QUANTITATIVE NATIVE FLORA COVER, DISTRIBUTION, AND ABUNDANCE OBSERVED DURING WET AND DRY SEASON: RAMONA GRASSLANDS COUNTY PRESERVE

| Study Location | Native Plant Species | | |

| Study Location | Native Plant Species | | |

| Study Location | Native Plant Species | | |

| Study Location | Native Plant Species | | |

| Study Location | Native Plant Species | | |

| Study Location | Native Plant Species | | |

TABLE 14
VERNAL POOL AND ALKALI PLAYA QUANTITATIVE NON-NATIVE FLORA COVER, DISTRIBUTION, AND ABUNDANCE MONITORING RESULTS OBSERVED DURING WET AND DRY SEASON: RAMONA GRASSLANDS COUNTY PRESERVE

Study Location	Non-Native Plant Species																											
	Anthemis cotula	*Avena sp.*	*Bromus diandrus*	*Bromus hordeaceus*	*Bromus madritensis*	*Cerastium glomeratum*	*Cotula australis*	*Cotula coronopifolia*	*Crypsis schoenoides*	*Cynodon dactylon*	*Erodium botrys*	*Festuca myuros*	*Festuca perennis*	*Hordeum murinum ssp. leoporinum*	*Hypochaeris glabra*	*Lactuca serriola*	*Lythrum hyssopifolia*	*Medicago polymorpha*	*Meliotus sp.*	*Poa annua*	*Polygonum aviculare ssp. depressum*	*Polypogon monspeliensis*	*Portulaca oleracea*	*Rumex crispus*	*Silene gallica*	*Sonchus oleraceus*	*Spergularia bocconi*	*Trifolium hirtum*
P13		1 S L						1 S L			2 P H	1 P L		2 P M			1 C H											
		1 S L						1 S L			1 S H	1 S M	1 P H	1 P M			1 C H								1 S L			
P14		1 S M			1 P M		1 S L			1 P M	2 C H			3 C H			2 S H			1 P H				1 S L				
		1 S L		1 S H			1 S L				2 C H	1 P H	2 C H	2 P H	1 S L		2 C H	1 S H		1 S L				1 S L				
P7										1 P M	1 P M			2 P H			1 S H							1 S M				
	1 S L			1 S M		1 S L		1 C H		1 P H	1 P H	1 S H		1 P H			1 S H				1 S L			1 S M				
E59	1 P H	1 S L				1 S L		1 S M		1 P L	1 S M		1 P M	1 P H			1 C H				1 S M			1 S M			1 P H	
	1 S H								1 S L	2 C H	1 S L	1 S L	1 P H	1 P M			1 S H				1 S H	1 S M	1 S L	1 S L			1 S L	

Study Location	Non-Native Plant Species																											
	Anthemis cotula	*Avena sp.*	*Bromus diandrus*	*Bromus hordeaceus*	*Bromus madritensis*	*Cerastium glomeratum*	*Cotula australis*	*Cotula coronopifolia*	*Crypsis schoenoides*	*Cynodon dactylon*	*Erodium botrys*	*Festuca myuros*	*Festuca perennis*	*Hordeum murinum ssp. leoporinum*	*Hypochaeris glabra*	*Lactuca serriola*	*Lythrum hyssopifolia*	*Medicago polymorpha*	*Meliilotus sp.*	*Poa annua*	*Polygonum aviculare ssp. depressum*	*Polypogon monspeliensis*	*Portulaca oleracea*	*Rumex crispus*	*Silene gallica*	*Sonchus oleraceus*	*Spergularia bocconi*	*Trifolium hirtum*
CS01	1 SM	1 SL								1 PL	1 SL		1 PH	1 PL			1 SL											
	1 SL									1 CS			1 PH				1 PH								1 SL			
CS02	1 SL	1 SL								1 SL	1 SM		1 PM	1 PM			1 SL											
	1 SL	1 SL								2 PH			1 PH	1 SL			1 PH											
CS03	1 SM	1 SM								1 SL			1 PH	1 PH			1 SL											
	1 SH	1 SM											1 PH				1 SH							1 SL				
E63		1 SL									1 SL			3 CH			1 PL											
	1 SL	1 SL								1 SL			2 PH	1 PH			1 SL											

Study Location	Non-Native Plant Species																												
	Anthemis cotula	*Avena sp.*	*Bromus diandrus*	*Bromus hordeaceus*	*Bromus madritensis*	*Cerastium glomeratum*	*Cotula australis*	*Cotula coronopifolia*	*Crypsis schoenoides*	*Cynodon dactylon*	*Erodium botrys*	*Festuca myuros*	*Festuca perennis*	*Hordeum murinum ssp. leoporinum*	*Hypochaeris glabra*	*Lactuca serriola*	*Lythrum hyssopifolia*	*Medicago polymorpha*	*Melilotus sp.*	*Poa annua*	*Polygonum aviculare ssp. depressum*	*Polypogon monspeliensis*	*Portulaca oleracea*	*Rumex crispus*	*Silene gallica*	*Sonchus oleraceus*	*Spergularia bocconi*	*Trifolium hirtum*
E56	1 S L	1 S L												3 C H			1 S H							1 S M				
	1 S L	1 S L						1 P H					2 P M	3 C H		1 S L	1 S H				1 S L	1 S L		1 S M				
E58		1 S L								1 S L	1 S H	1 S H	1 P M	3 C H			1 S L							1 S L				
										1 P M	1 S H		2 S H	2 P H	1 S L		1 S H											
E61								1 S H		1 P H				2 P H			1 S L										2 C H	
		1 S L		1 S L				1 S H		2 P H	2 P H	1 P M	2 P H	1 P H			1 S H		1 S H	1 S L							2 C H	1 S L
C20											2 C M			1 P H			1 S M										1 P M	
	1 S L			1 S L							1 P H	1 P L	1 P M	1 S L		1 S L	2 S H				1 P H	1 S L		1 S L			1 P H	

Study Location	Non-Native Plant Species																											
	Anthemis cotula	*Avena sp.*	*Bromus diandrus*	*Bromus hordeaceus*	*Bromus madritensis*	*Cerastium glomeratum*	*Cotula australis*	*Cotula coronopifolia*	*Crypsis schoenoides*	*Cynodon dactylon*	*Erodium botrys*	*Festuca myuros*	*Festuca perennis*	*Hordeum murinum ssp. leoporinum*	*Hypochaeris glabra*	*Lactuca serriola*	*Lythrum hyssopifolia*	*Medicago polymorpha*	*Melilotus sp.*	*Poa annua*	*Polygonum aviculare ssp. depressum*	*Polypogon monspeliensis*	*Portulaca oleracea*	*Rumex crispus*	*Silene gallica*	*Sonchus oleraceus*	*Spergularia bocconi*	*Trifolium hirtum*
E62		1 S L								1 P L				3 C H			1 S M											
		1 S L		1 S L						1 P M	3 C H	3 C H	2 C H	3 C H			1 S H							1 S L		1 S L	1 P M	
E53		1 S L	1 S L								2 S H			2 P H			1 S M											
		1 S L									1 P H	1 P M	1 P L	2 P H		1 S L	1 S M											
E77			1 S L							1 P H	3 C H			2 C H	1 S L		1 S M											
		1 S M	1 S L							1 P M	3 C H	2 P H		1 S L			1 S H											
E52		1 S H								1 P M	3 CH	1 S H		2 C H			1 S H											
		1 S H								1 P M	1 P H	1 S H		2 C H			1 S H											

Study Location	Non-Native Plant Species																												
	Anthemis cotula	*Avena sp.*	*Bromus diandrus*	*Bromus hordeaceus*	*Bromus madritensis*	*Cerastium glomeratum*	*Cotula australis*	*Cotula coronopifolia*	*Crypsis schoenoides*	*Cynodon dactylon*	*Erodium botrys*	*Festuca myuros*	*Festuca perennis*	*Hordeum murinum ssp. leoporinum*	*Hypochaeris glabra*	*Lactuca serriola*	*Lythrum hyssopifolia*	*Medicago polymorpha*	*Melilotus sp.*	*Poa annua*	*Polygonum aviculare ssp. depressum*	*Polypogon monspeliensis*	*Portulaca oleracea*	*Rumex crispus*	*Silene gallica*	*Sonchus oleraceus*	*Spergularia bocconi*	*Trifolium hirtum*
E48		1 S L									2 P H			2 P H			1 P H											
		1 S L		1 S L						1 P H	1 P H	1 S M	1 P H	2 C H			1 S H											
E45		1 S L								1 S L	3 C H			2 P H			1 P H											
		1 S L	1 P H								2 P H		1 P M	1 P H	1 S L													
Ev3				1 P H										2 P H			2 P H							1 S L				
										1 P H			1 P H	2 C H			1 P H							1 S L				
C3e		1 P M	1 P H		1 S L						2 C H			2 P H			2 C H							1 S L				
			1 P H								1 S H		1 S H	1 P H			1 S H					1 P H		1 S M				

Study Location	Non-Native Plant Species																											
	Anthemis cotula	*Avena sp.*	*Bromus diandrus*	*Bromus hordeaceus*	*Bromus madritensis*	*Cerastium glomeratum*	*Cotula australis*	*Cotula coronopifolia*	*Crypsis schoenoides*	*Cynodon dactylon*	*Erodium botrys*	*Festuca myuros*	*Festuca perennis*	*Hordeum murinum ssp. leoporinum*	*Hypochaeris glabra*	*Lactuca serriola*	*Lythrum hyssopifolia*	*Medicago polymorpha*	*Melilotus sp.*	*Poa annua*	*Polygonum aviculare ssp. depressum*	*Polypogon monspeliensis*	*Portulaca oleracea*	*Rumex crispus*	*Silene gallica*	*Sonchus oleraceus*	*Spergularia bocconi*	*Trifolium hirtum*
Raap17				1 S L						1 P M	1 P L			3 C H			1 S H	1 S M						1 P M			3 C H	
				1 S L			1 P L						2 S H	3 C H			1 P H	1 S M	1 S L								2 P H	
Raap4		1 S L		1 S M		1 S L				1 P L	1 S M			3 C H		1 S L		1 S H							1 S L	1 S L	3 C H	
				1 S H									1 S H	1 S H		1 S L		1 S M							1 S L		2 C H	
Raap6		2 P M	1 P M	2 S H						1 P M	1 S M	1 S H		3 C H			1 S H	1 P M									3 C H	
		1 S L		1 S M							1 P H		1 P M	1 P M		1 S L	1 S H	1 S H							1 S L		3 C H	
Raap14		1 S L	1 S L											3 C H													1 P L	
				1 S L									2 P H	3 C H													1 P H	

Study Location	Non-Native Plant Species																											
	Anthemis cotula	*Avena sp.*	*Bromus diandrus*	*Bromus hordeaceus*	*Bromus madritensis*	*Cerastium glomeratum*	*Cotula australis*	*Cotula coronopifolia*	*Crypsis schoenoides*	*Cynodon dactylon*	*Erodium botrys*	*Festuca myuros*	*Festuca perennis*	*Hordeum murinum ssp. leoporinum*	*Hypochaeris glabra*	*Lactuca serriola*	*Lythrum hyssopifolia*	*Medicago polymorpha*	*Melilotus sp.*	*Poa annua*	*Polygonum aviculare ssp. depressum*	*Polypogon monspeliensis*	*Portulaca oleracea*	*Rumex crispus*	*Silene gallica*	*Sonchus oleraceus*	*Spergularia bocconi*	*Trifolium hirtum*

NOTES:

All pools were surveyed once during the wet season and once during the dry season.
Blue-shaded rows denote results of wet season surveys, while white-shaded rows denote results of dry season surveys of species abundance, distribution, and cover.
Blank cells indicate that the species was not observed within the study location during the respective survey window.
Cover values:
1 = species constitutes <25% of pool vegetation cover
2 = species constitutes 25-49% of pool vegetation cover
3 = species constitutes 50%+ of pool vegetation cover
Distribution values:
S = Solitary; species occurring as single plants widely dispersed within the pool or playa
P = Patches; species occurring in patches or clumps scattered throughout the pool or playa
C = Carpets; species occurring in dense stands within the pool or playa
Abundance values:
L = Low; 0–50 species individuals observed within the pool or playa
M = Moderate; 51–100 species individuals observed within the pool or playa
H = High; 101–500+ individuals observed within the pool or playa

TABLE 15
VERNAL POOL AND ALKALI PLAYA QUANTITATIVE FAUNA ABUNDANCE OBSERVED DURING WET AND DRY SEASON: RAMONA GRASSLANDS COUNTY PRESERVE

Study Location	Invertebrates			Amphibians		
	Copepoda	Fairy shrimp	Seed Shrimp	Baja California tree frog tadpole/frog	Western spadefoot toad	Tadpoles/toads/frogs (Unknown species)
P13						
P14						
P7			H			
E59	H		H			
CS01			M			L
CS02			M			L
CS03						M
			H			L
E63			H			
E56			H			
				L		
E58			H			
E61			H	H		
				L		
C20			H			
E62	H		H			
				L		
E53	H		H			L

Study Location	Invertebrates			Amphibians		
	Copepoda	**Fairy shrimp**	**Seed Shrimp**	Baja California tree frog tadpole/frog	Western spadefoot toad	Tadpoles/toads/frogs (Unknown species)
E77						
E52			H			
				L		
E48		L	H	L		L
E45						
Ev3		M	H			L
				M		
C3e	M	H	H		L	
Raap17						
Raap4						
Raap6						
Raap14						

NOTES:
All pools were surveyed once during the wet season and once during the dry season.
Bold species are known vernal pool indicators, as listed in the *Revised Final City of San Diego Vernal Pool Habitat Conservation Plan* (City of San Diego 2019).
Blue-shaded rows denote results of wet season surveys, while white-shaded rows denote results of dry season surveys of species abundance, distribution, and cover.
Blank cells indicate that species was not observed within pool during the respective survey window.
Abundance values:
L = 0–50 species individuals observed within pool
M = 51–100 species individuals observed within pool
H = 101–500+ individuals observed within pool

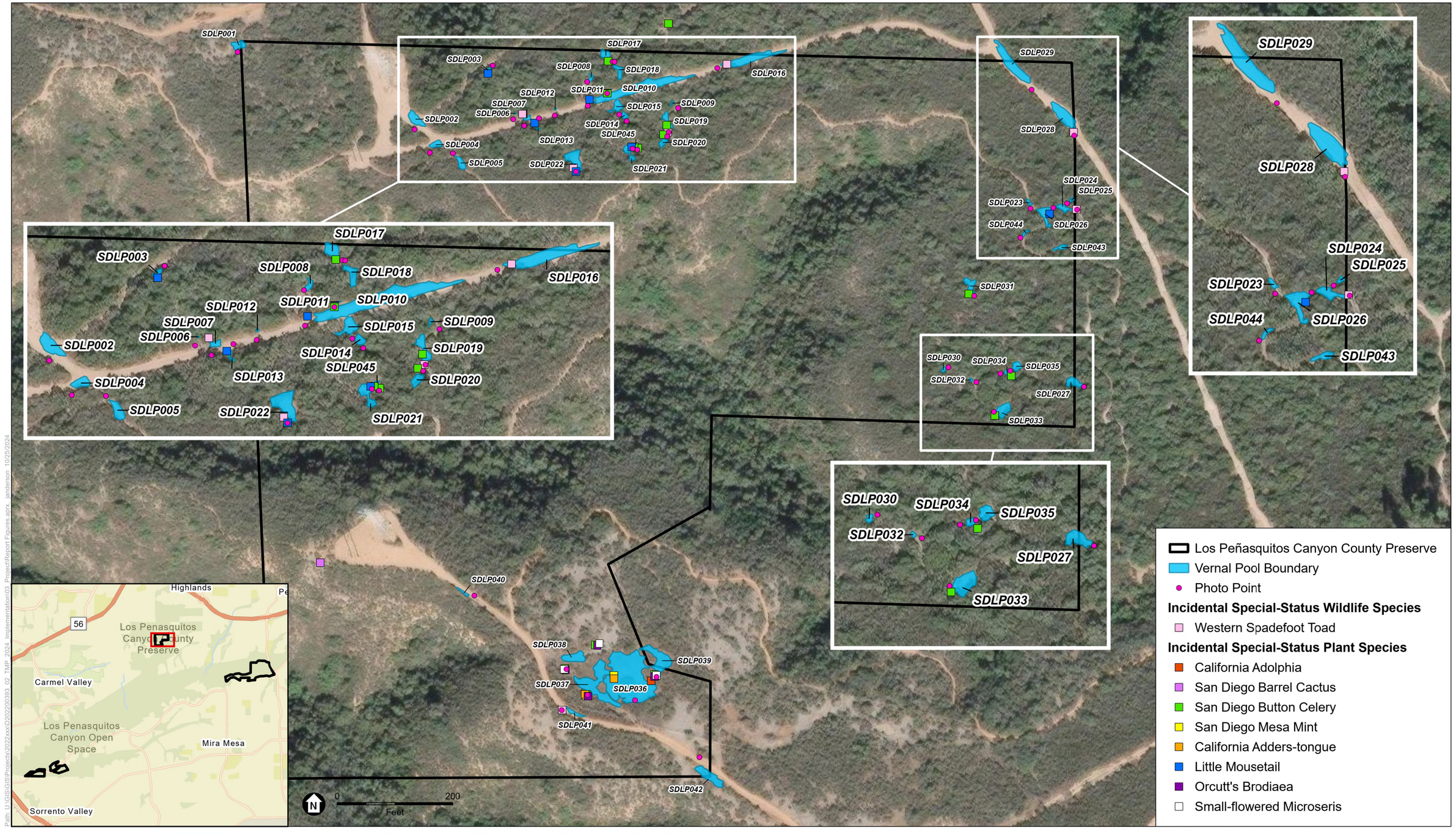
The annual floral and faunal species composition within vernal pools and alkali playas varies annually based on the rainfall pattern as well as the total amount of rainfall received. Quantitative monitoring in 2024 found non-native annual grasses dominated the vernal pools, alkali playas, and the banks and top of banks around the Cagney Swale, often creating dense stands or carpets and accounting for a greater percent cover than native plant species. Quantitative monitoring results presented in Tables 13–15 illustrate a correlation between native plant species, including floral indicator species, abundance and distribution with the overall health of the vernal pool or alkali playa. For example, vernal pools such as p48, e45, and c20 had high native plant species richness and abundance and lower non-native species abundance with scattered or patchy distribution. Conversely, vernal pools such as e62 and e63 with high non-native grass cover, abundance, and dense distribution had lower vernal pool indicator plant species cover and often had scattered distribution along the pool margins or in small patches within the basins.

Nine vernal pools (p13, e56, e58, e61, e48, e52, e45, c20, and e53) have higher native plant species richness compared to non-native plant species richness, and eight vernal pools (p7, p14, e59, e63, e62, e77, ev3, and c3e) are threatened by high non-native plant cover, abundance, and dense distribution within and surrounding the vernal pools. Alkali playa raap4 and raap6 continue to support Pacific saltscale and additional plant species evolved for alkali soils. Alkali playa raap14 and raap17 are threatened by dense carpets of invasive non-native hare barley.

4.1.1.2 Los Peñasquitos Canyon County Preserve

A reconnaissance baseline survey was conducted at Los Peñasquitos Canyon County Preserve to map the current extent of vernal pools and establish a permanent photo-point for the 45 vernal pools observed in 2024. Additionally, quantitative monitoring at Los Peñasquitos Canyon County Preserve consisted of documenting vernal pool plant species and estimating their cover, distribution, and abundance, and documenting vernal pool faunal indicator species and estimating their abundance across the 45 vernal pool study locations. Locations of the vernal pools mapped and monitored in 2024 at Los Peñasquitos Canyon County Preserve are shown in **Figure 3**. Cover, distribution, and abundance of native plant species within each pool during wet and dry seasons are summarized in **Table 16**; cover, distribution, and abundance of non-native plant species within each pool during wet and dry seasons are summarized in **Table 17**. In addition, faunal vernal pool indicator species observed within each pool during the wet and dry season surveys are summarized in **Table 18**.

Seventeen vernal pool floral indicator species were observed during quantitative monitoring at Los Peñasquitos Canyon County Preserve, with winged water starwort (*Callitriche marginata*), water pygmy weed (*Crassula aquatica*), toad rush, and woolly marbles (*Psilocarphus brevissimus*) recorded as the most common. Floral indicator species within each vernal pool ranged from 4 to 14 observed species over the course of the wet and dry season surveys.



Path: U:\GIS\GIS\Projects\2022\xxx\D2022003933_02_TMP_2024_Implementation\03_Project\Report Figures aprx, jlanderson 10/25/2024

SOURCE: ESRI, 2021; ESA 2024

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management

Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 3

Vernal Pool Monitoring Results
Los Peñasquitos Canyon County Preserve

ESA

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TABLE 16
VERNAL POOL QUANTITATIVE NATIVE FLORA COVER, DISTRIBUTION, AND ABUNDANCE MONITORING RESULTS OBSERVED DURING WET AND DRY SEASON: LOS PEÑASQUITOS CANYON COUNTY PRESERVE

| Vernal Pool | Native Plant Species | | |

| Vernal Pool | Native Plant Species | | |

| Vernal Pool | Native Plant Species | | |

| Vernal Pool | Native Plant Species | | |

| Vernal Pool | Native Plant Species | | |

| Vernal Pool | Native Plant Species | | |

| Vernal Pool | Native Plant Species | | |

| Vernal Pool | Native Plant Species | | |

| Vernal Pool | Native Plant Species | | |

| Vernal Pool | Native Plant Species | | |

TABLE 17
VERNAL POOL QUANTITATIVE NON-NATIVE FLORA COVER, DISTRIBUTION, AND ABUNDANCE MONITORING RESULTS OBSERVED DURING WET AND DRY SEASON: LOS PEÑASQUITOS CANYON COUNTY PRESERVE

Vernal Pool	Non-Native Plant Species																		
	Avena sp.	*Bromus diandrus*	*Bromus hordeaceus*	*Bromus madretensis*	*Centaurea melitensis*	*Dittrichia graveolens*	*Festuca myuros*	*Festuca perenne*	*Gastridium pheloides*	*Helmenthotheca echoides*	*Hordeum murinum ssp. leporinum*	*Hypochaeris glabra*	*Lysmachia arvensis*	*Lythrum hyssopifolia*	*Oxalis pes-caprae*	*Polypogon monspeliensis*	*Sonchus apser*	*Sonchus oleraceus*	*Spergularia bocconii*
SDLP001				1 S M			1 P M				1 P L								
							3 C H	1 S L									1 S L		
SDLP002																			2 P H
							1 P H												1 P M
SDLP003				1 S L															
SDLP004			1 S L								1 S L								1 S L
							1 S M		1 S M										1 S L
SDLP005																			
							1 S M												
SDLP006																			
				1 S L				1 S L											

Vernal Pool	Non-Native Plant Species																		
	Avena sp.	*Bromus diandrus*	*Bromus hordeaceus*	*Bromus madretensis*	*Centaurea melitensis*	*Dittrichia graveolens*	*Festuca myuros*	*Festuca perenne*	*Gastridium pheloides*	*Helmenthotheca echoides*	*Hordeum murinum ssp. leporinum*	*Hypochaeris glabra*	*Lysmachia arvensis*	*Lythrum hyssopifolia*	*Oxalis pes-caprae*	*Polypogon monspeliensis*	*Sonchus apser*	*Sonchus oleraceus*	*Spergularia bocconii*
SDLP007																			1 P L
									1 P L										
SDLP008																			
SDLP009																			
SDLP010																			
							1 S L												
SDLP011																			
									1 S M										1 S L
SDLP012																			
SDLP013																			
							1 P M												
SDLP014																			
SDLP015					1 S L		1 S L												
							1 S M											1 S L	

Vernal Pool	Non-Native Plant Species																		
	Avena sp.	*Bromus diandrus*	*Bromus hordeaceus*	*Bromus madretensis*	*Centaurea melitensis*	*Dittrichia graveolens*	*Festuca myuros*	*Festuca perenne*	*Gastridium pheloides*	*Helmenthotheca echoides*	*Hordeum murinum ssp. leporinum*	*Hypochaeris glabra*	*Lysmachia arvensis*	*Lythrum hyssopifolia*	*Oxalis pes-caprae*	*Polypogon monspeliensis*	*Sonchus apser*	*Sonchus oleraceus*	*Spergularia bocconii*
SDLP016																			
																			1 S L
SDLP017																			
SDLP018																			
SDLP019																			
SDLP020																			
								1 S L											
SDLP021																			
SDLP022																			
SDLP023																			
																		1 S L	
SDLP024																			
SDLP025																			

Vernal Pool	Non-Native Plant Species																		
	Avena sp.	*Bromus diandrus*	*Bromus hordeaceus*	*Bromus madretensis*	*Centaurea melitensis*	*Dittrichia graveolens*	*Festuca myuros*	*Festuca perenne*	*Gastridium pheloides*	*Helmenthotheca echoides*	*Hordeum murinum ssp. leporinum*	*Hypochaeris glabra*	*Lysmachia arvensis*	*Lythrum hyssopifolia*	*Oxalis pes-caprae*	*Polypogon monspeliensis*	*Sonchus apser*	*Sonchus oleraceus*	*Spergularia bocconii*
SDLP026																			
SDLP027																			
SDLP028								1 S L											1 S L
							1 S L									1 S L			1 S M
SDLP029								1 S L										1 S L	1 S L
							1 S L									1 S L			1 S L
SDLP030																			
SDLP031																			
SDLP032																			
SDLP033																			
SDLP034																			

Vernal Pool	Non-Native Plant Species																		
	Avena sp.	*Bromus diandrus*	*Bromus hordeaceus*	*Bromus madretensis*	*Centaurea melitensis*	*Dittrichia graveolens*	*Festuca myuros*	*Festuca perenne*	*Gastridium pheloides*	*Helmenthotheca echoides*	*Hordeum murinum ssp. leporinum*	*Hypochaeris glabra*	*Lysmachia arvensis*	*Lythrum hyssopifolia*	*Oxalis pes-caprae*	*Polypogon monspeliensis*	*Sonchus apser*	*Sonchus oleraceus*	*Spergularia bocconii*
SDLP035																			
SDLP036	1 S L											2 C H					1 S L		
	1 S L		1 P H	1 S L	1 P H		2 P H		1 S L	1 S L	1 P M	1 P H		1 S L			1 S L	1 S M	
SDLP037	1 S L		1 S L	1 P M			1 P M					2 P H					1 S L		
			1 P H				1 P H	1 S L				1 S H		1 S L				1 S L	
SDLP038				1 P M	1 S L		2 P H					1 S H					1 S L		
			1 P H	1 S L			2 S H	1 S L				1 S M						1 S L	1 P H
SDLP039	1 S L		1 S L	1 P M	1 S M		1 P H					1 S H			1 P M		1 S L	1 S L	
			1 P H				2 P M		1 S L			1 S H						1 S L	
SDLP040																			2 C H
		1 P H		1 S L			1 P H	1 S H										1 S L	1 P H

Vernal Pool	Non-Native Plant Species																		
	Avena sp.	*Bromus diandrus*	*Bromus hordeaceus*	*Bromus madretensis*	*Centaurea melitensis*	*Dittrichia graveolens*	*Festuca myuros*	*Festuca perenne*	*Gastridium pheloides*	*Helmenthotheca echoides*	*Hordeum murinum ssp. leporinum*	*Hypochaeris glabra*	*Lysmachia arvensis*	*Lythrum hyssopifolia*	*Oxalis pes-caprae*	*Polypogon monspeliensis*	*Sonchus apser*	*Sonchus oleraceus*	*Spergularia bocconii*
SDLP041							1 P H												1 S L
							1 P M												
SDLP042							1 P H					1 S L	1 P M	1 P H					1 P H
			1 P H	1 S L	1 S L		1 P H	1 S L	1 S L			1 P H	1 S M	1 S M				1 S L	1 P H
SDLP043*																			
						1 S L													
SDLP044*																			
SDLP045*																			

NOTES:
All pools were surveyed once during the wet season and once during the dry season.
* Pools were not discovered during the wet season, thus were only surveyed during the dry season.
Bold species are known vernal pool indicators, as listed in the *Revised Final City of San Diego Vernal Pool Habitat Conservation Plan* (City of San Diego 2019).
Blue-shaded rows denote results of wet season surveys, while white-shaded rows denote results of dry season surveys of species abundance, distribution, and cover.
Blank cells indicate that species was not observed within pool during the respective survey window.
Cover values:
1 = species constitutes <25% of pool vegetation cover
2 = species constitutes 25–49% of pool vegetation cover
3 = species constitutes 50%+ of pool vegetation cover
Distribution values:
S = Solitary; species occurring as single plants widely dispersed within the pool
P = Patches; species occurring in patches or clumps scattered throughout the pool
C = Carpets; species occurring in dense stands within the pool
Abundance values:
L = Low; 0–50 species individuals observed within the pool
M = Moderate; 51–100 species individuals observed within the pool
H = High; 101–500+ individuals observed within the pool

TABLE 18
VERNAL POOL QUANTITATIVE FAUNA ABUNDANCE MONITORING RESULTS OBSERVED DURING WET AND DRY SEASON: LOS PEÑASQUITOS CANYON COUNTY PRESERVE

Vernal Pool	Invertebrates				Amphibians		
	Cladocera	Copepoda	Fairy shrimp	Seed Shrimp	Baja California tree frog tadpole/frog	Western spadefoot toad	Tadpoles/toads (Unknown species)
SDLP001				H			
	H						
SDLP002				H			
				L			L
SDLP003				H			
SDLP004							
SDLP005							
SDLP006							
SDLP007		M		H		L	
				H		L	
SDLP008		L		H			
SDLP009				M			
SDLP010		L		H			
				M			

Vernal Pool	Invertebrates				Amphibians		
	Cladocera	Copepoda	Fairy shrimp	Seed Shrimp	Baja California tree frog tadpole/frog	Western spadefoot toad	Tadpoles/toads (Unknown species)
SDLP011				L			
SDLP012							
SDLP013							
SDLP014							
SDLP015							
				H			
SDLP016						H	
				M			
SDLP017				H			
				H	L		
SDLP018				H			
				H			
SDLP019		H		H		M	
SDLP020				H			
SDLP021		H		H			

Vernal Pool	Invertebrates				Amphibians		
	Cladocera	Copepoda	Fairy shrimp	Seed Shrimp	Baja California tree frog tadpole/frog	Western spadefoot toad	Tadpoles/toads (Unknown species)
SDLP022		H		H		M	
				H	L		L
SDLP023				H			
SDLP024					L	L	
SDLP025							
SDLP026		H		H			
				H			
SDLP027		H	H	H			
		H					
SDLP028		H				L	
				M			
SDLP029							
				M			
SDLP030		H					
SDLP031		H	H	H	L		
SDLP032							

Vernal Pool	Invertebrates				Amphibians		
	Cladocera	Copepoda	Fairy shrimp	Seed Shrimp	Baja California tree frog tadpole/frog	Western spadefoot toad	Tadpoles/toads (Unknown species)
SDLP033			H	H			L
				H			
SDLP034		H		H			
SDLP035			H				
					L		
SDLP036				H			
				H			
SDLP037					L		
SDLP038							
				H			
SDLP039							
SDLP040							
				H			
SDLP041						L	
				H			
SDLP042				H			
SDLP043*							
				H			

Vernal Pool	Invertebrates				Amphibians		
	Cladocera	**Copepoda**	**Fairy shrimp**	**Seed Shrimp**	Baja California tree frog tadpole/frog	Western spadefoot toad	Tadpoles/toads (Unknown species)
SDLP044*							
				H			
SDLP045*							
					L		

NOTES:

All pools were surveyed once during the wet season and once during the dry season.
* Pools were not discovered during the wet season, thus were only surveyed during the dry season.
Bold species are known vernal pool indicators, as listed in the *Revised Final City of San Diego Vernal Pool Habitat Conservation Plan* (City of San Diego 2019).
Blue-shaded rows denote results of wet season surveys, while white-shaded rows denote results of dry season surveys of species abundance, distribution, and cover.
Blank cells indicate that species was not observed within pool during the respective survey window.
Abundance values:
L = 0–50 species individuals observed within pool
M = 51–100 species individuals observed within pool
H = 101–500+ individuals observed within pool

Native plant diversity, including floral indicator species, in each vernal pool ranged from 4 to 34 species observed over the course of wet and dry season surveys. San Diego mesa mint (*Pogogyne abramsii*), a federally listed vernal pool indicator plant species and MSCP covered species, was observed within vernal pools SDLP036 and SDLP037; and San Diego button celery (*Eryngium aristulatum var. parishii*), a MSCP covered species, was observed within vernal pools SDLP011, SDLP017, SDLP019, SDLP031, SDLP033, SDLP035–SDLP039, and SDLP045 (**Figure 3**). Additional incidental special-status plant species detected included Orcutt's brodiaea (*Brodiaea orcuttii*), California adolphia (*Adolphia californica*), small-flowered microseris (*Microseris douglasii ssp. platycarpha*), little mousetail (*Myosurus minimus ssp. apus*), California adders-tongue (*Ophioglossum californicum*) and San Diego barrel cactus (*Ferocactus viridescens*) (**Figure 3**).

Non-native plant species were detected in 24 of the 45 surveyed vernal pools, with a total of 19 non-native plant species observed. Non-native plant species in each vernal pool ranged from 0 to 12 observed species over the course of the wet and dry season surveys. The most common non-native plant species encountered within vernal pools during surveys were rattail fescue (*Festuca myuros*) and Boccone's sand-spurrey.

Faunal indicator species were observed in 36 of the 45 surveyed vernal pools. The maximum number of faunal indicator species observed within a vernal pool was 4 species. The most common aquatic faunal indicator species observed in vernal pools was seed shrimp. Fairy shrimp were visually identified in vernal pools SDLP027, SDLP031, SDLP033, and SDLP035; however, dip-netting was not conducted to confirm species. Baja California tree frog, western spadefoot toad, and unknown species of tadpoles, froglets, and toadlets were also observed in 14 of the 45 surveyed vernal pools over the course of the wet and dry season surveys. Special-status western spadefoot toad tadpoles and toadlets were observed in vernal pools SDLP007, SDLP016, SDLP019, SDLP022, SDLP024, SDLP028, and SDLP041 over the course of the wet and dry season surveys (**Figure 3**).

The floral and faunal species composition within vernal pools varies annually based on the rainfall pattern as well as the total amount of rainfall received. Native species richness and abundance was generally high in most vernal pools. Quantitative monitoring in 2024 found non-native plant species cover and abundance within each pool was generally low. Signs of physical damage were observed in nineteen of the vernal pools (generally those associated with on-site roads). This included observing an unidentified truck driving through vernal pools at high speeds, resulting in pools emptied of ponded water or turbid water conditions, damaged plants, and dead amphibians.

4.1.2 Adaptive Management Recommendations

4.1.2.1 Ramona Grasslands County Preserve

The results of the 2024 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendations:

- **Continue focused invasive non-native plant management.** The TMP recommends overall invasive non-native plant cover within vernal pool basins to be kept to less than 20 percent (ESA and ICF 2022). Invasive non-native plants are the main threat to the vernal pool and alkali playa habitat within Ramona Grasslands County Preserve as they outcompete native species for resources and the thatch they produce can affect ponding duration and timing, subsequently impacting aquatic faunal species as well. The dominant invasive non-native species detected in 2024 were hare barely, grass poly, and

red-stem filaree. The percent cover for these three species are provided in **Table 19** with recommended management priority levels. To ensure the persistence of vernal pool and alkali playa habitat at Ramona Grasslands County Preserve, it is recommended that invasive non-native plant control be conducted by a qualified restoration specialist within vernal pools p13, p14, p7, e59, e56, e58, e61, e62, e63, e53, e77, e52, e48, e45, and ev3, and the alkali playas raap4, raap6, raap14, and raap17. Management should continue to occur twice a year, once just after pool and playa basins have dried and the soil surface becomes firm, and again later in the season before invasive non-native plants have set seed. Invasive non-native grasses should be manually cut at the base and removed by hand to minimize soil disturbance. Sensitive plants or vernal pool/alkali playa indicator plant species should be flagged prior to the start of maintenance. A follow-up maintenance visit should be performed during the dry phase, after native plant species have set seed to fully remove any invasive non-native plant biomass remaining by hand to prevent the removal of native seed material. Thatch removal should be done by hand and lightly raking in basins and around the pool margins to minimize soils disturbance. At the County's discretion, an aquatic-safe herbicide may be used after the first maintenance visit in accordance with the TMP (ESA and ICF 2022).

- **Conduct a hydrological study of the Cagney Swale.** Potential altered hydrology (e.g., erosion and undercutting of the banks) within the Cagney Swale continued to be observed during 2024 quantitative monitoring surveys (see representative photographs in **Appendix A**). A hydrological study of the Cagney Swale is recommended to determine if altered hydrology is occurring and inform adaptive management strategies (e.g., implement erosion control, stormwater/road runoff control, minor grading to help dissipate water and reduce flow velocity, and/or restrict access to portions of the swale to allow for a natural recovery of the banks and bed).
- **Implement fencing pilot study.** Many vernal pools and alkali playas had numerous deep hoof prints and cow patties in the basins and along the margins. A fencing pilot study is recommended to study the effects of cattle grazing on existing vernal pool and alkali playa species richness, species distribution, and their abundance during both the wet and dry seasons. The pilot study would consist of installing exclusionary fencing around one vernal pool (e59) and one alkali playa (raap17) within the Ramona Grasslands County Preserve. Vernal pool e59 is proposed because this pool supports vernal pool indicator species and is located adjacent to existing exclusionary fencing surrounding the boundary of the preserve, which would reduce fencing cost and effort. Alkali playa raap17 is proposed because it has been documented to support three special-status plant species (Parish's brittlescale [*Atriplex parishii*], Coulter's saltbush, and southern tarplant [*Centromadia parryi* ssp. *australis*]), however their presence and abundance are declining or are on the brink of disappearing from the playa. Exclusionary fencing may help decrease impacts to hydrology, reduce erosion and sedimentation, and increase native plant species presence and distribution within a vernal pool. Ground disturbance caused by the installation of fencing posts for this pilot study should be anticipated, and proper avoidance and minimization measures should be taken to avoid potential impacts to biological and cultural resources.
- **Strategize cattle rotations.** Close coordination with the current rancher is recommended to strategize cattle rotation patterns that best protect existing vernal pool and alkali playa habitat during conditions when they are most vulnerable to soil and sensitive plant and wildlife disturbance. As stated in the Grazing Management Plan, grazing shall occur after the vernal pool inundation period is complete and soils are firm (anticipated as April to June) (ESA 2019). Working with the rancher to minimize cattle grazing within management units containing vernal pool and alkali playa resources (particularly management unit 2A) during the wet season could benefit native vernal pool species richness, improve the overall hydrology and functionality of the vernal pool and alkali playa complexes, and assist in meeting conservation and RDM goals and metrics.

- **Seed vernal pool/alkali playa indicator plant species.** Hand-seeding of vernal pool or alkali playa indicator plant species is recommended in pools and playas with low non-native cover that have demonstrated sufficient ponding periods to support indicator plant species across the pool and playa gradient to increase and enhance native species richness, diversity, and natural recruitment from year to year. Vernal pools and alkali playas that meet these criteria include e52, e61, e63 ev3, raap 4, raap 6, raap 14, and raap 17; while e77 supports a low cover of native and vernal pool indicators species, it does not have a sufficient ponding duration to support a seeding effort. Weed control efforts should be conducted in the summer to prepare vernal pool basins prior to seeding. Seeding should be timed for late fall and early winter prior to a rain event.

TABLE 19
VERNAL POOL AND ALKALI PLAYA QUANTITATIVE MONITORING SUMMARY AND MANAGEMENT PRIORITIES: RAMONA GRASSLANDS COUNTY PRESERVE

Vernal Pool	Total # of Plant Species	# of Vernal Pool Plant Indicator Species	# of Native Plant Species	# of Non-Native Plant Species	% Cover of Invasive Non-Native Hare Barley, Grass Poly, and Red-stem Filaree			Management Priority
					Red-Stem Filaree	Hare Barley	Grass Poly	
P13	15	7	9	6	2	2	1	Moderate
	22	11	14	8	1	1	1	
P14	18	7	9	9	2	3	2	High
	22	3	10	12	2	2	2	
P7	13	7	8	5	1	2	1	Moderate
	22	9	11	11	1	1	1	
E59	24	8	12	12	1	1	1	Low
	20	4	7	13	1	1	1	
CS01	10	1	3	7	1	1	1	Low
	7	2	2	5	0	0	1	
CS02	9	1	2	7	1	1	1	Low
	9	2	3	6	0	1	1	
CS03	7	1	1	6	0	1	1	Low
	8	1	3	5	0	0	1	
E63	9	5	5	4	1	3	1	High
	10	4	4	6	0	1	1	
E56	16	9	11	5	0	3	1	High
	22	11	12	10	0	3	1	
E58	18	7	10	8	1	3	1	High
	15	7	9	6	1	2	1	
E61	12	5	7	5	0	2	1	Moderate
	24	7	11	13	2	1	1	
C20	16	10	12	4	2	1	1	Moderate
	22	8	10	12	1	1	2	

Vernal Pool	Total # of Plant Species	# of Vernal Pool Plant Indicator Species	# of Native Plant Species	# of Non-Native Plant Species	% Cover of Invasive Non-Native Hare Barley, Grass Poly, and Red-stem Filaree			Management Priority
					Red-Stem Filaree	Hare Barley	Grass Poly	
E62	14	8	10	4	0	3	1	High
	20	7	9	11	3	3	1	
E53	13	8	8	5	2	2	1	Moderate
	19	7	12	7	1	2	1	
E77	12	4	6	6	3	2	1	High
	18	4	11	7	3	1	1	
E52	15	7	9	6	3	2	1	High
	20	8	14	6	1	2	1	
E48	15	9	11	4	2	2	1	Moderate
	26	10	18	8	1	2	1	
E45	18	9	13	5	3	2	1	High
	19	8	13	6	2	1	0	
Ev3	10	6	6	4	0	2	2	Moderate
	11	6	6	5	0	2	1	
C3e	17	6	10	7	2	2	2	Moderate
	12	4	5	7	1	1	1	
Raap 17	14	4	6	8	1	3	1	High
	12	2	4	8	0	3	1	
Raap4	18	5	7	11	1	3	0	High
	13	4	6	7	0	1	0	
Raap6	16	3	6	10	1	3	1	High
	17	4	7	10	1	1	1	
Raap14	5	0	1	4	0	3	0	High
	5	0	1	4	0	3	0	

NOTES:

All pools were surveyed once during the wet season and once during the dry season.
Blue-shaded rows denote results of wet season surveys, while white-shaded rows denote results of dry season surveys.
Cover values:
1 = species constitutes <25% of pool or playa vegetation cover
2 = species constitutes 25–49% of pool or playa vegetation cover
3 = species constitutes 50%+ of pool or playa vegetation cover
Management priority was determined based on the percent cover of the three focus invasive non-native grass species:
High: Maximum percent cover of at least one of the three focus invasive non-native grass species is greater than or equal to 50 percent.
Moderate: Maximum percent cover of at least one of the three focus invasive non-native grass species is 25–49 percent.
Low: Maximum percent cover at least one of the three focus invasive non-native grass species is less than 25.

4.1.2.2 Los Peñasquitos Canyon County Preserve

The results of the 2024 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendations:

- **Conduct long-term monitoring of vernal pools.** Per the TMP, long-term monitoring shall be initiated at the Los Peñasquitos Canyon County Preserve within a subset of pools. The following 15 vernal pools are recommended for long-term monitoring: SDLP09, SDLP014, SDLP015, SDLP017, SDLP019, SDLP027, SDLP32–SDLP39, and SDLP42. These vernal pools are recommended as they support federally and state listed San Diego mesa mint, San Diego button celery and/or have high non-native plant cover but support floral and faunal indicator species in sufficient abundance and cover and are distributed throughout the basin. Quantitative, qualitative, and hydrologic monitoring methods and frequencies should follow the TMP (ESA 2024a).
- **Repair existing broken fencing.** The fencing around vernal pools SDLP035–SDLP039 was observed to be broken in more than one location during 2024 monitoring. It is recommended to repair the fence to limit unauthorized access to these pools and prevent damage or take of listed species.
- **Control unauthorized access.** Bicycle and automobile tire tracks were documented in many of the vernal pools. These disturbances caused physical changes to the vernal pools by creating ruts and altering the local hydrology and how the vernal pools pond water over time, as well as having direct impacts on floral and faunal indicator species abundance and distribution. The estimated percent of damage for each pool is provided in **Table 20** with recommended management priority levels. Installation of signage stating sensitive resources are in the area, installation of exclusionary fencing around vernal pools, and regular preserve patrols focusing on these areas are options to control unauthorized access.
- **Conduct focused invasive non-native plant management.** The TMP recommends overall invasive non-native plant cover within vernal pool basins to be kept to less than 20 percent (ESA 2024a). While invasive non-native plant species richness was generally low across all pools, non-native species were distributed throughout the basin, and abundance was high in vernal pools SDLP035–SDLP039. Focused management within these pools are recommended as several special-status plant species (San Diego mesa mint, San Diego button celery, and Orcutt's brodiaea [*Brodiaea orcuttii*]) occur within these pools. Management should continue to occur twice a year, once just after pools have dried and the soil surface becomes firm, and again later in the season before invasive non-native plants have set seed. Invasive non-native grasses should be manually cut at the base and removed by hand to minimize soil disturbance. Sensitive plants or vernal pool indicator plant species should be flagged prior to the start of maintenance. A follow-up maintenance visit should be performed during the dry phase, after native plant species have set seed to fully remove any invasive non-native plant biomass remaining by hand; no blowing seed material out of the pool into the surrounding habitats will occur. Thatch removal should be done by hand and lightly raking in basins and around the pool margins to minimize soils disturbance. At the County's discretion, an aquatic-safe herbicide may be used after the first maintenance visit in accordance with the TMP (ESA and ICF 2022).
- **Seed vernal pool indicator plant species.** Hand-seeding of vernal pool indicator plant species is recommended in pools with low non-native cover that have demonstrated sufficient ponding periods to support indicator plant species across the pool gradient to increase and enhance native species richness, diversity, and natural recruitment from year to year. Vernal pools SDLP005, SDLP008, SDLP014, SDLP018, SDLP025, SDLP030 were found to have a low native and indicator species cover and abundance and a low non-native species abundance during the 2024 baseline surveys. These pools should be prioritized for hand-seeding and non-native species control. Invasive non-native plant control efforts should be conducted in the summer to prepare vernal pool basins prior to

hand-seeding to capture non-native seed material before it falls to the ground. Hand-seeding should be timed for late fall and early winter prior to a rain event.

TABLE 20
VERNAL POOL QUANTITATIVE MONITORING SUMMARY AND MANAGEMENT PRIORITIES: LOS PEÑASQUITOS CANYON COUNTY PRESERVE

Vernal Pool/Alkali Playa	Toal # of Plant Species	# of Vernal Pool Indicator Species	# of Native Plant Species	# of Non-Native Plant Species	% Physical Damage	Management Priority
SDLP001	8	5	5	3	<25	Low
	14	5	11	3		
SDLP002	7	5	6	1	0	Very low
	7	5	5	2		
SDLP003	7	5	6	1	0	Very low
	5	4	5	0		
SDLP004	9	4	6	3	25–49	Moderate
	11	6	8	3		
SDLP005	5	4	5	0	25–49	Moderate
	9	5	8	1		
SDLP006	4	4	4	0	0	Very low
	12	6	10	2		
SDLP007	7	5	6	1	25–49	Moderate
	3	1	2	1		
SDLP008	3	3	3	0	0	Very low
	4	4	4	0		
SDLP009	2	2	2	0	0	Very low
	6	5	6	0		
SDLP010	6	5	6	0	50–74	High
	11	8	10	1		
SDLP011	6	5	6	0	0	Very low
	9	5	7	2		
SDLP012	5	4	5	0	0	Very low
	6	4	6	0		
SDLP013	6	4	6	0	0	Very low
	6	4	5	1		
SDLP014	1	1	1	0	0	Very low
	5	5	5	0		
SDLP015	8	4	6	2	25–49	Moderate
	11	6	9	2		
SDLP016	7	4	7	0	25–49	Moderate
	9	6	8	1		

Vernal Pool/Alkali Playa	Toal # of Plant Species	# of Vernal Pool Indicator Species	# of Native Plant Species	# of Non-Native Plant Species	% Physical Damage	Management Priority
SDLP017	7	6	7	0	0	Very low
	11	9	11	0		
SDLP018	4	2	4	0	0	Very low
	5	5	5	0		
SDLP019	6	5	6	0	0	Very low
	9	7	9	0		
SDLP020	4	4	4	0	0	Very low
	9	4	8	1		
SDLP021	5	5	5	0	0	Very low
	4	4	4	0		
SDLP022	8	6	8	0	0	Very low
	8	5	8	0		
SDLP023	7	6	7	0	50–74	High
	11	7	10	1		
SDLP024	8	6	8	0	0	Very low
	7	5	7	0		
SDLP025	4	4	4	0	0	Very low
	7	4	7	0		
SDLP026	9	6	9	0	50–74	High
	8	6	8	0		
SDLP027	6	6	6	0	<25	Low
	4	3	4	0		
SDLP028	12	7	10	2	50–74	High
	12	7	9	3		
SDLP029	11	7	8	3	50–74	High
	13	8	10	3		
SDLP030	4	4	4	0	0	Low
	5	4	5	0		
SDLP031	8	6	8	0	0	Low
	11	8	11	0		
SDLP032	5	4	5	0	0	Low
	7	3	7	0		
SDLP033	7	5	7	0	25–49	Moderate
	11	10	11	0		
SDLP034	6	6	6	0	0	Very low
	8	7	8	0		
SDLP035	10	8	10	0	0	Very low
	9	8	9	0		

Vernal Pool/Alkali Playa	Toal # of Plant Species	# of Vernal Pool Indicator Species	# of Native Plant Species	# of Non-Native Plant Species	% Physical Damage	Management Priority
SDLP036	26	11	23	3	50–74	High
	42	13	30	12		
SDLP037	29	12	23	6	25–49	Moderate
	26	12	20	6		
SDLP038	23	8	18	5	0	Very low
	21	7	14	7		
SDLP039	26	10	17	9	0	Very low
	26	11	21	5		
SDLP040	11	7	10	1	<25	Low
	14	5	8	6		
SDLP041	13	8	11	2	50–74	High
	9	6	8	1		
SDLP042	18	9	13	5	50–74	High
	18	6	9	11		
SDLP043*	0	0	0	0	50-74	High
	7	5	6	1		
SDLP044*	0	0	0	0	25–49	Moderate
	5	5	5	0		
SDLP045*	0	0	0	0	0	Very low
	11	6	11	0		

NOTES:
All pools were surveyed once during the wet season and once during the dry season.
* Pools were not discovered during the wet season, thus were only surveyed during the dry season.
Blue-shaded rows denote results of wet season surveys, while white-shaded rows denote results of dry season surveys.
Management priority was determined based on observed physical damage to the vernal pool:
High: Physical damage observed in 50–74 percent of pool.
Moderate: Physical damage observed in 25–49 percent of pool.
Low: Physical damage observed in less than 25 percent of pool.
Very low: Physical damage not observed.

4.2 Rare Plant Monitoring and Focused Management

Rare plant monitoring was conducted at nine permanent monitoring plots at two preserves in 2024. Rare plant monitoring consisted of one San Diego thornmint monitoring plot at Simon County Preserve, five San Diego thornmint monitoring plots at Sycamore Canyon/Goodan Ranch County Preserve, and three willowy monardella monitoring plots at Sycamore Canyon/Goodan Ranch County Preserve. Rare plant management was conducted at five permanent monitoring plots at four preserves in 2024. Rare plant management consisted of one San Miguel savory monitoring plot at Boulder Oaks County Preserve, one Otay tarplant monitoring plot at Furby-North County Preserve, two Orcutt's bird's-beak monitoring plots at Tijuana River Valley Regional Park, and one variegated dudleya monitoring plot at Lusardi Creek County Preserve.

A summary of the monitoring plots, monitoring results, and management recommendations are provided in **Table 21**. Photographic monitoring and representative photographs of the monitored and managed plots are provided in **Appendix B**, *Rare Plant Monitoring & Management – Permanent Photographic Monitoring & Representative Photographs*. MSP Rare Plant Occurrence Monitoring Forms, which include Rare Plant Habitat and Threats Assessments, are provided in **Appendix C**, *MSP Rare Plant Occurrence Monitoring Forms*.

4.2.1 San Diego Thornmint

Simon County Preserve

The one monitoring plot within the San Diego thornmint population in Simon County Preserve was monitored by ESA in 2024. A total of 2,200 San Diego thornmint plants were estimated within the monitoring plot. The entire population of San Diego thornmint within Simon County Preserve in 2024 is estimated at 2,260 plants. Monitoring plot, center point, photo point, and maximum extent are shown in **Figure 4**. Photo monitoring and representative photographs are provided in **Appendix B**. Special-status plant species detected inside the monitoring plot included Palmer's grappling hook (*Harpagonella palmeri*). Incidental special-status wildlife species observed outside of the monitoring plot included turkey vulture (**Figure 4**). The San Diego thornmint habitat contained invasive non-native grasses and herbs, particularly slender oat (*Avena barbata*), soft brome (*Bromus hordeaceus*), annual fescue (*Festuca myuros*), and tocalote.

Monitoring Plot Number ACIL_4SIPR026_1

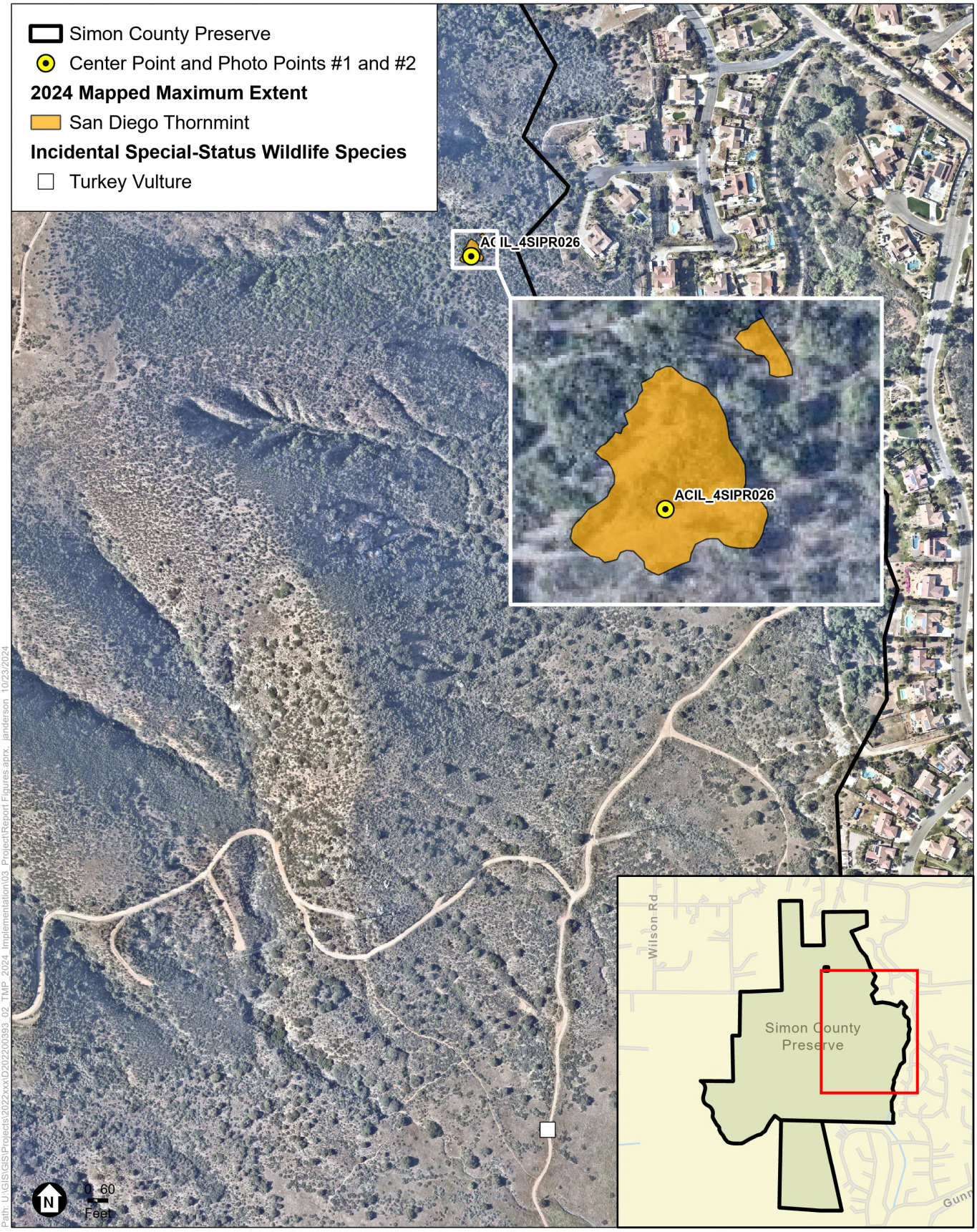
Monitoring plot ACIL_4SIPR026_1 is in the central portion of the San Diego thornmint population. Approximately 2,200 San Diego thornmint plants were estimated within the monitoring plot; 1 to 10 percent were flowering and the remaining were vegetative. Total vegetative cover within the plot was 47.6 percent, with 39.2 percent native plant cover and 8.4 percent non-native plant cover (non-native plant cover includes invasive non-native plant species). The dominant native plant species within the monitoring plot was mission manzanita (*Xylococcous bicolor*). Invasive non-native plant species included slender oat, soft brome, red brome (*Bromus rubens*), tocalote, redstem stork's bill (*Erodium cicutarium*), annual fescue, shortpod mustard (*Hirschfeldia incana*), and smooth cat's ear (*Hypochaeris glabra*). Non-native plant species included, narrowleaf cottonrose (*Logfia gallica*), annual yellow sweetclover (*Melilotus indicus*), and spiny sowthistle (*Sonchus asper*). Special-status plant species detected inside the plot included Palmer's grappling hook. Incidental special-status wildlife species observed outside of the monitoring plot included turkey vulture (**Figure 4**).

TABLE 21
MSP 2024 RARE PLANT MONITORING SUMMARY

Species	County Preserve	Plot #; MSP Occurrence ID[a]	Center Point Coordinates	Monitoring Plot Population		Native Plant Cover		Non-Native Plant Cover[b]		Management Recommendations
				# individuals	% cover	# species	% cover	# species	% cover	
San Diego thornmint *Acanthomintha ilicifolia*	Simon	– ACIL_4SIPR026_1	E 516451 N 3654129	2,200	8.0	17	39.2	11	8.4	Continue MSP rare plant monitoring of population.
San Diego thornmint *Acanthomintha ilicifolia*	Sycamore Canyon/ Goodan Ranch	SYGOACIL01 ACIL_4SYCA027_1	E 501592 N 3644272	1,100	2.0	18	20.0[c]	10	42.6[d]	Continue MSP rare plant monitoring of population. Continue management of invasive non-native grasses and forbs, particularly purple false brome and tocalote. Continue thatch removal.
		SYGOACIL05 ACIL_4SYCA027_5	E 502915 N 3643523	344	1.0	26	45.8	10	14.6	
		SYGOACIL06 ACIL_4SYCA027_6	E 502252 N 3644084	3,300	2.0	15	39.0	10	8.6	
		SYGOACIL08 ACIL_4SYCA027_8	E 502267 N 3644249	1,142	2.0	20	12.0	10	31.6	
		SYGOACIL10 ACIL_4SYCA027_10	E 501927 N 3644370	1,200	4.0	17	50.2	7	2.2	
Willowy monardella *Monardella viminea*	Sycamore Canyon/ Goodan Ranch	SYC201501 MOLIV_4SYCA006_1	E 502412 N 3642218	47	5.0	19	31.2	9	9.4[e]	Continue MSP rare plant monitoring of population. Conduct invasive non-native plant treatment for grasses and herbs, particularly slender oat, purple false brome, brome grasses, annual fescue, and tocalote. Trimming of California buckwheat within SYC201602 can be considered to reduce potential native competition to willowy monardella plants.
		SYC201602 MOLIV_4SYCA002_1	E 501045 N 3642551	2	0.2	9	15.0	12	9.8	
		SYC202103 MOLIV_4SPCA006_2	E 501657 N 3640638	7	1.0	12	23.4	9	9.8	

NOTES:

a. Plot # code was assigned during plot establishment by the establishing plot biologist and is used throughout this report when available. However, some monitoring plots do not have a plot # code associated with them as the establishing plot biologist used only the MSP occurrence ID (assigned by SDMMP) to establish and document the plot. In these instances, the MSP occurrence ID is used throughout this report.
b. Non-native plant cover calculation includes invasive non-native plant species.
c. *Stylocline gnaphaloides, Euphorbia spathulata,* and *Scutellaria tuberosa were detected at 0.2 percent each and were* categorized as native during vegetation cover calculations.
d. *Melilotus indicus* was detected at 0.2 percent and was categorized as non-native during vegetation cover calculations.
e. *Cirsium sp.* was detected at 0.2 percent and was categorized as non-native during vegetation cover calculations.



SOURCE: Nearmap, 4/18/2021; ESA, 2024.

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management

Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 4

San Diego Thornmint Monitoring Results
Simon County Preserve

ESA

Adaptive Management Recommendations

Based on the results of the 2024 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP, no management is recommended for 2025. Focused invasive non-native plant species management did not occur in 2023 and while non-native plant cover increased from 5.4 percent in 2023 to 8.4 percent in 2024, this increase is likely due to the higher than average rainfall in 2024 and encroachment of invasive non-native plants adjacent to the monitoring plot. Monitoring in 2025 should continue to track non-native plant cover within and around the San Diego thornmint population at Simon County Preserve and determine if focused invasive non-native plant species management is required.

Sycamore Canyon/Goodan Ranch County Preserve

Five monitoring plots within the San Diego thornmint population in Sycamore Canyon/Goodan Ranch County Preserve were monitored by ESA in 2024. A total of 7,086 San Diego thornmint plants were estimated within the monitoring plots. The entire population of San Diego thornmint within Sycamore Canyon County Preserve in 2024 is estimated at 36,788 plants. Monitoring plots, center points, photo points, maximum extent, and invasive non-native plant management areas are shown in **Figure 5**. Photo monitoring and representative photographs are provided in **Appendix B**. Special-status plant species detected included small-flowered bindweed (*Convolvulus simulans*) at one of the five monitoring plots, Palmer's grappling hook at all five monitoring plots, and variegated dudleya at one of the five monitoring plots. Incidental special-status wildlife species observed outside of the monitoring plots included San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), and turkey vulture (**Figure 5**). Across all five monitoring plots, San Diego thornmint habitat contained invasive non-native grasses and herbs, particularly purple false brome and tocalote.

Monitoring Plot Number SYGOACIL01

Monitoring plot SYGOACIL01 is in the northwestern portion of the San Diego thornmint population. A total of 1,100 San Diego thornmint plants were estimated within the monitoring plot; 10 to 25 percent were in flower, the remaining were vegetative. Total vegetative cover within the plot was 62.6 percent, with 20.0 percent native plant cover and 42.6 percent non-native plant cover. The dominant native plant species within the monitoring plot was clustered tarweed. Invasive non-native plant species included purple false brome, compact brome (*Bromus madritensis*), tocalote, annual fescue, and smooth cat's ear. Non-native plant species included longbeak stork's bill (*Erodium botrys*), nit grass (*Gastridium phleoides*), narrowleaf cottonrose, scarlet pimpernel (*Lysimachia arvensis*), and spiny sowthistle. Artichoke thistle was detected north of this plot's maximum extent. Special-status plant species detected within the monitoring plot included small-flowered bindweed and Palmer's grappling hook.

Monitoring Plot Number SYGOACIL05

Monitoring plot SYGOACIL05 is in the southeastern portion of the San Diego thornmint population. A total of 344 San Diego thornmint plants were estimated within the monitoring plot; 0 to 10 percent were in flower, greater than 75 percent were vegetative, and 0 to 10 percent were fruiting. Potential sign of stunted growth was detected in 0 to 10 percent of all plants. Total vegetative cover within the plot was 60.4 percent, with 45.8 percent native plant cover and 14.6 percent non-native plant cover. The dominant native plant species within the monitoring plot was mission manzanita. Invasive non-native plant species included purple false brome, soft brome, red brome, tocalote, redstem stork's bill, annual fescue, and

smooth cat's ear. Non-native plant species included pepperweed (*Lepidium* spp.), narrowleaf cottonrose, and spiny sowthistle. Special-status plant species detected within the monitoring plot included variegated dudleya and Palmer's grappling hook.

Monitoring Plot Number SYGOACIL06

Monitoring plot SYGOACIL06 is in the central-northern portion of the San Diego thornmint population. A total of 3,300 San Diego thornmint plants were estimated within the monitoring plot; 10 to 25 percent were flowering, 25 to 50 percent were vegetative, and 0 to 10 percent were fruiting. Potential sign of stunted growth was detected in 0 to 10 percent of all plants. Total vegetative cover within the plot was 47.6 percent, with 39.0 percent native plant cover and 8.6 percent non-native plant cover. The dominant native plant species within the monitoring plot were clustered tarweed and mission manzanita. Invasive non-native plant species included slender oat, purple false brome, soft brome, red brome, tocalote, redstem stork's bill, annual fescue, and smooth cat's ear. Non-native plant species included scarlet pimpernel and spiny sowthistle. Special-status plant species detected within the monitoring plot included Palmer's grappling hook.

Monitoring Plot Number SYGOACIL08

Monitoring plot SYGOACIL08 is in the central–northern portion of the San Diego thornmint population. A total of 1,142 San Diego thornmint plants were estimated within the monitoring plot; 10 to 25 percent were in flower, the remaining were vegetative. Potential sign of stunted growth was detected in 0 to 10 percent of all plants. Total vegetative cover within the plot was 43.6 percent, with 12.0 percent native plant cover and 31.6 percent non-native plant cover. The dominant native plant species within the monitoring plot were laurel sumac (*Malosma laurina*) Torrey's hybrid oak (*Quercus x acutidens*), and lemonade berry (*Rhus integrifolia*). Invasive non-native plant species included slender oat, purple false brome, soft brome, tocalote, and smooth cat's ear. Non-native plant species included field bindweed, petty spurge (*Euphorbia peplus*), scarlet pimpernel, spiny sowthistle, and common sowthistle (*Sonchus oleraceus*). Special-status plant species detected within the monitoring plot Palmer's grappling hook.

Monitoring Plot Number SYGOACIL10

Monitoring plot SYGOACIL10 is in the northwestern portion of the San Diego thornmint population. A total of 1,200 San Diego thornmint plants were estimated within the monitoring plot; 10 to 25 percent were in flower and the remaining were vegetative. Potential sign of stunted growth was detected in 0 to 10 percent of all plants. Total vegetative cover within the plot was 52.4 percent, with 50.2 percent native plant cover and 2.2 percent non-native plant cover. The dominant native plant species within the monitoring plot were mock parsley (*Apiastrum angustifolium*), Torrey's hybrid oak, and black sage (*Salvia mellifera*). Invasive non-native plant species included red brome, tocalote, redstem stork's bill, and smooth cat's ear. Non-native plant species included petty spurge, narrowleaf cottonrose, scarlet pimpernel, and spiny sowthistle. Special-status plant species detected within the monitoring plot included small-flowered bindweed and Palmer's grappling hook.

Sycamore Canyon/Goodan Ranch County Preserve
Center Point
Photo Point
2024 Management Areas*

2024 Mapped Maximum Extent

San Diego Thornmint

Incidental Special-Status Plant Species

Variegated Dudleya

Incidental Invasive Non-Native Plant Species

Artichoke Thistle

Incidental Special-Status Wildlife Species

Turkey Vulture

San Diego Black-tailed Jackrabbit

SYGOACIL10 Detail

SYGOACIL10

SYGOACIL08 Detail

SYGOACIL08

SYGOACIL10

SYGOACIL01

SYGOACIL08

SYGOACIL01 Detail

SYGOACIL01

SYGOACIL06

SYGOACIL06

SYGOACIL06 Detail

SYGOACIL05 Detail

SYGOAC

SYGOACIL05

Sycamore Canyon / Goodan Ranch County Preserve

N

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Feet

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SOURCE: Nearmap, 2023; ESA, 2024.
**NOTE: 2024 Management areas provided by RECON Environmental, Inc.*

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management
Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 5
San Diego Thornmint Monitoring Results
Sycamore Canyon/Goodan Ranch County Preserve

ESA

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Adaptive Management Recommendations

The results of the 2024 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendation:

- **Continue focused invasive non-native plant species removal.** The TMP recommends overall invasive non-native plant cover be kept to less than 20 percent and cover of purple false brome be kept to less than 10 percent cover (ESA and ICF 2022). To ensure the persistence of San Diego thornmint at Sycamore Canyon/Goodan Ranch County Preserve, it is recommended that invasive non-native plant control be continued by a qualified restoration specialist within at least three of the monitoring plots: plots 1, 5, and 8, and the surrounding areas, as needed, to reduce encroachment and competition from invasive non-native plant species and allow expansion opportunities for the San Diego thornmint population. Total invasive non-native plant cover and purple false brome percent cover for all monitoring plots in 2024 are provided in **Table 22** with recommended management priority levels. The invasive non-native plant species removal protocol within the TMP, which includes hand-clipping, hand-pulling, and herbicide use, should be followed. Care should be taken when management or monitoring is performed to not trample San Diego thornmint plants. Artichoke thistle was also detected north of monitoring plot 1; these individuals should be removed and treated with herbicide during focused management to prevent future spread and encroachment into the San Diego thornmint population.

TABLE 22
SAN DIEGO THORNMINT INVASIVE NON-NATIVE PLANT CONTROL MANAGEMENT PRIORITIES: SYCAMORE CANYON/GOODAN RANCH COUNTY PRESERVE

Monitoring Plot	Total Non-Native Plant Cover (%)	Purple False Brome Cover (%)[a]	Priority for Invasive Non-Native Plant Management[b]
1	42.6	40.0	High
5	14.6	12.0	Moderate
6	8.6	3.0	Low
8	31.6	25.0	High
10	2.2	0.0	Low

NOTES:

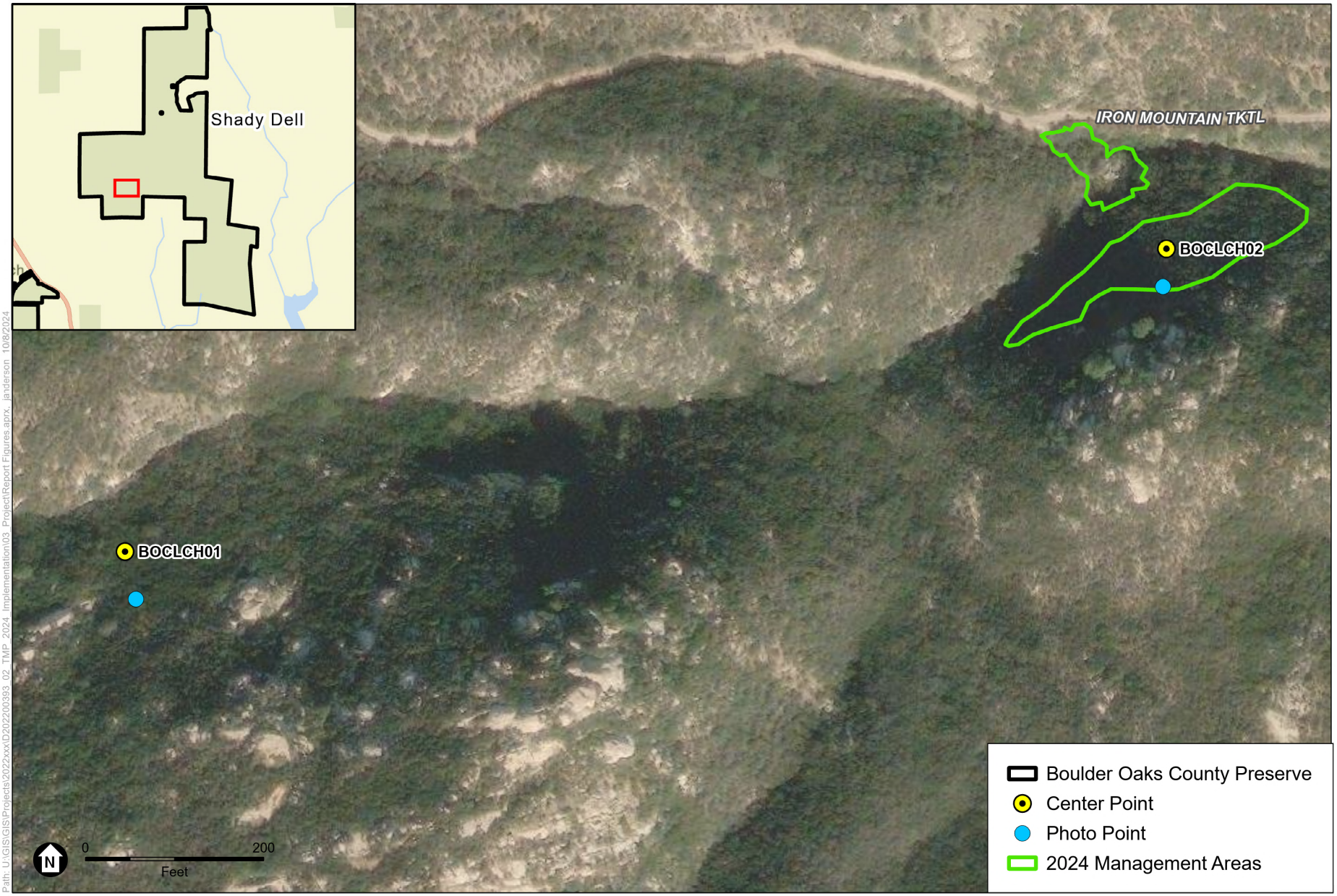
a. Invasive non-native purple false brome percent cover is included in the total non-native plant cover percentage.
b. Management priority was determined based on total non-native plant cover and purple false brome cover.
High = If total non-native plant cover was greater than 20 percent, and/or purple false brome cover was 10 percent or greater.
Moderate = If total non-native plant cover was 10 to 20 percent, and/or purple false brome cover was 5 to 10 percent.
Low = If total non-native plant cover was under 10 percent, and/or purple false brome cover was under 5 percent.

4.2.2 San Miguel Savory

Boulder Oaks County Preserve

Focused Management

Focused management occurred in 2024 in response to the presence of invasive non-native plant species detected during 2023 monitoring efforts. As described in Section 3.4.1, management consisted of carefully removing invasive non-native plants by hand within 12 inches of the San Miguel savory plants in the 0.57-acre management area around monitoring plot BOCLCH02 shown in **Figure 6**. Management targeted removal of high-priority invasive perennial veldtgrass. All cut biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. No herbicide was used. Representative photographs of focused management are provided in **Appendix B**.



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SOURCE: ESRI, 2022; ESA, 2024.

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management

Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 6

San Miguel Savory Management Results
Boulder Oaks County Preserve

ESA

Adaptive Management Recommendations

The results of 2024 focused management, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendation:

Conduct focused invasive non-native plant species removal within and around BOCLCH02. The TMP recommends overall invasive non-native plant cover be kept to less than 20 percent (ESA and ICF 2022). Although monitoring did not occur in 2024, on-site observations demonstrated that high-priority invasive non-native perennial veldtgrass was still detected within monitoring plot BOCLCH02, with increased cover adjacent to the monitoring plot. To limit the expansion of perennial veldtgrass and ensure the persistence of San Miguel savory at Boulder Oaks County Preserve, it is recommended that invasive non-native plant control be continued within monitoring plot BOCLCH02 by a qualified restoration specialist, with a focus on treatment of perennial veldtgrass populations. In addition, treatment should continue to include areas around monitoring plot BOCLCH02, just west and east of the dirt access road, to prevent encroachment of perennial veldtgrass. Herbicide applications should be conducted along the dirt access road when invasive non-native grasses have reached 2 to 3 inches in height during the peak of the growing season, and hand weeding should occur within the monitoring plot.

4.2.3 Otay Tarplant

Furby-North County Preserve

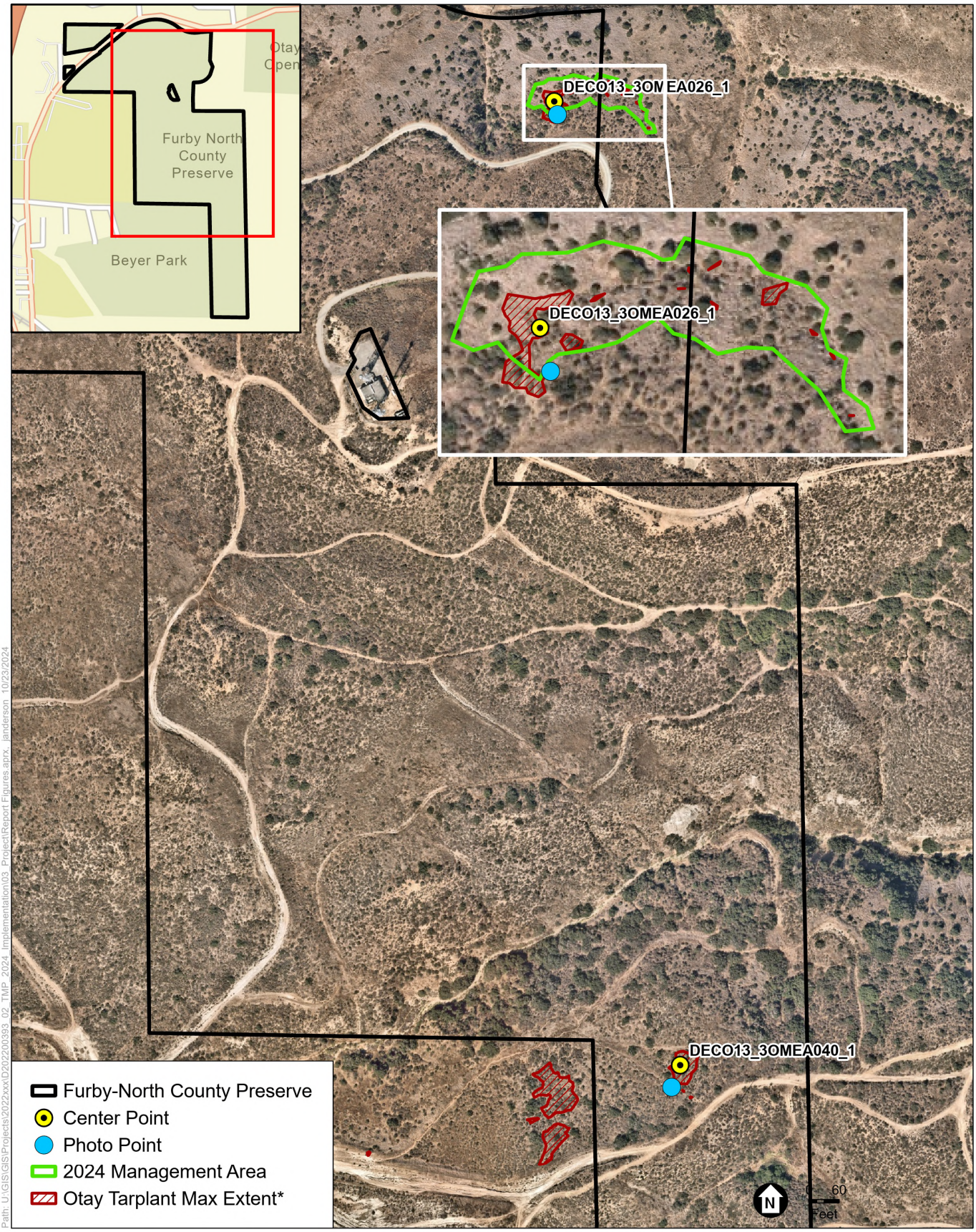
Focused Management

Focused management occurred in 2024 in response to the high thatch and invasive non-native plant cover observed in 2023. As previously described, management within DECO13_3OMEA026_1 plot maximum extent consisted of carefully hand-pulling invasive non-native grasses and herbs directly adjacent to Otay tarplant individuals, followed by line trimming invasive non-native grasses and thatch removal within the monitoring plot maximum extent, surrounding the hand-pulled areas within an 0.30-acre management area, as shown in **Figure 7**. All cut biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. No herbicide was used. Representative photographs of focused management are provided in **Appendix B**.

Adaptive Management Recommendations

The results of the 2024 focused management, TMP management goals and objectives, recommendations from MBC monitoring, and the adaptive management actions outlined in the TMP were used to develop the following recommendation:

- **Conduct focused invasive non-native plant species and thatch removal.** The TMP recommends overall invasive non-native plant cover be kept to less than 20 percent and thatch to be removed (ESA and ICF 2022). MBC monitored both DECO13_3OMEA026_1 and DECO13_3OMEA40_1 monitoring plots in 2024 and recommended invasive non-native plant species management as non-native cover was estimated to be 39.2 percent and 16.4 percent, respectively. To ensure the persistence of Otay tarplant at Furby-North County Preserve, it is recommended that thatch removal and invasive non-native plant control be continued by a qualified restoration specialist. Thatch removal should be implemented with line trimmers and rakes; debris should be hauled out and disposed of off-site at a county landfill.



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SOURCE: Nearmap, 9/21/2020; ESA, 2024; Mulligan Biological Consulting, 2024
**NOTE: IMG monitoring results provided by Mulligan Biological Consulting.*

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management
Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 7
Otay Tarplant Management Results
Furby-North County Preserve

ESA

4.2.4 Orcutt's Bird's-Beak

Tijuana River Valley Regional Park

Focused Management

Focused management occurred in 2024 in response to high thatch cover detected in 2023. As previously described, management consisted of carefully hand-pulling invasive non-native grasses and herbs adjacent to Orcutt's bird's-beak individuals within the COOR7_1TIRI009_1 and COOR7_1SMGU006_1 plot maximum extents, for an approximately 0.46-acre management area, as shown in **Figure 8**. Management consisted of carefully hand-pulling invasive non-native grasses and herbs, primarily red brome and tocalote adjacent to Orcutt's bird's-beak individuals. All biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. No herbicide was used. Special-status species coastal California gnatcatcher (*Polioptila californica californica*) was observed during focused management in 2024 (**Figure 8**). Representative photographs of focused management are provided in **Appendix B**.

Adaptive Management Recommendations

The results of the 2024 management, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendations:

- **Conduct reconnaissance surveys and establish new monitoring plots.** Additional Orcutt's bird's-beak plants were detected during 2021 discovery survey performed by AECOM and CBI through a DPR-issued ROE permit. Reconnaissance surveys should be conducted in these areas to determine population status and if new monitoring plots are warranted. Up to two new monitoring plots could be established for the preserve.
- **Conduct focused invasive non-native plant species removal.** The TMP recommends control of invasive non-native grasses and forbs within suitable habitat (ESA and ICF 2022) and SDMMP recommends controlling invasive non-native plant species to less than 20 percent cover. In 2024, the non-native plant cover at monitoring plot COOR7_1TIRI009_1 was estimated to be approximately 25 percent west of the dirt road that bisects the monitoring plot and 35 percent east of the dirt road. At monitoring plot COOR7_1SMGU006_1 non-native plant cover was estimated to be approximately 15 percent. To ensure the persistence of Orcutt's bird's-beak at the Tijuana River Valley Regional Park, invasive non-native plant control by a qualified restoration specialist is recommended at monitoring plot COOR7_1TIRI009_1 and extend into the maximum extent to reduce invasive non-native grass and forb species.

4.2.5 Variegated Dudleya

Lusardi Creek County Preserve

Focused Management

Focused management occurred in 2024 in response to the high thatch and invasive non-native plant cover observed in 2023. Management consisted of carefully hand-removing invasive non-native plants within the herbivory fencing surrounding the monitoring plot and line trimming within the maximum extent. Focused management for variegated dudleya was conducted within an 0.75-acre management area, shown in **Figure 9**. Invasive non-native plant cover consisted primarily of purple false brome, tufted wallaby grass, artichoke thistle, fountain grass, and other non-native grasses and herbs. All cut biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. No herbicide was

used. Special-status species Crotch's bumble bee (*Bombus crotchii*) was observed during focused management in 2024 (**Figure 9**). Representative photographs of focused management are provided in **Appendix B**.

Adaptive Management Recommendations

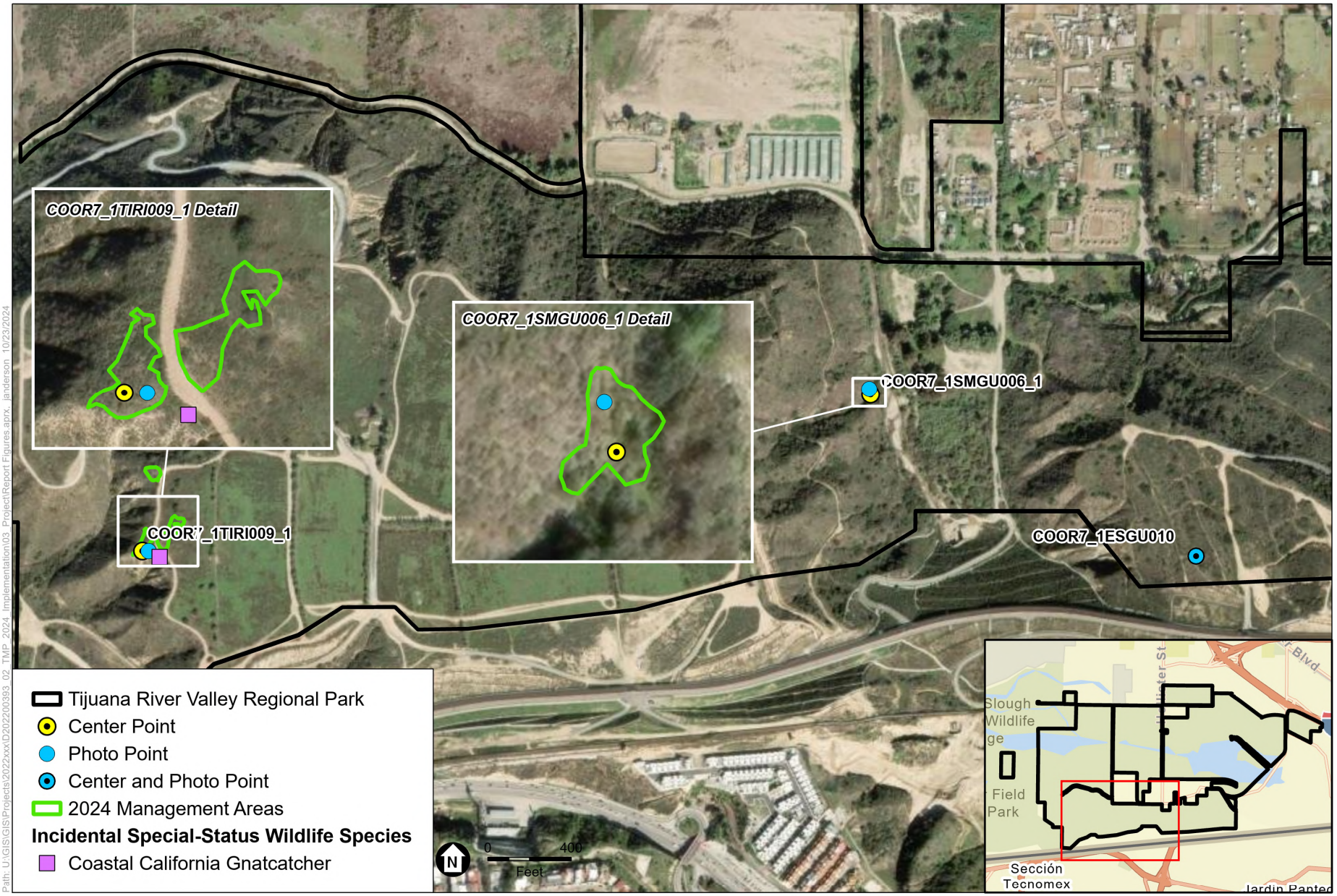
The results of the 2024 focused management, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendation:

- **Conduct focused invasive non-native plant species removal.** The TMP recommends overall invasive non-native plant cover be kept to less than 20 percent (ESA and ICF 2022). Total non-native plant cover within the monitoring plot was estimated to be over 20 percent in 2024. To ensure the persistence of variegated dudleya at Lusardi Creek County Preserve, it is recommended that invasive non-native plant control and thatch removal be continued by a qualified restoration specialist. Invasive non-native plant species within the previously installed herbivory fencing and any invasive non-native plants within 18 inches of variegated dudleya plants should be carefully pulled by hand. Invasive non-native plants within the management area, but outside of the herbivory fencing, can be trimmed with a mechanical weed trimmer to 1–2 inches from the ground. All biomass should be manually collected, bagged, and properly disposed of at an approved off-site facility. Conditions of the previously installed herbivory fencing and fence posts should be checked and repaired as necessary during management. Artichoke thistle and tufted wallaby grass should continue to be targeted for removal and treatment to prevent future spread and encroachment into the variegated dudleya population.

4.2.6 Willowy Monardella

Sycamore Canyon/Goodan Ranch County Preserve

The three monitoring plots within the willowy monardella population in Sycamore Canyon/Goodan Ranch County Preserve were monitored by ESA in 2024. A total of 56 willowy monardella plants were estimated within the monitoring plots. The entire population of willowy monardella within Sycamore Canyon/Goodan Ranch County Preserve is estimated at 444 individual plants. Monitoring plots, center points, photo points, maximum extent, and plant management area are shown in **Figure 10**. Photo monitoring and representative photographs, including pre- and post-management conditions, are provided in **Appendix B**. Special-status plant species ashy spike-moss (*Selaginella cinerascens*) was incidentally observed outside monitoring plot SYC201501 (**Figure 10**). Incidental special-status wildlife species Crotch's bumble bee was observed multiple times outside of the monitoring plots (**Figure 10**). Across all monitoring plots, willowy monardella habitat contained invasive non-native grasses and herbs, particularly slender oat, purple false brome, brome grasses, tocalote, and annual fescue. Invasive non-native crimson fountain grass (*Pennisetum setaceum*) was detected within the willowy monardella population associated with monitoring plot number SYC201501 (**Figure 10**). Additional monitoring data, including number of patches, area covered by patches, volume of patches, and growth stages of the plants in each patch, were collected (**Table 23**).



SOURCE: ESRI, 2022; ESA, 2024.

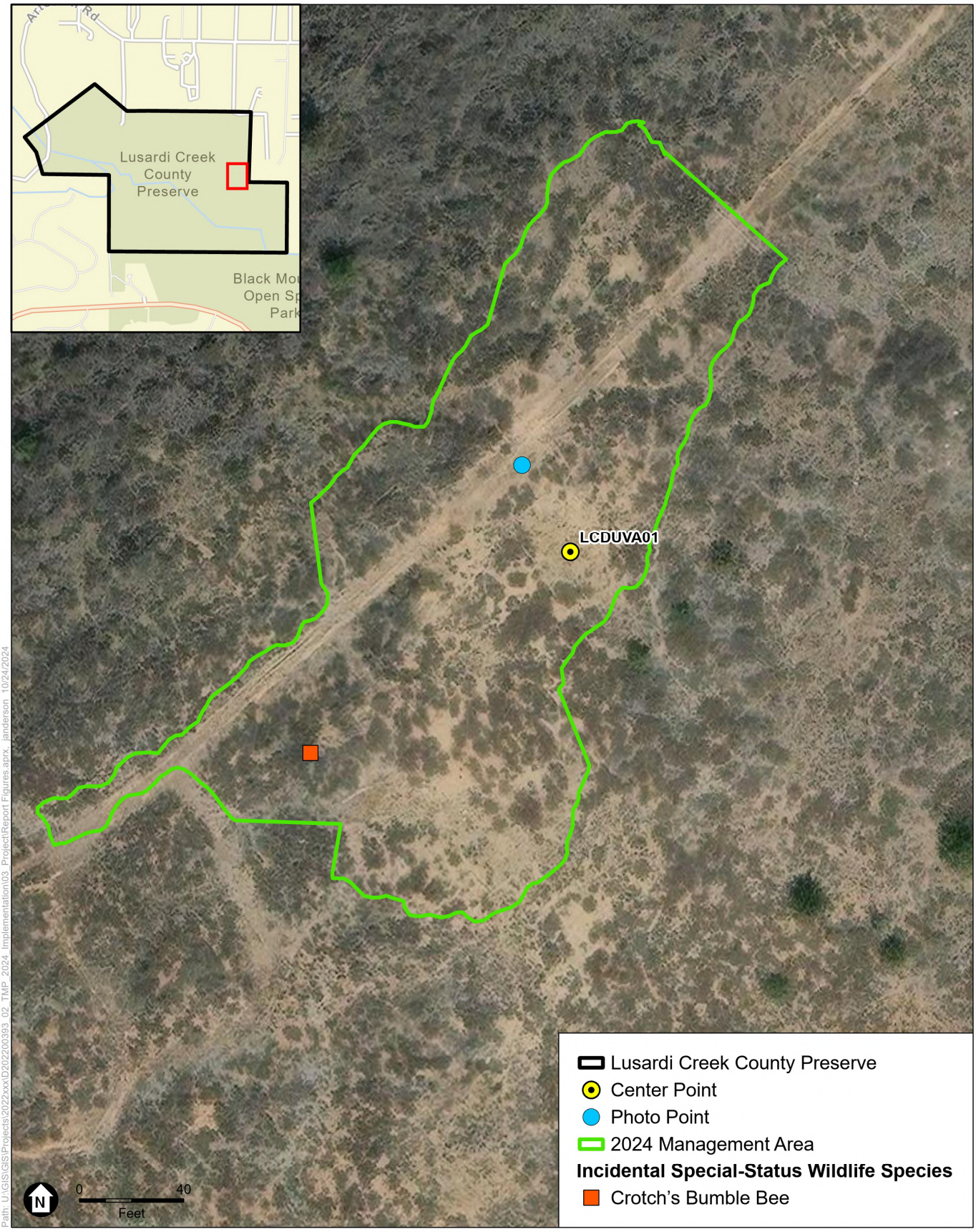
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Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 8

Orcutt's Bird's-Beak Management Results
Tijuana River Valley Regional Park

ESA



SOURCE: ESRI, 2022; ESA, 2024.

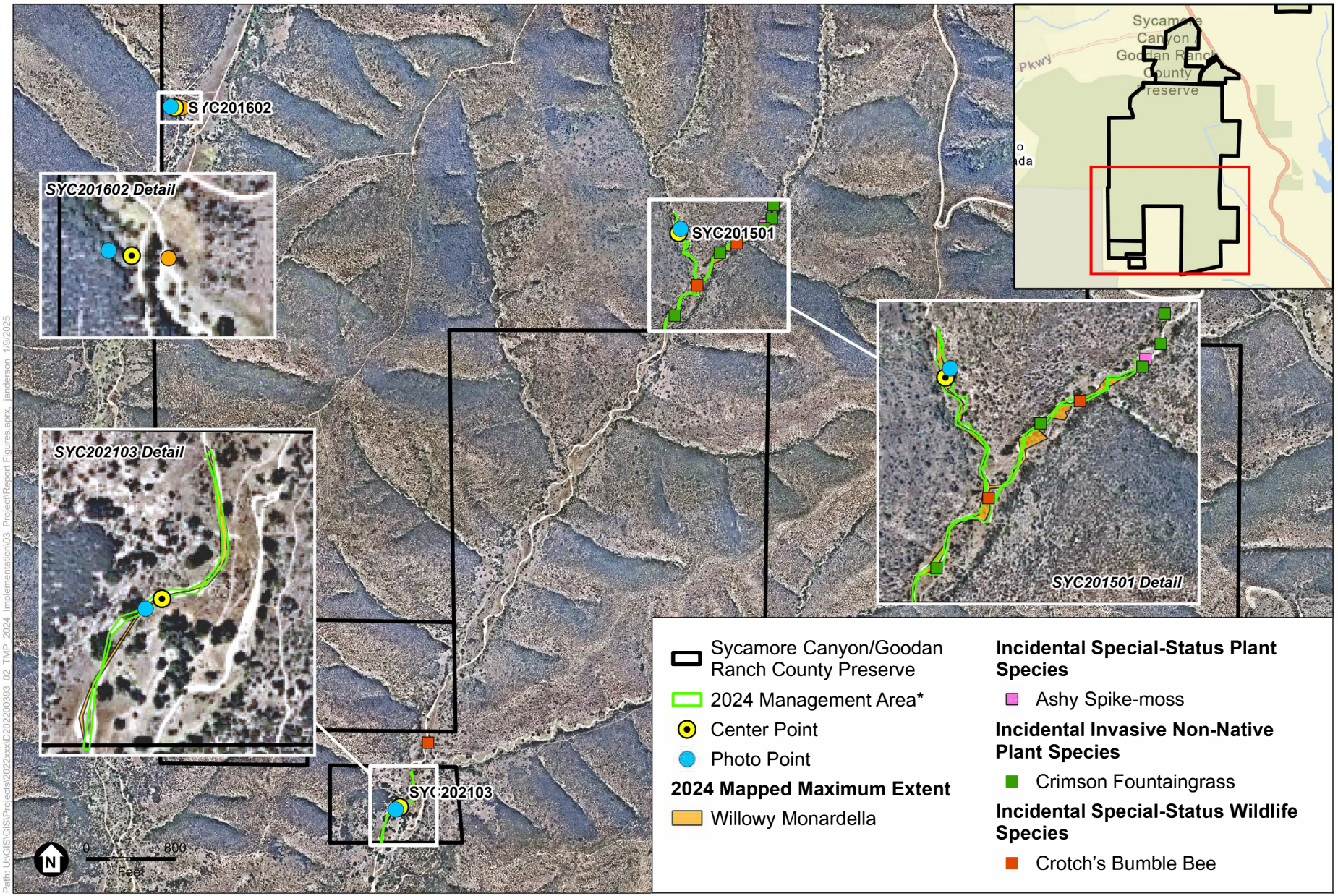
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Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 9

Variegated Dudleya Management Results
Lusardi Creek County Preserve

ESA



SOURCE: Nearmap, 4/18/2021; ESA, 2024.
**NOTE: 2024 Management areas provided by RECON Environmental, Inc.*

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management
Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 10
Willowy Monardella Monitoring and Management Results
Sycamore Canyon/Goodan Ranch County Preserve

ESA

TABLE 23
WILLOWY MONARDELLA ADDITIONAL MONITORING DATA: SYCAMORE CANYON/ GOODAN RANCH COUNTY PRESERVE

Monitoring Plot	Patch Number	Width (m)	Length (m)	Height (m)	Area (width x length)	Volume (width x length x height)	# of Individuals within Patch	Growth Stage
SYC201501	1	1.25	0.9	0.75	1.25	0.84	2	1 Mature 1 Adult
	2	2.1	0.75	0.5	4.2	0.79	3	1 Mature 2 Adults
	3	1.8	1.3	0.6	5.4	1.40	6	2 Mature 4 Adults
	4	0.3	0.5	0.5	1.2	0.08	1	1 Adult
	5	1.4	4.2	0.6	7	3.53	11	1 Mature 10 Adults
	6	1.1	0.9	0.5	6.6	0.50	1	1 Adult
	7	1.5	0.75	0.4	10.5	0.45	3	3 Adults
	8	1.5	1.1	0.7	12	1.16	1	1 Adult
	9	0.75	0.4	0.6	6.75	0.18	1	1 Adult
	10	1.4	1.5	0.6	14	1.26	1	1 Adult
	11	1.1	0.8	0.5	12.1	0.44	2	2 Adults
	12	2.3	2.5	0.75	27.6	4.31	6	1 Mature 5 Adults
	13	1.8	1.75	0.5	23.4	1.58	3	3 Adults
	14	1.7	0.6	0.5	23.8	0.51	1	1 Adult
	15	1.2	1.6	0.5	18	0.96	5	1 Mature 4 Adults
SYC201602	1	1.2	1.1	0.7	1.32	0.92	2	1 Mature 1 Adult
SYC202103	1	1.7	1.5	0.4	2.55	1.02	1	1 Adult
	2	1.3	1	0.6	1.3	0.78	4	2 Mature 2 Adults
	3	1.6	1.3	0.7	2.08	1.46	1	1 Adult
	4	1.5	1.5	0.7	2.25	1.58	1	1 Adult

Monitoring Plot Number SYC201501

Monitoring plot SYC201501 is in the central portion of the willowy monardella population. A total of 47 willowy monardella plants were estimated within the monitoring plot; 25 to 50 percent were flowering and the remaining were vegetative. Total vegetative cover within the plot was 40.6 percent, with 31.2 percent native plant cover and 9.4 percent non-native plant cover. The dominant native plant species within the monitoring plot was California buckwheat (*Eriogonum fasciculatum*). Invasive non-native plant species included slender oat, purple false brome, ripgut brome (*Bromus diandrus*), soft brome, compact brome, tocalote, and annual fescue; non-native plant species included prickly lettuce (*Lactuca*

serriola) and thistle (*Cirsium* sp.). Crimson fountain grass was detected at multiple locations within the maximum extent associated with this monitoring plot. Incidental special-status wildlife species observed outside the monitoring plot included Crotch's bumble bee (**Figure 10**).

Monitoring Plot Number SYC201602

Monitoring plot SYC201602 is in the western portion of the willowy monardella population. A total of two willowy monardella plants were estimated within the monitoring plot, greater than 75 percent were flowering and the remaining were vegetative. Total vegetative cover within the plot was 24.8 percent, with 15 percent native plant cover and 9.8 percent non-native plant cover. The dominant native plant species within the monitoring plot was California buckwheat. Invasive non-native plant species included slender oat, purple false brome, ripgut brome, soft brome, compact brome, tocalote, annual fescue, shortpod mustard, and smooth cat's ear; non-native plant species included Italian thistle (*Carduus pycnocephalus*). No special-status species were detected within or outside the monitoring plot.

Monitoring Plot Number SYC202103

Monitoring plot SYC202103 is in the southern portion of the willowy monardella population. A total of seven willowy monardella plants were estimated within the monitoring plot, greater than 75 percent were flowering and the remaining were vegetative. Total vegetative cover within the plot was 33.2 percent, with 23.4 percent native plant cover and 9.8 percent non-native plant cover. The dominant native plant species within the monitoring plot was California buckwheat. Invasive non-native plant species included slender oat, purple false brome, ripgut brome, soft brome, compact brome, tocalote, annual fescue, shortpod mustard, and smooth cat's ear. Incidental special-status wildlife species observed outside the monitoring plot included Crotch's bumble bee (**Figure 10**).

Adaptive Management Recommendations

The results of the 2024 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendation:

- **Thin native vegetation to reduce competition.** For monitoring plot number SYC201602, thin California buckwheat to reduce native competition to the willowy monardella plants.
- **Conduct focused invasive non-native plant species removal.** The TMP recommends overall invasive non-native plant cover be kept to less than 10 percent (ESA and ICF 2022) around willowy monardella plants. Total non-native plant cover was 9.4 percent within monitoring plot number SYC201501, 9.8 percent within monitoring plot number SYC201602, and 9.8 percent within monitoring plot number SYC202103. Total non-native cover was just under the 10 percent management threshold for all monitoring plots; therefore, to ensure the persistence of willowy monardella at Sycamore Canyon/Goodan Ranch County Preserve, it is recommended that invasive non-native plant control and thatch removal be continued by a qualified restoration specialist, as follows:
  - High-intensive management areas, 2- to 3-foot buffers around willowy monardella plants, should be delineated with submeter GPS units and flagged. Within each high-intensive management area, invasive non-native plants should be carefully pulled by hand. Areas outside the high-intensive management area can be treated with an appropriate aquatic-safe herbicide.

- Invasive non-native crimson fountain grass was observed at multiple locations within the willowy monardella population associated with monitoring plot number SYC201501. It should be treated and removed prior to seeding to prevent further spread into the willowy monardella population.
- All biomass should be manually collected, bagged, and properly disposed of at an approved off-site facility.

4.2.7 Regional MSP Rare Plant Monitoring & Focused Management

Through ROE permits issued by DPR, AECOM and MBC (contracted by SANDAG) conducted MSP rare plant monitoring for Parish's brittlescale at one permanent monitoring plot at Ramona Grasslands County Preserve; for Otay tarplant at two permanent monitoring plot at Furby-North County Preserve; and for Baja California oatgrass (*Sphenopholis interrupta* ssp. *californica*) at Furby-North County Preserve in 2024. Results of MSP rare plant monitoring by AECOM and MBC are provided in **Table 24**. MSP rare plant monitoring results for Parish's brittlescale at Ramona Grasslands County Preserve are depicted on **Figure 2** and Otay tarplant at Furby-North County Preserve are depicted on **Figure 7**.

TABLE 24
REGIONAL MSP 2024 RARE PLANT MONITORING RESULTS

Species	County Preserve	Plot #; MSP Occurrence ID	Monitoring Plot Population[a]	Maximum Extent Population Estimate[b]	Native Plant % Cover	Non-Native Plant % Cover	Threats
Parish's brittlescale	Ramona Grasslands	ATPA2_5RAGR001	12	129	14.6	84.8	Non-native grasses and forbs and grazing.
Otay tarplant	Furby North	DECO13_3OMEA026	295	340	33.4	39.2	Non-native grasses and forbs.
		DECO13_3OMEA40	102	430	44.4	16.4	Non-native grasses and forbs.
Baja California oatgrass[c]	Furby North	SPINCA_4SYCA008	206	516	26.4	12.6	Non-native grasses and thatch.

NOTES:
a. Monitoring plot population is the number of plants identified in the monitoring plot.
b. Maximum extent population is the total number of plants identified in the preserve, including the plants identified in the monitoring plot.
c. Baja California oatgrass is not a species covered under the TMP.

DPR also contracted RECON Environmental Inc. (RECON) to conduct focused management at 14 vernal pools (e45, e48, e52, e53, e56, e58, e59, e61, e62, e77, ev3, p7, p13, p14) and 4 alkali playas (raap4, raap6, raap14, raap17) within Ramona Grasslands County Preserve, and San Diego thornmint, variegated dudleya, and willowy monardella within Sycamore Canyon/Goodan Ranch County Preserve in 2024. Focused management within Sycamore Canyon/Goodan Ranch County Preserve was funded through the Natural Community Conservation Planning 30x30 Grant Program. Results of focused management by RECON are provided in **Table 25**.

TABLE 25
REGIONAL MANAGEMENT SUMMARY

Species	2024 Management Date	County Preserve	Acres Managed
Vernal pools/Alkali playas	August 19–24; October 14–17	Ramona Grasslands	2.23
San Diego thornmint	August 13–16, 19–23, 26–29; September 3–6	Sycamore Canyon/Goodan Ranch	0.98
Variegated dudleya	August 13–16, 19–23, 26–29; September 3–6	Sycamore Canyon/Goodan Ranch	0.04
Willowy monardella	September 19	Sycamore Canyon/Goodan Ranch	0.89

4.3 Harbison's Dun Skipper

4.3.1 Adult Flight Surveys

HDS adult flight surveys were conducted at two locations (survey locations 1 and 2) around large patches of San Diego sedge within suitable habitat along Hell Creek and its southern tributary in Hellhole Canyon County Preserve (**Figure 11**). During the first adult flight survey on May 28, 2024, two HDS were observed at survey location 1, where one individual was observed foraging on shortpod mustard. No HDS were observed at survey location 2 during the first survey. During the second adult flight survey on June 17, 2024, one pair of HDS was observed at survey location 1, where they were seen chasing each other, basking in the sun, and nectaring on California wild rose (*Rosa californica*). One male HDS was observed at survey location 2 where it was seen nectaring on hemp dogbane (*Apocynum cannabinum*). All butterfly species and potential nectar sources observed during the two adult flight surveys are presented in **Table 26**. Monitoring locations and HDS detections are depicted in **Figure 11**. Representative photographs from adult surveys, including HDS observations, are provided in **Appendix D**, *Harbison's Dun Skipper Representative Photographs and Field Forms*.

Habitat assessments were conducted at both adult flight survey locations concurrently with the first adult flight survey. The woodland habitat at survey location 1 consisted of 15 percent oaks, 30 percent sycamores (*Platanus* sp.), 40 percent willows (*Salix* spp.), and 15 percent cottonwoods (*Populus* sp.). The woodland habitat at survey location 2 consisted of 30 percent oaks, 15 percent sycamores, and 55 percent willows. The condition of San Diego sedge host plant populations at both survey locations ranged from all green (healthy) to mostly brown (dead). At survey location 1, most San Diego sedge plants were seen to be green with brown tips, suggesting only minor drought or water stress. At survey location 2, most San Diego sedge plants were all green. Climate change was the main threat detected at the survey locations during the threats assessment as other plant species within the habitat, such as willows and oaks, showed signs of heat stress. Additional threats detected at the survey locations included tree pests such as Kuroshio shot hole borer (*Euwallacea kuroshio*). This tree pest has led to oak mortality at the survey locations. While San Diego sedge is not restricted to oak woodlands, this species is commonly found inhabiting partially shaded riparian oak woodlands (Brown 1991). The full habitat assessment data matrix can be found in **Appendix D**.

TABLE 26
OBSERVED BUTTERFLY AND POTENTIAL NECTAR SOURCES: HELLHOLE CANYON COUNTY PRESERVE

Common Name	Scientific Name
Butterflies Observed	
California sister	*Adelpha californica*
Orange sulphur	*Colias eurytheme*
Funeral duskywing	*Erynnis funeralis*
Propertius duskywing	*Erynnis propertius*
Bernardino blue	*Euphilotes bernardino*
Harbison's dun skipper	*Euphyes vestris harbisoni*
Gray buckeye	*Junonia grisea*
Marine blue	*Leptotes marina*
Western tiger swallowtail	*Papilio rutulus*
Cabbage white	*Pieris rapae*
Mylitta crescent	*Phyciodes mylitta*
Umber skipper	*Poanes melane*
Checkered white	*Pontia protodice*
Hedgerow hairstreak	*Satyrium saepium*
California dogface	*Zerene eurydice*
Potential Nectar Sources Observed	
Foothill deervetch	*Acmispon brachycarpus*
Hemp dogbane[a]	*Apocynum cannabinum*[a]
Italian thistle*	*Carduus pycnocephalus*[*]
Tocalote	*Centaurea melitensis*
Canyon clarkia	*Clarkia epilobioides*
Wine-cup clarkia	*Clarkia purpurea*
Golden yarrow	*Eriophyllum confertiflorum*
Seep monkeyflower	*Erythranthe guttata*
Shortpod mustard[a*]	*Hirschfeldia incana*[a*]
Chaparral beardtongue	*Keckiella antirrhinoides*
Southern honeysuckle	*Lonicera subspicata*
Chaparral mallow	*Malacothamnus fasciculatus*
Indian sweetclover*	*Melilotus indica**
Watercress	*Nasturtium officinale*
Caterpillar phacelia	*Phacelia cicutaria*
Sierra milkwort	*Rhinotropis cornuta*
California rose[a]	*Rosa californica*
Black sage	*Salvia mellifera*
Blue elderberry	*Sambucus cerulea*
Nuttall's snapdragon	*Sairocarpus nuttallianus*
California bee plant	*Scrophularia californica*
Ajuga hedge nettle	*Stachys ajugoides*

NOTES:

a Harbison's dun skipper was observed nectaring on this species during 2024 adult flight surveys.
* Non-native plant species.

4.3.2 Focused Management

Focused management for HDS occurred in 2024 in response to 2023 adaptive management recommendations. As described in Section 3.5.2, ESA biologist Mark Dodero was on-site on May 16, 2024, to check for germination of native nectar plant species in areas seeded in 2023 (Survey Location 2; management areas 1–6) and identify and map additional management areas (**Figure 11**). Seeded species observed to have successfully germinated on May 16, 2024, included chaparral bushmallow (*Malacothamnus fasciculatus*) and rod wirelettuce (*Stephanomeria virgata*) seedlings in management area 1 (**Figure 11**). Two additional management areas (management areas 7 and 8) were delineated during the May 16, 2024, visit, for a total of 0.84 acres (**Figure 11**). Site preparation occurred on November 4–6, 2024, and consisted of removing non-native grasses and forbs via hand tools and line trimmers across management areas 1–8, a total of 1.2 acres. All cut biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. No herbicide was used.

Once the seeding areas were prepared, rough hedgenettle (*Stachys rigida*) seed was broadcast by hand in select areas near Hell Creek (i.e., management areas 3–5, see **Figure 11**) that support higher soil moisture levels appropriate for hedgenettle growth on November 6, 2024. The remaining seed, consisting of chaparral bushmallow, rod wirelettuce, island false morning glory (*Calystegia macrostegia intermedia*), narrowleaf milkweed (*Asclepias fascicularis*), and cobweb thistle (*Cirsium occidentale*), was broadcast by hand in the new management areas (management areas 7 and 8) on November 27, 2024. A list of seed species and quantities is provided in **Table 27**. The seed was lightly raked into the top 0.25 inch of soil. Once seed was applied, the seed was covered with light natural organic mulch (less than 80 percent cover) sourced from the surrounding habitat, which primarily consisted of coast live oak and California sycamore (*Platanus racemosa*) leaves. Representative photos of the Habitat West crew working, and before-and-after management photos are included in **Appendix D**.

TABLE 27
HARBISON'S DUN SKIPPER HABITAT ENHANCEMENT SEED

Scientific Name	Common Name	Source	Purity% / Germination%	Bulk Quantity (pounds)
Asclepias fascicularis	Narrowleaf milkweed	Camp Pendelton	88.22 / 71	1.76
Calystegia macrostegia intermedia	Island false morning glory	Lake Elsinore	99 / 68	0.70
Circium occidentale	Cobweb thistle	Colusa	99.08 / 63	0.44
Malacothamnus fasciculatus	Chaparral bushmallow	Camp Pendelton	34.54 / 72	0.88
Stachys rigida	Hedgenettle	Vista	No test	0.88
Stephanomeria virgata	Rod wirelettuce	Escondido	9.49 / 23	0.88
			Total	**5.54**

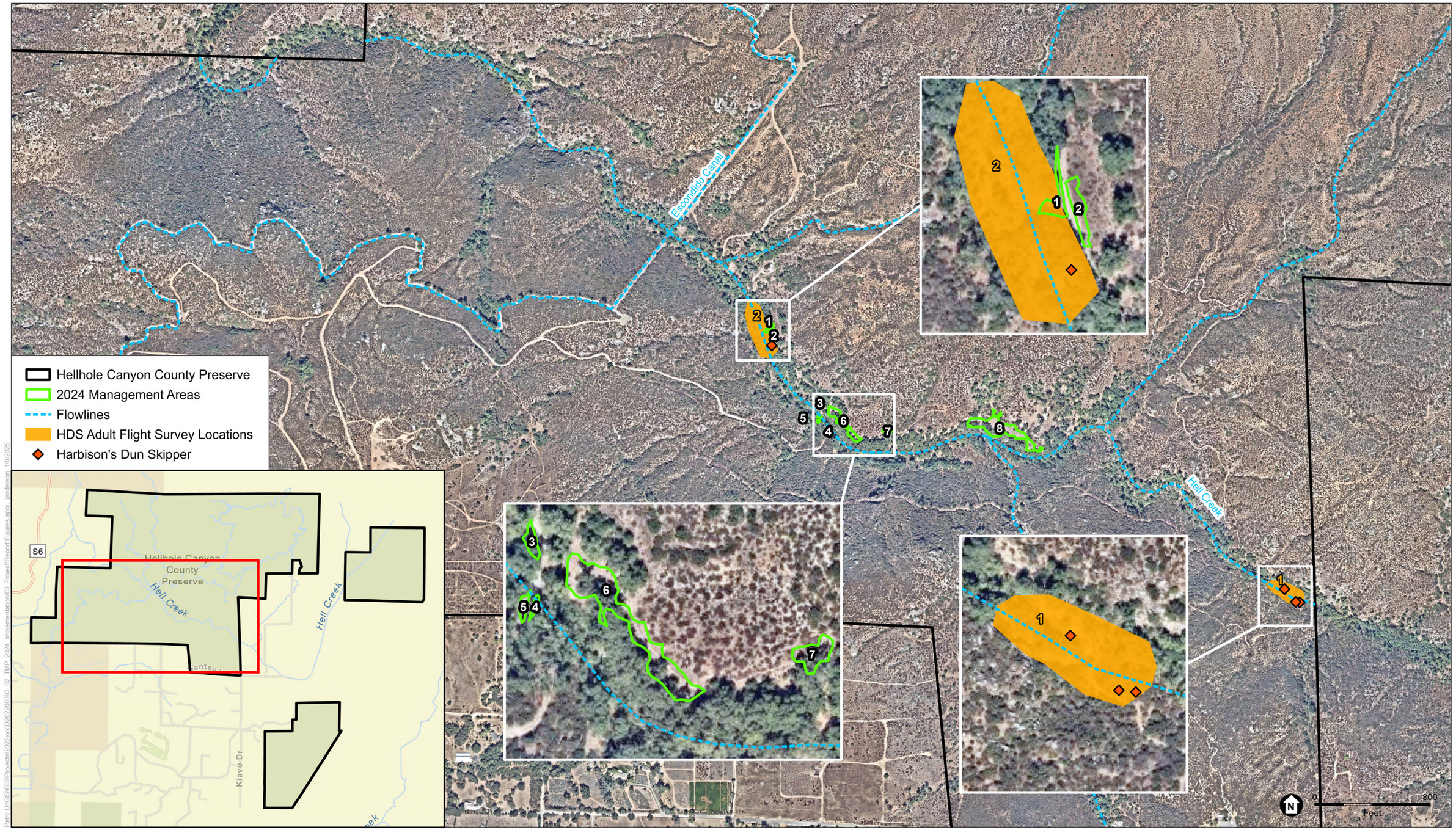
4.3.3 Adaptive Management Recommendations

The results of the 2024 surveys, TMP management goals and objectives, and adaptive management actions outlined in the TMP were used to develop the following recommendations:

- **Monitor/maintain nectar source seeded areas along Hell Creek.** Areas that were seeded with potential native nectar sources in 2024 along Hell Creek adjacent to and downstream of Survey Location 2 (**Figure 11**), should be monitored to assess seeding success, document site conditions and potential nectaring HDS individuals, and implement as needed follow-up management activities, such as hand weeding and additional seeding. Seeding considerations include the following:
  - Potential native nectar sources can include hedgenettle, cobweb thistle, narrowleaf milkweed, and chaparral bushmallow (Marschalek and Deutschman 2015, 2016).
  - Document the seed source (collection location) and confirm it is ecologically appropriate for Hellhole Canyon County Preserve. Seed may be rejected based on its source.
  - Document seed purity and germination percentages to determine pure live seed quantity.
  - Apply seed in the fall, prior to first rains (e.g., November). Seed applied at other times of the year are more likely to be lost to predation and/or not receive sufficient rainfall to support germination and survival of seedlings.
  - Prepare seeding areas in willow riparian and oak riparian woodland areas by thinning thatch and reducing weed presence/competition, as needed. The optimal seeding condition is to provide seed direct contact with the soil and space to grow while retaining some organic debris (e.g., organic mulch) and existing native plant growth in place.
  - Apply seed by hand. Select method (e.g., selective hand application or use of "belly spreader") based on the quantity of seed and size of seeding areas. Lightly rake seed into the top 0.25 inch of soil and provide "light" natural organic mulch cover (less than 80 percent cover to provide light and space for germinates).
  - Apply species in ecologically appropriate areas (e.g., closer or further from the creek) within willow riparian and oak riparian woodland areas. Depending on the species and habitat conditions, species may be seeded together or in separate locations.
  - Document date of application, species and quantities of seed applied, and locations via GPS coordinates.
  - Conduct follow-up maintenance and monitoring to assess seeding success, site conditions, and implement as needed follow-up management activities.
- **Coordinate with other entities prior to conducting management or monitoring.** Future monitoring for HDS should be coordinated with Dr. Daniel Marschalek with the University of Central Missouri to implement consistent monitoring protocols, limit duplication of efforts, provide cumulative adaptive management recommendations, and provide transparency on any implemented management activities.

4.4 Arroyo Toad

ESA monitored the status of breeding arroyo toads and assessed habitat conditions and potential threats to inform management needs within 18 reaches of the Santa Maria Creek in the Ramona Grasslands County Preserve. Arroyo toad occurrence data is depicted in **Figure 12** and presented in **Table 28**. Representative photographs of the survey area are provided in **Appendix E**, *Arroyo Toad Representative Photographs*.



SOURCE: Nearmap, 2020; ESA, 2024.

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management

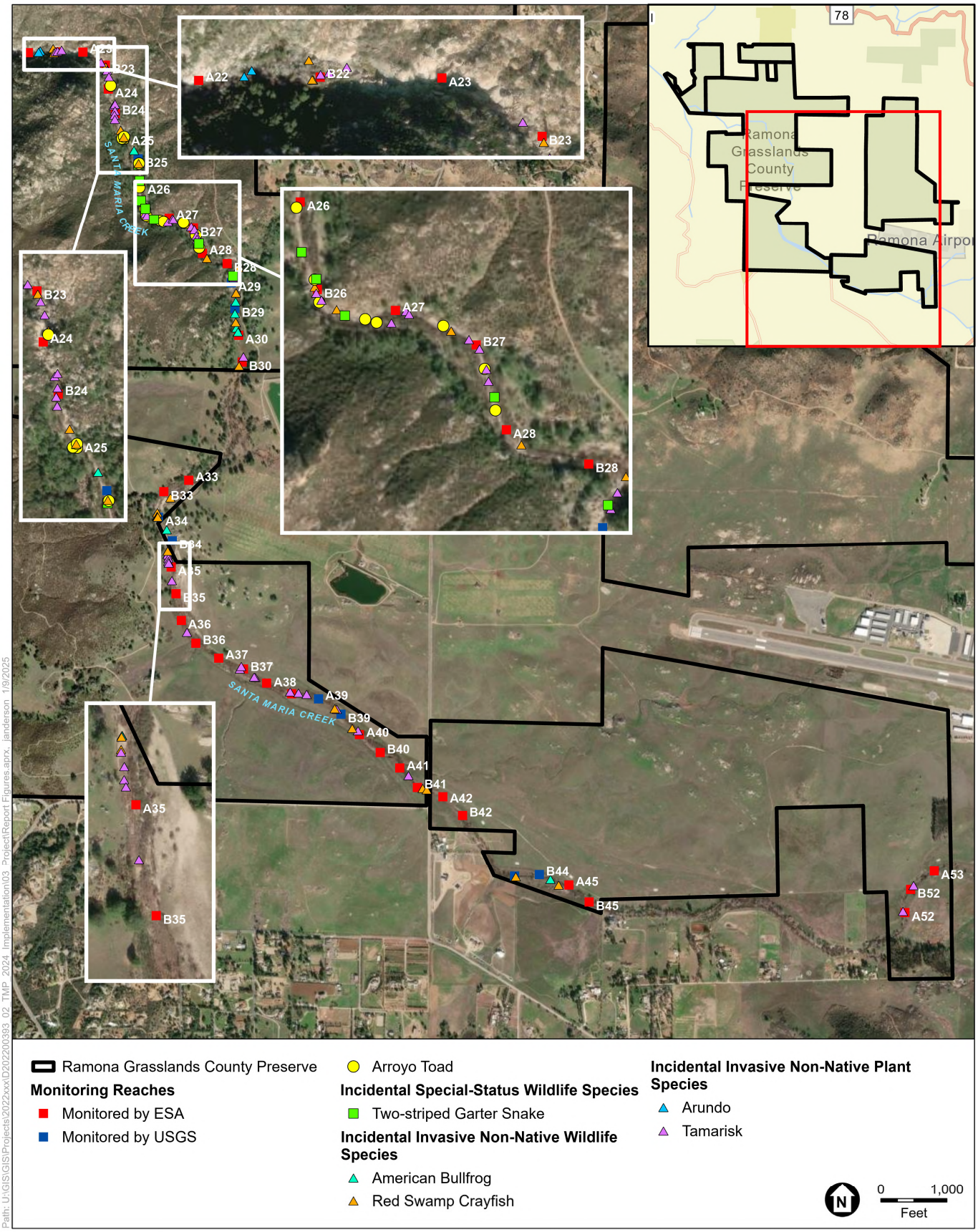
Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 11

Harbison's Dun Skipper Monitoring and Management Results
Hellhole Canyon County Preserve

ESA

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SOURCE: ESRI; ESA, 2024; USGS, 2024

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management

Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 12

Arroyo Toad Monitoring Results
Ramona Grasslands County Preserve

ESA

Of the 18 reaches surveyed, a total of five reach segments supported larval toad development. These include reach segments 23B, 26A, 26B, 27A, and 27B, concentrated within areas with suitable habitat in the northwestern, downstream extent of the survey area. Larvae were all observed prior to metamorphosis and were categorized into two size classes: 10–20 millimeters (mm) and 15–25 mm. Representative photographs of larvae observed within reach segments are provided for reference in **Appendix E**. Special-status wildlife species, two-striped garter snake, was incidentally observed during the surveys along reach segments 26A, 26B, 27B, 28B, and immediately upstream of reach 26A (**Figure 12**).

Vegetation along the Santa Maria Creek generally consists of riparian forest/riparian woodland, characterized by a prominence of mule fat (*Baccharis salicifolia*), red willow (*Salix laevigata*), and common threesquare (*Schoenoplectus pungens*). Invasive non-native plant species arundo (*Arundo donax*) and tamarisk were observed throughout the Santa Maria Creek (**Figure 12**). The overstory within the southeastern upstream extent of the survey area (including within segments 38B, 40A, and 40B) is particularly dense and supports 75–100 percent cover along the channel in many areas. Much of the northwestern downstream extent of the creek is less dense (including within segments 22A, 22B, 23A, 23B, 24B, 25A, 25B, 26A, 27A, and 27B) and exhibits more of an open channel. Flowing water was observed within the creek and pool depth ranged between shallow, medium, and deep. A greater number of plunge pools were documented in the northwestern downstream portion of the survey area (including within segments 22A, 22B, 23A, 23B, and 24A). Aquatic algae was observed throughout the survey area and was particularly dense along segment 23B. In general, substrate observed along the bed and banks of the creek generally varied between a dominance of sand with gravel, clay, cobble, pebble, and silt periodically mixed in. It should be noted that between reaches 22 and 24, the channel is formed by large boulders that are lined with sand.

The southeastern upstream extent of the survey area is generally characterized by moderate- to low-quality habitat for arroyo toad. This can be attributed to the presence of a dense overstory (i.e., greater than 50 percent overstory in segments 28A, 33A, 37A, 37B, 38B, 40A, 40B, and 41A) which provides sub-optimal conditions for male toads to call and attempt to initiate breeding. Generally, the northwestern downstream extent of the survey area (i.e., reaches 22–24, 26–27) provides a much higher concentration of suitable habitat for arroyo toad. Portions of the creek that were observed to have suitable habitat for arroyo toad were characterized by reduced overstory density, substrates with relatively high concentrations of sand, and areas of shallow pooling, all of which are habitat characteristics necessary for supporting breeding behavior and successful larval development.

TABLE 28
ARROYO TOAD HABITAT ASSESSMENT RESULTS: RAMONA GRASSLANDS COUNTY PRESERVE

Survey Reach	Segment	2024 Survey Date	Start/End Time	Start/End Air Temperature (°F)	Start/End Cloud Cover	Channel Width/ Flood Prone Width (m)	Entrancement Ratio	Plunge Pools (#)	Overhead Canopy (%)	Dominant Plant Species*	Portion Wet (%)	Pooling (%)			Aquatic Vegetation			Substrate (%)									# of Arroyo Toad larvae	
												Sh	Med	De	Su/ Flo	Em	Al	Cla	S	Sa	G	P	Co	B	LL	FL	10-20 mm	15-25 mm
22	A	05/13	10:35/ --	73/75	PCV / PCV	12.5/13.5	1.08	1-5	11-25	*Salix gooddingii, Populus spp., Platanus spp.*	76-100	1-10	51-75	11-25	1-10	1-10	51-75	--	--	26-50	--	--	--	26-50	1-10	--		
22	B	05/13	12:37/ --	75/75	PCV / PCV	3.85/7.3	1.90	1-5	1-10	*Salix gooddingii, Populus spp., Typha spp.*	76-100	11-25	26-50	11-25	0	1-10	51-75	--	--	26-50	--	--	--	26-50	1-10	--		
23	A	05/13	13:20/ 13:20	75/77	PCV / PCV	7.5/10.2	1.36	1-5	1-10	*Platanus spp.*	76-100	11-25	51-75	1-10	1-10	1-10	51-75	--	--	26-50	--	--	--	26-50	1-10	--		
23	B	05/13	14:07/ 15:10	75/75	PCV / PCV	5.6/13.5	2.41	1-5	1-10	*Salix laevigata, Populus spp., Platanus spp.*	76-100	11-25	26-50	11-25	1-10	1-10	76-100	--	--	26-50	--	--	--	26-50	1-10	--		1
24	A	05/14	09:31/ 10:20	71/63	Cl / --	7.6/12.5	1.64	1-5	26-50	*Baccharis salicifolia, Salix laevigata, Schoenoplectus pungens*	76-100	1-10	51-75	1-10	0	11-25	51-75	0	1-10	76-100	1-10	1-10	1-10	0	1-10	0		
24	B	05/14	10:21/ 10:55	72/72	Cl / Cl	9.7/11.5	1.19	0	11-25	*Salix laevigata, Baccharis salicifolia, Schoenoplectus pungens*	76-100	26-50	1-10	1-10	1-10	11-25	51-75	0	1-10	76-100	1-10	1-10	1-10	1-10	1-10	0		
26	A	05/14	11:10/ 11:58	72/79	Cl / Cl	11.3/14	1.24	0	1-10	*Salix laevigata, Baccharis salicifolia, Schoenoplectus pungens*	76-100	76-100	1-10	1-10	0	11-25	51-75	0	1-10	76-100	1-10	1-10	1-10	1-10	1-10	0		8
26	B	05/14	11:59/ 13:22	70/66	Cl / Cl	7.3/10.8	1.5	0	26-50	*Salix laevigata, Baccharis salicifolia, Schoenoplectus pungens*	76-100	11-25	26-50	1-10	1-10	11-25	26-50	0	1-10	76-100	1-10	1-10	1-10	1-10	1-10	1-10	10	3
27	A	05/14	13:25/ 13:52	72/73	Cl / Cl	8.1/9.2	1.14	0	11-25	*Salix laevigata, Baccharis salicifolia, Schoenoplectus pungens*	76-100	26-50	51-75	0	0	11-25	26-50	0	1-10	76-100	1-10	1-10	1-10	1-10	1-10	0		5
27	B	05/14	13:53/ 14:38	73/75	Cl / Cl	8/14.3	1.78	0	11-25	*Baccharis salicifolia, Salix laevigata, Schoenoplectus pungens*	76-100	11-25	26-50	11-25	0	26-50	26-75	0	1-10	76-100	1-10	1-10	1-10	1-10	1-10	0	125	60
28	A	05/14	14:39/ 15:00	75/72	Cl / Cl	22.8/29	1.27	0	51-75	*Baccharis salicifolia, Salix laevigata, Schoenoplectus pungens*	76-100	51-75	11-25	1-10	0	26-50	26-50	0	1-10	76-100	1-10	1-10	1-10	1-10	1-10	0		
28	B	05/14	15:02/ 15:26	75/75	Cl / Cl	14.7/19.7	1.34	0	26-50	*Salix laevigata, Baccharis salicifolia, Schoenoplectus pungens*	76-100	1-10	26-50	26-50	0	26-50	26-50	0	1-10	76-100	1-10	1-10	1-10	1-10	1-10	0		

Survey Reach	Segment	2024 Survey Date	Start/End Time	Start/End Air Temperature (°F)	Start/End Cloud Cover	Channel Width/ Flood Prone Width (m)	Entrancement Ratio	Plunge Pools (#)	Overhead Canopy (%)	Dominant Plant Species*	Portion Wet (%)	Pooling (%)			Aquatic Vegetation			Substrate (%)									# of Arroyo Toad larvae	
												Sh	Med	De	Su/ Flo	Em	Al	Cla	S	Sa	G	P	Co	B	LL	FL	10-20 mm	15-25 mm
30	A	05/15	08:30/ 09:17	56/59	Clo / Clo	15.1/46.8	3.22	0	1-10	*Schoenoplectus pungens, Baccharis salicifolia, Salix laevigata*	76-100	1-10	26-50	26-50	0	76-100	11-25	--	1-10	76-100	1-10	--	--	--	--	--		
33	A	05/15	10:04/ 10:41	60/62	Clo / Clo	24.9/30	0.83	0	76-100	*Baccharis salicifolia, Salix laevigata, Schoenoplectus pungens*	76-100	26-50	51-75	1-10	0	11-25	26-50	--	1-10	76-100	1-10	--	--	--	1-10	--		
33	B	05/15	10:42/ 11:06	62/64	Clo / Clo	11/26.6	2.42	0	26-50	*Schoenoplectus pungens, Salix laevigata, Baccharis salicifolia*	76-100	1-10	26-50	26-50	0	26-50	11-25	--	1-10	76-100	1-10	--	--	--	1-10	--		
35	A	05/15	11:18/ 12:11	64/67	z	6/22	3.67	0	11-25	*Schoenoplectus pungens, Baccharis salicifolia, Salix laevigata*	76-100	11-25	26-50	26-50	0	51-75	11-25	--	1-10	76-100	--	--	--	--	1-10	--		
35	B	05/15	12:16/ 12:34	67/67	PCV / PCV	40/45	1.23	0	26-50	*Schoenoplectus pungens, Salix laevigata, Baccharis salicifolia*	76-100	11-25	26-50	26-50	0	26-50	11-25	--	1-10	76-100	1-10	--	--	--	1-10	--		
36	A	05/15	12:35/ 12:53	67/68	PCV / Cl	40/56	1.4	0	26-50	*Schoenoplectus pungens, Salix laevigata, Baccharis salicifolia*	76-100	11-25	26-50	26-50	0	26-50	11-25	--	1-10	76-100	1-10	--	--	--	1-10	1-10		
36	B	05/15	12:54/ 13:15	68/69	Cl / PCV	21/27	1.29	0	--	*Salix laevigata, Baccharis salicifolia, Typha latifolia*	76-100	1-10	26-50	26-50	0	1-10	1-10	--	1-10	76-100	1-10	--	--	--	1-10	--		
37	A	05/15	13:16/ 13:45	69/70	PCV / PCV	26/33	1.27	0	51-75	*Baccharis salicifolia, Schoenoplectus pungens, Salix gooddingii*	76-100	11-25	26-50	11-25	0	26-50	11-25	--	1-10	51-75	--	--	--	--	1-10	--		
37	B	05/15	13:47/ 14:05	70/70	PCV / PCV	32/36	1.13	0	51-75	*Salix laevigata, Baccharis salicifolia, Schoenoplectus pungens*	76-100	11-25	26-50	26-50	0	26-50	11-25	--	11-25	26-50	--	--	--	--	1-10	--		
38	A	05/15	14:09/ 14:27	70/70	PCV / Clo	29/32	1.10	0	26-50	*Schoenoplectus pungens, Salix laevigata, Baccharis salicifolia*	76-100	76-100	1-10	1-10	0	26-50	11-25	--	26-50	26-50	--	--	--	--	1-10	--		
38	B	05/15	14:28/ 14:49	70/69	Clo / Clo	30/36	0.1	0	76-100	*Salix laevigata, Baccharis salicifolia, Schoenoplectus pungens*	76-100	76-100	1-10	0	1-10	51-75	11-25	--	26-50	26-50	--	--	--	--	1-10	--		

Survey Reach	Segment	2024 Survey Date	Start/End Time	Start/End Air Temperature (°F)	Start/End Cloud Cover	Channel Width/ Flood Prone Width (m)	Entrancement Ratio	Plunge Pools (#)	Overhead Canopy (%)	Dominant Plant Species*	Portion Wet (%)	Pooling (%)			Aquatic Vegetation			Substrate (%)								# of Arroyo Toad larvae	
												Sh	Med	De	Su/ Flo	Em	Al	Cla	S	Sa	G	P	Co	B	LL	FL	10-20 mm	15-25 mm
40	A	05/16	08:29/ 09:08	61/61	Clo / Clo	31/43	1.39	0	76-100	*Salix laevigata, Baccharis salicifolia, Schoenoplectus pungens*	76-100	76-100	1-10	0	1-10	51-75	11-25	1-10	1-10	51-75	1-10	1-10	1-10	0	11-25	1-10		
40	B	05/16	09:12/ 09:34	66/66	Clo / Clo	25.3/32	1.26	0	76-100	*Salix laevigata, Baccharis salicifolia, Schoenoplectus pungens*	76-100	26-50	11-25	11-25	1-10	26-50	11-25	26-50	26-50	1-10	1-10	1-10	0	0	11-25	1-10		
41	A	05/16	09:36/ --	70/70	Clo / Clo	18/26.2	1.45	0	51-75	*Salix laevigata, Bolboschoenus spp., Baccharis salicifolia*	76-100	51-75	26-50	1-10	1-10	26-50	11-25	11-25	51-75	1-10	1-10	0	0	0	11-25	1-10		
41	B	05/16	10:05/ 10:31	66/66	Clo / Clo	19/28	1.47	1-5	11-25	*Schoenoplectus acutus, Bolboschoenus spp., Anemopsis californica*	76-100	11-25	51-75	1-10	1-10	26-75	26-50	11-25	51-75	11-25	1-10	0	0	0	1-10	1-10		
42	A	05/16	10:36/ --	68/68	Clo / Clo	14.5/22.3	1.54	0	1–10	*Schoenoplectus acutus, Bolboschoenus spp., Salix laevigata*	76-100	51-75	26-50	1-10	1-10	51-75	26-50	1-10	1-10	76-100	1-10	1-10	0	0	1-10	1-10		
45	A	05/16	11:18/ 11:43	72/72	Clo / Clo	20/31	1.55	0	11–25	*Salix laevigata, Baccharis salicifolia, Schoenoplectus acutus*	76-100	51-75	11-25	1-10	0	26-50	11-25	0	1-10	76-100	1-10	1-10	0	0	11-25	0		
52	A	05/16	12:43/ 13:08	75/75	PCV / PCV	5.2/13.2	2.54	0	11–25	*Salix laevigata, Baccharis salicifolia, Persicaria hydropiper*	76-100	76-100	1-10	1-10	0	51-75	26-50	0	1-10	76-100	1-10	1-10	0	0	11-25	0		
52	B	05/16	13:08/ --	73/73	PCV / Cl	5.2/7.7	1.48	0	26–50	*Salix laevigata, Baccharis salicifolia, Persicaria hydropiper*	76-100	51-75	11-25	0	0	51-75	11-25	0	1-10	76-100	1-10	1-10	0	0	11-25	0		
53	A	05/16	13:26/ 13:40	75/75	Cl / Cl	7.6/11.3	1.49	0	26–50	*Baccharis salicifolia, Salix laevigata, Anemopsis californica*	76-100	76-100	1-10	0	1-10	26-50	11-25	0	1-10	76-100	1-10	1-10	0	0	1-10	0		
TOTAL																											**135**	**77**

NOTES:

F = Fahrenheit; Cl = Clear, Clo = Cloudy, PCV = Partly Cloudy/Variable; m = meters; Sh = Shallow, Med = Medium Depth, De = Deep; Su/Flo = Submerged/Floating, Em = Emergent, Al = Algae; Cla = Clay, S = Silt, Sa = Sand, G = Gravel, P = Pebbles, Co = Cobble, B = Boulder, LL = Leaf Litter, FL = Fallen Logs; -- = no value; mm = millimeters

* Dominant plant species within the canopy overstory.

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4.4.1 Habitat and Threats Assessment

Threats and habitat were assessed during surveys to determine: (1) if identified threats are having a direct negative effect on the species or habitat, and (2) if adaptive management actions need to be implemented. The following threats were assessed.

- **Invasive non-native plant species.** Invasive non-native plant species arundo and tamarisk were observed in 2024 (**Figure 12**). Arundo, a Cal-IPC "High" rated species, was mapped in low densities within reach segment A22. Tamarisk, a Cal-IPC "High" rated species due to its severe impacts on physical processes and plant and wildlife communities (Cal-IPC 2023), occurs in moderate densities throughout the Santa Maria Creek.
- **Exotic predators.** Exotic predators have been noted in abundance during previous monitoring efforts and were observed in 2024. Eleven red swamp crayfish observations were recorded within segments 22A, 23B, 24B, 27A, 28B, 33B, 34B (incidental observations within USGS's survey segment), and 41B; and seventeen American bullfrogs were observed within segments 23B, 24A, 26A, 26B, 27B, 30A, 33A, 34B (incidental observation within USGS's survey segment), 35A, 35B, 36B, 41B, and 52A (**Figure 12**). This is an increase in the amount of exotic predators compared to 2023 surveys, during which only one crayfish and one bullfrog were observed.

4.4.2 Adaptive Management Recommendations

The Santa Maria Creek supports adequate instream habitat for breeding arroyo toad; however, threats such as invasive non-native plant species and exotic predators may diminish the success of the species over time without effective management. The following adaptive management actions are recommended.

- **Treat invasive non-native plant species.** The invasive non-native plant species documented along the Santa Maria Creek have the potential to reduce available breeding habitat along the channel over time and should be treated to prevent their spread throughout the survey area. All treatment activities should take place outside of the arroyo toad breeding season. Vegetation should be treated as follows:
  - *Tamarisk and arundo*: Hand removal is recommended as the primary control method for these two species due to their proximity to arroyo toad breeding habitat. Care should be taken to remove underground rhizomes while limiting disturbance to the channel and breeding margins. Larger individuals (e.g., greater than 10 feet in height) may be removed using cut-and-daub practices with an aquatic-safe herbicide on a case-by-case basis, as necessary.
- **Control exotic predators.** Many exotic predators were observed during the 2024 surveys and should be controlled to some extent. This should be accomplished through targeted removal of breeding-size adult bullfrogs to avoid and minimize impacts to aquatic species and habitats. Red-swamp crayfish should be removed concurrently.

4.5 Northern Harrier

The 2024 northern harrier nesting surveys focused on areas with low scrub and/or vegetation cover and areas with previously documented northern harrier use in Tijuana River Valley Regional Park (Park). These areas include the coastal sage scrub vegetation community in the western portion of the Park north of Monument Road and west of Hollister Street, the southern willow scrub vegetation community in the northwestern portion of the Park near the intersection of Saturn Boulevard and Sunset Avenue, the Diegan coastal sage scrub vegetation community northeast of the Hollister Street and Monument Road intersection, the mule fat/southern willow scrub habitat east and south of the Tijuana River Valley Sports

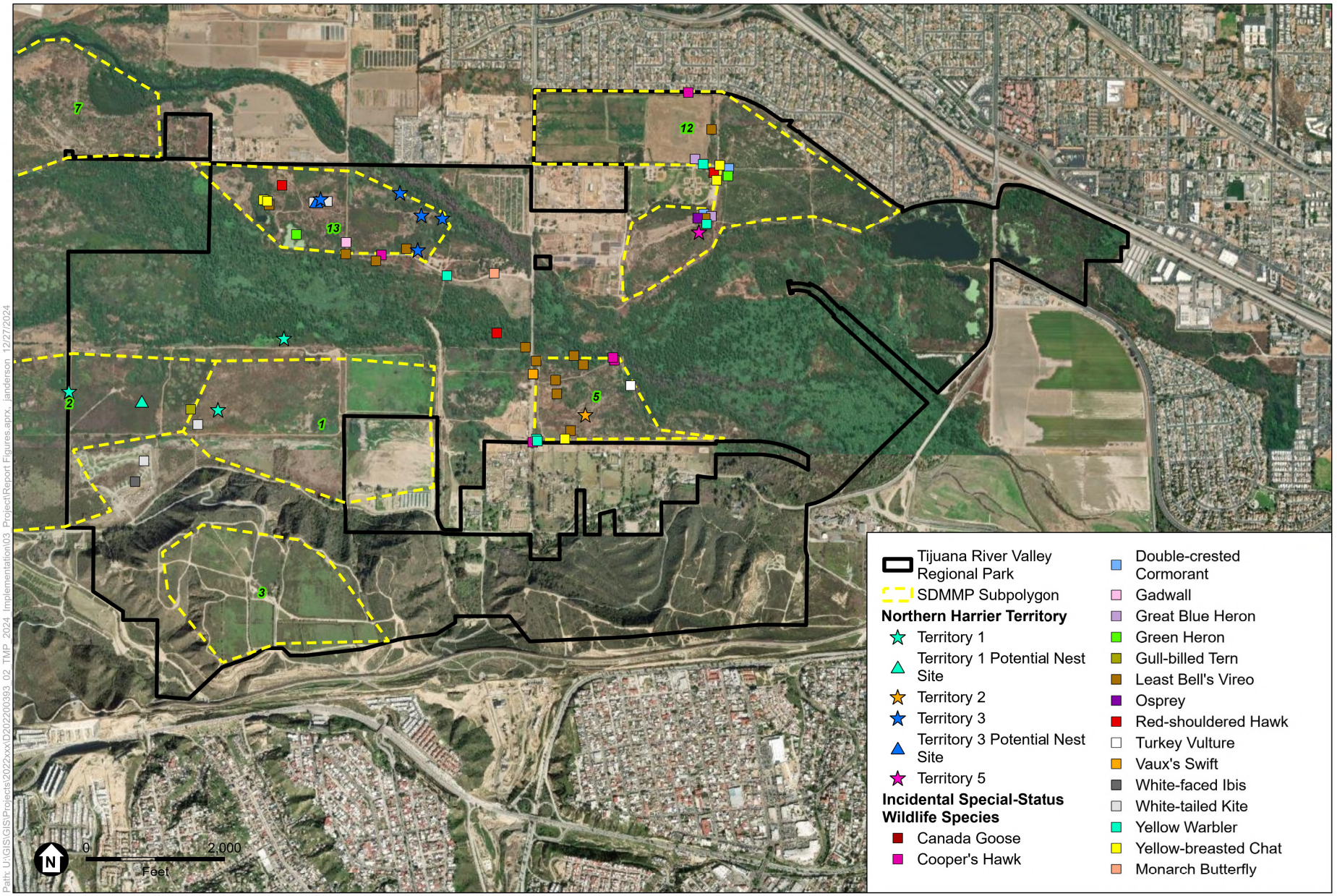
Complex, and the abandoned agricultural habitat north of the Tijuana River Valley Sports Complex. Representative photographs of the survey areas and completed field forms are provided in **Appendix F**, *Northern Harrier Representative Photographs and Field Forms*.

Northern harriers were observed during all surveys with the highest observations during the month of June. While up to five northern harrier territories could be present within the Park based on previous monitoring results, only two (Territory 1 [SDMMP Subpolygon 02] and Territory 3 [SDMMP Subpolygon 13]) were occupied with unknown nest success and two (Territory 2 [SDMMP Subpolygon 01] and Territory 5 [SDMMP Subpolygon 12]) were potentially occupied but not confirmed in 2024 (**Figure 13** and **Table 29**). Territorial behavior exhibited by northern harriers during surveys included prey carrying, prey transfers, females seen visiting probable nest sites, and fledglings heard begging from a probable nest location. Nesting behavior was confirmed within Territory 1 and Territory 3. The presumed nest site in Territory 1 was located approximately 90 meters west of a public trail and 200 meters north of the campground. A pair was seen making prey transfers during the May survey and making multiple prey deliveries to the presumed nest site during the June survey. No juveniles were detected on the July survey; therefore, the outcome of the nest is unknown. The nest in Territory 3 was confirmed to have chicks (unknown number) during the July survey, but it is unknown if they fledged because the July survey was the last survey of the monitoring period. The presumed nest site in Territory 3 was approximately 40 meters north from a public trail. Adults were seen carrying food at least once in Territories 2 and 5, but no potential nest locations were located. It is unknown if the observations were on territory or in transit to other territories. No northern harriers were observed in Territory 4 (SDMMP Subpolygon 02) in 2024. Overall, there were a similar number of northern harrier observations in 2024 compared to 2022 and 2023, but fewer compared to 2021.

Incidentally observed special-status wildlife species included monarch butterfly (*Danaus plexippus*), Canada goose (*Branta canadensis*), gadwall (*Mareca strepera*), gull-billed tern (*Gelochelidon nilotica*), double-crested cormorant (*Nannopterum auritum*), great blue heron (*Ardea herodias*), green heron (*Butorides virescens*), white-faced ibis (*Plegadis chihi*), turkey vulture, osprey (*Pandion haliaetus*), Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), white-tailed kite (*Elanus leucurus*), Vaux's swift (*Chaetura vauxi*), least Bell's vireo, yellow-breasted chat (*Icteria virens*), and yellow warbler (*Setophaga petechia*) (**Figure 13**).

4.5.1 Habitat and Threats Assessment

Habitat and threats were assessed during surveys to determine: (1) if identified threats are having a direct negative effect on the species or habitat, and (2) if adaptive management actions need to be implemented.



SOURCE: ESRI, 2022; ESA, 2024.

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Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 13

Northern Harrier Monitoring Results
Tijuana River Valley Regional Park

ESA

TABLE 29
NORTHERN HARRIER NESTING SURVEY RESULTS

Territory (SDMMP Subpolygon)	Type	Nest Success	Location	Observation Summary
1 (Subpolygon 02)	Pair	Unknown (Chicks)	North of the TRVRP campground. Likely same location of historic nesting.	No April visit due to trail closures and road flooding. The pair was seen in May near historic nest site. During the June visit, the pair was seen taking food to a presumed nest. In July, only an adult male was seen.
2* (Subpolygon 01)	Possible Pair	Unknown	Northeast of the Hollister St/Monument Rd Intersect	In June, a possible pair were seen behaving in a way suggestive of nesting but was not seen on previous or subsequent visits.
3 (Subpolygon 13)	Pair	Unknown (Chicks)	West of the TRVRP Bird & Butterfly Garden	A possible pair was observed during the April visit and was confirmed on subsequent visits. The pair was seen visiting a possible nest in May, then seen carrying food to the same location in June and July. Chicks could be heard during the July visit.
4* (Subpolygon 02)	None	Not Occupied	Northwest of the newly constructed TRVRP campground. Likely not nesting on the preserve.	No observations in this potential territory were documented in 2024.
5* (Subpolygon 12)	Possible Pair	Unknown	East and South of Tijuana River Valley Sports Complex	An adult male was seen carrying food south of the Sports Complex, but flew out of view before its destination could be determined.

NOTES:
TRVRP = Tijuana River Valley Regional Park
* Potential territories due to territorial distance from other territories and evidence during previous years' surveys.

Suitable foraging habitat for northern harrier includes low-height and sparsely covered vegetation such as non-native grassland, coastal sage scrub, mule fat scrub, abandoned agriculture, and disturbed habitat. Suitable nesting habitat for northern harrier include dense scrub habitats that limit predation or predator harassment such as mule fat scrub, coastal sage scrub, marsh, and cattail habitat. Overall, the Park provides high-quality suitable foraging and nesting habitat for northern harriers as demonstrated by observed prey transfers and the Park being occupied by up to four northern harrier territories in 2024. The following threat was observed:

- **Nest disturbance.** Northern harrier is a ground-nesting species. The nest sites in Territory 1 and Territory 3 are close to authorized public trails. Territory 1 was occupied in 2024. The campground and adjacent trails were closed due to flooding in 2024 which likely reduced the potential for disturbance. An increase in public use (e.g., campground users) and U.S. Border Patrol activities could affect future nesting success if trail usage encroaches on nesting harriers.

4.5.2 Adaptive Management Recommendations

The Park supports suitable foraging and nesting habitat; however, threats such as nest disturbance and predator harassment, without effective management, may diminish the success of the species over time. The results of 2024 nest monitoring, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendations:

- **Monitor trail use in vicinity of the Territory 1 and 3 nest sites.** Install trail counters on trails in the vicinity of the nests in Territories 1 and 3 to track trail use. This will provide baseline trail use information and inform if seasonal trail closure is warranted to prevent nest disturbance. Trail closure is not recommended at this time.
- **Clean up trash.** Regularly maintain trash cans and remove trash around the campground to prevent attraction of nest predators. Trash removal is especially important during the nesting season due to the campground proximity to Territory 1.

4.6 Least Bell's Vireo

ESA monitored the status of breeding least Bell's vireo populations and habitat conditions and threats to inform management needs in the Santa Margarita County Preserve. The submitted 45-day report is provided in **Appendix G**, *Least Bell's Vireo USFWS 45-Day Report and Brown-Headed Cowbird Trapping Annual Report*. Due to the still present threat of nest parasitism by brown-headed cowbirds on least Bell's vireo in the preserve, the cowbird trapping program established in 2022 was continued in 2024. The brown-headed cowbird trapping annual report is also provided in **Appendix G**.

4.6.1 Least Bell's Vireo Nest Monitoring

All vegetation communities within the Santa Margarita channel are potentially suitable nesting habitat for least Bell's vireo and were surveyed. Potentially suitable nesting habitat for least Bell's vireo occurs only in southern riparian woodland, southern riparian forest, southern willow scrub, southern cottonwood-willow riparian forest, southern riparian scrub, southern sycamore-alder riparian woodland, and southern coast live oak riparian forest.

Survey results are summarized in **Table 30** below and depicted on **Figure 14**. Fifteen least Bell's vireo territories were detected during the nest monitoring study, an increase from thirteen territories detected in 2023. Of the fifteen pairs, fourteen pairs successfully produced at least one fledgling, and one pair produced six fledglings over the course of two broods. Two pairs attempted and successfully completed second broods. Four nests failed and were presumed to have been predated based on the physical appearance of the nest when found empty. Another nest was found to have failed (found empty) but there was no physical evidence suggesting predation, and so the cause of failure is unknown. No parasitized least Bell's vireo nests were found; however, one parasitized song sparrow (*Melospiza melodia*) nest was incidentally detected within an active least Bell's vireo territory on April 24, 2024. Adult song sparrows were observed feeding a brown-headed cowbird chick and an additional brown-headed cowbird egg was seen in the nest. During a following survey, this parasitized nest was found empty. No juvenile brown-headed cowbirds were observed during nest monitoring. A total of five adult brown-headed cowbirds were observed during nest monitoring (**Table 31**).

TABLE 30
LEAST BELL'S VIREO NEST MONITORING RESULTS: SANTA MARGARITA COUNTY PRESERVE

Category	Count
Number of territorial males	15
Number of known pairs	15
Number of known breeding (nesting) pairs	15
Number of known successful breeding pairs	14
Number of known fledged young observed	35
Number of nests that were discovered	13
Number of successful nests	8
Number of nests that failed as a result of reproductive failure	0
Number of nests that failed as a result of predation	4
Number of nests that failed as a result of parasitism	0
Number of nests that failed for unknown reasons	1

TABLE 31
BROWN-HEADED COWBIRD DETECTIONS: SANTA MARGARITA COUNTY PRESERVE

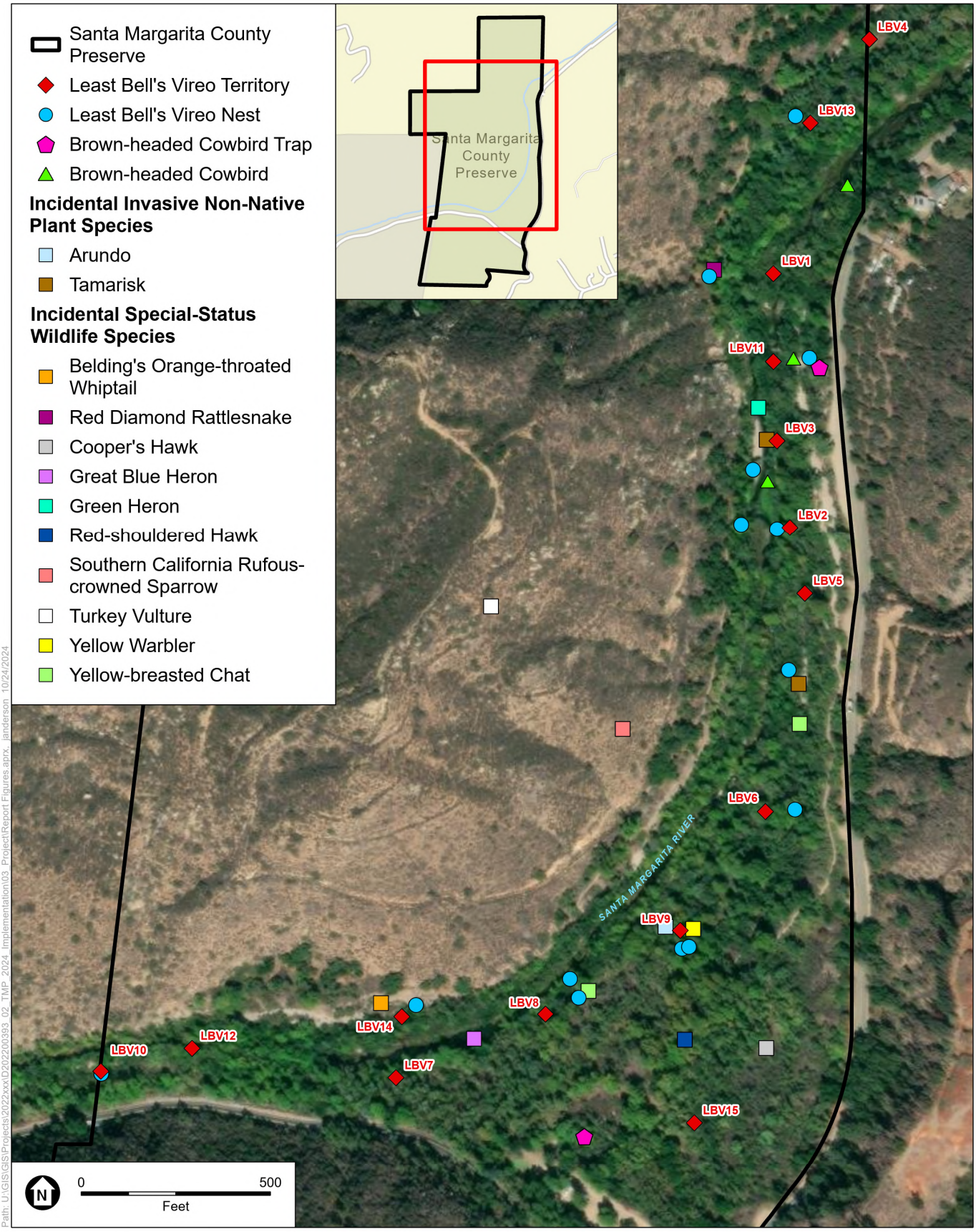
Date	Count
4/24/2024	2
5/08/2023	1
6/26/2023	2

During the nest monitoring survey on May 22, 2024, utility contractors were observed working on overhead powerlines in the area. This work involved flying a helicopter low and placing safety ball markers on an electrical line crossing the preserve. The helicopter operations caused mature riparian trees to shake and sway violently due to the strong downdrafts. After the helicopter departed, numerous avian alarm calls were heard throughout the habitat beneath the powerlines. Due to the stress response exhibited, the biologists immediately halted the monitoring survey and left the area.

Incidentally observed invasive non-native plant species included arundo and tamarisk (**Figure 14**). Incidentally observed special-status species included Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), red diamond rattlesnake (*Crotalus ruber*), great blue heron, green heron, turkey vulture, Cooper's hawk, red-shouldered hawk, Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), yellow-breasted chat, and yellow warbler (**Figure 14**). A complete list of wildlife observed during nest monitoring is included in **Appendix G**.

4.6.2 Habitat and Threats Assessment

Threats and habitat were assessed during species nest monitoring and surveys to determine: (1) if identified threats are having a direct negative effect on the species or habitat, and (2) if adaptive management actions need to be implemented.



SOURCE: ESRI, 2021; ESA, 2024

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Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 14
Least Bell's Vireo Nest Monitoring and Management Results
Santa Margarita County Preserve

ESA

Suitable breeding habitat for least Bell's vireo includes riparian woodlands, particularly those dominated by willows. Overall, Santa Margarita County Preserve provides high-quality suitable breeding habitat as demonstrated by the preserve being occupied by 15 least Bell's vireo territories in 2024. The following threats were observed:

- **Nest parasitism by brown-headed cowbird.** The observations and capture of adult brown-headed cowbirds within Santa Margarita County Preserve are indicative of the continued threat of brood parasitism. Cowbirds were observed during three monitoring surveys and a parasitized song sparrow nest containing a cowbird nestling and egg was observed. This nest was found to be depredated the following survey. No monitored least Bell's vireo nests were parasitized and no cowbird fledglings were observed during the surveys. However, the continued presence of cowbirds and nest parasitism detection in the preserve is indicative of a continued threat.
- **Invasive non-native plant species.** Invasive non-native plant species arundo and tamarisk occur on the preserve in scattered locations (**Figure 14**). Arundo, a Cal-PIC "High" rated species was present in two stands on the preserve. Tamarisk, a Cal-PIC "High" rated species due to its severe impacts on hydrological processes and plant and wildlife communities (Cal-IPC 2023), occurs in scattered locations throughout the Santa Margarita River. These invasive non-native plant species can outcompete and displace native plant species, resulting in degraded riparian habitats. Displacement of native vegetation can negatively impact vireo prey availability and nesting habitat.
- **Management of desert wild grape.** Desert wild grape (*Vitis grdiana*) is a native vine species that occurs in many areas within the preserve. The species is dominant in the herbaceous layer and in some cases, has climbed into the canopy of mature riparian trees, choking out large willows and sycamores. The expansion of wild grape paired with the mortality of mature riparian trees decreases habitat quality and suitability for least Bell's vireo. In several active vireo territories, wild grape has become established resulting in decreased plant diversity and habitat quality.

4.6.3 Brown-Headed Cowbird Trapping

The two trap locations are depicted in **Figure 14**. A total of 11 brown-headed cowbirds were captured within Santa Margarita County Preserve from April 1 to June 30, 2024. This included four adult males and seven adult females. There were 181 actual trap days out of a potential 182. Total trap days are calculated by multiplying the number of traps by the number of days they are in operation, then subtracting the number of days individual traps are inactive for various reasons such as vandalism. Trap 1 was inactive on June 18, 2024, due to vandalism, resulting in a loss of one trap day. There were 0.06 cowbirds captured per trap day in 2024. The ratio of male to female captures was 0.57:1. Trapping results for each trap location are summarized below in **Table 32**. Six non-target species were captured in Trap 1 and were released from the trap site unharmed on the same day they were captured. Non-target captures included four California towhees (*Melozone crissalis*), one song sparrow, and one house finch (*Haemorhous mexicanus*). Detailed trapping methods and results are provided in **Appendix G**.

TABLE 32
BROWN-HEADED COWBIRD TRAPPING RESULTS: SANTA MARGARITA COUNTY PRESERVE

Trap Number	Brown-Headed Cowbirds Captured			
	Adult Male	Adult Female	Juvenile	Total
1	2	3	0	**5**
2	2	4	0	**6**
Total	**4**	**7**	**0**	**11**

4.6.4 Adaptive Management Recommendations

The results of 2024 nest monitoring, 2024 adaptive management actions, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendations:

- **Continue brown-headed cowbird trapping program.** The brown-headed cowbird trapping effort in 2024 successfully captured 11 cowbirds. No juvenile cowbirds were captured, but a parasitized song sparrow nest containing a cowbird nestling and egg was observed. Continued program implementation should occur as follows.
  - Implement brown-headed cowbird trapping within the Santa Margarita County Preserve during the breeding season.
  - Evaluate the trapping program annually over a 2- to 5-year period to determine trends in (1) cowbird captures, (2) brood parasitism, and (3) least Bell's vireo nesting success.
  - Establish thresholds for the density of cowbird females and the allowable level of parasitism for least Bell's vireo to guide the cowbird trapping program (Parker et al. 2022).
  - Partner with adjacent land managers in the area to provide trapping in suitable habitat to improve catch rates and decrease parasitism impacts to vireo and songbird species in the area.
- **Continue least Bell's vireo monitoring.** The monitoring frequency for least Bell's vireo at Santa Margarita County Preserve has been updated to every 3 years, with protocol-level presence/absence surveys anticipated to occur in 2028 (ESA 2024a). However, if brown-headed cowbird nest parasitism of least Bell's vireo or other songbird species is incidentally observed (e.g., feeding brown-headed cowbird fledglings) or a wave of juvenile brown-headed cowbirds are caught in brown-headed cowbird traps within the preserve, more intensive nest monitoring may be warranted to complement brown-headed cowbird trapping.
- **Conduct habitat restoration and habitat enhancement.** The current distribution and density of invasive non-native plants is low on the preserve, which would make it an ideal time to control these small populations before they increase substantially. Removal or treatment of invasive non-native plants creates an opportunity for habitat enhancement and restoration in areas that have low plant diversity. Actions should occur as follows.
  - Remove invasive non-native plant species arundo and tamarisk and monocultures of desert wild grape through mechanical or chemical methods outside of the avian nesting season (March–September). Care should be taken to remove underground rhizomes of arundo and tamarisk while limiting disturbance to the channel and breeding margins. Larger individuals (e.g., greater than 10 feet in height) may be removed using cut-and-daub practices with an aquatic-safe herbicide on a case-by-case basis, as necessary. Hand tools and herbicide (aquatic-safe) could be used during the nesting season if a biologist is present to clear the impact areas in front of the restoration crew. Ideally, herbicide should be applied before seed sets on plants, which may involve multiple treatment visits throughout the season.
- **Collaborate with partner agencies and land managers.** Coordination with adjacent land managers is essential to managing brown-headed cowbirds and non-native plant populations in the area. Partnering with land managers upstream and downstream of the preserve will vastly increase the efficiency of the cowbird trapping program and spread of invasive non-native plants from upstream properties. Brown-headed cowbird traps are generally spaced at least a mile apart for trap efficiency, as traps placed closer together do not equate to higher trap rates. Coordination with partner agencies, including utility contractors, is recommended to ensure operations and maintenance activities do not occur during the least Bell's vireo breeding and nesting season and potentially impact nesting success.

4.7 Stephens' Kangaroo Rat

ESA and Blackhawk (ESA subconsultant) conducted a burrow/sign search and habitat characterization to inform SKR management needs in Ramona Grasslands County Preserve and Hellhole Canyon County Preserve. The habitat assessment memorandums for both preserves are included in **Appendix H**, *Stephens' Kangaroo Rat Monitoring Memorandums.*

4.7.1 Ramona Grasslands County Preserve

Habitat Assessment

Habitat assessments were conducted at 28 monitoring plots within Ramona Grasslands County Preserve. Of these plots, 10 were determined to be occupied by SKR and 18 were determined to be unoccupied (**Figure 15, Table 33**). Each plot was rated for SKR potential and, in total, 10 monitoring plots were characterized as having a high potential, 1 was characterized as having a medium potential, 17 were characterized as having a low potential, and 0 were characterized as having no potential for SKR (**Table 34**).

TABLE 33
SKR MONITORING RESULTS: RAMONA GRASSLANDS COUNTY PRESERVE

Occupancy/Potential		# of Monitoring Plots
SKR Occupancy	Occupied	10
	Unoccupied	18
SKR Potential	High	10
	Medium	1
	Low	17
	No	0

NOTE:
SKR = Stephens' kangaroo rat.

The 2024 results indicate slight shifts in overall SKR suitability that can increase or decrease at given sites between monitoring years due to variables such as randomized assignment of non-permanent monitoring plots that varies between monitoring years, annual grazing practices, and drought/precipitation. Generally, there was an overall decrease in SKR potential in 2024, and the following variables influenced the survey results:

- **Precipitation.** Heavy rainfall was observed in the greater San Diego region between fall 2022 and fall 2024. An increase in overall rainfall can be beneficial for SKR suitability in that it can increase food availability; however, significant increases in rainfall are likely to increase vegetation density and height, which may increase obstruction factors. The period between the fall 2022 and fall 2024 monitoring efforts was marked by above-average rainfall in the greater San Diego region. In an ecological regime that is free of anthropogenic influences such as cattle grazing, consistently higher rainfall could result in a reduction of suitable habitat for SKR by promoting vegetation cover that excludes SKR.
- **Grazing.** Much of the SKR Monitoring Areas are actively grazed, thereby helping to reduce significant vegetative growth during years of above-average rainfall. Sunrise Cattle Company currently holds a grazing agreement with DPR, and cattle were stocked on-site in Grazing

Management Units 1A, 2A, 2B, 3A, 3B, 4A, and 4B in 2024. While grazing can help reduce vegetation coverage, thus potentially increasing SKR suitability, it does not always result in highly suitable SKR habitat. In 2024, monitoring results found that areas in which grazing was observed within the past 3 to 6 months did not directly correlate to high SKR potential. Two surveyed plots (3B-1 and 3B-2) showed no signs of grazing, with medium living vegetation coverage and medium obstruction factors, but were determined to have high-potential for SKR based on habitat and observed sign. Furthermore, several of the surveyed plots determined to have low potential for SKR had been grazed within the past 3 months, yet still maintained high living vegetative cover. This suggests that cattle may not be grazing uniformly within each Grazing Management Unit, and other factors may also influence overall habitat suitability.

- Most of the annual vegetation present in the high- or medium-potential SKR plots consisted of red-stem filaree, doveweed, western ragweed (*Ambrosia psilostachya*), shortpod mustard, and vinegar weed (*Trichostema lanceolatum*). Annual vegetation in the low-potential plots comprised similar species, as well as curly dock (*Rumex crispus*). Dense annual grasses were also observed in several low-potential plots, which may preclude or reduce SKR movement.

Detailed monitoring methods and results, including plot photographs and habitat assessment forms, are included in **Appendix H**.

Adaptive Management Recommendations

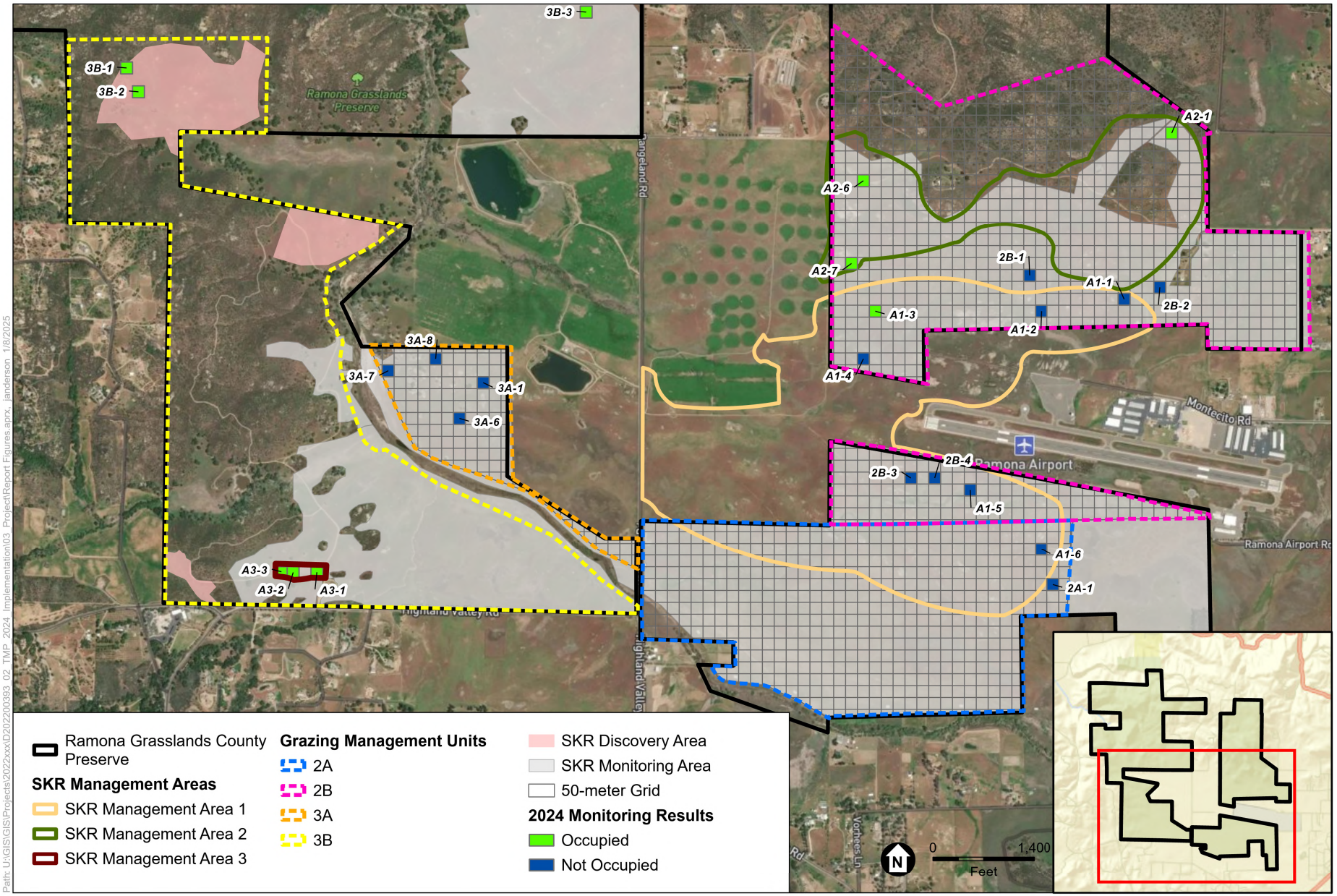
The following are the adaptive management recommendations to ensure persistence of SKR at Ramona Grasslands County Preserve:

- **Coordinate with the grazing lessee on cattle grazing practices.** Coordinate with the grazing lessee to provide information on the conservation goals to be fulfilled by grazing on the preserve, including those for SKR, and discuss grazing frequency, timing, rotation, and RDM targets to better guide annual grazing practices on the preserve. Recent 2024 RDM monitoring reports should be used to inform 2025 grazing practices to meet RDM targets for SKR.

4.7.2 Hellhole Canyon County Preserve

Habitat Assessment

Habitat assessments were conducted at three monitoring plots within the Sierra Verde addition of Hellhole Canyon County Preserve. All three plots were determined to be occupied or potentially occupied by SKR (**Figure 16**, **Table 35**). Each plot was rated for SKR potential; no plots were rated high, two were rated medium, and one was rated low (**Table 36**).



SOURCE: Mapbox; ESA, 2024

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management

Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 15

Stephens' Kangaroo Rat Monitoring Results
Ramona Grasslands County Preserve

ESA

TABLE 34
SKR HABITAT ASSESSMENT SUMMARY: RAMONA GRASSLANDS COUNTY PRESERVE

	Fall 2024									Fall 2023
Plot ID	% Bare Ground	Living Herb Density	Shrub/Tree Density (%)	Plant Litter (Dead) (%)	Gopher/ Ground Squirrel Density^	Obstruction Factor	Potential K-Rat Sign*	SKR Occupancy Determination	Rating†	Rating†
A1-1	0–5	High	0	75–95	Low/Medium	High	None	Not Occupied	Low	Medium**
A1-2	0–5	High	0	75–95	Low/Low	High	None	Not Occupied	Low	Low
A1-3	0–5	Medium	0	75–95	Low/Medium	Medium	None	Occupied	High**	Medium
A1-4	0–5	High	0	75–95	Medium/Medium	High	None	Not Occupied	Low	Low
A1-5	0–5	High	0–5	75–95	Medium/Low	High	None	Not Occupied	Low	Low
A1-6	0–5	Low	5–25	75–95	Medium/Low	Low	None	Not Occupied	Low	Medium**
A2-1	5–25	Low	0–5	75–95	Medium/Medium	Low	B, S	Occupied	High**	High**
A2-6	5–25	Medium	0	75–95	Medium/Low	Medium	B, S, CF	Occupied	High**	High**
A2-7	0–5	High	0	50–75	Low/Medium	High	B, S, CF	Occupied	High**	Low
A3-1	50–75	Low	0	50–75	Low/Low	Low	B, S, CF	Occupied	High**	High**
A3-2	50–75	Low	0	25–50	Low/Medium	Low	B, S, TD, CF	Occupied	High**	High**
A3-3	50–75	Low	0	25–50	Low/Medium	Low	S, TD, CF	Occupied	High**	High**
2A-1	0–5	High	5–25	75–95	Medium/Medium	High	None	Not Occupied	Low	Low
2B-1	0–5	Medium	0	75–95	Low/Low	Low	None	Not Occupied	Medium	High**
2B-2	0–5	High	0–5	50–75	Medium/Low	High	None	Not Occupied	Low	Low**
2B-3	0–5	Medium	0–5	75–95	Medium/Low	High	None	Not Occupied	Low	High**
2B-4	0–5	High	0–5	75–95	Medium/Low	High	None	Not Occupied	Low	Low
3A-1	0	High	0	50–75	Low/Low	High	None	Not Occupied	Low	Low
3A-6	0–5	Medium	0	75–95	Medium/Medium	Medium	None	Not Occupied	Low	Medium
3A-7	0–5	High	0	75–95	Medium/Low	High	None	Not Occupied	Low	Medium**
3A-8	0–5	Medium	0	75–95	Medium/Low	High	None	Not Occupied	Low	Medium
3B-1	0–5	Medium	5–25	50–75	Medium/High	Medium	B, S, CF	Occupied	High**	Low
3B-2	0–5	Medium	0–5	75–95	Low/Medium	Medium	B, S, CF	Occupied	High**	Medium
3B-3	0–5	Low	0	75–95	Low/Medium	Medium	S, CF	Occupied	High**	Medium

	Fall 2024									Fall 2023
Plot ID	% Bare Ground	Living Herb Density	Shrub/Tree Density (%)	Plant Litter (Dead) (%)	Gopher/ Ground Squirrel Density^	Obstruction Factor	Potential K-Rat Sign*	SKR Occupancy Determination	Rating†	Rating†
3C-1	0–5	Medium	0–5	75–95	High/Low	Medium	B	Not Occupied	Low	NA
3C-2	0–5	Medium	0–5	75–95	High/Low	Medium	None	Not Occupied	Low	NA
3C-3	0–5	Medium	5–25	75–95	High/Low	Medium	None	Not Occupied	Low	NA
3C-4	0–5	High	0–5	50–75	High/Low	High	None	Not Occupied	Low	NA

NOTES:

SKR = Stephens' kangaroo rat
^ Active gopher excavation density ratings used; inactive excavations excluded.
* Potential Kangaroo Rat Sign: B = Burrow(s); S = Scat; T = Tracks; TD = Tail Drag; TV = Trails in Vegetation; CF = Caching/Foraging Craters; O = Other
** Exhibited habitat conditions and observed sign indicates plot is likely occupied by SKR.
† Estimated potential for SKR occupancy based on habitat community condition and observed kangaroo rat sign.

TABLE 35
SKR MONITORING RESULTS: HELLHOLE CANYON COUNTY PRESERVE

Occupancy/Potential		# of Monitoring Plots
SKR Occupancy*	Occupied	3
	Unoccupied	0
SKR Potential	High	0
	Medium	2
	Low	1
	No	0

NOTES:

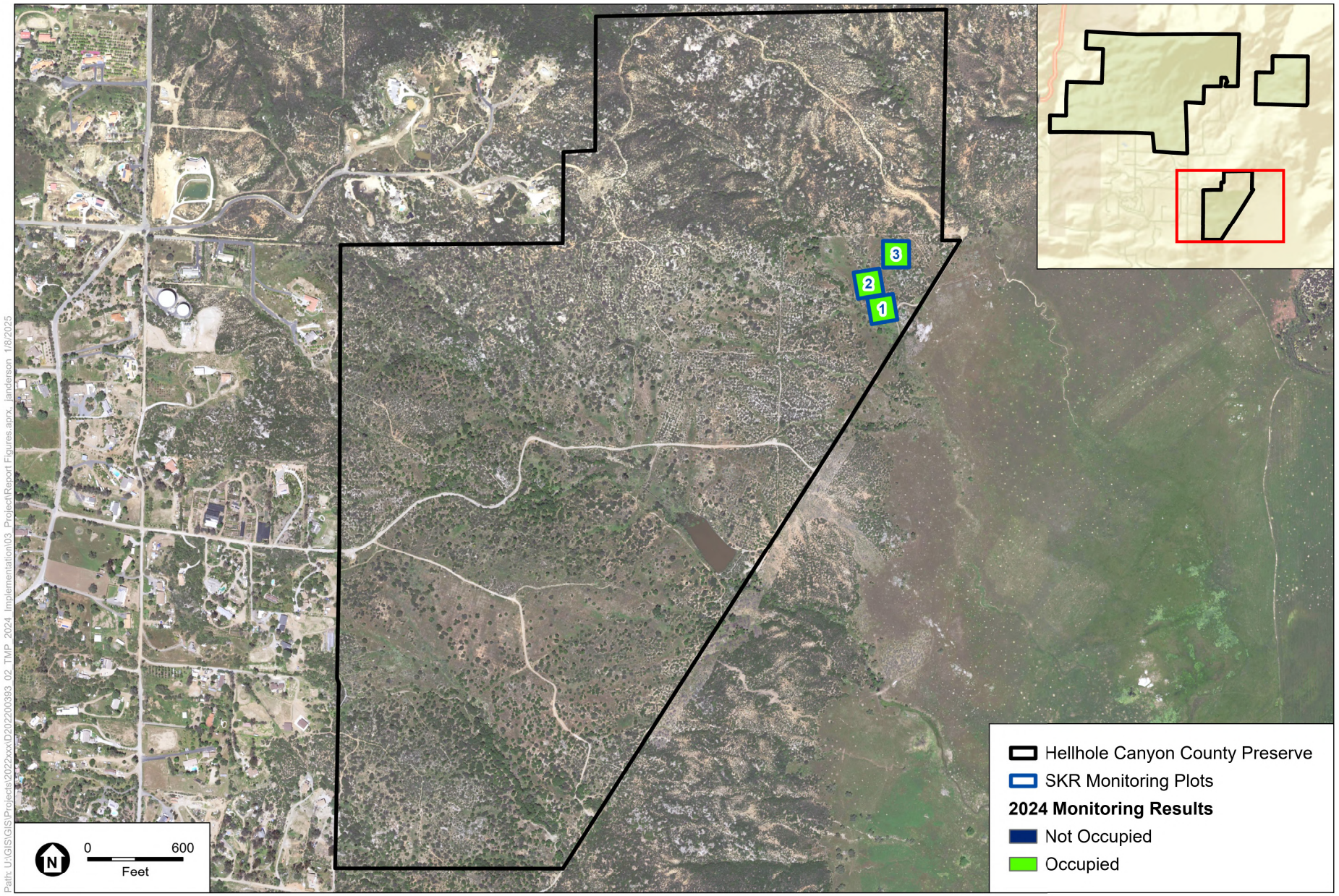
SKR = Stephens' kangaroo rat.
* Occupancy status was determined as "potentially occupied" based on the positive detection of one SKR in plot 2 during fall 2020 live-trapping surveys, positive kangaroo rat sign during fall 2023 monitoring, the proximity of all three plots (within 150 feet of one another), and no factors that could reasonably be expected to entirely preclude SKR movement between the three plots.

TABLE 36
SKR HABITAT ASSESSMENT SUMMARY: HELLHOLE CANYON COUNTY PRESERVE

	Fall 2024									Fall 2023
Plot ID	% Bare Ground	Living Herb Density	Shrub/ Tree Density (%)	Plant Litter (Dead) (%)	Gopher/ Ground Squirrel Density^	Obstruction Factor	Potential K-Rat Sign*	SKR Occupancy Determination+	Rating†	Rating†
1	0–5	Medium	5–25	50–75	High/Low	Medium	B	Occupied	Low	Low
2	5–25	Medium	5–25	50–75	High/Low	Medium	B	Occupied	Medium**	High**
3	0–5	High	25–50	50–75	Medium/Low	High	B, S	Occupied	Medium**	Medium**

NOTES:

SKR = Stephens' kangaroo rat
^ Active gopher excavation density ratings used; inactive excavation density ratings excluded.
* Potential Kangaroo Rat Sign: B = Burrow(s); S = Scat; T = Tracks; TD = Tail Drag; TV = Trails in Vegetation; O = Other
** Exhibited habitat conditions and observed sign indicates plot is likely or potentially occupied by SKR.
† Estimated potential for SKR occupancy based on habitat community condition and observed kangaroo rat sign.
+ Occupancy status in fall 2023 was determined as "potentially occupied" as described in the footnote on **Table 30.**



SOURCE: NAIP, 2020; SanGIS, 2024; ESA, 2024.

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan –
2024 Resource-Specific Monitoring and Management
Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 16
Stephens' Kangaroo Rat Monitoring Results
Hellhole Canyon County Preserve

ESA

SKR occupancy potential decreased for one of the three monitoring plots in fall 2024 compared to fall 2023 monitoring. SKR was found present at only one of the three monitoring plots during the fall 2020 live-trapping effort, but Dulzura kangaroo rat (*Dipodomys simulans*) (DKR) was also found present during the live-trapping effort. Based on sign detected during the fall 2024 habitat assessment monitoring effort, SKR presence was potentially detected at all three of the monitoring plots; however, habitat assessment monitoring cannot conclusively differentiate between SKR and DKR. Based on the fall 2020 live-trapping effort, SKR and DKR are both present on-site and there are no obstruction factors that could preclude the possibility of SKR from any of the three monitoring plots, especially considering the proximity of the three plots (all within 150 feet of one another). Therefore, SKR was potentially present at all three monitoring plots (**Table 36**). Habitat suitability for SKR decreased from High to Medium for plot 2. These results indicate seasonal SKR occupancy can increase or decrease at given sites between monitoring years due to variables such as drought/precipitation, survey timing, food availability, and competition among sympatric species. The following variables influenced survey results:

- **Precipitation.** Heavy rainfall was observed in the greater San Diego region between fall 2023 and fall 2024. An increase in overall rainfall can be beneficial for SKR suitability in that it can increase food availability; however, increases in rainfall are likely to increase vegetation density and height, which may increase obstruction factors. The period between the fall 2023 and fall 2024 monitoring efforts was marked by above-average rainfall in the greater San Diego region. In an ecological regime that is free of anthropogenic influences such as cattle grazing, consistently higher rainfall could result in a reduction of suitable habitat for SKR by promoting vegetation cover that excludes SKR.
- **Vegetation composition.** During the 2024 monitoring effort, none of the plots were observed to have had any mowing conducted, unlike the 2023 monitoring effort. As a result, and in conjunction with slightly above-average rainfall amounts during the previous rainy season, an increase in living/standing herb density and overall vegetation coverage was broadly observed across all three plots. Plot 2 presented similar findings as previous years, with more open areas primarily vegetated with low-growing filarees (*Erodium* spp.), which facilitates SKR movement and is a potential food source. Comparatively, plots 1 and 3 presented with higher percentages of taller-growing ruderal species such as tocalote and shortpod mustard, that increase obstruction factors and may preclude or reduce SKR movement. Obstruction factors were increased for plots 1, 2, and 3, compared to findings from 2021 to 2023, reducing the potential for SKR. Also of note is the significant increase in active gopher excavations observed, most notably in plots 1 and 2.

Detailed monitoring methods and results, including plot photographs and habitat assessment forms are included in **Appendix H**.

Adaptive Management Recommendations

The following are the adaptive management recommendations to ensure persistence of SKR at Hellhole Canyon County Preserve. The incidental observations of thatch and non-native plant species in 2024, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendations:

- **Habitat enhancement.** Focused management within the 5.8-acre management area is recommended to enhance and ensure persistence of suitable SKR habitat. Focused SKR management can include targeted dethatching, mowing, and/or scraping. Targeted dethatching and mowing can reduce the overall height of the existing vegetation to a desired level and assist with disarticulation of herbaceous

weeds. Scraping can reduce vegetation density and increase open ground, maximizing the ability of SKR to move across the landscape.

4.8 Pallid Bat

ESA conducted surveys to monitor the status of pallid bat occupancy and roosting and foraging habitat and document current distribution and threat data to inform management needs in Hellhole Canyon County Preserve (**Figure 17**), Mount Olympus County Preserve (**Figure 18**), and Wilderness Gardens County Preserve (**Figure 19**). Field forms, including the habitat and threats assessment form, are included in **Appendix I**, *Bat Survey & Habitat Assessment Field Forms and Representative Photograph*. Transect acoustic monitoring was conducted to provide supplemental information and to document if pallid bat was potentially roosting on-site. Pallid bat was not detected during transect acoustic monitoring surveys (**Table 37**). Incidentally observed special-status wildlife species included turkey vulture at Hellhole Canyon County Preserve (**Figure 17**).

TABLE 37
TRANSECT ACOUSTIC BAT SURVEY RESULTS

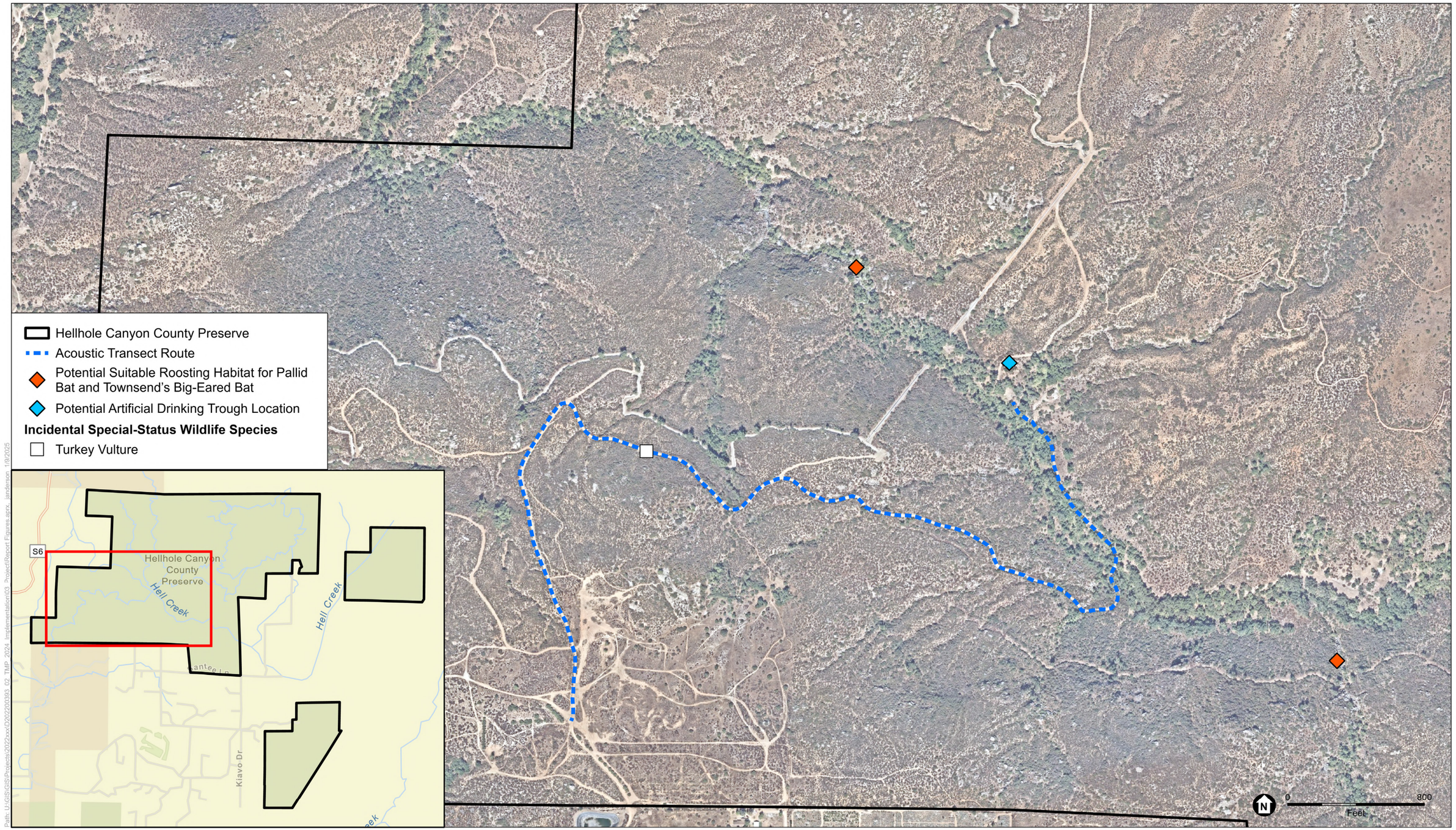
Bat Species Detected	Mount Olympus County Preserve (07/03/2024)	Hellhole Canyon County Preserve (07/10/2024)	Wilderness Gardens County Preserve (07/11/2024)	Total
Big brown bat *Eptesicus fuscus*	2	1	23	26
Silver-haired bat *Lasionycteris noctivagans*	1	–	30	31
Western yellow bat *Lasiurus xanthinus*	–	–	2	2
California myotis *Myotis californicus*	–	1	10	11
Western small-footed myotis[a] *Myotis ciliolabrum*	3	3	2	8
Yuma myotis[a] *Myotis yumanensis*	–	–	5	5
Canyon bat *Parastrellus hesperus*	5	–	–	5
Total	**11**	**5**	**72**	**88**

NOTES:

a. County of San Diego Sensitive Animal Group 2 Species.

4.8.1 Roosting and Foraging Habitat Assessment

Pallid bat is a multiple-habitat roosting species and forages on terrestrial arthropods in oak savannah-type habitats, grassy oak and sycamore-lined river terraces, native grasslands, and sparsely vegetated scrublands. Suitable foraging habitat also includes dirt trails, roads, and staging areas especially when it cuts through dense scrubland habitat like chaparral. It has an affinity for roosting in human-made structures but can also be found roosting in a variety of natural crevice and cavity situations, such as rock crevices, natural caves, mines, under tree bark, and in tree cavities and hollows.



SOURCE: Nearmap, 2020; ESA, 2024.

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management

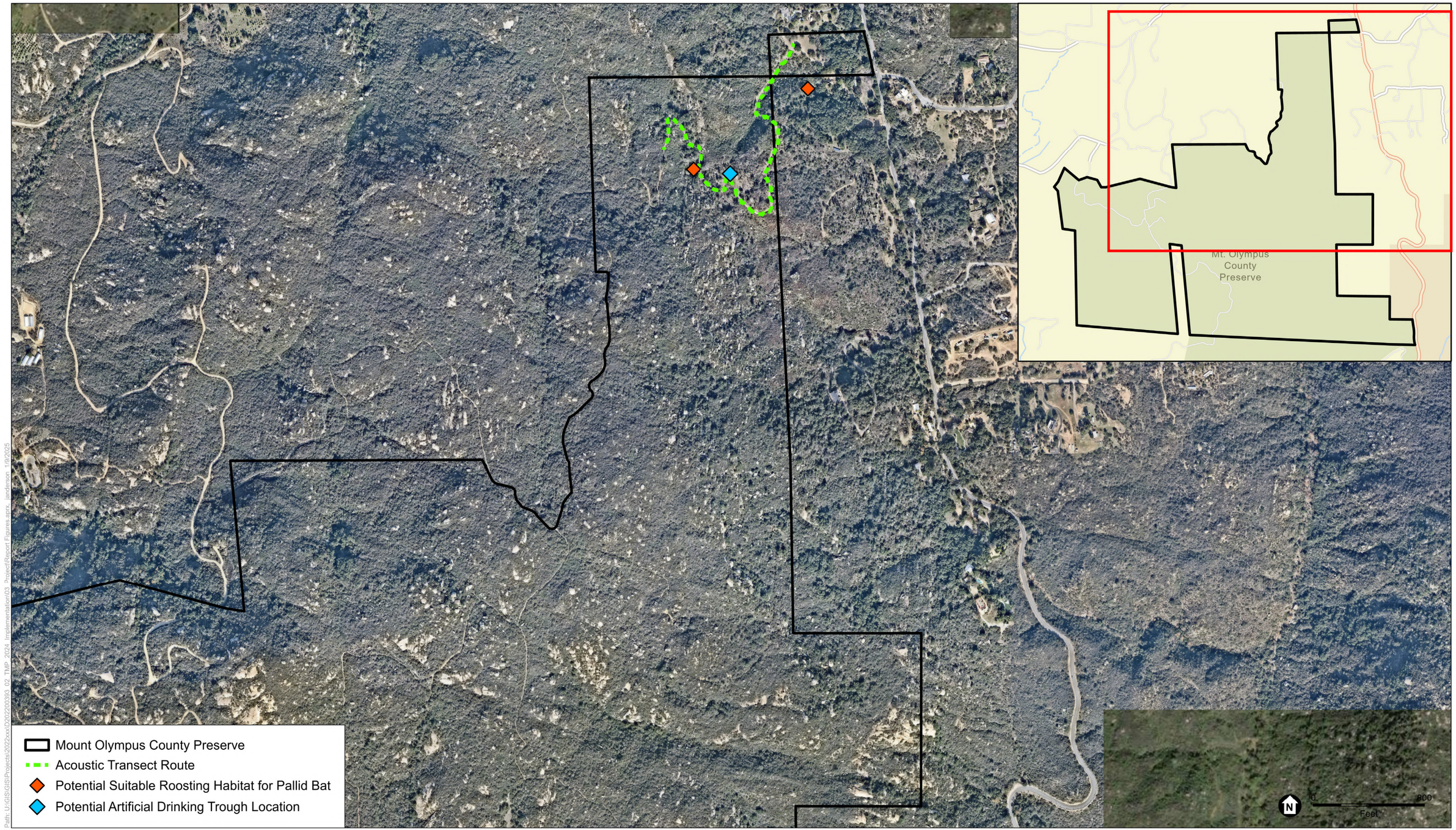
Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 17

Pallid Bat and Townsend's Big-Eared Bat Monitoring Results
Hellhole Canyon County Preserve

ESA

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SOURCE: Nearmap, 2021; ESA, 2024.

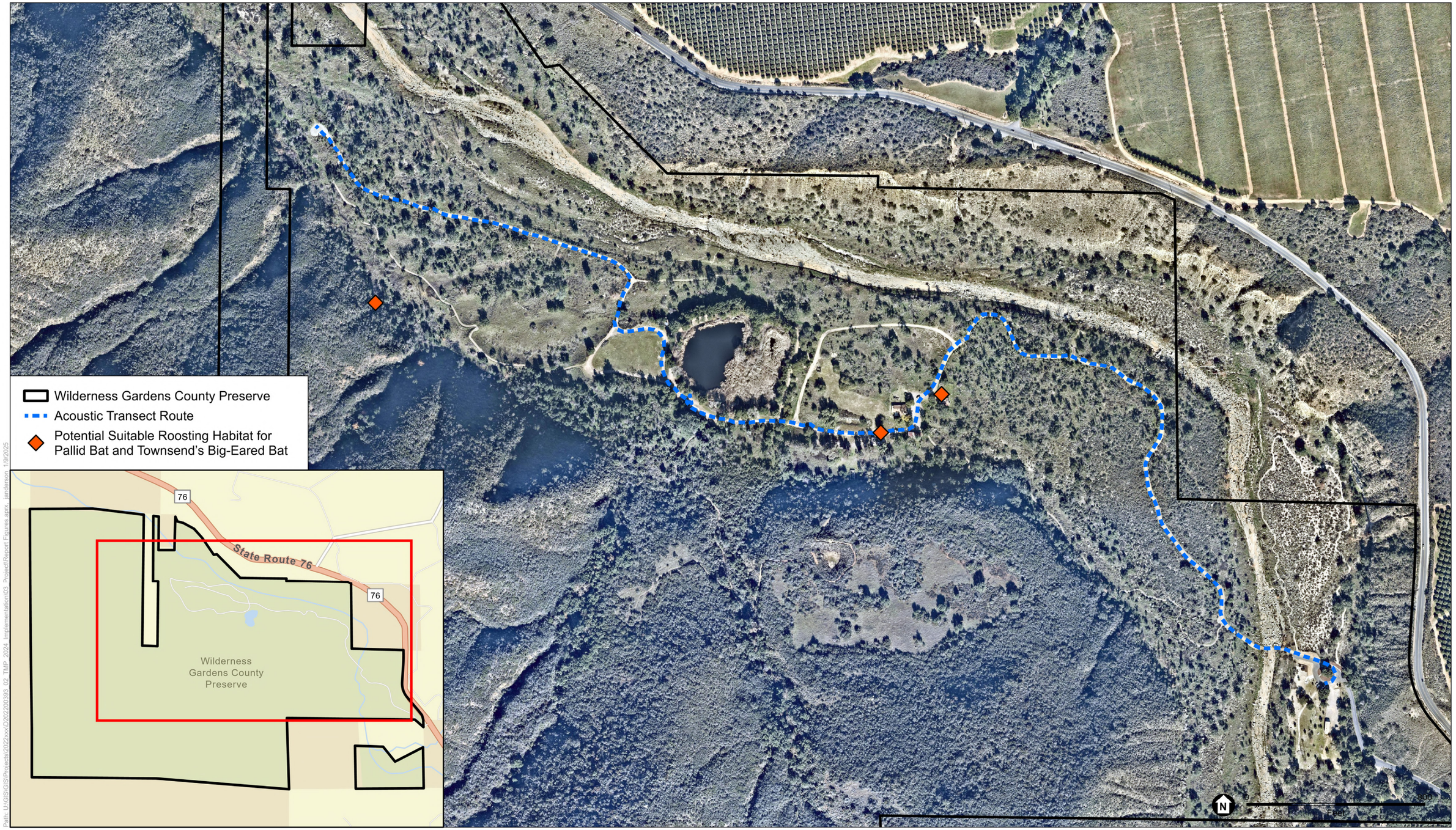
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Figure 18

Pallid Bat Monitoring Results
Mount Olympus County Preserve

ESA



Path: U:\GIS\GIS\Projects\2022xxx\D2022200393_02_TMP_2024_Implementation\03_Project\Report Figures.aprx, janderson 1/9/2025

SOURCE: Nearmap, 2021; ESA, 2024.

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Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 19
Pallid Bat and Townsend's Big-Eared Bat Monitoring Results
Wilderness Gardens County Preserve

ESA

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Hellhole Canyon County Preserve

There is an abundance of rocky outcrops and boulders that could provide suitable roosting habitat for pallid bats in Hellhole Canyon County Preserve. The rocky and boulder-strewn areas that appear most suitable for pallid bat and other crevice- and cavity-roosting bat species include the rocky/boulder draw near the "grotto" and along Hell Creek from the beginning of significant boulder habitat to the western end of Hell Creek within the preserve (**Figure 17**). There are also a number of oaks and other tree species on-site that have the potential for providing pallid bat roosting opportunities under bark and/or in tree hollows and cavities. Most of the suitable trees are found along Hell Creek within the preserve. There are no human-made structures that could serve as roosting habitat for pallid bats in Hellhole Canyon County Preserve.

Suitable foraging habitat on Hellhole Canyon County Preserve include the sycamore-lined Hell Creek and the sparsely vegetated scrubland. The numerous dirt trails and roads that run through chaparral and coastal sage scrub habitats on the preserve also provide suitable foraging habitat for pallid bat.

Mount Olympus County Preserve

There is an abundance of rocky outcrops and boulders throughout the Mount Olympus County Preserve that could provide suitable roosting habitat for pallid bats. There are oaks and other tree species on-site that have the potential for providing pallid bat roosting opportunities under bark and/or in tree hollows and cavities. Most of the suitable trees are found in the forested eastern portion of the preserve along Pala Temecula Road. There are abandoned human-made structures that could also serve as roosting habitat for pallid bats in Mount Olympus County Preserve (**Figure 18**).

Suitable foraging habitat on Mount Olympus County Preserve is limited to the rocky outcrops, dirt trails, and roads through the preserve. While there is oak and sycamore woodland, they are densely vegetated and lack openings for foraging pallid bats.

Wilderness Gardens County Preserve

The historic and unused buildings near the center of Wilderness Gardens County Preserve and the exposed rocky habitat such as the rocky outcrops near the northern boundary of the preserve provide potential pallid bat roosting habitat (**Figure 19**). Additional potential roosting habitat for pallid bat occurs in suitable trees that could have loose bark, cavities, and hollows along the San Luis Rey River, along the base of and in the draws of the chaparral-covered hillside that dominate the preserve, and near the two ponds on-site.

Suitable foraging habitat on Wilderness Gardens County Preserve include the sycamore-lined San Luis Rey River, native grassland, and the sparsely vegetated scrubland. The numerous dirt trails and roads that run through chaparral and coastal sage scrub habitats on the preserve also provide suitable foraging habitat for pallid bats.

4.8.2 Threats Assessment

Threats and suitable roosting and foraging habitat were assessed during the species surveys to determine: (1) if identified threats are having a direct negative effect on the species or habitat, and (2) if adaptive management actions need to be implemented. The following threats were observed:

- **Invasive non-native plant species.** Invasive non-native plant species alter vegetation structure, which affects foraging success. Invasive non-native plant cover has increased in density in the eastern portion of Mount Olympus County Preserve along the dirt trails and roads on-site and presents a potentially significant threat to pallid bat foraging habitat (see overgrown dirt trail in representative photograph Photo 1 in **Appendix I**). Pallid bats require open and sparsely vegetated areas for foraging such that they can easily access terrestrial arthropods; therefore, dense invasive non-native plant cover reduces suitable foraging habitat (Krutzsch 1948).

4.8.3 Adaptive Management Recommendations

The following are adaptive management recommendations to maintain and enhance suitable roosting and foraging habitat for pallid bat:

- **Foraging habitat enhancement.** Focused pallid bat foraging habitat management can include targeted dethatching, mowing, and/or herbicide treatment for non-native plant species within and along trails, roads, disturbed areas, and sparsely vegetated habitats that provide openings for foraging pallid bats mainly on Mount Olympus County Preserve. Targeted dethatching and mowing can reduce the overall height of the existing vegetation to a desired level and increase open ground, maximizing the ability for pallid bats to forage. Herbicide treatment can be used to maintain open ground areas and trail widths. Focused management should occur outside of the avian nesting season (March–September) at Hellhole Canyon County Preserve and Wilderness Gardens County Preserve. Mechanical methods and herbicide could be used during the avian nesting season if a biologist is present to clear the impact areas in front of the restoration crew. Thatch and vegetation removal should be implemented with weedeaters and rakes; debris should be hauled out and disposed of off-site at a county landfill. Ideally, herbicide should be applied before seed sets on plants, which may involve multiple treatment visits throughout the season.
- **Enhance drinking sources.** Enhance drinking sources for pallid bats at Hellhole Canyon County Preserve and Mount Olympus County Preserve by installing spring- and/or water-table-fed artificial drinking troughs in the preserves where such aquatic features are present and logistically feasible (i.e., near roads and/or trails). Potential artificial drinking trough locations for Hellhole Canyon and Mount Olympus County Preserves are included in **Figure 17** and **Figure 18**, respectively. Both locations are near access roads and are assumed to have access to potential wells that could fill the drinking troughs. On Wilderness Gardens County Preserve (**Figure 19**), the existing pond can be enhanced by clearing cattails and other wetland vegetation to provide better opportunities for pallid bats to drink while in flight.
- **Create roost structures.** Create and install artificial roost structures in Hellhole Canyon, Mount Olympus, and Wilderness Gardens County Preserves to provide consistent and protected roost structures. Artificial roosts that are large, thermally stable, and provide roosting opportunities for crevice- and cave-roosting bats are recommended. This can include cinderblock style “combat town” structures typically found on military bases. Artificial roost locations that are near foraging habitat such as riparian areas, oak woodlands, and near water sources are ideal, but they should be put in areas where they would not be subject to disturbance and vandalism.

- **Conduct mist-netting to determine pallid bat occupancy.** Pallid bats are most readily detected by mist-net capture and by finding their guano and culled insect parts in their night roosts. In absence of mist-netting or obvious roosts to detect pallid bat sign, the alternative is to use electronic bat detectors. Pallid bats echolocation calls can resemble other more common species such as the big brown bat (*Eptesicus fuscus*). Future pallid bat monitoring should implement a combination of acoustic monitoring (either passive or transect) and mist-netting to confirm presence of species and document individual bat information to inform population dynamics, as recommended in the TMP (ESA and ICF 2022).

4.9 Townsend's Big-Eared Bat

ESA conducted surveys to monitor the status of Townsend's big-eared bat occupancy and roosting and foraging habitat to document current distribution and threat data to inform management needs in Hellhole Canyon County Preserve and Wilderness Gardens County Preserve. Field forms, including the habitat and threats assessment form, are included in **Appendix I**. Transect acoustic monitoring was conducted to provide supplemental information and to document if Townsend's big-eared bat was potentially roosting on-site. Townsend's big-eared bat was not detected during transect acoustic monitoring surveys; however, this species has a low detection rate due to their call frequency (**Table 37**). Incidentally observed special-status wildlife species included turkey vulture at Hellhole Canyon County Preserve (**Figure 17**).

4.9.1 Roosting and Foraging Habitat Assessment

Townsend's big-eared bat is an obligate cave-roosting species that depends on caves and cave-analogs for its roosting requirements. Roosting situations include natural caves, including boulder caves, mines, tree hollows, and human-made structures that provide cave-like environments. Townsend's big-eared bat is a Lepidopteran (small to medium moths) specialist and forages in edge habitats along streams and wooded habitats.

Hellhole Canyon County Preserve

There is an abundance of boulder habitat that could provide suitable roosting habitat in Hellhole Canyon County Preserve. The boulder strewn areas that appear most suitable for the Townsend's big-eared bat include the boulder draw near the "grotto" and along Hell Creek from the beginning of significant boulder habitat to the western end of Hell Creek (**Figure 17**). On-site trees with tree hollows and cavities also have the potential for providing Townsend's big-eared bat roosting opportunities but is not the preferred roosting location for this species. Most of the suitable trees are found along Hell Creek in the preserve. There are no human-made structures that could serve as roosting habitat for the Townsend's big-eared bat in the preserve.

Suitable foraging habitat on Hellhole Canyon County Preserve is limited to the woodland edge habitats around Hell Creek.

Wilderness Gardens County Preserve

The historic and unused buildings near the center of Wilderness Gardens County Preserve and the exposed rocky habitat such as the rocky outcrops near the northwest boundary of the preserve provide potential Townsend's big-eared bat roosting habitat (**Figure 19**). Exposed rocky habitat such as the rocky outcrops near the northern boundary of the preserve serve as potential roosting habitat for Townsend's

big-eared bat as well. Additional potential roosting habitat for Townsend's big-eared bat occurs in suitable trees that could have loose bark, cavities, and hollows along the San Luis Rey River, along the base of and in the draws of the chaparral-covered hillside that dominates the preserve, and near the two ponds on-site.

Suitable foraging habitat on Wilderness Gardens County Preserve include the woodland area surrounding the pond and the woodland edge habitats around San Luis Rey River.

4.9.2 Threats Assessment

Threats to roosting and foraging habitat were assessed during species surveys to determine: (1) if identified threats are having a direct negative effect on the species or habitat, and (2) if adaptive management actions need to be implemented. No signs of dumping/trash or illegal trail/unauthorized off-trail usage were detected; therefore, no threats were identified during the species surveys.

4.9.3 Adaptive Management Recommendations

The following are adaptive management recommendations to maintain and enhance suitable roosting and foraging habitat for Townsend's big-eared bat:

- **Foraging habitat enhancement.** Focused Townsend's big-eared bat foraging habitat management can include targeted mowing and/or herbicide treatment for non-native plant species along edge habitats adjacent to Hell Creek and San Luis Rey River and adjacent to and within woodland habitat areas. Targeted mowing can increase native plant diversity by reducing invasive non-native plants, increasing prey abundancy, and maximizing the ability of Townsend's big-eared bats to forage in intact native habitat. Herbicide treatment can be used to reduce invasive non-native plants and increase prey abundance. Focused management should occur outside of the avian nesting season (March–September) at Hellhole Canyon County Preserve and Wilderness Gardens County Preserve and away from recreation areas such as trails and staging areas. Mechanical methods and herbicide could be used during the avian nesting season if a biologist is present to clear the impact areas in front of the restoration crew. Vegetation removal should be implemented with weedeaters and rakes; debris should be hauled out and disposed of off-site at a county landfill. Ideally, herbicide should be applied before seed sets on plants, which may involve multiple treatment visits throughout the season.
- **Enhance drinking sources.** Enhance drinking sources for Townsend's big-eared bats at Hellhole Canyon County Preserve by installing spring- and/or water-table-fed artificial drinking troughs in the preserve where such aquatic features are present and logistically feasible (i.e., near roads and/or trails). Potential artificial drinking trough locations for Hellhole Canyon County Preserve are included on **Figure 17**, respectively. The location is near an access road and assumed to have access to potential wells that could fill the drinking troughs. On Wilderness Gardens County Preserve, the existing pond can be enhanced by clearing cattails and other wetland vegetation to provide better opportunities for Townsend's big-eared bats to drink while in flight.
- **Create roost structures.** Create and install artificial roost structures in Hellhole Canyon and Wilderness Gardens County Preserves to provide consistent and protected roost structures. Artificial roosts that are large, thermally stable, and provide roosting opportunities for cave-roosting bats are recommended. This can include cinderblock style "combat town" structures typically found on military bases. Artificial roost locations that are near foraging habitat such as riparian areas, oak woodlands, and near water sources are ideal, but they should be put in areas where they would not be subject to disturbance and vandalism.

- **Conduct mist-netting to determine Townsend's big-eared bat occupancy.** Townsend's big-eared bats are most readily detected by mist-net capture and by finding their guano and culled insect parts in their night roosts. In absence of mist-netting or obvious roosts to detect Townsend's big-eared bat sign, the alternative is to use electronic bat detectors. Townsend's big-eared bats appear to have low detection rates. Future Townsend's big-eared bat monitoring should implement a combination of acoustic monitoring (either passive or transect) and mist-netting to confirm presence of species and document individual bat information to inform population dynamics, as recommended in the TMP (ESA and ICF 2022).

4.10 Regional MSP Wildlife Monitoring Results

Through ROE permits issued by DPR, USGS and the San Diego Natural History Museum conducted arroyo toad and tricolored blackbird monitoring at Ramona Grasslands County Preserve, respectively. Results are provided below.

4.10.1 Arroyo Toad

Regional monitoring efforts for arroyo toad included monitoring surveys performed by USGS permitted biologists (recovery permit TE-045991-19.1) along reaches 25, 29, 34, 39, and 44 in the Santa Maria Creek within Ramona Grasslands County Preserve. Of the 10 reach segments surveyed, only 2 reach segments (segments 25A and 25B) supported breeding and larval toad development (**Figure 12**). A total of 25 metamorphs were detected across these two reach segments. No additional special-status wildlife species were incidentally observed. Ninety-seven red swamp crayfish were recorded across all 10 reach segments; and 18 American bullfrogs were observed within segments 25A, 29A, 29B, 34A, 34B, and 44B (**Figure 12**).

4.10.2 Tricolored Blackbird

Regional monitoring efforts for tricolored blackbird included monitoring surveys performed by the San Diego Natural History Museum biologists within Ramona Grasslands County Preserve. No tricolored blackbird nesting colonies were observed within the preserve, but potentially suitable nesting and foraging habitat was observed.

4.11 Residual Dry Matter Monitoring

4.11.1 Residual Dry Matter Monitoring

The results of vegetation sampling within each management unit at Ramona Grasslands County Preserve are discussed below, and 2024 RDM values are summarized in **Table 38** and **Figure 20**. The results of the average RDM values from each of the individual RDM plots from 2011 through 2024 can be found in **Appendix J**, *Residual Dry Matter Monitoring Report*. All RDM values, except for management units 1A, 4A, and 4B, were above the target RDM values. Management units 1A and 4A were within their target RDM values, while management unit 4B was below its target RDM value. In 2024, RDM values in all management units except 1A and 3D decreased from 2023 results. Management unit 3D had the most significant increase in RDM value this season.

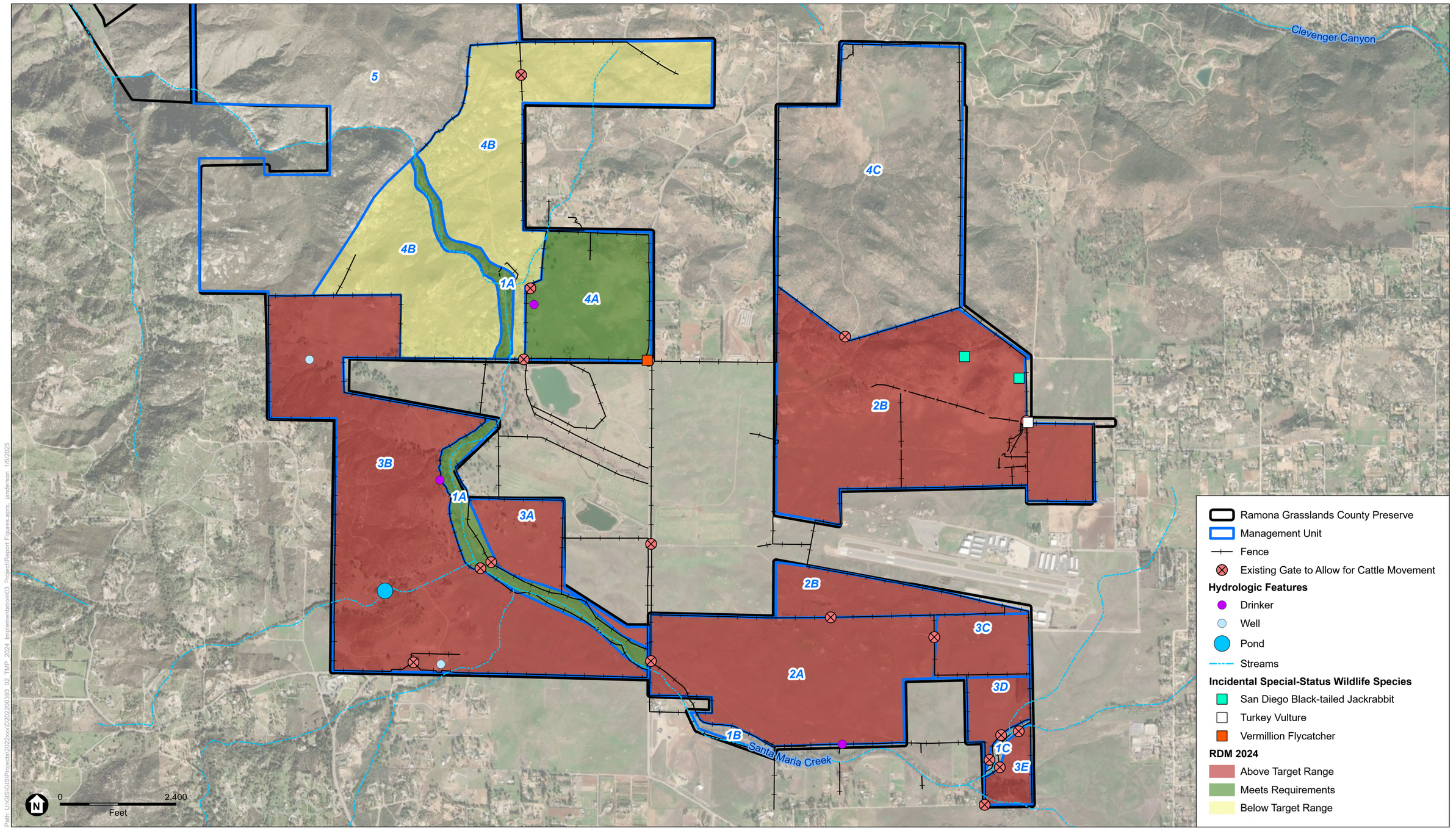
TABLE 38
SUMMARY OF 2024 RAMONA GRASSLANDS COUNTY PRESERVE RDM RESULTS

		Average RDM (lb/acre)														
Management Unit	**Target RDM Value**	**2011***	**2012***	**2013***	**2014***	**2015***	**2016***	**2017***	**2018***	**2019***	**2020**	**2021**	**2022**	**2023**	**2024**	**2024 Results**
1A	800 to 2,000 lb/acre	4,900	2,137	586	453	350	843	679	233	2,522	4,178	1,833	2,478	1,333	1,867	Meets grazing requirements.
2A	400 to 800 lb/acre	6,241	3,381	1,728	517	1,137	1,479	1,085	394	3,071	3,352	2,348	2,186	3,886	2,871	Does not meet grazing requirements.
2B	400 to 800 lb/acre	3,957	1,844	933	301	1,124	747	798	338	3,167	3,786	2,962	1,400	2,881	2,086	Does not meet grazing requirements.
3A	400 to 800 lb/acre	3,688	2,796	384	136	238	282	1,521	20	1,767	2,600	2,540	1,627	2,447	1,700	Does not meet grazing requirements.
3B	800 to 1,500 lb/acre	2,450	2,405	635	402	385	880	803	27	2,420	2,587	2,413	1,933	2,193	1,720	Does not meet grazing requirements.
3C	800 to 1,500 lb/acre	4,055	2,890	1,013	810	403	1,543	919	233	2,622	2,100	3,711	2,456	3,600	2,311	Does not meet grazing requirements.
3D	800 to 1,500 lb/acre	6,855	3,740	1,406	1,450	370	1,190	709	167	489	1,800	2,622	2,522	2,667	5,244	Does not meet grazing requirements.
3E	800 to 1,500 lb/acre	0	123	2,540	1,547	1,330	5,883	4,923	5,908	925	1,025	2,675	5,608	6,858	3,300	Does not meet grazing requirements.
4A	800 to 1,500 lb/acre	4,122	2,407	2,086	100	513	890	876	78	2,522	1,889	1,267	911	1,800	833	Meets grazing requirements.
4B	800 to 1,500 lb/acre	2,688	1,140	1,210	400	1,053	633	573	244	1,417	1,594	2,039	1,272	1,294	756	Does not meet grazing requirements.
4C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not proposed for managed grazing.
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not proposed for managed grazing.

NOTES: RDM = residual dry matter; lb/acre = pounds per acre; N/A = not applicable

* RDM values from 2011–2019 were compared to previous target RDM values as described in the Ramona Grasslands Preserve Vegetation Management Plan (ICF 2012).

These results are an average of the RDM values of all monitoring plots per management unit 2011 through 2024.



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SOURCE: ESRI, AECOM 2017; ESA 2024

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management
Targeted Monitoring Plan Resource-Specific Monitoring and Management 2024 Annual Report

Figure 20
Residual Dry Matter Monitoring Results
Ramona Grasslands County Preserve

ESA

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The majority of management units were above their target RDM values in 2024; however, 2024 RDM values were generally lower than in 2023. Results were likely influenced by the accumulated rainfall in 2024 and the reinstatement of grazing in January 2023. Ramona Airport reported approximately 13.5 inches of accumulated rainfall from January to September 2024, with significant rainfall in February from atmospheric river events (NWS, NOAA 2024). Extreme fluctuations in rainfall in recent years (e.g., drought conditions in 2018, above-average rainfall in 2019, below-average to average rainfall in 2020, drought conditions in 2021 and 2022, and above-average rainfall in 2023 and 2024) drive substantial variability in vegetative cover from year to year. As seen in **Table 38**, the general decrease in RDM values between 2023 and 2024 is likely due to the return of cattle on the preserve.

4.11.2 Adaptive Management Recommendations

The following are adaptive management recommendations based on the annual RDM monitoring results for all management units:

- **Coordinate with the grazing lessee on cattle grazing practices**. Provide information on the conservation goals to be fulfilled by grazing on the preserve and discuss grazing frequency, timing, rotation, and RDM targets to better guide annual grazing practices on the preserve. Cattle grazing frequency and rotations should be carefully monitored to restrict access to vernal pool and playa habitat during the wet season[1] (typically November through March for Southern California), as well as when clay soils are still moist and malleable.
- **Continue long-term RDM monitoring in all units (except 4C and 5)**. This is important to make sure that RDM values do not exceed or drop below the range needed to meet the management targets and increase biodiversity.
- **Conduct invasive non-native plant mapping**. Invasive non-native plant mapping should be conducted throughout the preserve annually, if feasible, per the monitoring recommendations in the *Targeted Monitoring Plan* (ESA and ICF 2022).
- **Continue active restoration of management unit 3E**. Remove invasive non-native plant species by a combination of mowing, herbicide treatment, and/or targeted grazing. Quantitative vegetation monitoring, such as Relevé assessment, is recommended within this management unit to document pre-restoration and post-restoration conditions.
- **Seed bare ground surrounding water troughs**. Extensive areas of bare ground were observed surrounding the water troughs during 2018–2024 surveys. Native grass seed should be planted around water troughs and in bare ground near water troughs to improve soil quality. Seed should be from a local credible source or collected within the preserve by hired seed collectors or DPR rangers who have been taught by a consultant on how to collect native plant seeds. Plant species that could be distributed in areas with bare ground, such as those around the troughs, include purple needlegrass (*Stipa pulchra*), nodding needlegrass (*Stipa cernua*), wild rye (*Elymus triticoides*), and Lemmon's canary grass (*Phalaris lemmonii*). These species have been verified as native grasses found within the preserve, according to the San Diego Natural History Museum (2011) Plant Atlas Database. Seeds should not come from outside of San Diego County.

[1] The vernal pool wet season can generally be defined as the period between winter and early spring, typically November through March for Southern California. The start of the vernal pool wet season begins each year once a substantial precipitation event occurs (providing at least 0.5 inch) to wet the soil enough to start germination of vernal pool indicator species.

- **Conduct rare plant surveys throughout the preserve**. Rare plant surveys should be conducted every 10 years in the spring and late summer, per the monitoring recommendations in the *Targeted Monitoring Plan* (ESA and ICF 2022). Rare plants have been incidentally observed during RDM monitoring; however, these incidental observations are not representative of comprehensive rare plant surveys. Rare plant surveys should focus on areas with rare soils and sensitive habitats, and areas where rare plants have been recorded in the past. The rare plant surveys should be used to update the sensitive plant maps from the Vegetation Management Plan (ICF 2012), identify populations of sensitive species for more intensive monitoring, and determine if any new sensitive species are present. Following the completion of rare plant surveys, monitoring plots located within sensitive plant populations should be adjusted to avoid impacts to the species.

CHAPTER 5
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Appendix A

Vernal Pools and Alkali Playas Permanent Photographic Monitoring

A-1 Ramona Grasslands County Preserve

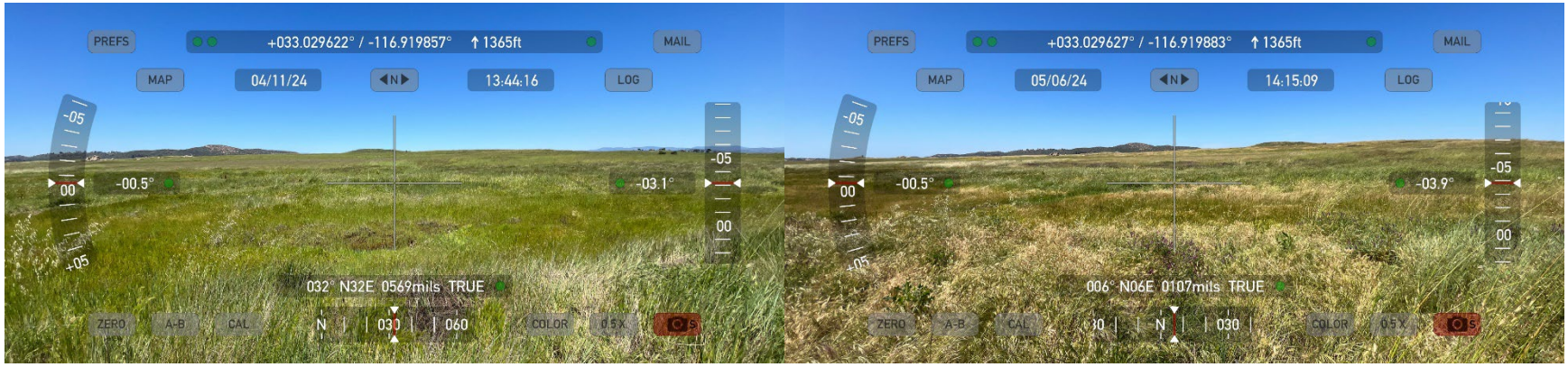
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c20

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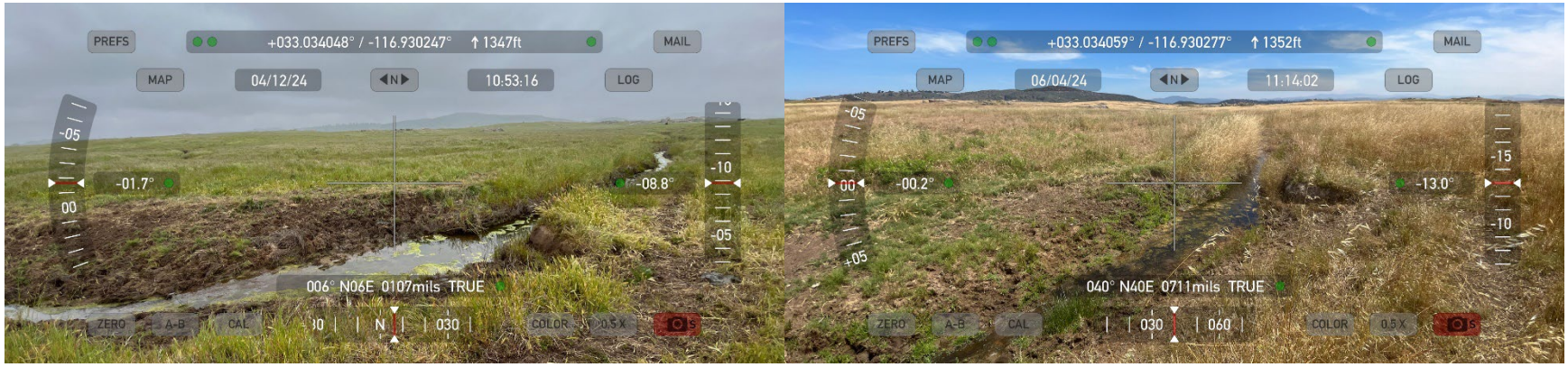


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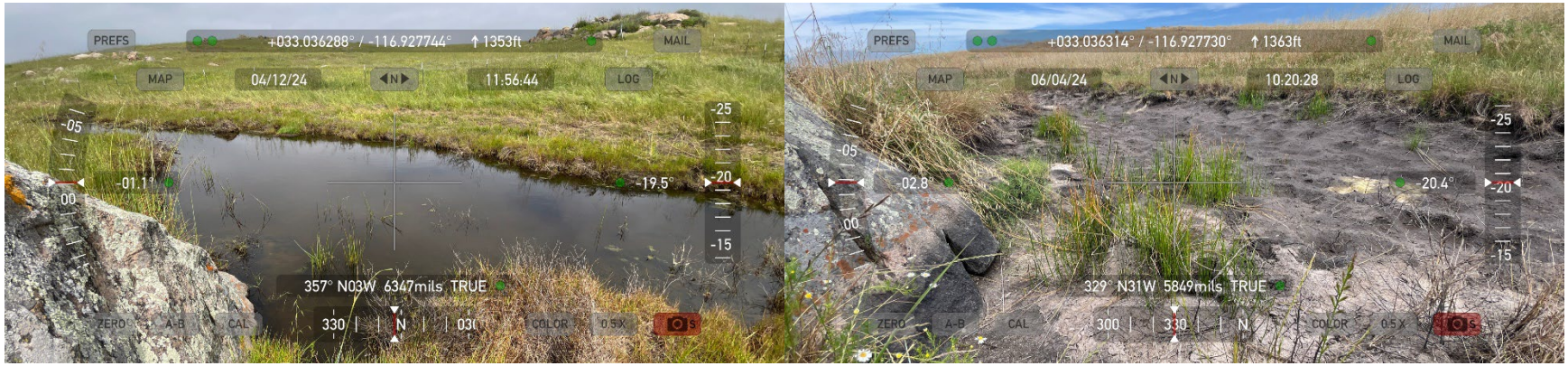


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CS02



CS03

Wet Season **Dry Season**



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e48

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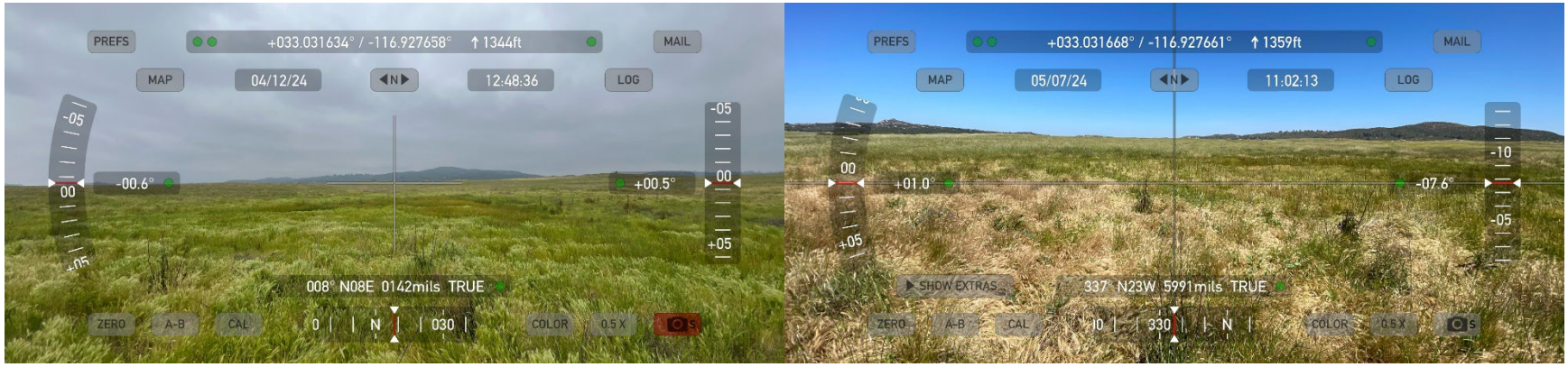


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e56



e58

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e59	





e61

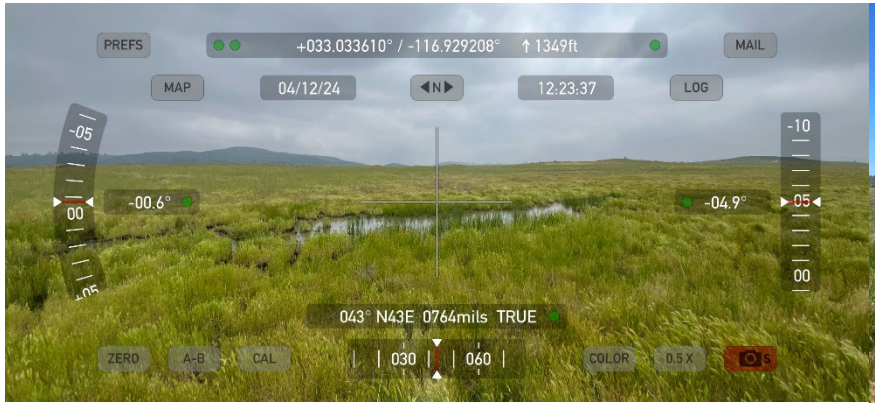
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Dry Season



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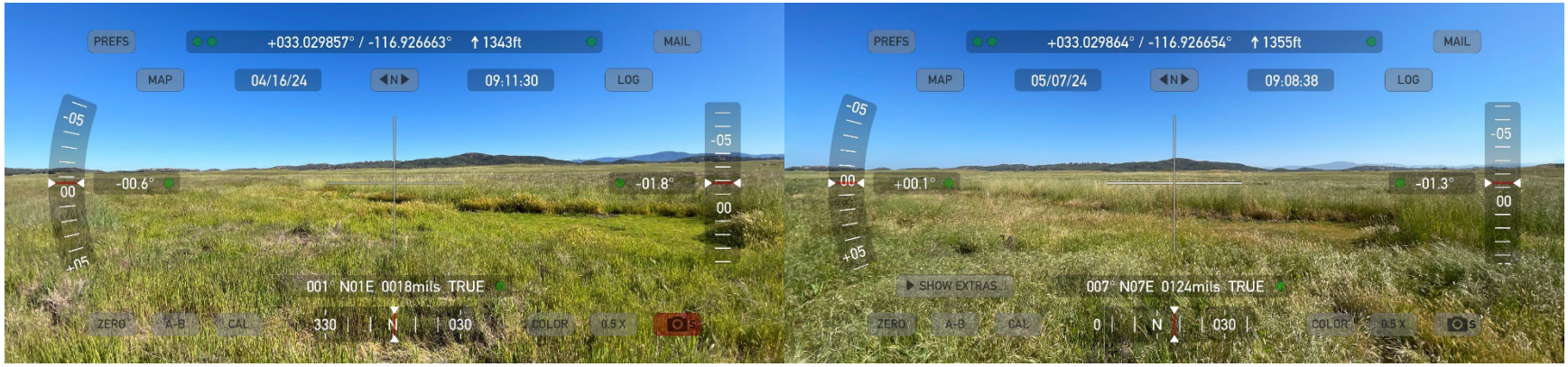


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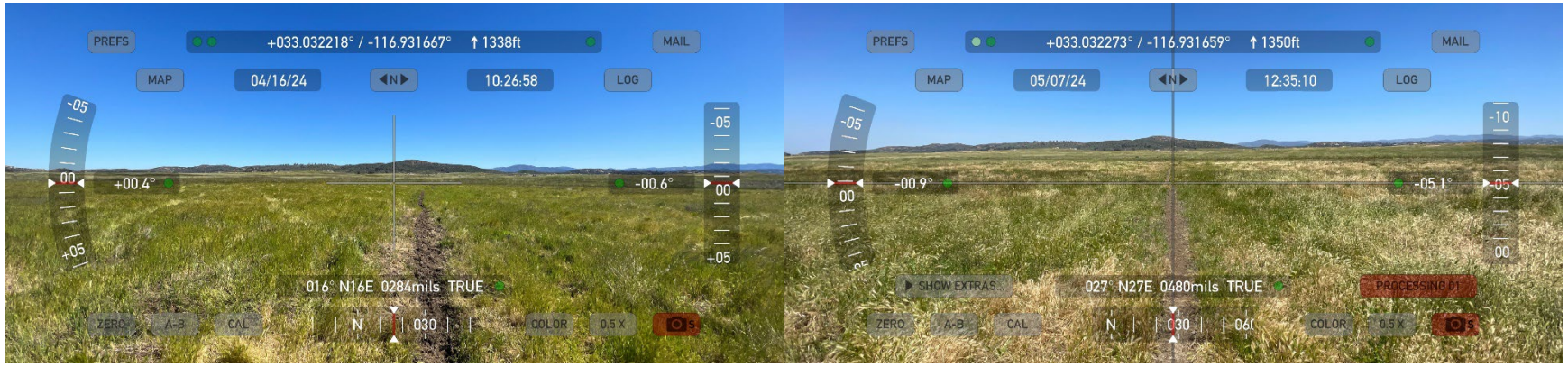
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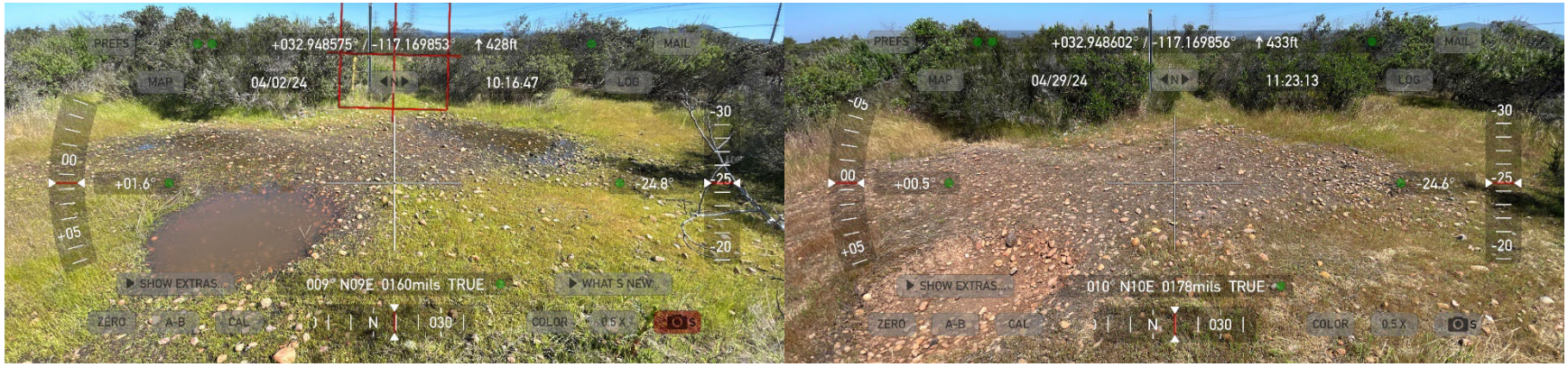


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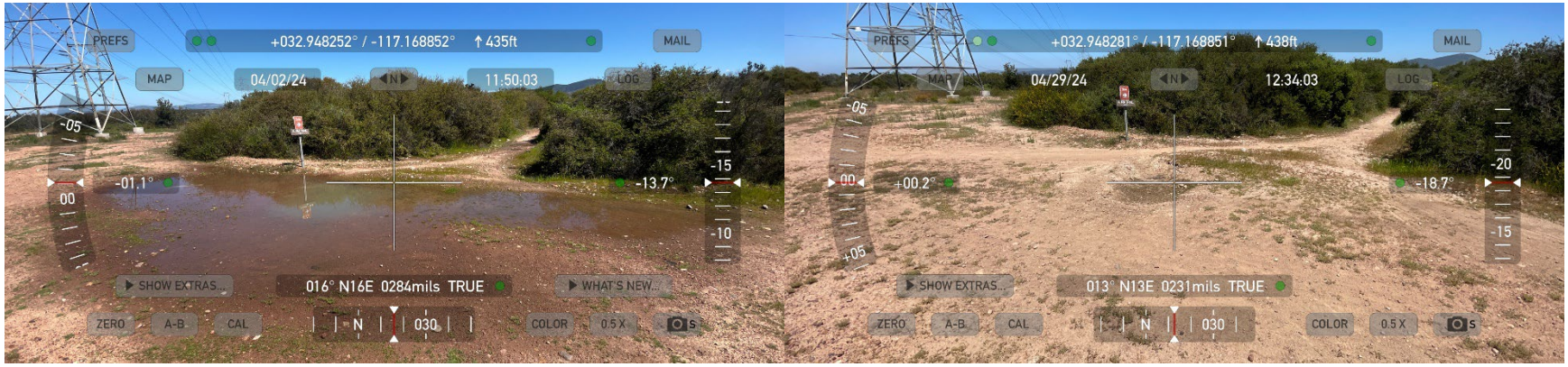
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A-2 Los Peñasquitos Canyon County Preserve

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SDLP002

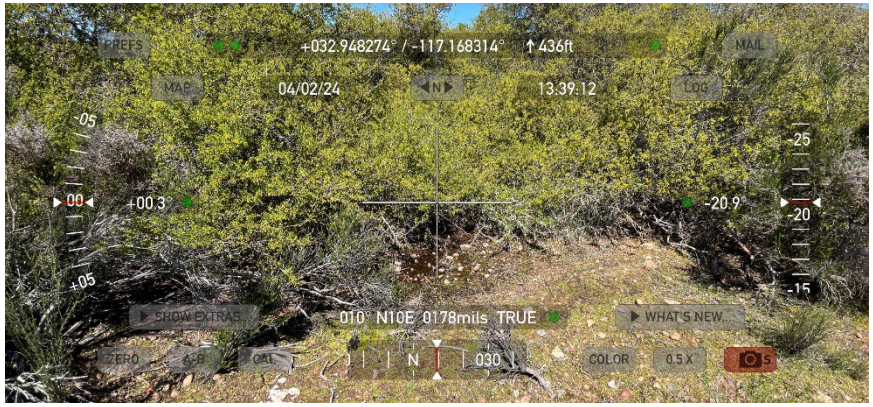
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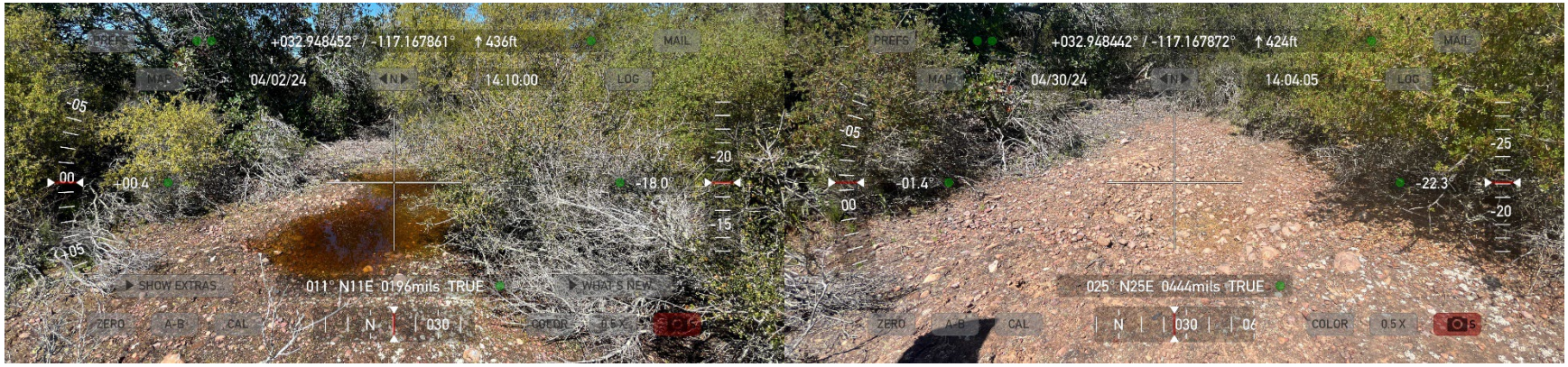
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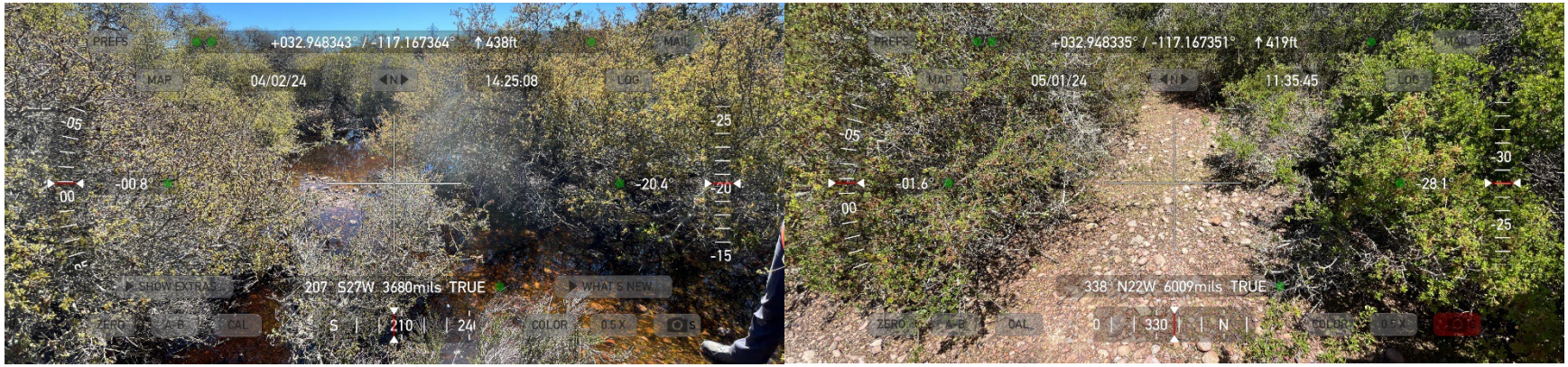


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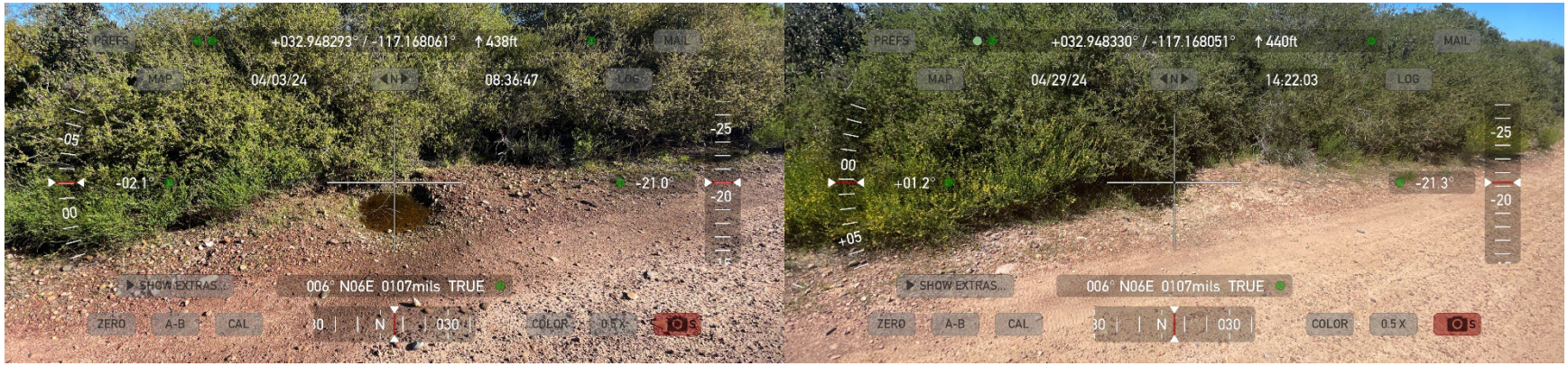


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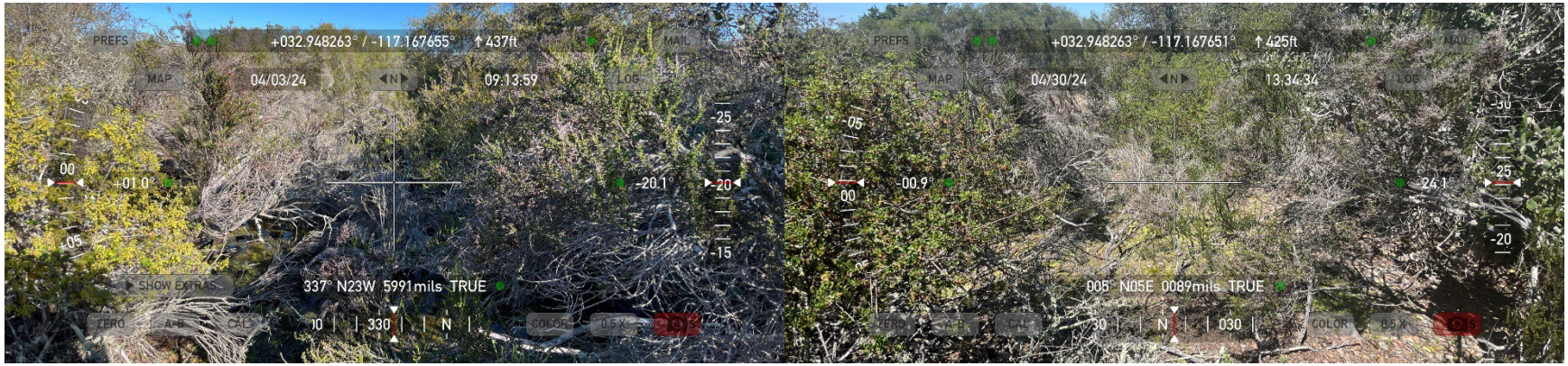


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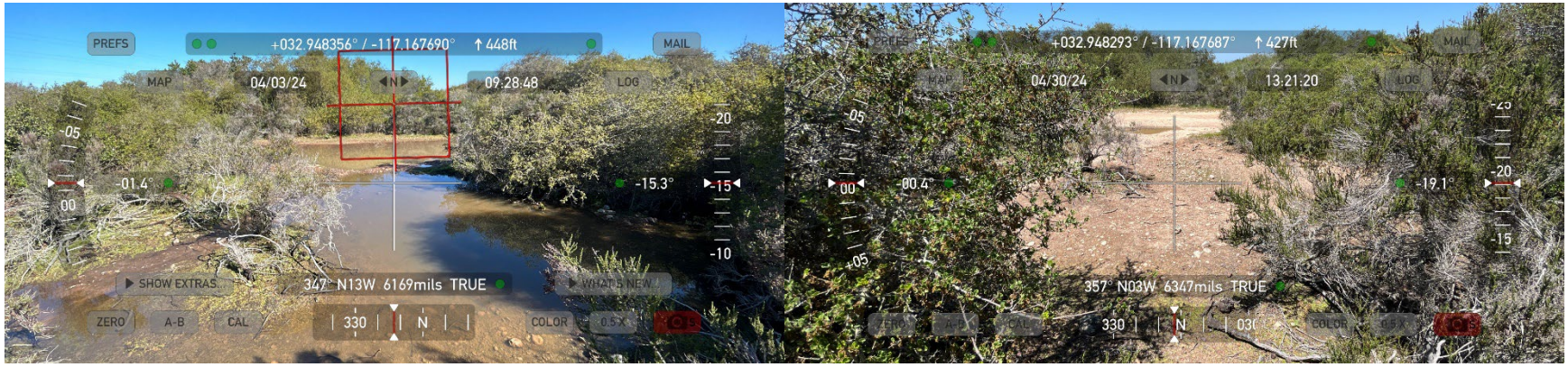


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SDLP014

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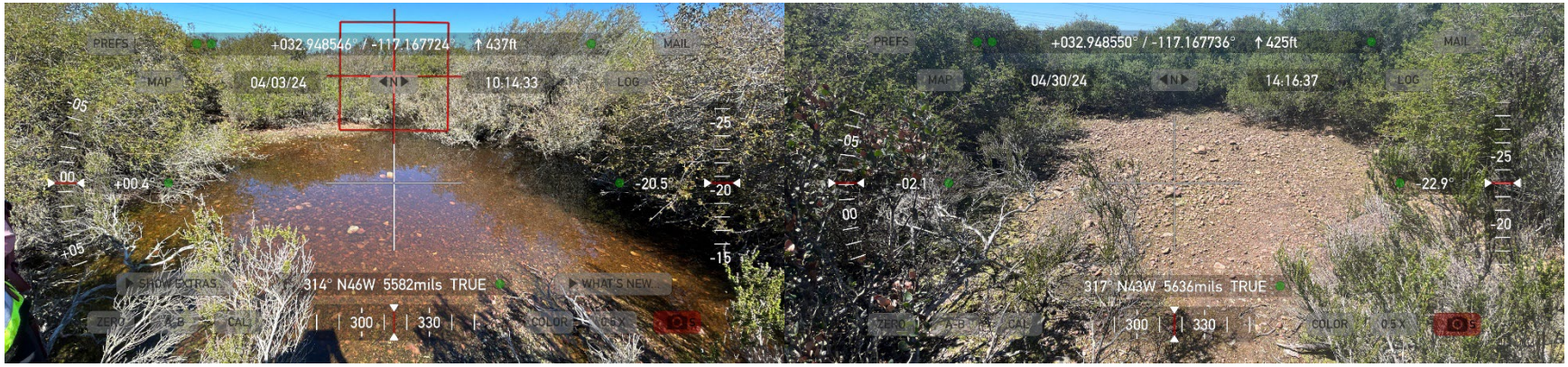


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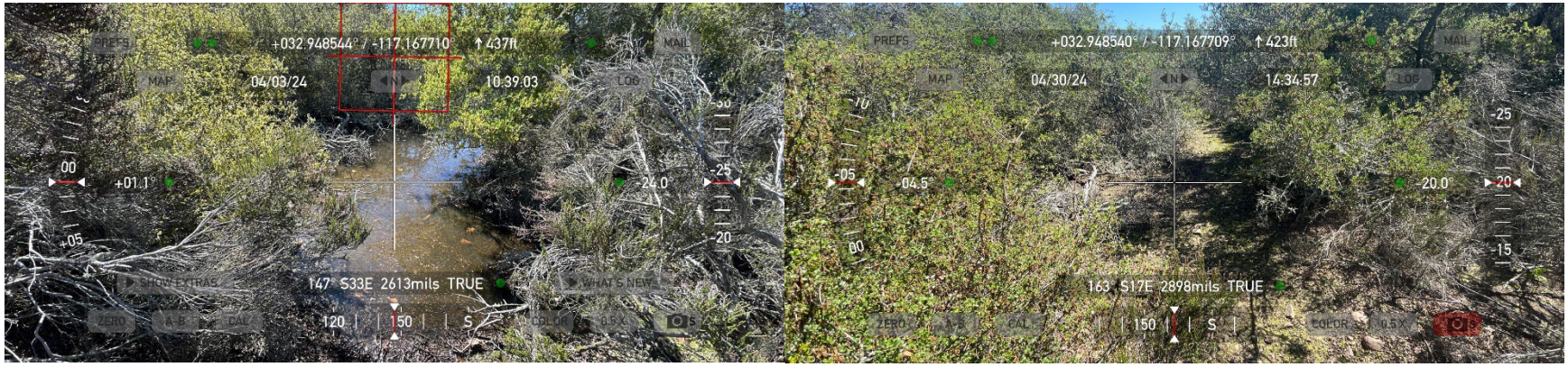


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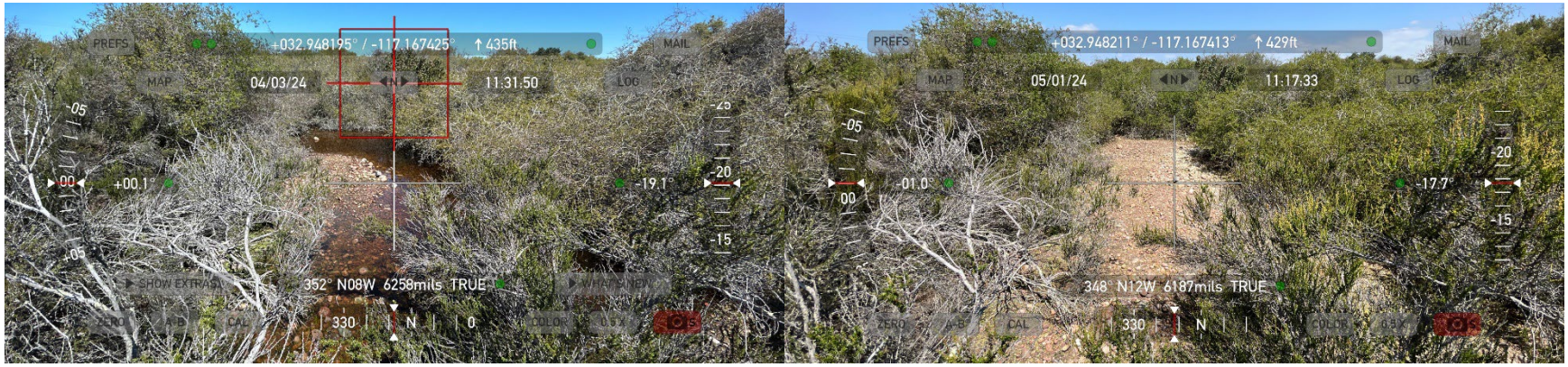


SDLP017

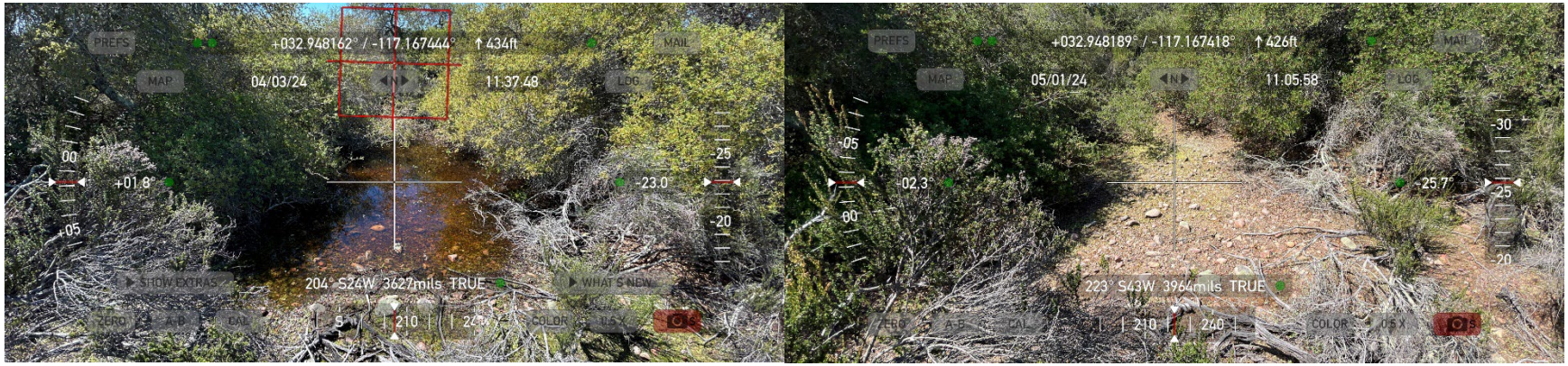


SDLP018

Wet Season **Dry Season**



SDLP019



SDLP020

Wet Season | **Dry Season**

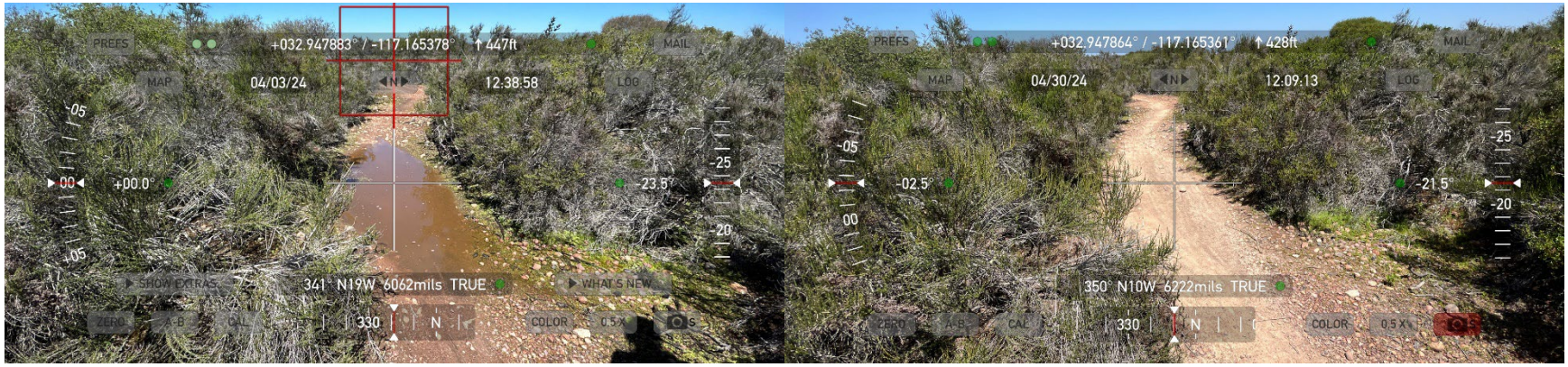


SDLP021

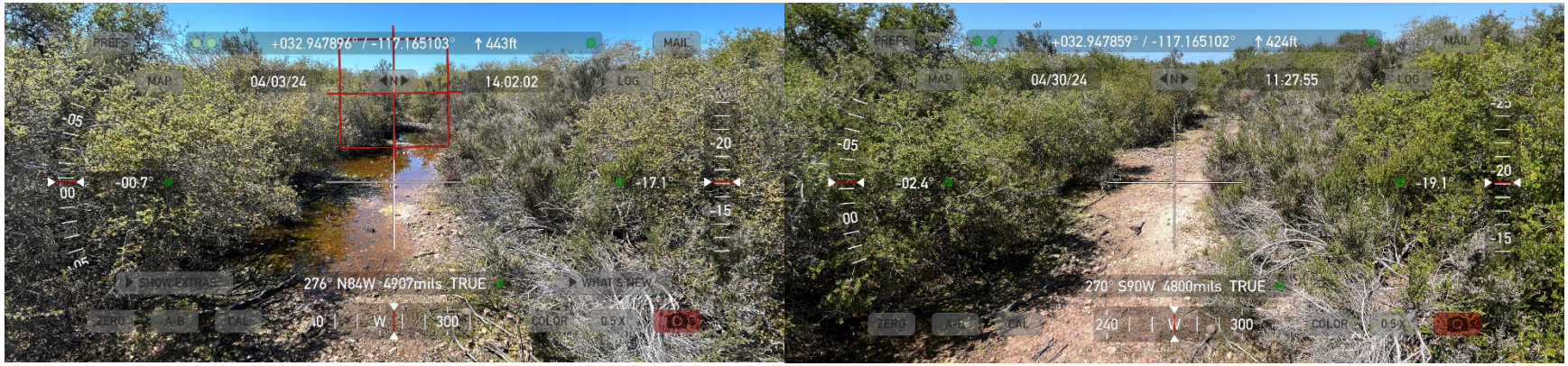


SDLP022

Wet Season | **Dry Season**

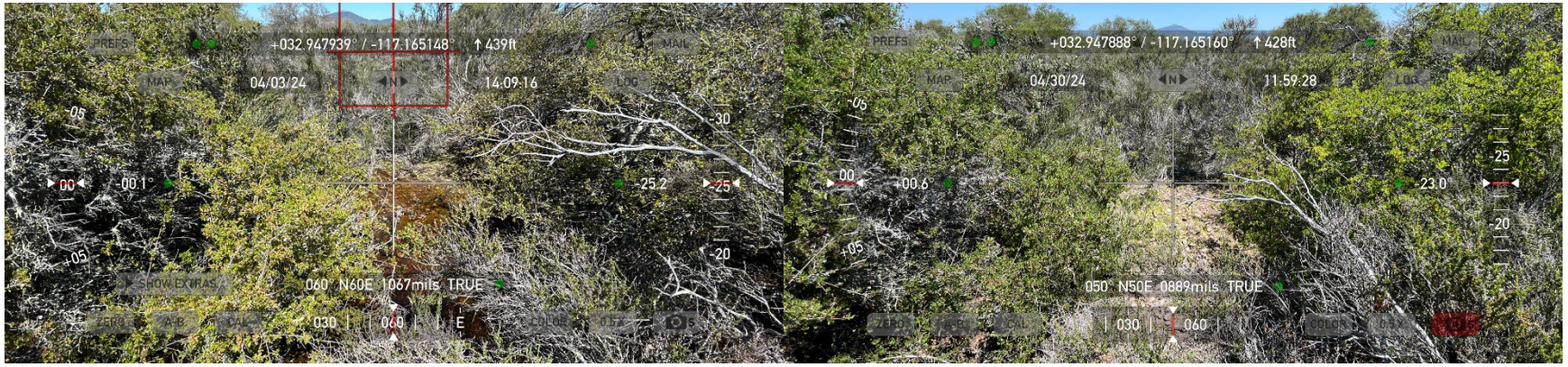


SDLP023

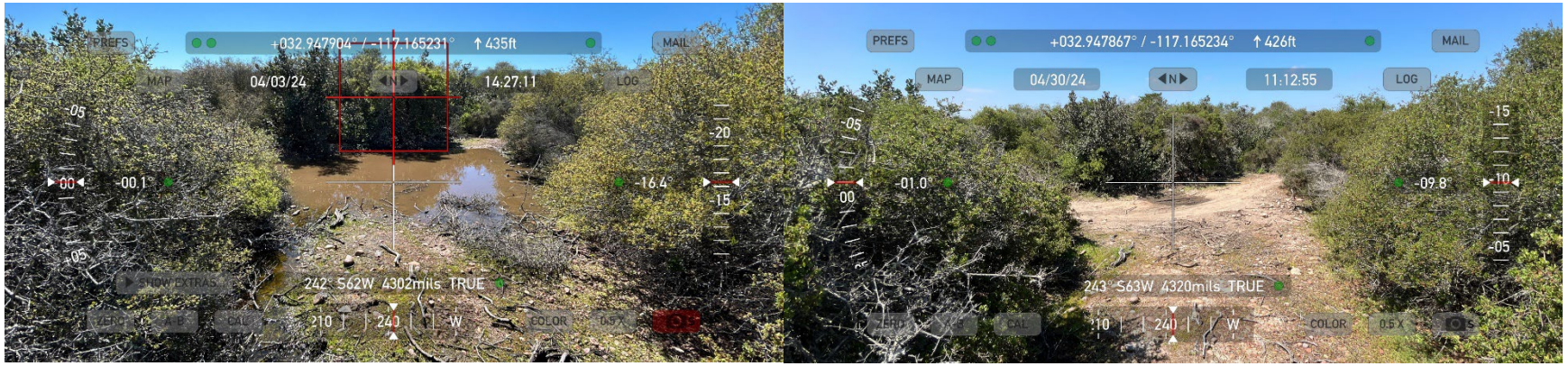


SDLP024

Wet Season **Dry Season**



SDLP025

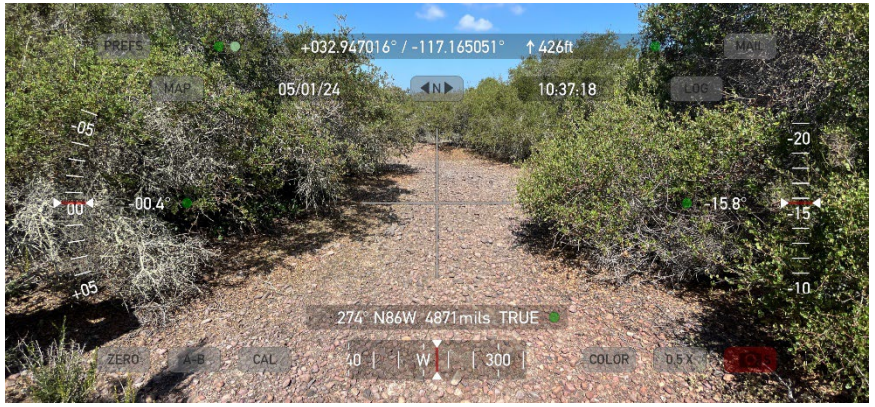


SDLP026

Wet Season



Dry Season



SDLP027



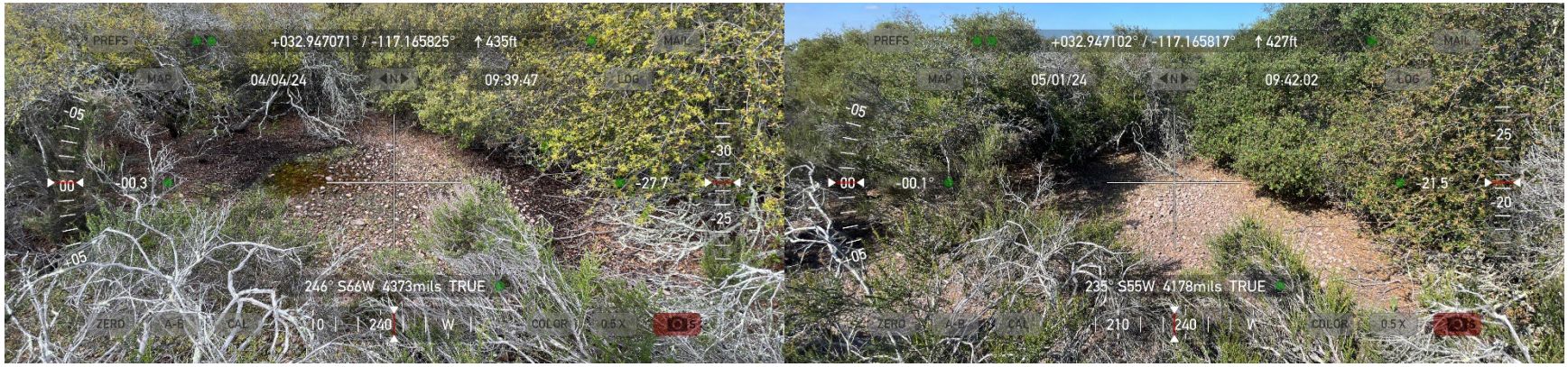


SDLP028

Wet Season | **Dry Season**

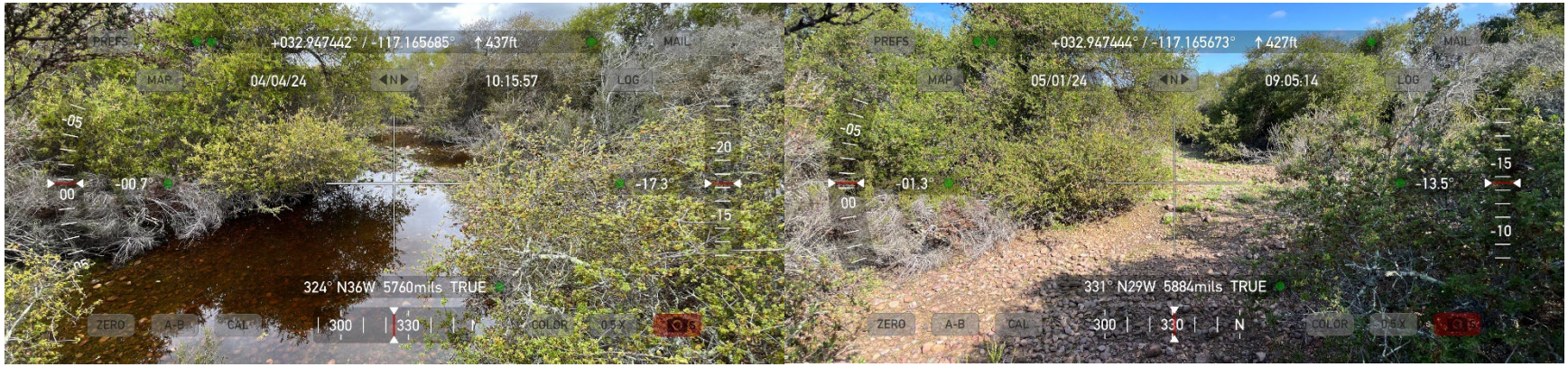


SDLP029

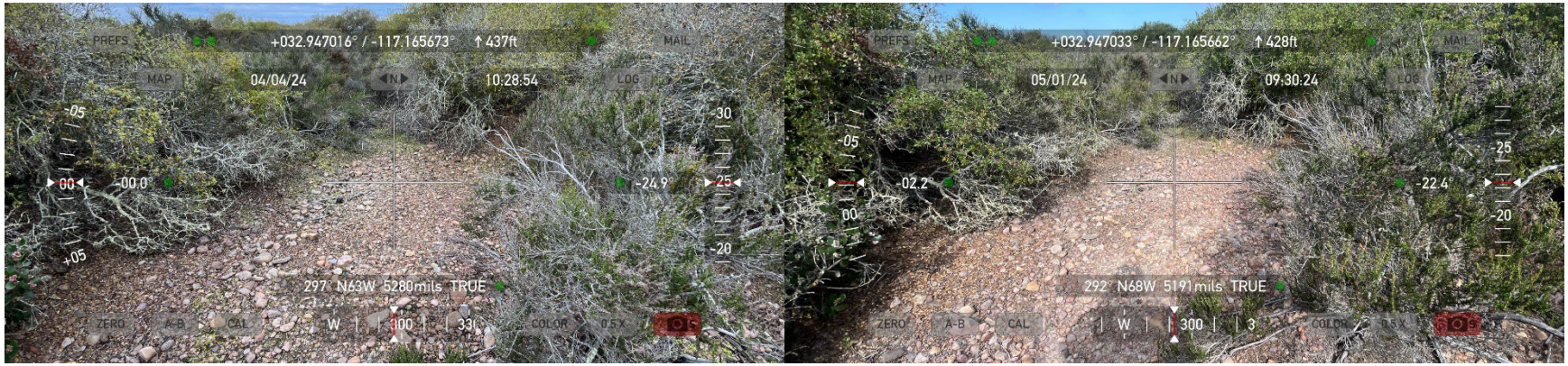


SDLP030

Wet Season **Dry Season**

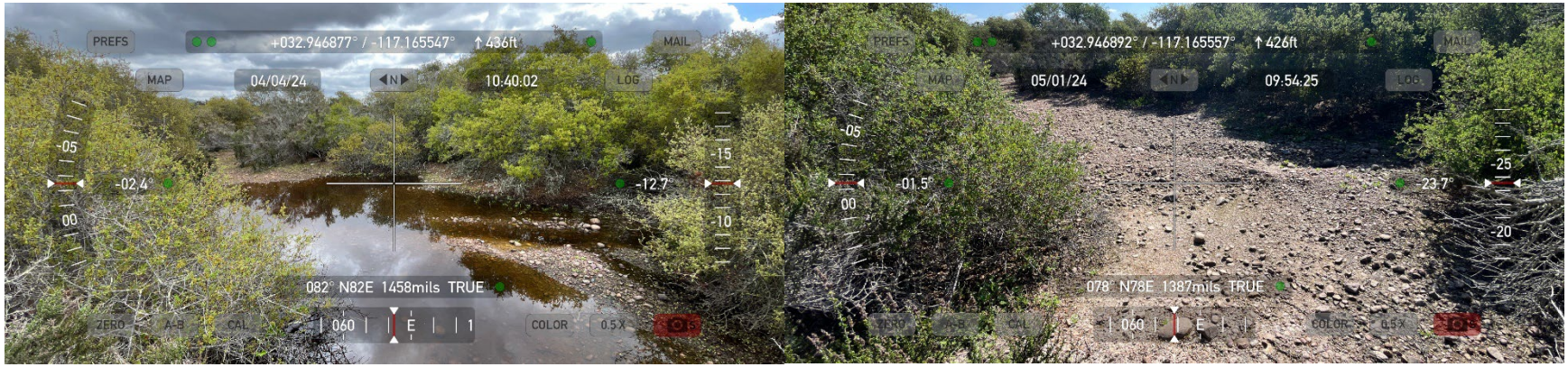


SDLP031

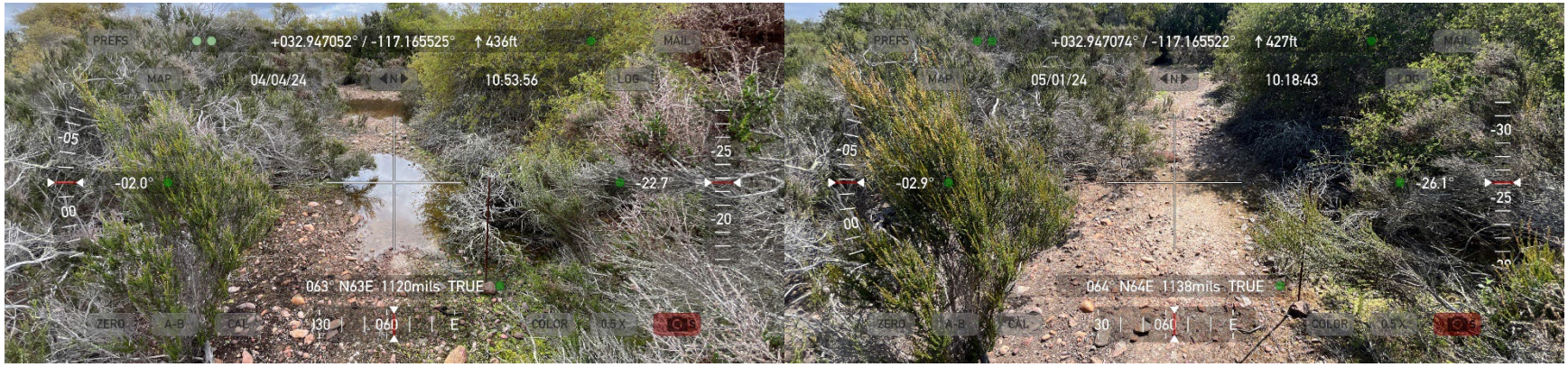


SDLP032

Wet Season **Dry Season**

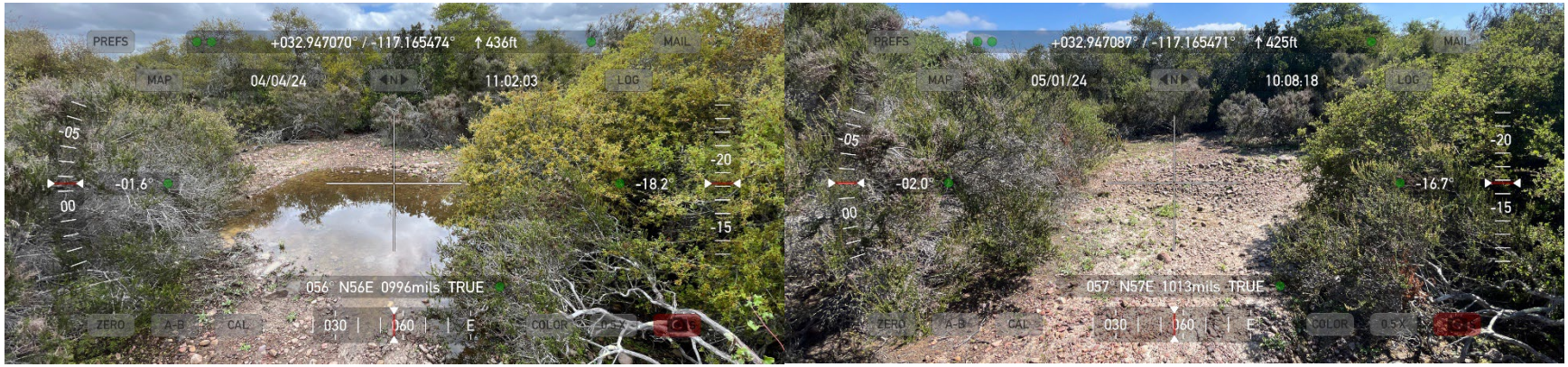


SDLP033

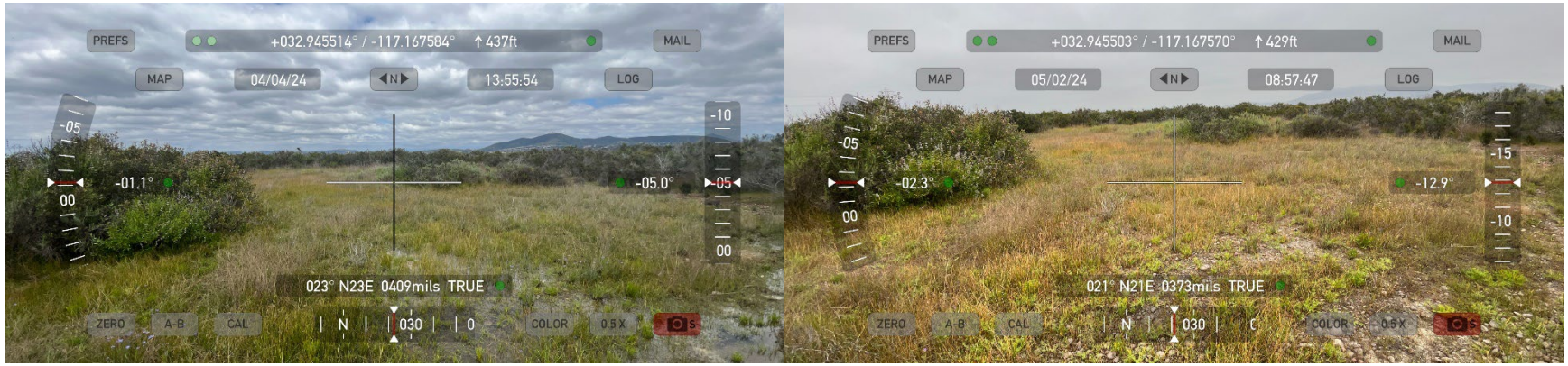


SDLP034

Wet Season **Dry Season**

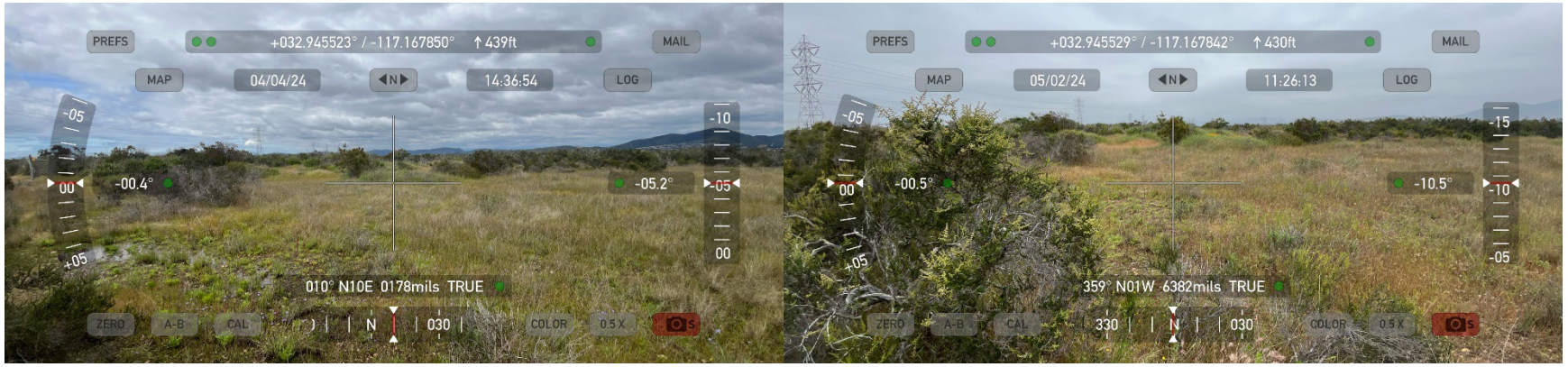


SDLP035

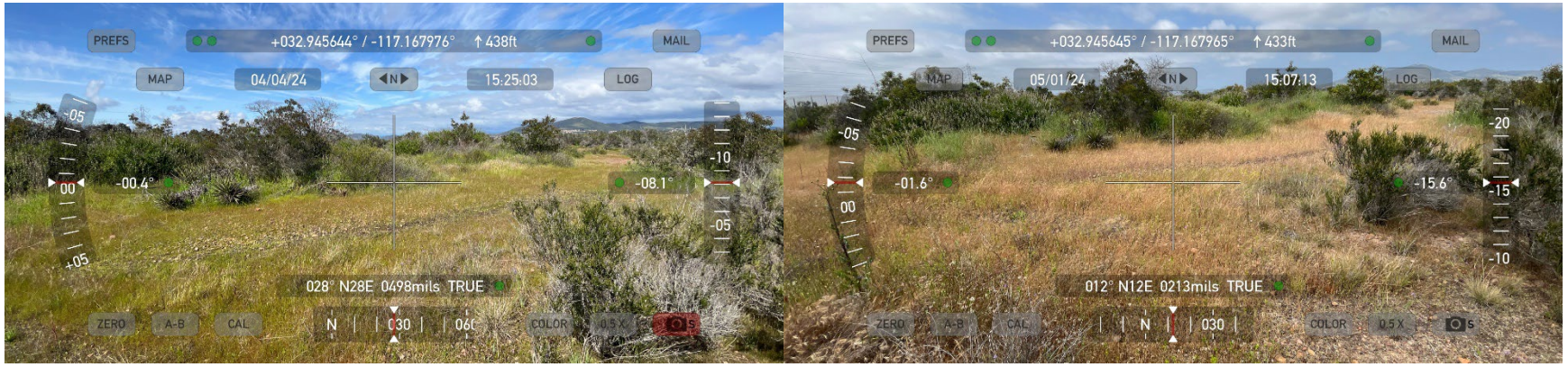


SDLP036

Wet Season **Dry Season**

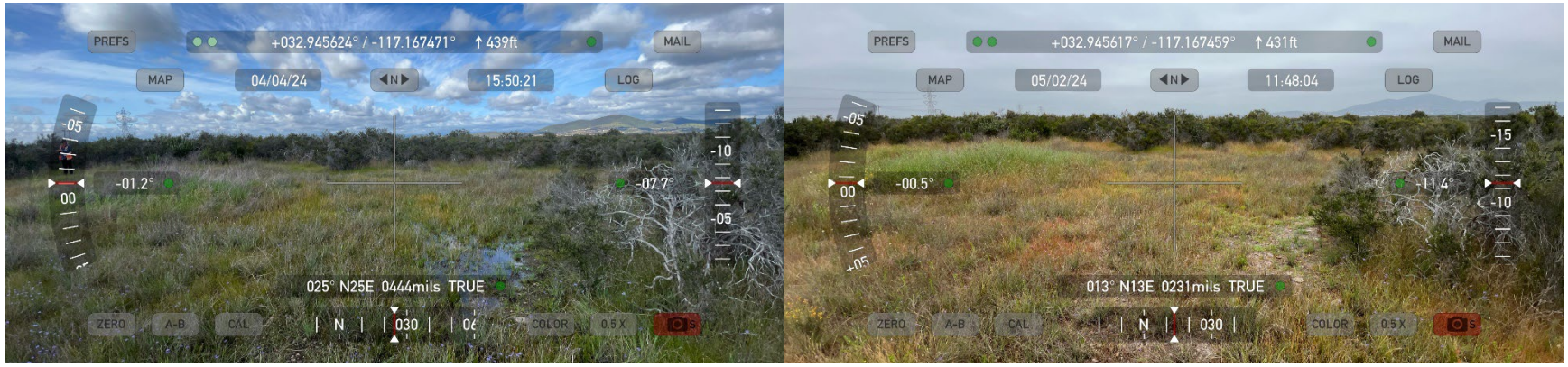


SDLP037



SDLP038

Wet Season **Dry Season**



SDLP039



SDLP040

Wet Season **Dry Season**

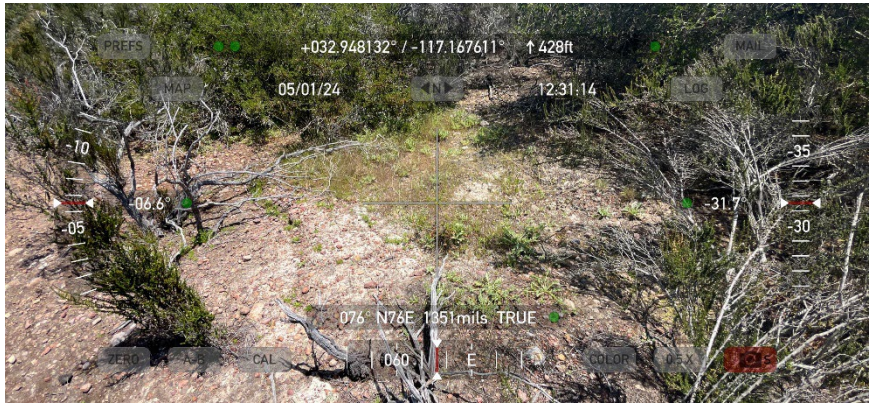


SDLP041



SDLP042

Wet Season	Dry Season
Image not available.	 SDLP043
Image not available.	 SDLP044

Wet Season	Dry Season
Image not available.	 SDLP045

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Appendix B

Rare Plant Monitoring & Management – Permanent Photographic Monitoring & Representative Photographs

B-1 San Diego Thornmint

Simon County Preserve Permanent Photo Points



Photo 1. San Diego thornmint photo monitoring at SIPRACIL01 (Photo Point 1). ACIL_4SIPR026_1_Photo1_05022024

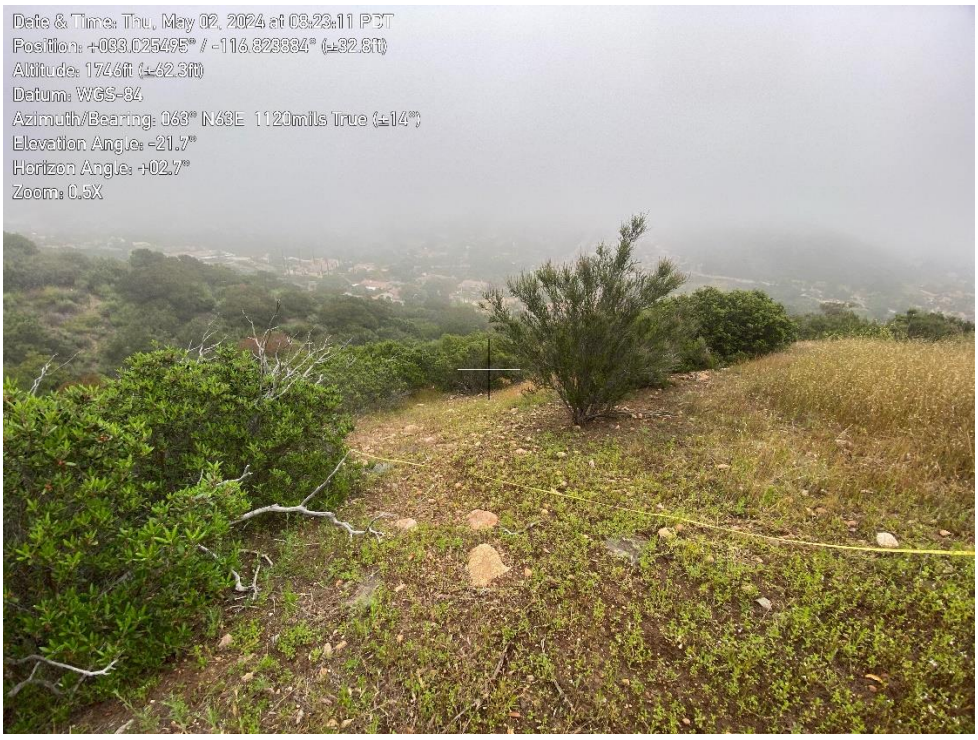


Photo 2. San Diego thornmint photo monitoring at SIPRACIL01 (Photo Point 2). ACIL_4SIPR026_1_Photo2_05022024

Simon County Preserve Representative Photographs



Photo 3. San Diego thornmint both vegetative and flowering at Simon County Preserve.

Sycamore Canyon/Goodan Ranch County Preserve Permanent Photo Points



Photo 4. San Diego thornmint photo monitoring at SYGOACIL01. ACIL_4SYCA027_1_Photo1_05072024

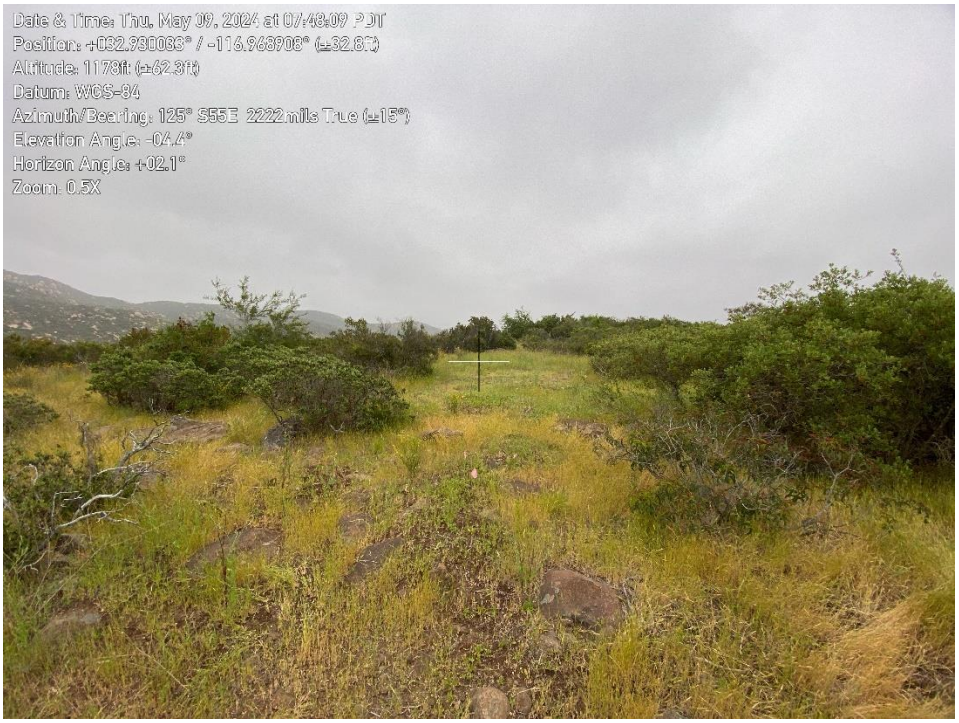


Photo 5. San Diego thornmint photo monitoring at SYGOACIL05. ACIL_4SYCA027_5_Photo1_05092024



Photo 6. San Diego thornmint photo monitoring at SYGOACIL06.
ACIL_4SYCA027_6_Photo1_05082024



Photo 7. San Diego thornmint photo monitoring at SYGOACIL08.
ACIL_4SYCA027_8_Photo1_05082024



Photo 8. San Diego thornmint photo monitoring at SYGOACIL10.
ACIL_4SYCA027_10_Photo1_05072024

Sycamore Canyon/Goodan Ranch County Preserve Representative Photographs



Photo 9. San Diego thornmint flowering amongst invasive non-native purple false brome at Sycamore Canyon/Goodan Ranch County Preserve.



Photo 10. San Diego thornmint population flowering amongst invasive non-native purple false brome and tocalote at Sycamore Canyon/Goodan Ranch County Preserve.



Photo 11. Sensitive native Palmer's grapplinghook detected within San Diego thornmint monitoring plots at Sycamore Canyon/Goodan Ranch County Preserve.

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B-2 San Miguel Savory

Boulder Oaks County Preserve Focused Management Representative Photographs



Photo 12. San Miguel savory in flower at Boulder Oaks County Preserve.



Photo 13. Representative photo of San Miguel savory after invasive non-native grasses were removed at Boulder Oaks County Preserve.



Photo 14. Focused management consisting of removing invasive non-native grasses near the San Miguel savory population at Boulder Oaks County Preserve.

B-3 Otay Tarplant

Furby-North County Preserve Focused Management Representative Photographs



Photo 15. Otay tarplant flowering at Furby-North County Preserve.



Photo 16. Representative invasive non-native plant species present in and around Otay tarplant populations within Furby-North County Preserve.



Photo 17. Focused management consisting of hand-pulling invasive non-native grasses occuring within the DECO13_3OMEA026_1 monitoring plot at Furby-North County Preserve.



Photo 18. Site conditions of the DECO13_3OMEA026_1 monitoring plot after management at Furby-North County Preserve.

B-4 Orcutt's Bird's-Beak

Tijuana River Valley Regional Park Focused Management Representative Photographs



Photo 19. Orcutt's bird's-beak observed at Tijuana River Valley Regional Park



Photo 20. Orcutt's bird's-beak observed at Tijuana River Valley Regional Park



Photo 21. New location of Orcutt's bird's-beak individuals observed at Tijuana River Valley Regional Park



Photo 22. New location of Orcutt's bird's-beak individuals observed at Tijuana River Valley Regional Park



Photo 23. Focused management consisting of hand-pulling invasive non-native grasses occuring within the Orcutt's bird's-beak monitoring plot COOR7_1TIRI009_1 at Tijuana River Valley Regional Park.



Photo 24. Site conditions of the Orcutt's bird's-beak monitoring plot COOR7_1TIRI009_1 after management at Tijuana River Valley Regional Park.

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B-5 Variegated Dudleya

Lusardi Creek County Preserve Focused Management Representative Photographs



Photo 25. Variegated dudleya with both the previous year's fruit and new flower buds at Lusardi Creek County Preserve.



Photo 26. New variegated dudleya seedlings at Lusardi Creek County Preserve.



Photo 27. Representative photo of invasive non-native grass cover within the variegated dudleya herbivore exclusion fencing prior to management at Lusardi Creek County Preserve.

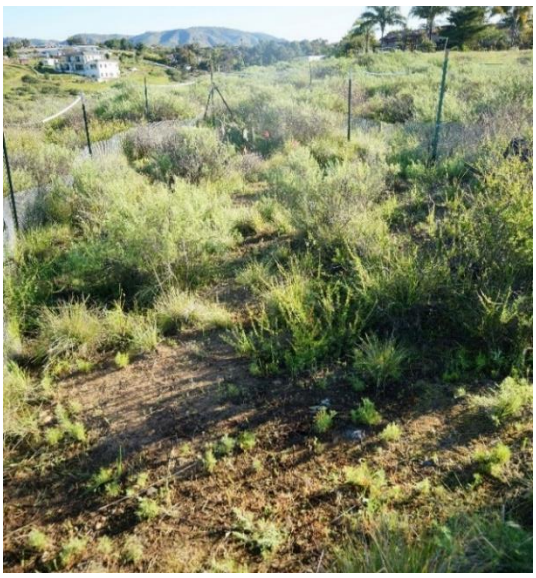


Photo 28. Representative photo within the variegated dudleya herbivore exclusion fencing after management at Lusardi Creek County Preserve.



Photo 29. Site conditions before management to the variegated dudleya monitoring plot at Lusardi Creek County Preserve.



Photo 30. Site conditions after management to the variegated dudleya monitoring plot at Lusardi Creek County Preserve.

B-6 Willowy Monardella

Sycamore Canyon/Goodan Ranch County Preserve Permanent Photo Points



Photo 31. Willowy monardella photo monitoring at SYC201501. MOLIV_4SYCA006_1_Photo1_0620204



Photo 32. Willowy monardella photo monitoring at SYC201602. MOLIV_4SYCA002_1_Photo1_0620204



Photo 33. Willowy monardella photo monitoring at SYC202103. MOLIV_4SYCA006_2_Photo1_0620204

Sycamore Canyon/Goodan Ranch County Preserve Representative Photographs



Photo 34. Willowy monardella blooming amongst invasive non-native grasses at Sycamore Canyon/Goodan Ranch County Preserve.



Photo 35. Willowy monardella blooming and being visited by Crotch's bumble bee at Sycamore Canyon/Goodan Ranch County Preserve.



Photo 36. Invasive non-native crimson fountaingrass detected upstream of monitoring plot SYC201501 within Sycamore Canyon/Goodan Ranch County Preserve.

Appendix C

MSP Rare Plant Occurrence Monitoring Forms

C-1 San Diego Thornmint

MSP Occurr. ID & Sample Point.	**ACIL_4SIPR026_1**
Preserve	Simon County Preserve
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
UpdateSampInfo	no
Can this survey be shared publicly?	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/2/2024
Time Start	8:43
Surveyors	Dillon Travis, Stefanie Lehner
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	2,200
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	medium
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	6
Category for Percent Flowering in Sampling Area	2
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	1.68
GPSAccurracyUnits	m
PlotX	516451
PlotY	3654129
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	Phone10
Photo1Dir	228
Photo1Hei	CamHei_Photo1

MSP Occurr. ID & Sample Point.	ACIL_4SIPR026_1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SIPR026_1_Photo1_05022024
Photo2X	Photo2_E_UTM
Photo2Y	Photo2_N_UTM
Check your location of the PHOTO POINT 2 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo2Dir	29
Photo2Hei	CamHei_Photo2
Photo2Ang	CamAng_Photo2
UpdatePhoto2Info	no
PhotoNumPhoto2	ACIL_4SIPR026_1_Photo2_05022024
SANDAG2012_VegAllianceAssoc	Adenostoma fasciculatum-Xylococcus bicolor Association
CryptogamicCrustCover	2
ThatchCover	3
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	7
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Hirschfeldia incana
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	60
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	8
Acmispon micranthus - San Diego bird's-foot trefoil	0.2
Adenostoma fasciculatum - chamise	4
Apiastrum angustifolium - mock parsley	0.2
Artemisia californica - coastal sagebrush	0.2
Avena barbata - slender oat	4
Bloomeria crocea - common goldenstar	0.2
Bromus hordeaceus - soft brome	0.2
Bromus rubens - red brome	0.2
Centaurea melitensis - Maltese star-thistle	1
Chlorogalum spp.- soaproot	0.2
Deinandra fasciculata - clustered tarweed	6

MSP Occurr. ID & Sample Point.	ACIL_4SIPR026_1
Erodium cicutarium - redstem stork's bill	0.2
Festuca microstachys - small fescue	0.2
Festuca myuros - annual fescue	1
Fritillaria biflora - chocolate lily	0.2
Harpagonella palmeri - Palmer's grappling-hook	0.2
Hirschfeldia incana - shortpod mustard	0.2
Hypochaeris glabra - smooth cat's ear	0.2
Logfia gallica - narrowleaf cottonrose	0.2
Microseris douglasii - Douglas' silverpuffs	1
Sonchus asper - spiny sowthistle	0.2
Uropappus lindleyi - Silver puffs	0.2
Xylococcus bicolor - mission manzanita	17
Other Associated Species?	yes
othername1	Stylocline gnaphaloides
otherper1	0.2
othername2	Euphorbia spathulata
otherper2	0.2
othername3	Melilotus indicus
otherper3	0.2
othername4	Scutellaria tuberosa
otherper4	1
BareGround	43.4
CrypSoils	2
Rock	4
Litter	3
Water	0
Vegetation	47.6
DeadShrubs	0
TotalPercCover	100.6
Is the maximum extent information already entered?	no
Number of Plants per Current Mapped Extent	2,260
Exact or Estimate for Max Extent Number	estimate
uncertainty_MaxExt	medium
Plants_clusters_vs_individ_MaxExt	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
AreaCurrentMappedExtent	313.85
Area_units	sq_m
Area_exact_or_estim	low
CurrentExtentPerimMethod	exact

MSP Occurr. ID & Sample Point.	ACIL_4SIPR026_1
SpeciesLocated_in_maximumExtent	yes
ExpandedEfforty_n	no
SurroundingLandUse	Conserved open space preserve. Surrounded by residential development.
NonnativeForbs	5
NonnativeForbs_desc	Non-native forbs (Centaurea melitensis, Erodium cicutarium, Hirschfeldia incana, Hypochaeris glabra, Logfia gallica, Sonchus asper, Melilotus indicus)
NonnativeGrasses	4
NonnativeGrasses_desc	Non-native grasses (Avena barbata, Bromus spp., Festuca spp.)
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	4
CompetitiveNativePlts_desc	Deinandra fasciculata
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	3
Trampling_desc	Minimal trampling as a result of IMG monitoring
Vandalism	1
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	no
HistoricGrazing_desc	NA
HistoricAgriculture	no
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	1
Erosion_desc	NA
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1

MSP Occurr. ID & Sample Point.	ACIL_4SIPR026_1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	no
YearBurned	NA
Trails_disturbance	1
Trails_authorized	NA
TrailUse_Hiking	NA
TrailUse_Biking	NA
TrailUse_Equestrian	NA
TrailUse_Dog	NA
TrailUse_ServiceVehicles	NA
TrailUse_Other	NA
TrailUse_illegal_descript	NA
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring. Hand weeding of competitive invasive non-native grasses (Avena, Bromus spp., Festuca spp.) and native plants (Deinandra fasciculata)
ManageActions_PastYr	None
CNDDB_SppDetected	Acanthomintha ilicifolia, Harpagonella palmeri
Notes	NA
Time Finish	11:09

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_1
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
UpdateSampInfo	no
Can this survey be shared publicly?	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/7/2024
Time Start	11:47
Surveyors	Amy Orduño-Baez and Dillon Travis
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	1100
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	medium
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	6
Category for Percent Flowering in Sampling Area	3
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	1.83
GPSAccurracyUnits	m
PlotX	501592
PlotY	3644272
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 10
Photo1Dir	203 Degrees
Photo1Hei	CamHei_Photo1

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SYCA027_1_Photo1_05072024
SANDAG2012_VegAllianceAssoc	Brachypodium distachyon Semi-Natural Stand Type
CryptogamicCrustCover	2
ThatchCover	4
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	3
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Centaurea melitensis
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	26
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	0.2
Acmispon glaber - deerweed	0.2
Apiastrum angustifolium - mock parsley	0.2
Artemisia californica - coastal sagebrush	0.2
Baccharis sarothroides - desertbroom	2
Brachypodium distachyon - purple false brome	40
Bromus madritensis - compact brome	0.2
Calochortus spp. - mariposa lily	0.2
Centaurea melitensis - Maltese star-thistle	0.2
Chlorogalum parviflorum - smallflower soap plant	0.2
Convolvulus simulans - field bindweed	0.2
Crassula connata - sand pygmyweed	0.2
Deinandra fasciculata - clustered tarweed	8
Erodium botrys - longbeak stork's bill	0.2
Festuca myuros - annual fescue	0.2
Gastridium phleoides - nit grass	0.2
Harpagonella palmeri - Palmer's grappling-hook	0.2
Heteromeles arbutifolia - toyon	2
Hypochaeris glabra - smooth cat's ear	0.2
Logfia gallica - narrowleaf cottonrose	0.2
Lysimachia arvensis – scarlet pimpernel	0.2
Malosma laurina - laurel sumac	1

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_1
Mirabilis laevis - wishbone bush	0.2
Plantago erecta - California plantain	0.2
Rhamnus crocea - spiny redberry	1
Salvia mellifera - black sage	1
Sisyrinchium bellum - western blue-eyed grass	0.2
Sonchus asper - spiny sowthistle	1
Other Associated Species?	no
BareGround	28.4
CrypSoils	1
Rock	5
Litter	2
Water	0
Vegetation	62.6
DeadShrubs	1
TotalPercCover	100
Alreadyentered	no
Ifyes_whichsurvey	
Number of Plants per Current Mapped Extent	3,575
Exact or Estimate for Max Extent Number	estimate
uncertainty_MaxExt	medium
Plants_clusters_vs_individ_MaxExt	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
AreaCurrentMappedExtent	1,299.55
Area_units	sq_m
Area_exact_or_estim	low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
ExpandedEfforty_n	no
SurroundingLandUse	Conserved open space preserve, open to hiking, mountain biking, equestrian use.
NonnativeForbs	6
NonnativeForbs_desc	Erodium spp., Centaurea melitensis, Sonchus spp., Logfia gallica, Hypochaeris glabra
NonnativeGrasses	7
NonnativeGrasses_desc	Brachypodium distachyon, Bromus spp., Festuca myuros
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	5
CompetitiveNativePlts_desc	Deinandra fasciculata decreased in cover from last year.
Dumping_trash	1

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	3
Trampling_desc	Light trampling as a result of TMP monitoring
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	unknown
HistoricGrazing_desc	NA
HistoricAgriculture	no
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	1
Erosion_desc	NA
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	no
YearBurned	NA
Trails_disturbance	1
Trails_authorized	NA

MSP Occurr. ID & Sample Point.	**ACIL_4SYCA027_1**
TrailUse_Hiking	NA
TrailUse_Biking	NA
TrailUse_Equestrian	NA
TrailUse_Dog	NA
TrailUse_ServiceVehicles	NA
TrailUse_Other	NA
TrailUse_illegal_descript	NA
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring and invasive non-native grass and forb treatment.
ManageActions_PastYr	Dethatching non-native grasses, hand weeding forbs and line trimming outside max extent in buffer.
CNDDB_SppDetected	Acanthomintha ilicifolia, Convolvulus simulans, Harpagonella palmeri.
Notes	NA
Time Finish	12:48

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_5
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
UpdateSampInfo	no
Public	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/9/2024
Time Start	08:24
Surveyors	Dillon Travis and Karla Alcaraz
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	344
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	6
Category for Percent Flowering in Sampling Area	2
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	2
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	1.52
GPSAccurracyUnits	m
PlotX	502915
PlotY	3643523
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 10
Photo1Dir	150 Degrees
Photo1Hei	CamHei_Photo1

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_5
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SYCA027_5_Photo1_05092024
SANDAG2012_VegAllianceAssoc	Adenostoma fasciculatum-Xylococcus bicolor Association
CryptogamicCrustCover	2
ThatchCover	2
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	3
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Deinandra fasciculata and Centaurea melitensis
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	25
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	3
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	1
Acmispon glaber - deerweed	1
Adenostoma fasciculatum - chamise	6
Allium sp. - onion	0.2
Apiastrum angustifolium - mock parsley	0.2
Brachypodium distachyon - purple false brome	12
Bromus hordeaceus - soft brome	0.2
Bromus rubens - red brome	0.2
Calochortus splendens - splendid mariposa lily	0.2
Centaurea melitensis - Maltese star-thistle	1
Cercocarpus betuloides - birch-leaf mountain-mahogany	1
Deinandra fasciculata - clustered tarweed	2
Dipterostemon capitatus - bluedicks	0.2
Dudleya variegata - Variegated dudleya	0.2
Eriophyllum confertiflorum - golden-yarrow	0.2
Erodium cicutarium - redstem stork's bill	0.2
Festuca myuros - annual fescue	0.2
Harpagonella palmeri - Palmer's grappling-hook	0.2
Heteromeles arbutifolia - toyon	1
Hypochaeris glabra - smooth cat's ear	0.2
Lepidium spp. - pepperweed	0.2
Logfia gallica - narrowleaf cottonrose	0.2

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_5
Lonicera subspicata - southern honeysuckle	1
Malosma laurina - laurel sumac	5
Plantago erecta - California plantain	1
Quercus X acutidens - Oak hybrid	2
Rhamnus crocea - spiny redberry	2
Salvia apiana - white sage	0.2
Sanicula arguta - sharptooth blacksnakeroot	0.2
Sisyrinchium bellum - western blue-eyed grass	0.2
Sonchus asper - spiny sowthistle	0.2
Stipa pulchra - Purple needle grass	0.2
Uropappus lindleyi - Silver puffs	0.2
Xylococcus bicolor - mission manzanita	20
Other Associated Species?	no
BareGround	26.6
CrypSoils	1
Rock	10
Litter	1
Water	0
Vegetation	60.4
DeadShrubs	1
TotalPercCover	100
Alreadyentered	no
Ifyes_whichsurvey	NA
Number of Plants per Current Mapped Extent	815
Exact or Estimate for Max Extent Number	estimate
uncertainty_MaxExt	medium
Plants_clusters_vs_individ_MaxExt	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
AreaCurrentMappedExtent	82.94
Area_units	sq_m
Area_exact_or_estim	low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
ExpandedEfforty_n	no
SurroundingLandUse	Open Space preserve open to hiking and biking and horse riding
NonnativeForbs	5
NonnativeForbs_desc	Erodium spp., Centaurea melitensis, Sonchus spp., Logfia gallica, Hypochaeris glabra
NonnativeGrasses	6

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_5
NonnativeGrasses_desc	Brachypodium distachyon, Bromus spp., Festuca myuros
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	3
CompetitiveNativePlts_desc	Deinandra fasciculata decreased in cover from last year.
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	3
Trampling_desc	Light trampling as a result of TMP monitoring
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	unknown
HistoricGrazing_desc	NA
HistoricAgriculture	no
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	1
Erosion_desc	NA
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_5
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	no
YearBurned	NA
Trails_disturbance	1
Trails_authorized	NA
TrailUse_Hiking	NA
TrailUse_Biking	NA
TrailUse_Equestrian	NA
TrailUse_Dog	NA
TrailUse_ServiceVehicles	NA
TrailUse_Other	NA
TrailUse_illegal_descript	NA
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring, hand weeding of non-native invasive forbs and grasses, specifically Brachypodium distachyon.
ManageActions_PastYr	Dethatching non-native grasses, hand weeding forbs and line trimming outside max extent in buffer.
CNDDB_SppDetected	Acanthomintha ilicifolia, Harpagonella palmeri, Dudleya variegata
Notes	Significantly less Deinandra fasciculata here compared to 2023.
Time Finish	09:08

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_6
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
UpdateSampInfo	no
Public	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/8/2024
Time Start	11:01
Surveyors	Dillon Travis and Karla Alcaraz
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	3,300
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	medium
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	5
Category for Percent Flowering in Sampling Area	3
Category for Percent Fruiting in Sampling Area	2
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	2
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	10
GPSAccurracyUnits	ft
PlotX	502262
PlotY	3644082
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 10
Photo1Dir	333 Degrees
Photo1Hei	CamHei_Photo1

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_6
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SYCA027_6_Photo1_05082024
SANDAG2012_VegAllianceAssoc	Deinandra fasciculata Association
CryptogamicCrustCover	1
ThatchCover	2
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	1
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Centaurea melitensis, Deinandra fasciculata
DeadStanding_CoverClass	3
DeadStandingHeightAverage_cm	28
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	2
Apiastrum angustifolium - mock parsley	1
Artemisia californica - coastal sagebrush	1
Avena barbata - slender oat	0.2
Bloomeria crocea - common goldenstar	0.2
Brachypodium distachyon - purple false brome	3
Bromus hordeaceus - soft brome	0.2
Bromus rubens - red brome	0.2
Centaurea melitensis - Maltese star-thistle	4
Cneoridium dumosum - bush rue	0.2
Deinandra fasciculata - clustered tarweed	6
Eriophyllum confertiflorum - golden-yarrow	0.2
Erodium cicutarium - redstem stork's bill	0.2
Festuca myuros - annual fescue	0.2
Harpagonella palmeri - Palmer's grappling-hook	0.2
Heteromeles arbutifolia - toyon	3
Hypochaeris glabra - smooth cat's ear	0.2
Lysimachia arvensis - scarlet pimpernel	0.2
Malosma laurina - laurel sumac	5
Quercus X acutidens - Oak hybrid	5
Rhus integrifolia - lemonade sumac	6
Salvia apiana - white sage	0.2

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_6
Salvia mellifera - black sage	3
Sonchus asper - spiny sowthistle	0.2
Xylococcus bicolor - mission manzanita	6
Other Associated Species?	no
BareGround	48.4
CrypSoils	0
Rock	1
Litter	2
Water	0
Vegetation	47.6
DeadShrubs	1
TotalPercCover	100
Alreadyentered	no
Ifyes_whichsurvey	NA
Number of Plants per Current Mapped Extent	3,800
Exact or Estimate for Max Extent Number	estimate
uncertainty_MaxExt	medium
Plants_clusters_vs_individ_MaxExt	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
AreaCurrentMappedExtent	222.74
Area_units	sq_m
Area_exact_or_estim	low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
ExpandedEfforty_n	no
SurroundingLandUse	Open Space preserve open to hiking and biking and horse riding
NonnativeForbs	4
NonnativeForbs_desc	Erodium spp., Centaurea melitensis, Sonchus spp., Hypochaeris glabra, Lysimachia arvensis
NonnativeGrasses	3
NonnativeGrasses_desc	Brachypodium distachyon, Bromus spp., Festuca myuros
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	4
CompetitiveNativePlts_desc	Deinandra fasciculata may be encroaching into plot.
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_6
FeralPig	1
FeralPig_desc	NA
Trampling	3
Trampling_desc	Light trampling as a result of TMP monitoring
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	no
HistoricGrazing_desc	NA
HistoricAgriculture	no
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	1
Erosion_desc	NA
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	no
YearBurned	NA
Trails_disturbance	1
Trails_authorized	NA
TrailUse_Hiking	NA
TrailUse_Biking	NA
TrailUse_Equestrian	NA

MSP Occurr. ID & Sample Point.	**ACIL_4SYCA027_6**
TrailUse_Dog	NA
TrailUse_ServiceVehicles	NA
TrailUse_Other	NA
TrailUse_illegal_descript	NA
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring. Invasive forb control (Centaurea melitensis), thin native Deinandra fasciculata specifically around ACIL patches.
ManageActions_PastYr	None
CNDDB_SppDetected	Acanthomintha ilicifolia, Harpagonella palmeri
Notes	none
Time Finish	11:32

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_8
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	197
UpdateSampInfo	no
Public	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/8/2024
Time Start	09:33
Surveyors	Dillon Travis and Karla Alcaraz
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	1,142
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	medium
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	5
Category for Percent Flowering in Sampling Area	3
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	2
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	3.11
GPSAccurracyUnits	m
PlotX	502267
PlotY	3644249
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 10
Photo1Dir	121 Degrees

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_8
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SYCA027_8_Photo1_05082024
SANDAG2012_VegAllianceAssoc	Brachypodium distachyon Semi-Natural Stand Type
CryptogamicCrustCover	1
ThatchCover	5
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	2
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Deinandra fasciculata, Centaurea melitensis
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	20
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	2
Apiastrum angustifolium - mock parsley	2
Avena barbata - slender oat	0.2
Bloomeria crocea - common goldenstar	0.2
Brachypodium distachyon - purple false brome	25
Bromus hordeaceus - soft brome	0.2
Calochortus splendens - splendid mariposa lily	0.2
Ceanothus tomentosus - woolyleaf ceanothus	1
Centaurea melitensis - Maltese star-thistle	5
Chlorogalum parviflorum - smallflower soap plant	0.2
Convolvulus arvensis - field bindweed	0.2
Deinandra fasciculata - clustered tarweed	0.2
Dipterostemon capitatus - bluedick	0.2
Eriophyllum confertiflorum - golden-yarrow	0.2
Euphorbia peplus - petty spurge	0.2
Festuca microstachys - small fescue	0.2
Harpagonella palmeri - Palmer's grappling-hook	0.2
Heteromeles arbutifolia - toyon	0.2
Hypochaeris glabra - smooth cat's ear	0.2
Lonicera subspicata - southern honeysuckle	0.2
Lysimachia arvensis – scarlet pimpernel	0.2

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_8
Malosma laurina - laurel sumac	1
Quercus X acutidens - Oak hybrid	2
Rhamnus crocea - spiny redberry	0.2
Rhus integrifolia - lemonade sumac	3
Sisyrinchium bellum - western blue-eyed grass	0.2
Sonchus asper - spiny sowthistle	0.2
Sonchus oleraceus - common sowthistle	0.2
Uropappus lindleyi - Silver puffs	0.2
Other Associated Species?	no
BareGround	51.2
CrypSoils	0
Rock	2
Litter	4
Water	0
Vegetation	43.6
DeadShrubs	0.2
TotalPercCover	100
Alreadyentered	no
Ifyes_whichsurvey	NA
Number of Plants per Current Mapped Extent	3,500
Exact or Estimate for Max Extent Number	estimate
uncertainty_MaxExt	medium
Plants_clusters_vs_individ_MaxExt	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
AreaCurrentMappedExtent	138.26
Area_units	sq_m
Area_exact_or_estim	low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
ExpandedEfforty_n	no
SurroundingLandUse	Open Space preserve open to hiking and biking and horse riding
NonnativeForbs	4
NonnativeForbs_desc	Centaurea melitensis, Sonchus spp., Hypochaeris glabra, Lysimachia arvensis, Convolvulus arvensis
NonnativeGrasses	3
NonnativeGrasses_desc	Brachypodium distachyon, Bromus hordeaceus
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	3

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_8
CompetitiveNativePlts_desc	Deinandra fasciculata may be encroaching into plot.
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	3
Trampling_desc	Light trampling as a result of TMP monitoring
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	no
HistoricGrazing_desc	NA
HistoricAgriculture	no
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	1
Erosion_desc	NA
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	no
YearBurned	NA

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_8
Trails_disturbance	1
Trails_authorized	NA
TrailUse_Hiking	NA
TrailUse_Biking	NA
TrailUse_Equestrian	NA
TrailUse_Dog	NA
TrailUse_ServiceVehicles	NA
TrailUse_Other	NA
TrailUse_illegal_descript	NA
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring and invasive non-native grass and forb hand weeding or line trimming.
ManageActions_PastYr	Dethatching non-native grasses, hand weeding forbs and line trimming outside max extent in buffer.
CNDDB_SppDetected	Acanthomintha ilicifolia, Harpagonella palmeri
Notes	NA
Time Finish	10:10

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_10
Preserve	Sycamore Canyon and Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	199
UpdateSampInfo	no
Public	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/7/2024
Time Start	08:27
Surveyors	Dillon Travis and Amy Orduño-Baez
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	1,200
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	medium
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	6
Category for Percent Flowering in Sampling Area	3
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	2
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	1.28
GPSAccurracyUnits	m
PlotX	501927
PlotY	3644367
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone10
Photo1Dir	093 Degrees

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_10
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SYCA027_10_Photo1_05072024
SANDAG2012_VegAllianceAssoc	Salvia mellifera-Malosma laurina Association
CryptogamicCrustCover	1
ThatchCover	2
ThatchDepthAverage_cat	2
ThatchDepthMax_cm	2
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Centaurea melitensis
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	60
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	4
Adenostoma fasciculatum - chamise	0.2
Apiastrum angustifolium - mock parsley	8
Artemisia californica – coastal sagebrush	1
Bromus rubens - red brome	0.2
Ceanothus tomentosus - woolyleaf ceanothus	0.2
Centaurea melitensis - Maltese star-thistle	1
Cneoridium dumosum - bush rue	0.2
Deinandra fasciculata - clustered tarweed	2
Dipterostemon capitatus - bluedicks	0.2
Eriophyllum confertiflorum - golden-yarrow	2
Erodium cicutarium - redstem stork's bill	0.2
Euphorbia peplus - petty spurge	0.2
Harpagonella palmeri - Palmer's grappling-hook	0.2
Hesperoyucca whipplei - chaparral yucca	0.2
Logfia gallica - narrowleaf cottonrose	0.2
Lupinus succulentus - Hollowleaf annual lupine	0.2
Lysimachia arvensis - Scarlet pimpernel	0.2
Malosma laurina - laurel sumac	1
Quercus X acutidens - Oak hybrid	8
Rhus ovata – sugar bush	6

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_10
Salvia apiana - white sage	5
Salvia mellifera – black sage	8
Sonchus asper - spiny sowthistle	0.2
Xylococcus bicolor - mission manzanita	4
Other Associated Species	no
BareGround	43.6
CrypSoils	0
Rock	1
Litter	3
Water	0
Vegetation	52.4
DeadShrubs	NA
TotalPercCover	100
Alreadyentered	no
Ifyes_whichsurvey	NA
Number of Plants per Current Mapped Extent	3,500
Exact or Estimate for Max Extent Number	estimate
uncertainty_MaxExt	medium
Plants_clusters_vs_individ_MaxExt	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
AreaCurrentMappedExtent	138.26
Area_units	sq_m
Area_exact_or_estim	low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
ExpandedEfforty_n	no
SurroundingLandUse	Open Space preserve open to hiking and biking and horse riding
NonnativeForbs	4
NonnativeForbs_desc	Centaurea melitensis, Sonchus spp., Erodium spp., Lysimachia arvensis, Logfia gallica, Euphorbia peplus
NonnativeGrasses	3
NonnativeGrasses_desc	Bromus rubens
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	3
CompetitiveNativePlts_desc	Deinandra fasciculata may be encroaching into plot.
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_10
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	3
Trampling_desc	Light trampling as a result of TMP monitoring
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	no
HistoricGrazing_desc	NA
HistoricAgriculture	no
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	1
Erosion_desc	NA
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	no
YearBurned	NA
Trails_disturbance	1
Trails_authorized	NA
TrailUse_Hiking	NA
TrailUse_Biking	NA

MSP Occurr. ID & Sample Point.	ACIL_4SYCA027_10
TrailUse_Equestrian	NA
TrailUse_Dog	NA
TrailUse_ServiceVehicles	NA
TrailUse_Other	NA
TrailUse_illegal_descript	NA
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring and Hand weeding of Apiastrum angustifolium, Centaurea melitensis, and Deinandra fasciculata.
ManageActions_PastYr	None
CNDDB_SppDetected	Acanthomintha ilicifolia, Harpagonella palmeri
Notes	NA
TimeFinish	09:30

C-2 Willowy Monardella

MSP Occurr. ID & Sample Point.	MOLIV_4SYCA006_1
Preserve	Sycamore Canyon and Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	172
UpdateSampInfo	no
Public	yes
Scientific Name	Monardella viminea
Date	6/20/2024
Time Start	08:58
Surveyors	Adrienne Lee and Dillon Travis
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	47
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	very_low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	clusters
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	5
Category for Percent Flowering in Sampling Area	4
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	1.52
GPSAccurracyUnits	m
PlotX	502412
PlotY	3642218
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 12
Photo1Dir	South, 176 Degrees

MSP Occurr. ID & Sample Point.	MOLIV_4SYCA006_1
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	MOLIV_4SYCA006_1_Photo1_0620204
SANDAG2012_VegAllianceAssoc	Eriogonum fasciculatum Association
CryptogamicCrustCover	2
ThatchCover	4
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	5
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Eriogonum fasciculatum, Rhamnus crocea
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	35
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acmispon glaber - deerweed	0.2
Artemisia californica - coastal sagebrush	2
Avena barbata - slender oat	2
Brachypodium distachyon - purple false brome	1
Bromus diandrus - ripgut brome	2
Bromus hordeaceus - soft brome	1
Bromus madritensis - compact brome	1
Calystegia macrostegia - island false bindweed	0.2
Centaurea melitensis - Maltese star-thistle	1
Deinandra fasciculata - clustered tarweed	0.2
Eriogonum fasciculatum - California buckwheat	12
Eriophyllum confertiflorum - golden-yarrow	0.2
Festuca myuros - annual fescue	1
Galium angustifolium - bedstraw	1
Helianthus gracilentus - slender sunflower	0.2
Lactuca serriola - prickly lettuce	0.2
Malosma laurina - laurel sumac	1
Mirabilis laevis - desert wishbone-bush	0.2
Monardella viminea - Willowy monardella	5
Osmadenia tenella - false rosinweed	0.2
Prunus ilicifolia - hollyleaf cherry	1

MSP Occurr. ID & Sample Point.	MOLIV_4SYCA006_1
Rhamnus crocea - spiny redberry	4
Salvia apiana - white sage	0.2
Salvia mellifera - black sage	3
Selaginella bigelovii - bushy spikemoss	0.2
Sisyrinchium bellum - western blue-eyed grass	0.2
Other Associated Species?	yes
othername1	Cirsium sp.
otherper1	0.2
BareGround	23.2
CrypSoils	0.2
Rock	25
Litter	11
Water	0
Vegetation	40.6
DeadShrubs	1
TotalPercCover	101
Alreadyentered	no
NumPlantsperCurrentMappedExtent	442
ExactorEstimate_MaxExt	exact
uncertainty_MaxExt	very_low
Plants_clusters_vs_individ_MaxExt	clusters
Flower_Veget_MaxExt	NA
AreaCurrentMappedExtent	3,923.31
Area_units	sq_m
Area_exact_or_estim	very_low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
Reason_IfNotFound	NA
ExpandedEfforty_n	no
SurroundingLandUse	Conserved open space preserve, open to hiking, mountain biking, equestrian use
NonnativeForbs	3
NonnativeForbs_desc	Centaurea melitensis, Cirsium spp.
NonnativeGrasses	5
NonnativeGrasses_desc	Avena barbata, Bromus spp., Brachypodium distachyon, Festuca myuros
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	1
CompetitiveNativePlts_desc	Eriogonum fasciculatum

MSP Occurr. ID & Sample Point.	MOLIV_4SYCA006_1
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	1
Trampling_desc	NA
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	unknown
HistoricGrazing_desc	NA
HistoricAgriculture	unknown
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	Creek bed channel
Erosion	3
Erosion_desc	Creek bed channel erosion
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	No
YearBurned	NA
Trails_disturbance	1

MSP Occurr. ID & Sample Point.	MOLIV_4SYCA006_1
Trails_authorized	NA
TrailUse_Hiking	NA
TrailUse_Biking	NA
TrailUse_Equestrian	NA
TrailUse_Dog	NA
TrailUse_ServiceVehicles	NA
TrailUse_Other	NA
TrailUse_illegal_descript	NA
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring, invasive forb/grass treatment
ManageActions_PastYr	None
CNDDB_SppDetected	Monardella viminea
Notes	NA
Time Finish	10:07

MSP Occurr. ID & Sample Point.	MOLIV_4SYCA002_1
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	328
UpdateSampInfo	no
Public	yes
Scientific Name	Monardella viminea
Date	6/20/2024
Time Start	13:21
Surveyors	Adrienne Lee and Dillon Travis
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	2
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	very_low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	clusters
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	1
Category for Percent Flowering in Sampling Area	6
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	1.25
GPSAccurracyUnits	m
PlotX	501045
PlotY	3642551
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 12
Photo1Dir	200

MSP Occurr. ID & Sample Point.	MOLIV_4SYCA002_1
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	MOLIV_4SYCA002_1_Photo1_06202024
SANDAG2012_VegAllianceAssoc	Eriogonum fasciculatum Association
CryptogamicCrustCover	1
ThatchCover	4
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	5.1
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Salvia apiana, Hirschfeldia incana, Acmispon glaber
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	40
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acmispon glaber - deerweed	0.2
Artemisia californica - coastal sagebrush	0.2
Avena barbata - slender oat	0.2
Brachypodium distachyon - purple false brome	1
Bromus diandrus - ripgut brome	2
Bromus hordeaceus - soft brome	1
Bromus madritensis - compact brome	1
Carduus pycnocephalus - Italian plumeless thistle	0.2
Cercocarpus minutiflorus - smooth mountain-mahogany	3
Eriogonum fasciculatum - California buckwheat	7
Erodium spp. - stork's bill	1
Festuca myuros - annual fescue	1
Festuca perennis - Italian rye grass	0.2
Heteromeles arbutifolia - toyon	1
Hirschfeldia incana - shortpod mustard	1
Hypochaeris glabra - smooth cat's ear	1
Lonicera subspicata - southern honeysuckle	0.2
Monardella viminea - Willowy monardella	0.2
Prunus ilicifolia - hollyleaf cherry	3
Salvia apiana - white sage	0.2
Silene gallica - common catchfly	0.2

MSP Occurr. ID & Sample Point.	MOLIV_4SYCA002_1
Other Associated Species?	no
BareGround	24.2
CrypSoils	0
Rock	45
Litter	6
Water	0
Vegetation	24.8
DeadShrubs	0.2
TotalPercCover	100.2
Alreadyentered	no
NumPlantsperCurrentMappedExtent	2
ExactorEstimate_MaxExt	exact
uncertainty_MaxExt	very_low
Plants_clusters_vs_individ_MaxExt	clusters
Flower_Veget_MaxExt	NA
AreaCurrentMappedExtent	Polygon submitted
Area_exact_or_estim	very_low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
Reason_IfNotFound	NA
ExpandedEfforty_n	no
SurroundingLandUse	Conserved open space preserve, open to hiking, mountain biking, equestrian use
NonnativeForbs	4
NonnativeForbs_desc	Erodium spp., Carduus pycnocephalus, Hirschfeldia incana, Hypochaeris glabra, Silene gallica
NonnativeGrasses	5
NonnativeGrasses_desc	Avena barbata, Brachypodium distachyon, Bromus spp., Festuca myuros, Festuca perennis
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	1
CompetitiveNativePlts_desc	NA
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	1
Trampling_desc	NA

MSP Occurr. ID & Sample Point.	MOLIV_4SYCA002_1
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	yes
HistoricGrazing_desc	Invasive grassland adjacent to plot
HistoricAgriculture	no
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	1
Erosion_desc	NA
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	2
RoadConst_Mainten_descrip	Hiking and biking trail adjacent to plot
VegClearing	1
VegClearing_descript	NA
Restoration	3
Restoration_desc	Appears some grass was removed last year in monardella patch
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	No
YearBurned	NA
Trails_disturbance	2
Trails_authorized	yes
TrailUse_Hiking	yes
TrailUse_Biking	yes
TrailUse_Equestrian	yes
TrailUse_Dog	unknown
TrailUse_ServiceVehicles	unknown
TrailUse_Other	no
TrailUse_illegal_descript	Hiking, biking and equestrian use likely

MSP Occurr. ID & Sample Point.	**MOLIV_4SYCA002_1**
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring, invasive forb and grass treatment
ManageActions_PastYr	Thinning of Eriogonum fasciculatum, and weeding of non-native grasses
CNDDB_SppDetected	Monardella viminea
Notes	NA
Time Finish	13:38

MSP Occurr. ID & Sample Point.	MOLIV_4SYCA006_2
Preserve	Sycamore Canyon and Goodan Ranch Preserves
Other Occ ID	MOLIV_4SPCA006_2
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	202157
UpdateSampInfo	no
Public	yes
Scientific Name	Monardella viminea
Date	6/20/2024
Time Start	12:13
Surveyors	Adrienne Lee and Dillon Travis
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	7
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	very_low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	clusters
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	2
Category for Percent Flowering in Sampling Area	6
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	1.22
GPSAccurracyUnits	m
PlotX	501657
PlotY	3640638
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	
Photo1Y	
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 12

MSP Occurr. ID & Sample Point.	MOLIV_4SYCA006_2
Photo1Dir	
Photo1Hei	
Photo1Ang	
UpdatePhotoInfo	no
PhotoNumPhoto1	MOLIV_4SYCA006_2_Photo1_0620204
SANDAG2012_VegAllianceAssoc	Eriogonum fasciculatum-Salvia apiana Association
CryptogamicCrustCover	2
ThatchCover	4
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	4
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Rhamnus crocea
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	32
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acmispon glaber - deerweed	0.2
Ambrosia psilostachya - Cuman ragweed	0.2
Artemisia californica - coastal sagebrush	3
Avena barbata - slender oat	3
Baccharis pilularis – coyote brush	0.2
Brachypodium distachyon - purple false brome	2
Bromus diandrus - ripgut brome	1
Bromus hordeaceus - soft brome	0.2
Bromus madritensis - compact brome	2
Calystegia macrostegia - island false bindweed	0.2
Centaurea melitensis - Maltese star-thistle	0.2
Cuscuta californica - California dodder	0.2
Eriogonum fasciculatum - California buckwheat	16
Festuca myuros - annual fescue	1
Hirschfeldia incana - shortpod mustard	0.2
Hypochaeris glabra - smooth cat's ear	0.2
Mirabilis laevis - desert wishbone-bush	0.2
Monardella viminea - Willowy monardella	1
Pentagramma triangularis - goldbeck fern	0.2
Rhamnus crocea - spiny redberry	1
Salvia apiana - white sage	1

MSP Occurr. ID & Sample Point.	MOLIV_4SYCA006_2
Stephanomeria spp. - wirelettuce	0.2
Other Associated Species?	no
BareGround	28.8
CrypSoils	0.2
Rock	35
Litter	3
Water	0
Vegetation	33.2
DeadShrubs	1
TotalPercCover	100.4
Alreadyentered	yes
Ifyes_whichsurvey	MOLIV_4SYCA006_1
ManageRecomm	Continued monitoring, invasive grass/forb treatment
ManageActions_PastYr	None
CNDDB_SppDetected	Monardella viminea Crotch’s bumble bee
Notes	Unofficial use of trails by public vehicles
Time Finish	12:29

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Appendix D

Harbison's Dun Skipper Representative Photographs and Field Forms

D-1 Representative Monitoring Photographs

Hellhole Canyon County Preserve Harbison's Dun Skipper Monitoring Representative Photographs



Photo 1. Harbison's dun skipper larval host plant San Diego sedge (*Carex spissa*) observed during adult flight surveys at Hellhole Canyon County Preserve.



Photo 2. Harbison's dun skipper observed nectaring on shortpod mustard (*Hirschfeldia incana*) at Hellhole Canyon County Preserve.



Photo 3. Harbison's dun skipper observed nectaring on Hemp dogbane (*Apocynum cannabinum*) at Hellhole Canyon County Preserve.



Photo 4. Harbison's dun skipper observed sunning at Hellhole Canyon County Preserve.

D-2 Field Forms

Hellhole Canyon County Preserve Harbison's Dun Skipper Field Forms

HARBISON'S DUN SKIPPER HABITAT AND THREATS ASSESSMENT MATRIX AT HELLHOLE CANYON COUNTY PRESERVE

				Oaks					Sycamores					Willows				
Site	Date	Latitude	Longitude	% composition	% healthy	% thin canopy	% dead	% fire damage	% composition	% healthy	% thin canopy	% dead	% fire damage	% composition	% healthy	% thin canopy	% dead	% fire damage
Hellhole Canyon County Preserve	5/28/24	33.22113196	-116.93281752	15	100	0	0	0	30	90	10	0	0	40	80	20	0	0
Hellhole Canyon County Preserve	5/28/24	33.22609057	-116.94489268	30	70	20	10	0	15	85	15	0	0	55	90	10	0	0

				Cottonwoods					Eucalyptus					Ornamental				
Site	Date	Latitude	Longitude	% composition	% healthy	% thin canopy	% dead	% fire damage	% composition	% healthy	% thin canopy	% dead	% fire damage	% composition	% healthy	% thin canopy	% dead	% fire damage
Hellhole Canyon County Preserve	5/28/24	33.22113196	-116.93281752	15	90	10	0	0	0	0	0	0	0	0	0	0	0	0
Hellhole Canyon County Preserve	5/28/24	33.22609057	-116.94489268	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

				Royal Empress Tree				Ash				*Carex spissa*			Water			
Site	**Date**	**Latitude**	**Longitude**	**% composition**	**% healthy**	**% thin canopy**	**% dead**	**% fire damage**	**% composition**	**% healthy**	**% thin canopy**	**% dead**	**% fire damage**	**% all green**	**% brown tips**	**% mostly brown**	**Flowing water**	**Standing Water**
Hellhole Canyon County Preserve	5/28/24	33.22113196	-116.93281752	0	0	0	0	0	0	0	0	0	0	25	65	10	Y	N
Hellhole Canyon County Preserve	5/28/24	33.22609057	-116.94489268	0	0	0	0	0	0	0	0	0	0	70	30	0	Y	N

Site	Threats														Threats: Non-Native Vegetation															
	Grazing	Dumping/Trash	Encampments	Feral Pig Activity	Illegal Trails	GSOB	KSHB/PSHB	Drought	Climate Change	Human Intrusion	Pesticide	Altered Hydrology	Altered Fire	*Typha* sp.	*Arundo donax*	Tamarisk	Pampas Grass	Smilo Grass	Thistle	Tree Tobacco	Mustard	Fennel	Palm Trees	Castor Bean	Fountaingrass	Ice Plant	Horehound	Tocalote	Umbrella Sedge
Hellhole Canyon County Preserve	N	N	N	N	N	U	U	N	Y	N	N	N	U	N	N	N	N	N	Y	N	Y	N	N	N	N	N	N	N	Y	N
Hellhole Canyon County Preserve	N	N	N	N	N	U	Y	N	Y	N	N	N	N	N	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N

NOTES:

Tree Species

% composition: across all tree species, adds up to 100%

% healthy, % thin canopy, % dead: within a tree species, adds up to 100%

% fire damage: within a tree species; same tree could be included in other categories

San Diego Sedge

Carex spissa: % of plants that have leaves that are all green; green with brown tips; or all brown; adds up to 100%

Threats

GSOB: gold-spotted oak borer

KSHB/PSHB: Kuroshio shot hole borer/polyphagous shot hole borer (*Euwallacea* sp.)

Arundo: *Arundo donax*

Tamarisk: *Tamarix* sp.

Pampas grass: *Cortaderia* sp.

Smilo grass: *Stipa miliacea*

Thistle: several genera possible

Tree Tobacco: *Nicotiana glauca*

Mustard: *Brassica nigra* or *Hirschfeldia incana*

Fennel: *Foeniculum vulgare*

Palm Trees: several genera possible

Castor Bean: *Ricinus communis*

Fountaingrass: *Pennisetum setaceum*

Ice Plant: several genera possible

Horehound: *Marrubium vulgare*

Tocalote: *Centaurea melitensis*

Umbrella Sedge: *Cyperus involucratus*

N = No; Y = Yes; U - Unknown

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D-3 Harbison's Dun Skipper Focused Management Representative Photographs

Hellhole Canyon County Preserve Harbison's Dun Skipper Representative Management Photographs



Photo 5. Habitat West crew using line trimmers and raking 11.5.24.



Photo 6. Management Area 7 before dethatching 11.5.24.



Photo 7. Management Area 7 after dethatching 11.5.24.



Photo 8. Management Area 8 before dethatching 11.5.24.



Photo 9. Management Area 8 after dethatching 11.6.24.



Photo 10. Habitat West crew mixing native seeds 11.27.24.



Photo 11. Habitat West crew dispersing native seeds 11.27.24.

Appendix E

Arroyo Toad Representative Photographs

Reach 22A



Photo 1. Photo taken at downstream end of Reach 22A, facing upstream.



Photo 2. Photo taken at upstream end of Reach 22A, facing downstream.

Reach 22B



Photo 3. Photo taken at downstream end of Reach 22B, facing upstream.



Photo 4. Photo taken at upstream end of Reach 22B, facing downstream.

Reach 23A



Photo 5. Photo taken at downstream end of Reach 23A, facing upstream.



Photo 6. Photo taken within Reach 23A, facing upstream.



Photo 7. Photo taken at upstream end of Reach 23A, facing downstream.

Reach 23B



Photo 8. Photo taken at downstream end of Reach 23B, facing upstream.



Photo 9. Photo taken at upstream end of Reach 23B, facing downstream.



Photo 10. Photo of pool within Reach 23B where arroyo toad tadpole was observed.

Reach 24A



Photo 11. Photo taken at downstream end of Reach 24A, facing upstream.



Photo 12. Photo taken at upstream end of Reach 24A, facing downstream.

Reach 24B



Photo 13. Photo taken at downstream end of Reach 24B, facing upstream.



Photo 14. Photo taken at upstream end of Reach 24B, facing downstream.

Reach 26A



Photo 15. Photo taken at downstream end of Reach 26A, facing upstream.



Photo 16. Photo taken at upstream end of Reach 26A, facing downstream.



Photo 17. Photo of arroyo toad tadpole taken within Reach 26A.



Photo 18. Photo of arroyo toad tadpole taken within Reach 26A.

Reach 26B



Photo 19. Photo taken at downstream end of Reach 26B, facing upstream.



Photo 20. Photo taken at upstream end of Reach 26B, facing downstream.



Photo 21. Arroyo toad suitable habitat within Reach 26B.



Photo 22. Arroyo toad tadpole observed within Reach 26B.

Reach 27A



Photo 23. Photo taken at downstream end of Reach 27A, facing upstream.



Photo 24. Photo taken at upstream end of Reach 27A, facing downstream.



Photo 25. Arroyo toad tadpole observed within Reach 27A.



Photo 26. Algal matting surrounding open pool with arroyo toad tadpoles within Reach 27A.



Photo 27. Margins of Reach 27A lined with dense algae.

Reach 27B



Photo 28. Photo taken at downstream end of Reach 27B, facing upstream.



Photo 29. Photo taken at upstream end of Reach 27B, facing downstream.

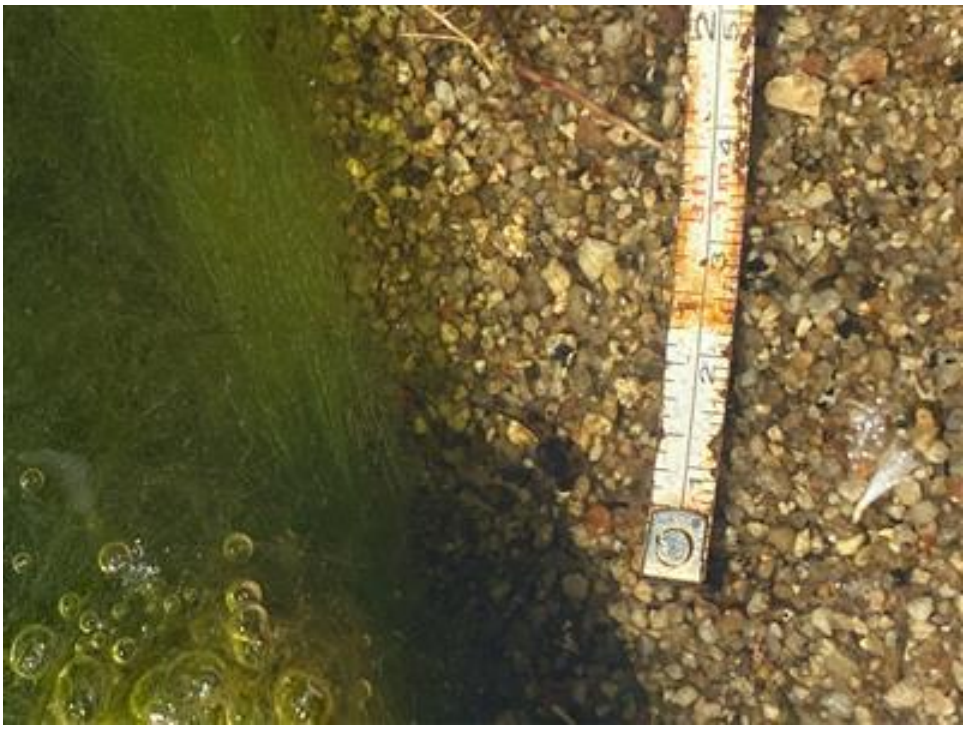


Photo 30. Arryo toad tadpole observed within Reach 27B.



Photo 31. Arryo toad tadpole observed within Reach 27B.



Photo 32. Arryo toad tadpole observed within Reach 27B.



Photo 33. Habitat within Reach 27B with approximately 60 arroyo toad tadpoles.

Reach 28A



Photo 34. Photo taken at downstream end of Reach 28A, facing upstream.



Photo 35. Photo taken at upstream end of Reach 28A, facing downstream.

Reach 28B



Photo 36. Photo taken at downstream end of Reach 28B, facing upstream.



Photo 37. Photo taken at upstream end of Reach 28B, facing downstream.

Reach 30A



Photo 38. Photo taken at upstream end of Reach 30A, facing downstream.



Photo 39. Photo taken at downstream end of Reach 30A, facing upstream.

Reach 33A



Photo 40. Photo taken at downstream end of Reach 33A, facing upstream,



Photo 41. Photo taken at upstream end of Reach 33A, facing downstream.

Reach 33B



Photo 42. Photo taken at downstream end of Reach 33B, facing upstream.



Photo 43. Photo taken at upstream end of Reach 33B, facing downstream.

Reach 35A



Photo 44. Photo taken at downstream end of Reach 35A, facing upstream.



Photo 45. Photo taken at upstream end of Reach 35A, facing downstream.

Reach 35B



Photo 46. Photo taken at downstream end of Reach 35B, facing upstream.



Photo 47. Photo taken at upstream end of Reach 35B, facing downstream.

Reach 36A



Photo 48. Photo taken at downstream end of Reach 36A, facing upstream.



Photo 49. Photo taken at upstream end of Reach 36A, facing downstream.

Reach 36B



Photo 50. Photo taken at downstream end of Reach 36B, facing upstream.



Photo 51. Photo taken at upstream end of Reach 36B, facing downstream.

Reach 37A



Photo 52. Photo taken at downstream end of Reach 37A, facing upstream.



Photo 53. Photo taken at upstream end of Reach of 37A, facing downstream.

Reach 37B



Photo 54. Photo taken at downstream end of Reach 37B, facing upstream.



Photo 55. Photo taken at upstream end of Reach 37B, facing downstream.

Reach 38A



Photo 56. Photo taken at downstream end of Reach 38A, facing upstream.



Photo 57. Photo taken at upstream end of Reach 38A, facing downstream.

Reach 38B



Photo 58. Photo taken at downstream end of Reach 38B, facing upstream.



Photo 59. Photo taken at upstream end of Reach 38B, facing downstream.

Reach 40A



Photo 60. Photo taken at downstream end of Reach 40A, facing upstream.



Photo 61. Photo taken at upstream end of Reach 40B, facing downstream.

Reach 40B



Photo 62. Photo taken at downstream end of Reach 40B, facing upstream.



Photo 63. Photo taken at upstream end of Reach 40B, facing downstream.

Reach 41A



Photo 64. Photo taken at downstream end of Reach 41A, facing upstream.



Photo 65. Photo taken at upstream end of Reach 41A, facing downstream.

Reach 41B



Photo 66. Photo taken at downstream end of Reach 41B, facing upstream.



Photo 67. Photo taken at upstream end of Reach 41B, facing downstream.

Reach 42A



Photo 68. Photo taken at downstream end of Reach 42A, facing upstream.



Photo 69. Photo taken at upstream end of Reach 42A, facing downstream.

Reach 45A



Photo 70. Photo taken at downstream end of Reach 45A, facing upstream.



Photo 71. Photo taken at upstream end of Reach 45A, facing downstream.



Photo 72. Photo of suitable arroyo toad habitat within Reach 45A.



Photo 73. Photo of suitable arroyo toad habitat within Reach 45A.

Reach 52A



Photo 74. Photo taken at downstream end of Reach 52A, facing upstream.



Photo 75. Photo taken at upstream end of Reach 52A, facing downstream.

Reach 52B



Photo 76. Photo taken at downstream end of Reach 52B, facing upstream.



Photo 77. Photo taken at upstream end of Reach 52B, facing downstream.

Reach 53A



Photo 78. Photo taken at downstream end of Reach 53A, facing upstream.



Photo 79. Photo taken at upstream end of Reach 53A, facing downstream.

Appendix F

Northern Harrier Representative Photographs and Survey Forms

F-1 Representative Photographs

Tijuana River Valley Regional Park Northern Harrier Monitoring Representative Photographs



Photo 1. Habitat (coastal sage scrub) in Territory 1 where a pair of northern harriers were seen carrying food to a presumed nest in 2024. Habitat is still suitable in good condition.



Photo 2. Habitat (coastal sage scrub) in Territory 2. A pair, including a male carrying prey, were seen only during the June survey.



Photo 3. Habitat (mule fat and coastal sage scrub) in Territory 5. An adult male was seen carrying food during the June Survey, but breeding activity was never confirmed in this territory in 2024.



Photo 4. Habitat (mule fat, Baccharis scrub) in Territory 3. A pair of northern harriers was seen carrying food to a nest with that was confirmed to contain chicks during the July survey.

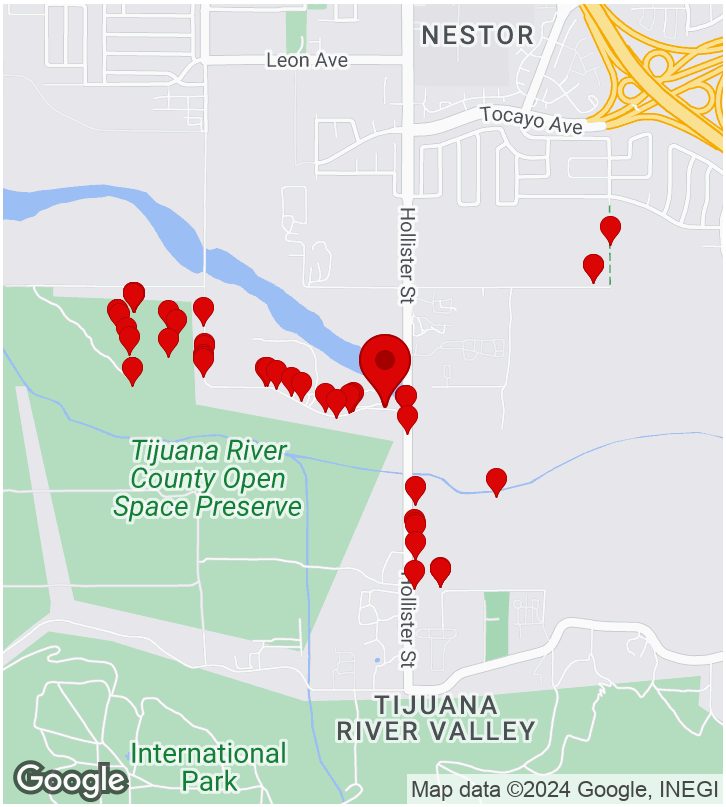
F-2 Field Forms

2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Northern Harrier

4/3/2024, 5:17:27 PM UTC



CREATED

4/3/2024, 2:07:40 PM UTC
by SC Fulcrum03

UPDATED

4/3/2024, 5:17:27 PM UTC
by SC Fulcrum03

LOCATION

32.553833, -117.085067

Parent Form

Project Name:	TMP Monitoring ▸ Northern Harrier
Preserve/Park Name	Tijuana River Valley Regional Park
General Survey Type	TMP Monitoring
Specific Survey Type	TMP Northern Harrier
Observer/Surveyor:	Jaclyn Catino-Davenport
Assistant Observer/Surveyor:	Brennan Mulrooney
Date:	April 3, 2024

START Weather Details:

Start - Time:	07:00
Start - Temperature:	55
Start - Wind Direction From (select one):	N/A
Start - Low Wind Speed:	0
Start - High Wind Speed:	0
Start - Average Wind Speed:	0
Start - Cloud Cover (%):	0
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	

END Weather Details:

Time Out:	10:15
End - Temperature:	68
End - Wind Direction From (select one):	SE
End - Low Wind Speed:	1
End - High Wind Speed:	3
End - Average Wind Speed:	2
End - Cloud Cover (%):	0
End - Precipitation (select one):	None
End - Visibility (select one):	
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	Order: sunset area, hollister area, ball fields

Notes	Couldn’t get to Campground due to monument rd flooding.
Observation Type:	Bird
Photos	

Bird

Bird Observation: (51 Items)

Bird Observation: - 1. 1 record

Bird (Common or Scientific Name):	Orange-crowned Warbler; Leiothlypis celata; OCWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 2. 1 record

Bird (Common or Scientific Name):	Cassin's Vireo; Vireo cassinii; CAVI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record

Bird (Common or Scientific Name):	Northern Waterthrush; Parkesia noveboracensis; NOWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 4. 1 record

Bird (Common or Scientific Name):	Hutton's Vireo; Vireo huttoni; HUVI
Is the Bird Sensitive ?	no

Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record

Bird (Common or Scientific Name):	Common Yellowthroat; Geothlypis trichas; COYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record

Bird (Common or Scientific Name):	Brown-headed Cowbird; Molothrus ater; BHCO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record

Bird (Common or Scientific Name):	Allen's Hummingbird; Selasphorus sasin; ALHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record

Bird (Common or Scientific Name):	Gadwall; Mareca strepera; GADW
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	3
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Female, Male
Bird Age (check all that apply):	Adult

Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 13. 1 record

Bird (Common or Scientific Name):	White-crowned Sparrow; Zonotrichia leucophrys; WCSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record

Bird (Common or Scientific Name):	Lincoln's Sparrow; Melospiza lincolnii; LISP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record

Bird (Common or Scientific Name):	White-tailed Kite; Elanus leucurus; WTKI
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Foraging
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 16. 1 record

Bird (Common or Scientific Name):	Blue-gray Gnatcatcher; Polioptila caerulea; BGGN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 17. 1 record

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 18. 1 record

Bird (Common or Scientific Name):	Common Gallinule; Gallinula galeata; COGA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 19. 1 record

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 20. 1 record

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 21. 1 record

Bird (Common or Scientific Name):	Black-crowned Night-Heron; Nycticorax nycticorax; BCNH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 22. 1 record

Bird (Common or Scientific Name):	Townsend's Warbler; Setophaga townsendi; TOWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 23. 1 record

Bird (Common or Scientific Name):	Yellow-rumped Warbler; Setophaga coronata; YRWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 24. 1 record

Bird (Common or Scientific Name):	Mallard; Anas platyrhynchos; MALL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 25. 1 record

Bird (Common or Scientific Name):	Red-shouldered Hawk; Buteo lineatus; RSHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 26. 1 record

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	2
Behavior (check all that apply):	Foraging
Bird Sex (check all that apply):	Male, Unknown
Bird Age (check all that apply):	Adult, Subadult
Additional Notes:	

Photo(s) of Bird:

Photo(s) of Bird:

Notes:

Bird Observation: - 27. 1 record

Bird (Common or Scientific Name):	American Goldfinch; Spinus tristis; AGOL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A

Photo(s) of Bird:

Notes:

Bird Observation: - 28. 1 record

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A

Photo(s) of Bird:

Notes:

Bird Observation: - 29. 1 record

Bird (Common or Scientific Name):	Red-winged Blackbird; Agelaius phoeniceus; RWBL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 30. 1 record

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Foraging
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 31. 1 record

Bird (Common or Scientific Name):	California Thrasher; Toxostoma redivivum; CATH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 32. 1 record

Bird (Common or Scientific Name):	Hermit Thrush; Catharus guttatus; HETH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 33. 1 record

Bird (Common or Scientific Name):	Red-breasted Nuthatch; Sitta canadensis; RBNU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 34. 1 record

Bird (Common or Scientific Name):	Cassin's Kingbird; Tyrannus vociferans; CAKI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 35. 1 record

Bird (Common or Scientific Name):	Black Phoebe; Sayornis nigricans; BLPH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 36. 1 record

Bird (Common or Scientific Name):	Northern Rough-winged Swallow; Stelgidopteryx serripennis; NRWS
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:

Bird Observation: - 37. 1 record

Bird (Common or Scientific Name):	Western Flycatcher; Empidonax difficilis; WEFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 38. 1 record

Bird (Common or Scientific Name):	Great-tailed Grackle; Quiscalus mexicanus; GTGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 39. 1 record

Bird (Common or Scientific Name):	Greater Yellowlegs; Tringa melanoleuca; GRYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 40. 1 record

Bird (Common or Scientific Name):	Greater Roadrunner; Geococcyx californianus; GRRO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 41. 1 record

Bird (Common or Scientific Name):	Bullock's Oriole; Icterus bullockii; BUOR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 42. 1 record

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 43. 1 record

Bird (Common or Scientific Name):	Snowy Egret; Egretta thula; SNEG
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 44. 1 record

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 45. 1 record

Bird (Common or Scientific Name):	Anna's Hummingbird; Calypte anna; ANHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 46. 1 record

Bird (Common or Scientific Name):	American Pipit; Anthus rubescens; AMPI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 47. 1 record

Bird (Common or Scientific Name):	Cooper's Hawk; Accipiter cooperii; COHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 48. 1 record

Bird (Common or Scientific Name):	Cinnamon Teal; Spatula cyanoptera; CITE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 49. 1 record

Bird (Common or Scientific Name):	Western Kingbird; Tyrannus verticalis; WEKI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 50. 1 record

Bird (Common or Scientific Name):	House Finch; Haemorhous mexicanus; HOFI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 51. 1 record

Bird (Common or Scientific Name):	House Wren; Troglodytes aedon; HOWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

2_COSD DPR Bio

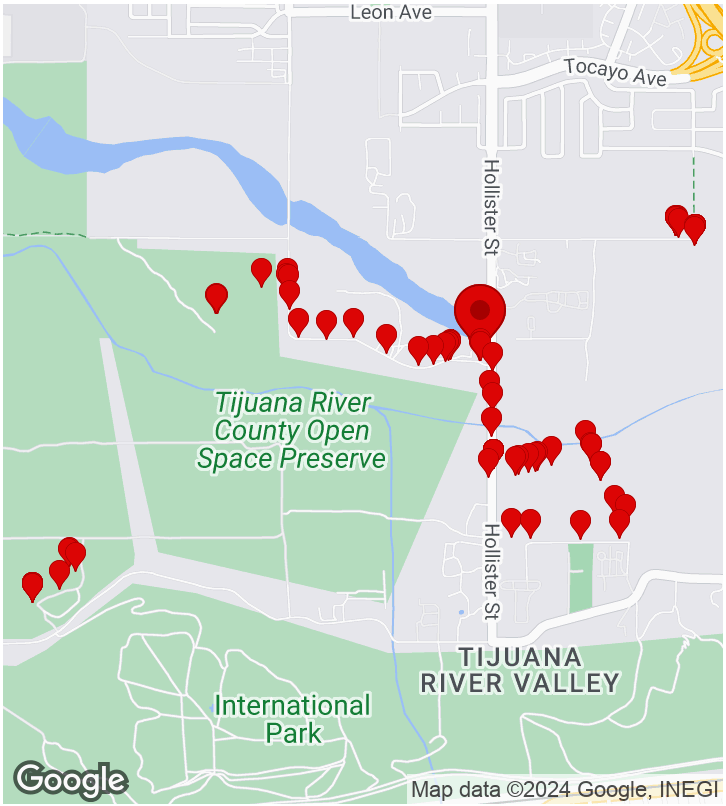
Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Northern Harrier

5/5/2024, 7:51:50 AM UTC



View of campground.



CREATED

5/2/2024, 1:28:46 PM UTC
by SC Fulcrum11

UPDATED

5/5/2024, 7:51:50 AM UTC
by SC Fulcrum11

LOCATION

32.553889, -117.084589

Parent Form

Project Name:	TMP Monitoring ▸ Northern Harrier
Preserve/Park Name	Tijuana River Valley Regional Park
General Survey Type	TMP Monitoring
Specific Survey Type	TMP Northern Harrier
Observer/Surveyor:	Brennan Mulrooney
Assistant Observer/Surveyor:	Karla Alcaraz
Date:	May 2, 2024

START Weather Details:

Start - Time:	06:40
Start - Temperature:	57
Start - Wind Direction From (select one):	SE
Start - Low Wind Speed:	2
Start - High Wind Speed:	9
Start - Average Wind Speed:	
Start - Cloud Cover (%):	100
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	

END Weather Details:

Time Out:	12:18
End - Temperature:	68
End - Wind Direction From (select one):	SW
End - Low Wind Speed:	2
End - High Wind Speed:	9
End - Average Wind Speed:	5.5
End - Cloud Cover (%):	0
End - Precipitation (select one):	None
End - Visibility (select one):	Good
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

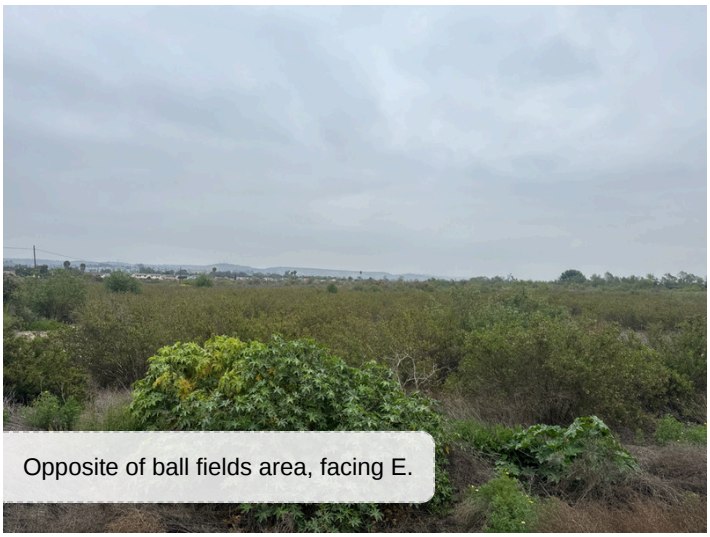
Notes	Started in the campground (nesting NOHA observed), ball fields (no NOHA observed), Hollister Street (no NOHA observed), sunset avenue area (2 possible pair of NOHA observed).
Observation Type:	Bird, Mammal, Nesting Bird Behavior, Plant, Invertebrate, Amphibian, Butterfly/Moth, Reptile

Photos



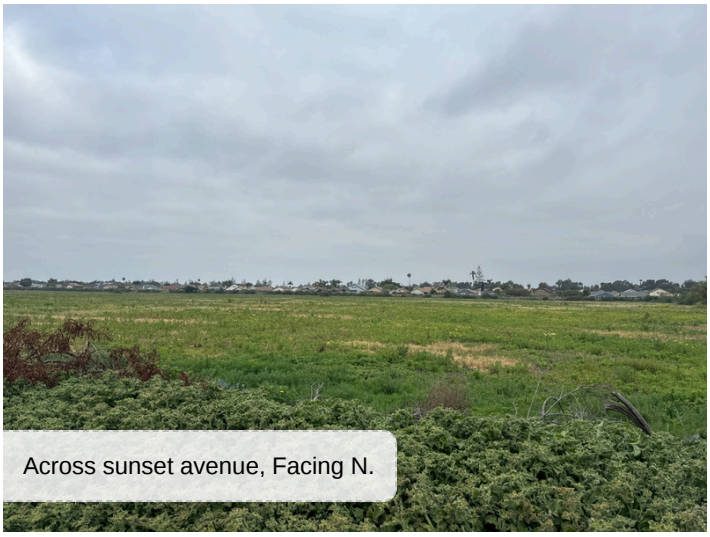
View of campground.





Opposite of ball fields area, facing E.





Across sunset avenue, Facing N.





Hollister street, Facing W





Hollister street, Facing W.





View from mountaintop, facing SE.

View of sunset area, facing NW.

Amphibian

Amphibian Observation: (1 Item)

Amphibian Observation: - 1.

Amphibian (Common or Scientific Name):	
Other Amphibian Species	
Is the Amphibian Sensitive ?	
Is the Amphibian Sensitive ?	
Sub-Species Info:	
Photo(s) of Amphibian:	
Notes:	

Bird

Bird Observation: (73 Items)

Bird Observation: - 1. 1 record

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 2. 1 record

Bird (Common or Scientific Name):	Black Phoebe; Sayornis nigricans; BLPH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A

Photo(s) of Bird:

Notes:

Bird Observation: - 4. 1 record

Bird (Common or Scientific Name):	Common Yellowthroat; Geothlypis trichas; COYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record

Bird (Common or Scientific Name):	House Wren; Troglodytes aedon; HOWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record

Bird (Common or Scientific Name):	Red-winged Blackbird; Agelaius phoeniceus; RWBL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record

Bird (Common or Scientific Name):	Mallard; Anas platyrhynchos; MALL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record

Bird (Common or Scientific Name):	Black-necked Stilt; Himantopus mexicanus; BNST
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record

Bird (Common or Scientific Name):	American Coot; Fulica americana; AMCO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record

Bird (Common or Scientific Name):	Wilson's Warbler; Cardellina pusilla; WIWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record

Bird (Common or Scientific Name):	Killdeer; Charadrius vociferus; KILL
Is the Bird Sensitive ?	no

Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 13. 1 record

Bird (Common or Scientific Name):	American Crow; Corvus brachyrhynchos; AMCR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record

Bird (Common or Scientific Name):	Greater Yellowlegs; Tringa melanoleuca; GRYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record

Bird (Common or Scientific Name):	Common Gallinule; Gallinula galeata; COGA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 16. 1 record

Bird (Common or Scientific Name):	White-faced Ibis; Plegadis chihi; WFIB
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual

Number of individuals observed:	1
Behavior (check all that apply):	Foraging
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 17. 1 record

Bird (Common or Scientific Name):	Long-billed Dowitcher; Limnodromus scolopaceus; LBDO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 18. 1 record

Bird (Common or Scientific Name):	White-tailed Kite; Elanus leucurus; WTKI
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 19. 1 record

Bird (Common or Scientific Name):	Red-shouldered Hawk; Buteo lineatus; RSHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Subadult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 20. 1 record

Bird (Common or Scientific Name):	Snowy Egret; Egretta thula; SNEG
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 21. 1 record

Bird (Common or Scientific Name):	White-throated Swift; Aeronautes saxatalis; WTSW
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 22. 1 record

Bird (Common or Scientific Name):	House Finch; Haemorhous mexicanus; HOFI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 23. 1 record

Bird (Common or Scientific Name):	Double-crested Cormorant; Nannopterum auritum; DCCO
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 24. 1 record

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown

Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 25. 1 record

Bird (Common or Scientific Name):	Green Heron; Butorides virescens; GRHE
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 26. 1 record

Bird (Common or Scientific Name):	Rock Pigeon; Columba livia; ROPI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 27. 1 record

Bird (Common or Scientific Name):	Red-tailed Hawk; Buteo jamaicensis; RTHA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A

Photo(s) of Bird:	
Notes:	

Bird Observation: - 28. 1 record

Bird (Common or Scientific Name):	Hooded Oriole; Icterus cucullatus; HOOR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 29. 1 record

Bird (Common or Scientific Name):	Great-tailed Grackle; Quiscalus mexicanus; GTGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 30. 1 record

Bird (Common or Scientific Name):	Say's Phoebe; Sayornis saya; SAPH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 31. 1 record

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1

Behavior (check all that apply):	Perched (not singing), Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:	
Notes:	

Bird Observation: - 32. 1 record

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 33. 1 record

Bird (Common or Scientific Name):	Western Kingbird; Tyrannus verticalis; WEKI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 34. 1 record

Bird (Common or Scientific Name):	Western Gull; Larus occidentalis; WEGU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 35. 1 record

Bird (Common or Scientific Name):	Great Blue Heron; Ardea herodias; GBHE

Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 36. 1 record

Bird (Common or Scientific Name):	Western Flycatcher; Empidonax difficilis; WEFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:

Bird Observation: - 37. 1 record

Bird (Common or Scientific Name):	Swainson's Thrush; Catharus ustulatus; SWTH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:

Bird Observation: - 38. 1 record

Bird (Common or Scientific Name):	Cassin's Kingbird; Tyrannus vociferans; CAKI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:	

Bird Observation: - 39. 1 record

Bird (Common or Scientific Name):	Orange-crowned Warbler; Leiothlypis celata; OCWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 40. 1 record

Bird (Common or Scientific Name):	Cliff Swallow; Petrochelidon pyrrhonota; CLSW
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 41. 1 record

Bird (Common or Scientific Name):	Canada Goose; Branta canadensis; CANG
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 42. 1 record

Bird (Common or Scientific Name):	Vaux's Swift; Chaetura vauxi; VASW
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 43. 1 record

Bird (Common or Scientific Name):	Gadwall; Mareca strepera; GADW
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 44. 1 record

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 45. 1 record

Bird (Common or Scientific Name):	Black-crowned Night-Heron; Nycticorax nycticorax; BCNH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:

Bird Observation: - 46. 1 record

Bird (Common or Scientific Name):	Anna's Hummingbird; Calypte anna; ANHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:

Bird Observation: - 47. 1 record

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 48. 1 record

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 49.

Bird (Common or Scientific Name):	
Other Bird Species	Calocitta colliei
Is the Bird Sensitive ?	
Is the Bird Sensitive ?	
Sub-Species Info:	
Photo(s) of Bird:	
Notes:	Black-throated magpie-jay

Bird Observation: - 50. 1 record

Bird (Common or Scientific Name):	Turkey Vulture; Cathartes aura; TUVU
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown

Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 51. 1 record

Bird (Common or Scientific Name):	Tree Swallow; Tachycineta bicolor; TRES
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 52. 1 record

Bird (Common or Scientific Name):	Allen's Hummingbird; Selasphorus sasin; ALHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 53. 1 record

Bird (Common or Scientific Name):	European Starling; Sturnus vulgaris; EUST
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 54. 1 record

Bird (Common or Scientific Name):	Black-headed Grosbeak; Pheucticus melanocephalus; BHGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:	

Bird Observation: - 55. 1 record

Bird (Common or Scientific Name):	Blue Grosbeak; Passerina caerulea; BLGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 56. 1 record

Bird (Common or Scientific Name):	Northern Rough-winged Swallow; Stelgidopteryx serripennis; NRWS
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 57. 1 record

Bird (Common or Scientific Name):	Hutton's Vireo; Vireo huttoni; HUVI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 58. 1 record

Bird (Common or Scientific Name):	Common Ground Dove; Columbina passerina; CGDO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 59. 1 record

Bird (Common or Scientific Name):	American Goldfinch; Spinus tristis; AGOL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 60. 1 record

Bird (Common or Scientific Name):	Black-chinned Hummingbird; Archilochus alexandri; BCHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 61. 1 record

Bird (Common or Scientific Name):	Cooper's Hawk; Accipiter cooperii; COHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 62. 1 record

Bird (Common or Scientific Name):	Pied-billed Grebe; Podilymbus podiceps; PBGR
Is the Bird Sensitive ?	no

Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 63. 1 record

Bird (Common or Scientific Name):	Western Tanager; Piranga ludoviciana; WETA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 64. 1 record

Bird (Common or Scientific Name):	Warbling Vireo; Vireo gilvus; WAVI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 65. 1 record

Bird (Common or Scientific Name):	Common Raven; Corvus corax; CORA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 66. 1 record

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual

Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Circling in the far distance. Carrying prey item (orange-throated whiptail lizard?). Flew west near sunset avenue.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 67. 1 record

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Female
Bird Age (check all that apply):	Adult
Additional Notes:	Circle soaring then gliding then circle soaring again. Flying west, same as previous male NOHA.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 68. 1 record

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual

Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Gliding W. Prey transfer with female NOHA. Not incubating, already have chicks?
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 69. 1 record

Bird (Common or Scientific Name):	Hermit Warbler; Setophaga occidentalis; HEWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:

Bird Observation: - 70. 1 record

Bird (Common or Scientific Name):	White-crowned Sparrow; Zonotrichia leucophrys; WCSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes: Dark lore

Bird Observation: - 71. 1 record

Bird (Common or Scientific Name):	Nashville Warbler; Leiothlypis ruficapilla; NAWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:

Bird Observation: - 72. 1 record

Bird (Common or Scientific Name):	Townsend's Warbler; Setophaga townsendi; TOWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 73.

Bird (Common or Scientific Name):	
Other Bird Species	Swinhoe’s white-eye
Is the Bird Sensitive ?	
Is the Bird Sensitive ?	
Sub-Species Info:	
Photo(s) of Bird:	
Notes:	

Nesting Bird Behavior

Nesting Bird Behavior Observation: (2 Items)

Nesting Bird Behavior Observation: - 1. 1 record

Status of Nest:	Active
Activity Status of Nest:	Prey transfer observed, nesting assumed.
Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Bird Nest Observation

Observation Type:	Visual
Number of individuals observed:	2
Behavior (check all that apply):	Prey transfer observed, nesting assumed.
Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult
Additional Notes:	Female took prey item to the ground in area of historic nest site. Found on Campground site.
Photo(s) of Bird:	

Photo(s) of Nesting Bird Behavior:	
Notes:	

Nesting Bird Behavior Observation: - 2. 1 record

Status of Nest:	Active
Activity Status of Nest:	Confirmed nestlings
Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Bird Nest Observation

Observation Type:	Visual
Number of individuals observed:	2
Behavior (check all that apply):	Prey transfer
Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult
Additional Notes:	Possible nesting in the ground. Saw a food transfer and separate deliver of material and or food to possible nest.
Photo(s) of Bird:	
Photo(s) of Nesting Bird Behavior:	
Notes:	

Butterfly/Moth

Butterfly/Moth Observation: (3 Items)

Butterfly/Moth Observation: - 1. 1 record

Butterfly/Moth (Common or Scientific Name):	Mourning Cloak; Nymphalis antiopa
Is the Butterfly/Moth Sensitive ?	no
Sub-Species Info:	N/A
Number of individuals observed:	

Butterfly/Moth Observation: - 2. 1 record

Butterfly/Moth (Common or Scientific Name):	Western Tiger Swallowtail; Papilio rutulus
Is the Butterfly/Moth Sensitive ?	no
Sub-Species Info:	N/A
Number of individuals observed:	

Butterfly/Moth Observation: - 3. 1 record

Butterfly/Moth (Common or Scientific Name):	Monarch; Danaus plexippus
Is the Butterfly/Moth Sensitive ?	yes
Sub-Species Info:	N/A
Number of individuals observed:	

Sensitive Butterfly/Moth Observation

Observation Type:	Visual sighting
Behavior (check all that apply):	Feeding
Butterfly Sex (check all that apply):	Unknown
Butterfly Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Butterfly:	

Photo(s) of Butterfly/Moth:

Notes:	

Invertebrate

Invertebrate Observation: (3 Items)

Invertebrate Observation: - 1.

Invertebrate (Common or Scientific Name):	
Other Invertebrate Species	Variegated meadowhawk
Is the Invertebrate Sensitive ?	

Is the Invertebrate Sensitive ?	
Sub-Species Info:	

Invertebrate Observation: - 2.

Invertebrate (Common or Scientific Name):	
Other Invertebrate Species	Apis mellifera
Is the Invertebrate Sensitive ?	
Is the Invertebrate Sensitive ?	
Sub-Species Info:	

Invertebrate Observation: - 3.

Invertebrate (Common or Scientific Name):	
Other Invertebrate Species	Tarantula hawk sp.
Is the Invertebrate Sensitive ?	
Is the Invertebrate Sensitive ?	
Sub-Species Info:	

Photo(s) of Invertebrate:

Notes:	

Mammal

Mammal Observation: (1 Item)

Mammal Observation: - 1. 1 record

Mammal (Common or Scientific Name):	Desert Cottontail; Sylvilagus audubonii
Is the Mammal Sensitive ?	no
Sub-Species Info:	N/A

Photo(s) of Mammal:

Notes:	

Plants

Plant Observation: (12 Items)

Plant Observation: - 1. 1 record

Plant (Common or Scientific Name):	Glebionis coronaria
Is the Plant Sensitive ?	no
State	N/A
Federal	N/A
CA Rare Plant Rank	N/A
Number of individuals observed:	
Additional Notes:	
Photo(s) of Plant:	

Plant Observation: - 2. 1 record

Plant (Common or Scientific Name):	Ricinus communis
Is the Plant Sensitive ?	no
State	N/A
Federal	N/A
CA Rare Plant Rank	N/A
Number of individuals observed:	
Additional Notes:	
Photo(s) of Plant:	

Plant Observation: - 3. 1 record

Plant (Common or Scientific Name):	Mesembryanthemum crystallinum
Is the Plant Sensitive ?	no
State	N/A
Federal	N/A
CA Rare Plant Rank	N/A
Number of individuals observed:	
Additional Notes:	
Photo(s) of Plant:	

Plant Observation: - 4. 1 record

Plant (Common or Scientific Name):	Phytolacca icosandra
Is the Plant Sensitive ?	no
State	N/A
Federal	N/A
CA Rare Plant Rank	N/A
Number of individuals observed:	
Additional Notes:	
Photo(s) of Plant:	

Plant Observation: - 5. 1 record

Plant (Common or Scientific Name):	Nicotiana glauca
Is the Plant Sensitive ?	no
State	N/A
Federal	N/A
CA Rare Plant Rank	N/A
Number of individuals observed:	
Additional Notes:	
Photo(s) of Plant:	

Plant Observation: - 6. 1 record

Plant (Common or Scientific Name):	Foeniculum vulgare
Is the Plant Sensitive ?	no
State	N/A
Federal	N/A
CA Rare Plant Rank	N/A
Number of individuals observed:	
Additional Notes:	
Photo(s) of Plant:	

Plant Observation: - 7. 1 record

Plant (Common or Scientific Name):	Matricaria discoidea
Is the Plant Sensitive ?	no
State	N/A
Federal	N/A

CA Rare Plant Rank	N/A
Number of individuals observed:	
Additional Notes:	
Photo(s) of Plant:	

Plant Observation: - 8. 1 record

Plant (Common or Scientific Name):	Italian Thistle
Is the Plant Sensitive ?	no
State	N/A
Federal	N/A
CA Rare Plant Rank	N/A
Number of individuals observed:	
Additional Notes:	Carduus pycnocephalus
Photo(s) of Plant:	

Plant Observation: - 9. 1 record

Plant (Common or Scientific Name):	Tropaeolum majus
Is the Plant Sensitive ?	no
State	N/A
Federal	N/A
CA Rare Plant Rank	N/A
Number of individuals observed:	
Additional Notes:	
Photo(s) of Plant:	

Plant Observation: - 10. 1 record

Plant (Common or Scientific Name):	Arundo donax
Is the Plant Sensitive ?	no
State	N/A
Federal	N/A
CA Rare Plant Rank	N/A
Number of individuals observed:	
Additional Notes:	
Photo(s) of Plant:	

Plant Observation: - 11. 1 record

Plant (Common or Scientific Name):	Silybum marianum
Is the Plant Sensitive ?	no
State	N/A
Federal	N/A
CA Rare Plant Rank	N/A
Number of individuals observed:	
Additional Notes:	
Photo(s) of Plant:	

Plant Observation: - 12. 1 record

Plant (Common or Scientific Name):	Atriplex lentiformis
Is the Plant Sensitive ?	no
State	N/A
Federal	N/A
CA Rare Plant Rank	N/A
Number of individuals observed:	
Additional Notes:	
Photo(s) of Plant:	

Reptile

Reptile Observation: (1 Item)

Reptile Observation: - 1. 1 record

Reptile (Common or Scientific Name):	Western Fence Lizard; Sceloporus occidentalis
Is the Reptile Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Reptile:	
Notes:	

2_COSD DPR Bio

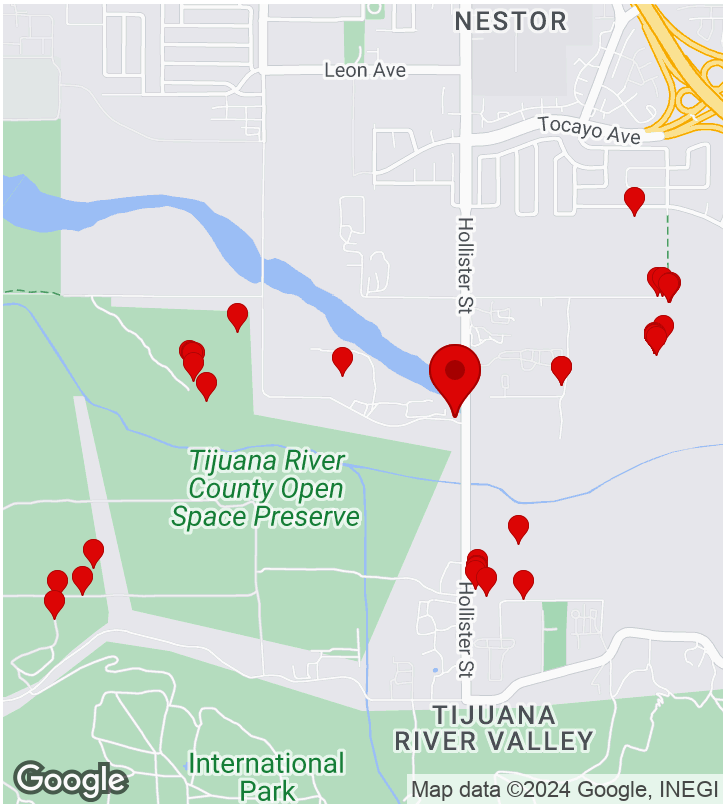
Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Northern Harrier

6/5/2024, 1:15:02 AM UTC



Ball field polygon, facing south



CREATED

6/4/2024, 1:37:48 PM UTC
by SC Fulcrum03

UPDATED

6/5/2024, 1:15:02 AM UTC
by SC Fulcrum03

LOCATION

32.553842, -117.084575

Parent Form

Project Name:	TMP Monitoring ▸ Northern Harrier
Preserve/Park Name	Tijuana River Valley Regional Park
General Survey Type	TMP Monitoring
Specific Survey Type	TMP Northern Harrier
Observer/Surveyor:	Brennan Mulrooney
Assistant Observer/Surveyor:	Alissa Lun
Date:	June 4, 2024

START Weather Details:

Start - Time:	06:37
Start - Temperature:	60
Start - Wind Direction From (select one):	S
Start - Low Wind Speed:	1
Start - High Wind Speed:	3
Start - Average Wind Speed:	2
Start - Cloud Cover (%):	100
Start - Precipitation (select one):	None
Start - Visibility (select one):	
Start - Notes (if applicable):	

END Weather Details:

Time Out:	12:49
End - Temperature:	67
End - Wind Direction From (select one):	SW
End - Low Wind Speed:	3
End - High Wind Speed:	5
End - Average Wind Speed:	4
End - Cloud Cover (%):	80
End - Precipitation (select one):	None
End - Visibility (select one):	Good
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

Notes	Started at the ball fields (1 male NOHA observed), Hollister Street (1 female and 1 male NOHA observed, possible nest), sunset avenue area (pair of NOHA with nest observed), campground (pair of nesting NOHA observed)
Observation Type:	Bird

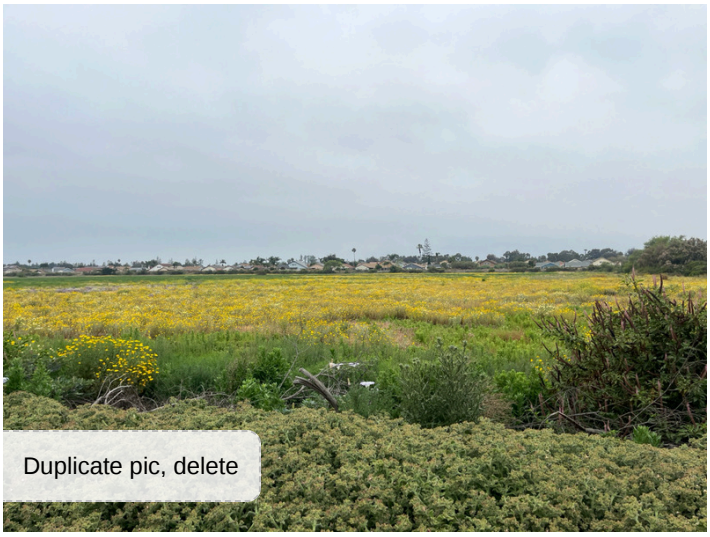
Photos


Ball field polygon, facing south




Ball field polygon, facing east




Duplicate pic, delete





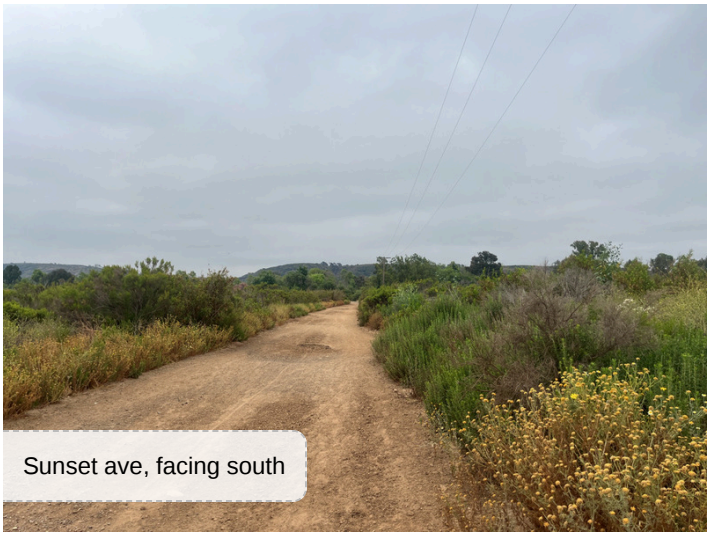
Hollister st, facing west





Hollister st, facing east




Sunset ave, facing south




Campground, facing west


Campground, facing south

Bird

Bird Observation: (53 Items)

Bird Observation: - 1. 1 record

Bird (Common or Scientific Name):	American Crow; Corvus brachyrhynchos; AMCR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 2. 1 record

Bird (Common or Scientific Name):	Eurasian Collared-Dove; Streptopelia decaocto; EUCD

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record

Bird (Common or Scientific Name):	Common Yellowthroat; Geothlypis trichas; COYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 4. 1 record

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:	

Bird Observation: - 6. 1 record

Bird (Common or Scientific Name):	House Finch; Haemorhous mexicanus; HOFI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record

Bird (Common or Scientific Name):	Black Phoebe; Sayornis nigricans; BLPH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record

Bird (Common or Scientific Name):	Western Gull; Larus occidentalis; WEGU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Foraging, In flight

Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Seen flying southwest, carrying food, lost sight of it south of ballfields.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record

Bird (Common or Scientific Name):	Black-crowned Night-Heron; Nycticorax nycticorax; BCNH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 13. 1 record

Bird (Common or Scientific Name):	California Thrasher; Toxostoma redivivum; CATH
Is the Bird Sensitive ?	no

Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 15. 1 record

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 16. 1 record

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 17. 1 record

Bird (Common or Scientific Name):	Black-headed Grosbeak; Pheucticus melanocephalus; BHGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 18. 1 record

Bird (Common or Scientific Name):	Downy Woodpecker; Dryobates pubescens; DOWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 19. 1 record

Bird (Common or Scientific Name):	Western Flycatcher; Empidonax difficilis; WEFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 20. 1 record

Bird (Common or Scientific Name):	Anna's Hummingbird; Calypte anna; ANHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 21. 1 record

Bird (Common or Scientific Name):	Cliff Swallow; Petrochelidon pyrrhonota; CLSW
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 22. 1 record

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 23. 1 record

Bird (Common or Scientific Name):	Cooper's Hawk; Accipiter cooperii; COHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	2
Behavior (check all that apply):	In flight, Perched (not singing)
Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult, Juvenile

Additional Notes:	Perched next to each other
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 24. 1 record

Bird (Common or Scientific Name):	White-throated Swift; Aeronautes saxatalis; WTSW
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 25. 1 record

Bird (Common or Scientific Name):	Double-crested Cormorant; Nannopterum auritum; DCCO
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	2
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 26. 1 record

Bird (Common or Scientific Name):	Great Blue Heron; Ardea herodias; GBHE
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 27. 1 record

Bird (Common or Scientific Name):	Ash-throated Flycatcher; Myiarchus cinerascens; ATFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:

Bird Observation: - 28. 1 record

Bird (Common or Scientific Name):	Osprey; Pandion haliaetus; OSPR
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 29. 1 record

Bird (Common or Scientific Name):	Rock Pigeon; Columba livia; ROPI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 30. 1 record

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Female
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 31. 1 record

Bird (Common or Scientific Name):	Cassin's Kingbird; Tyrannus vociferans; CAKI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 32. 1 record

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 33. 1 record

Bird (Common or Scientific Name):	Greater Roadrunner; Geococcyx californianus; GRRO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 34. 1 record

Bird (Common or Scientific Name):	American Goldfinch; Spinus tristis; AGOL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 35. 1 record

Bird (Common or Scientific Name):	Red-winged Blackbird; Agelaius phoeniceus; RWBL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 36. 1 record

Bird (Common or Scientific Name):	Mallard; Anas platyrhynchos; MALL
Is the Bird Sensitive ?	no

Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 37. 1 record

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Foraging, In flight
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Might have been seen going to the ground.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 38. 1 record

Bird (Common or Scientific Name):	Hooded Oriole; Icterus cucullatus; HOOR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 39. 1 record

Bird (Common or Scientific Name):	Blue Grosbeak; Passerina caerulea; BLGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:	

Bird Observation: - 40. 1 record

Bird (Common or Scientific Name):	Snowy Egret; Egretta thula; SNEG
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 41. 1 record

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Female
Bird Age (check all that apply):	Adult
Additional Notes:	Seen flying high, heading east.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 42. 1 record

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	2

Behavior (check all that apply):	Perched (not singing), In flight, Foraging
Bird Sex (check all that apply):	Female, Male
Bird Age (check all that apply):	Adult
Additional Notes:	Observed multiple prey transfers and delivery to unseen nests. Approximate nest location on field map.

Photo(s) of Bird:



Female perched on a branch for a few minutes

Photo(s) of Bird:

Notes:

Bird Observation: - 43. 1 record

Bird (Common or Scientific Name):	Pied-billed Grebe; Podilymbus podiceps; PBGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 44. 1 record

Bird (Common or Scientific Name):	Tree Swallow; Tachycineta bicolor; TRES
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 45. 1 record

Bird (Common or Scientific Name):	American Coot; Fulica americana; AMCO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 46. 1 record

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Heading west.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 47. 1 record

Bird (Common or Scientific Name):	Common Gallinule; Gallinula galeata; COGA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 48. 1 record

Bird (Common or Scientific Name):	Red-tailed Hawk; Buteo jamaicensis; RTHA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 49. 1 record

Bird (Common or Scientific Name):	Hutton's Vireo; Vireo huttoni; HUVI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 50. 1 record

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	2
Behavior (check all that apply):	Foraging, In flight
Bird Sex (check all that apply):	Female, Male
Bird Age (check all that apply):	Adult
Additional Notes:	Prey transfer between male and female; female deliver food to unseen nest. Nest location on fieldmaps.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 51. 1 record

Bird (Common or Scientific Name):	Gull-billed Tern; Gelochelidon nilotica; GBTE
Is the Bird Sensitive ?	yes

Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	2
Behavior (check all that apply):	Foraging
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	Flying west
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 52. 1 record

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:

Bird Observation: - 53. 1 record

Bird (Common or Scientific Name):	Black-necked Stilt; Himantopus mexicanus; BNST
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:

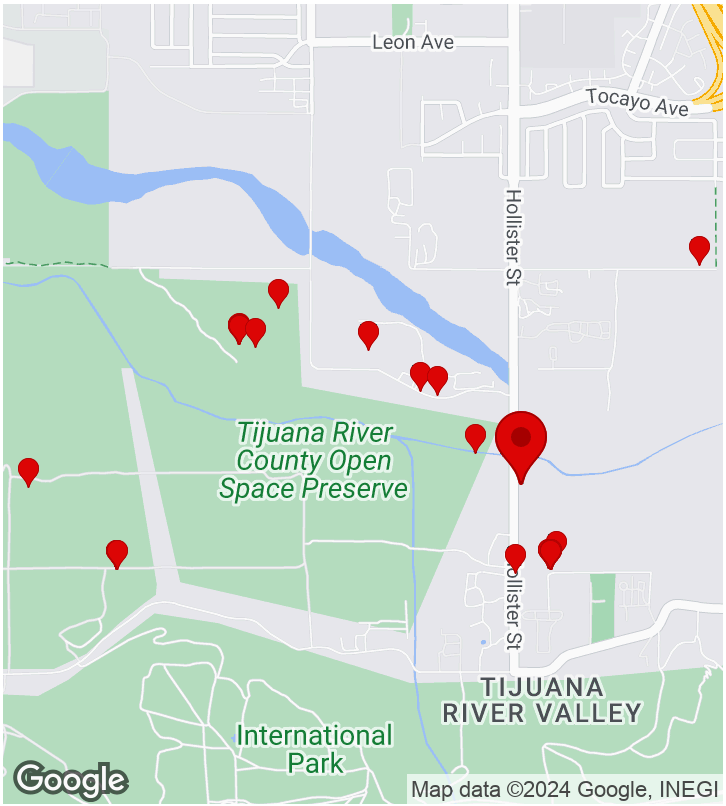
2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Northern Harrier

7/12/2024, 3:01:02 AM UTC





CREATED

7/2/2024, 1:49:29 PM UTC
by SC Fulcrum03

UPDATED

7/12/2024, 3:01:02 AM UTC
by SC Fulcrum18

LOCATION

32.550390, -117.083773

Parent Form

Project Name:	TMP Monitoring ▸ Northern Harrier
Preserve/Park Name	Tijuana River Valley Regional Park
General Survey Type	TMP Monitoring
Specific Survey Type	TMP Northern Harrier
Observer/Surveyor:	Brennan Mulrooney
Assistant Observer/Surveyor:	Jaclyn Catino-Davenport
Date:	July 2, 2024

START Weather Details:

Start - Time:	06:10
Start - Temperature:	63
Start - Wind Direction From (select one):	W
Start - Low Wind Speed:	0
Start - High Wind Speed:	2
Start - Average Wind Speed:	1
Start - Cloud Cover (%):	100
Start - Precipitation (select one):	None
Start - Visibility (select one):	
Start - Notes (if applicable):	

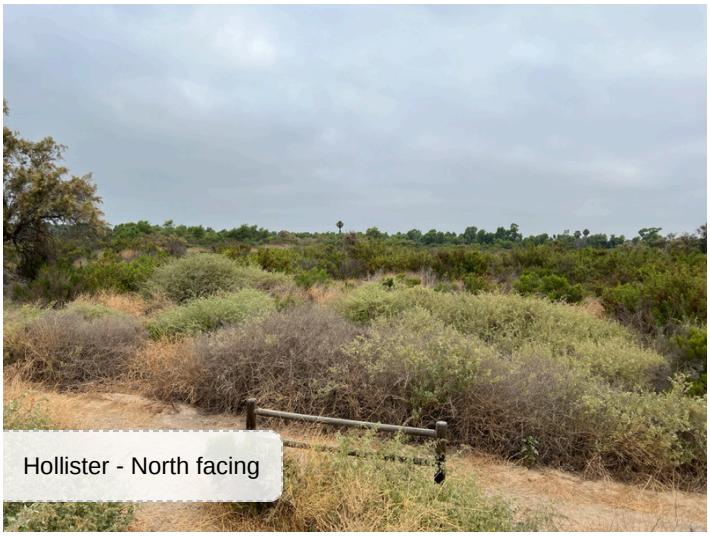
END Weather Details:

Time Out:	10:58
End - Temperature:	70
End - Wind Direction From (select one):	SW
End - Low Wind Speed:	1
End - High Wind Speed:	3
End - Average Wind Speed:	2
End - Cloud Cover (%):	0
End - Precipitation (select one):	None
End - Visibility (select one):	
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

Notes	Started at Hollister, no NOHA Then Sunset, pair seen taking food to nest where chicks could be heard, and possibly second pair seen on walk in that did a food exchange and the female took it to the ground in an area where we have not previously seen nesting activity. Then Campground, single male NOHA Lastly, Ballfields, no NOHA
Observation Type:	Bird

Photos


Hollister - North facing




Campground north facing


North facing at ball fields

Bird

Bird Observation: (33 Items)

Bird Observation: - 1. 1 record

Bird (Common or Scientific Name):	Cooper's Hawk; Accipiter cooperii; COHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 2. 1 record

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 3. 1 record

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 4. 1 record

Bird (Common or Scientific Name):	Common Yellowthroat; Geothlypis trichas; COYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:

Bird Observation: - 5. 1 record

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:

Bird Observation: - 6. 1 record

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:

Bird Observation: - 7. 1 record

Bird (Common or Scientific Name):	Black Phoebe; Sayornis nigricans; BLPH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record

Bird (Common or Scientific Name):	California Thrasher; Toxostoma redivivum; CATH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record

Bird (Common or Scientific Name):	Cliff Swallow; Petrochelidon pyrrhonota; CLSW
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record

Bird (Common or Scientific Name):	Allen's Hummingbird; Selasphorus sasin; ALHU
Is the Bird Sensitive ?	no

Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record

Bird (Common or Scientific Name):	Western Gull; Larus occidentalis; WEGU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 13. 1 record

Bird (Common or Scientific Name):	American Goldfinch; Spinus tristis; AGOL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record

Bird (Common or Scientific Name):	Mallard; Anas platyrhynchos; MALL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record

Bird (Common or Scientific Name):	American Crow; Corvus brachyrhynchos; AMCR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 16. 1 record

Bird (Common or Scientific Name):	Red-shouldered Hawk; Buteo lineatus; RSHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 17. 1 record

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 18. 1 record

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	2
Behavior (check all that apply):	Foraging, In flight
Bird Sex (check all that apply):	Female, Male
Bird Age (check all that apply):	Adult
Additional Notes:	Food exchange, male to female, then female went to the ground, but not at the nest
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 19. 1 record

Bird (Common or Scientific Name):	Black-crowned Night-Heron; Nycticorax nycticorax; BCNH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 20. 1 record

Bird (Common or Scientific Name):	Common Gallinule; Gallinula galeata; COGA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 21. 1 record

Bird (Common or Scientific Name):	Pied-billed Grebe; Podilymbus podiceps; PBGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 22. 1 record

Bird (Common or Scientific Name):	Green Heron; Butorides virescens; GRHE
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 23. 1 record

Bird (Common or Scientific Name):	Mallard; Anas platyrhynchos; MALL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 24. 1 record

Bird (Common or Scientific Name):	American Coot; Fulica americana; AMCO
Is the Bird Sensitive ?	no

Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 25. 1 record

Bird (Common or Scientific Name):	Tree Swallow; Tachycineta bicolor; TRES
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 26. 1 record

Bird (Common or Scientific Name):	Common Raven; Corvus corax; CORA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 27. 1 record

Bird (Common or Scientific Name):	Black-headed Grosbeak; Pheucticus melanocephalus; BHGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 28. 1 record

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 29. 1 record

Bird (Common or Scientific Name):	House Finch; Haemorhous mexicanus; HOFI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 30. 1 record

Bird (Common or Scientific Name):	Blue Grosbeak; Passerina caerulea; BLGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 31. 1 record

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	2
Behavior (check all that apply):	Foraging, Perched (not singing), Territorial display
Bird Sex (check all that apply):	Female, Male
Bird Age (check all that apply):	Adult
Additional Notes:	Seen doing food exchanges and taking food to nest where chicks could be heard.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 32. 1 record

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Foraging
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Seemed to later go to ground in the NE corner of this field, but never carried food.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 33. 1 record

Bird (Common or Scientific Name):	Northern Rough-winged Swallow; Stelgidopteryx serripennis; NRWS
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

F-3 Threat Assessment Form

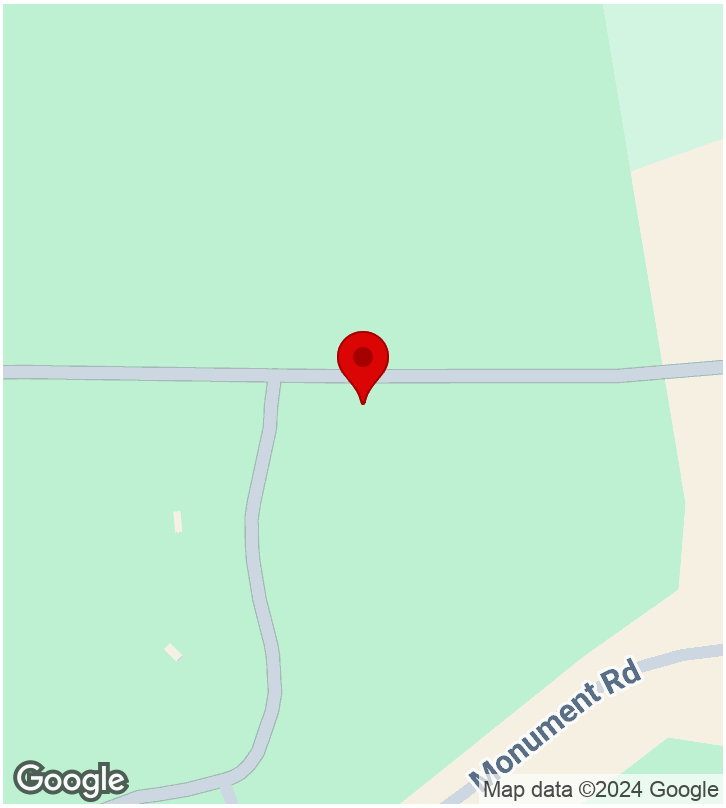
2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Northern Harrier

7/2/2024, 4:52:05 PM UTC





CREATED

7/2/2024, 4:16:24 PM UTC
by SC Fulcrum05

UPDATED

7/2/2024, 4:52:05 PM UTC
by SC Fulcrum05

LOCATION

32.547255, -117.101146

Parent Form

Project Name:	TMP Monitoring ▸ Northern Harrier
Preserve/Park Name	Tijuana River Valley Regional Park
General Survey Type	TMP Monitoring
Specific Survey Type	NOHA Threats Assessment
Observer/Surveyor:	Brennan Mulrooney
Assistant Observer/Surveyor:	Jaclyn Catino-Davenport
Date:	July 2, 2024

START Weather Details:

Start - Time:	09:16
Start - Temperature:	
Start - Wind Direction From (select one):	
Start - Low Wind Speed:	
Start - High Wind Speed:	
Start - Average Wind Speed:	
Start - Cloud Cover (%):	
Start - Precipitation (select one):	None
Start - Visibility (select one):	
Start - Notes (if applicable):	

END Weather Details:

Time Out:	09:41
End - Temperature:	
End - Wind Direction From (select one):	
End - Low Wind Speed:	
End - High Wind Speed:	
End - Average Wind Speed:	
End - Cloud Cover (%):	
End - Precipitation (select one):	None
End - Visibility (select one):	
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

Notes	
Observation Type:	Bird

Photos







Bird

Bird Observation:

NOHA Threats Assessment

Survey Round	Round 4
Subpolygon Name	Tijuana Estuary 02
Is this an existing subpolygon?	Yes
Date	July 2, 2024
Primary Observer	Brennan Mulrooney
Secondary Observer	Jaclyn Catino-Davenport

Suitable For Nesting?	Yes
Subpolygon Occupied?	Yes

Occupied Subpolygon

Breeding Behavior Observed?	Yes
If yes, what breeding behavior was observed?	
Other Behavior	
Nest Site Located?	No
Foraging Behavior Observed?	Yes
Foraging Habitat	Coastal Scrub
# Fledglings	
NOHA Comments	

Habitat Description	Coastal scrub habitat surrounded by riparian vegetation and disturbed habitat.
Habitat Management Recs	Remove non-native weeds and plants from habitat.
Invasive Species Risk	Yes
If yes, Invasive Species Description	Castor bean, Tamarisk, tree tobacco, daisy, sweet fennel, black mustard, arundo
Invasive Spp Management Recs	Remove non-native weeds and plants from habitat.
Risk from Ag Practices	No
Other Habitat Risks?	
NOHA Foraging Habitat at Risk?	Yes
If yes, describe NOHA Foraging Habitat	Invasive non-native
Foraging Habitat Management Recs	Remove non-native weeds and plants from habitat.
Predators Present?	Yes
Predation Risk Level	Medium
Description of Predation Risk	Red-tailed hawk
Predator Management Recs	While not observed during today's survey, raccoon, coyote, and Corvids (common raven, American crow) are likely predators.
Risk from Humans?	Yes
Description of Human Risks	Authorized Trail Use, Unauthorized Trail Use, Border Patrol Activities
Human Management Recs	Close unauthorized trails.
Description of Other Threats	
Management Recs Other Threats	
Dominant Surrounding Land Use	Disturbed Habitat, Urban/Developed, Riparian Forest/Woodland
Subpolygon Notes	
Subpolygon Photos	


07/02/2024 09:41:33

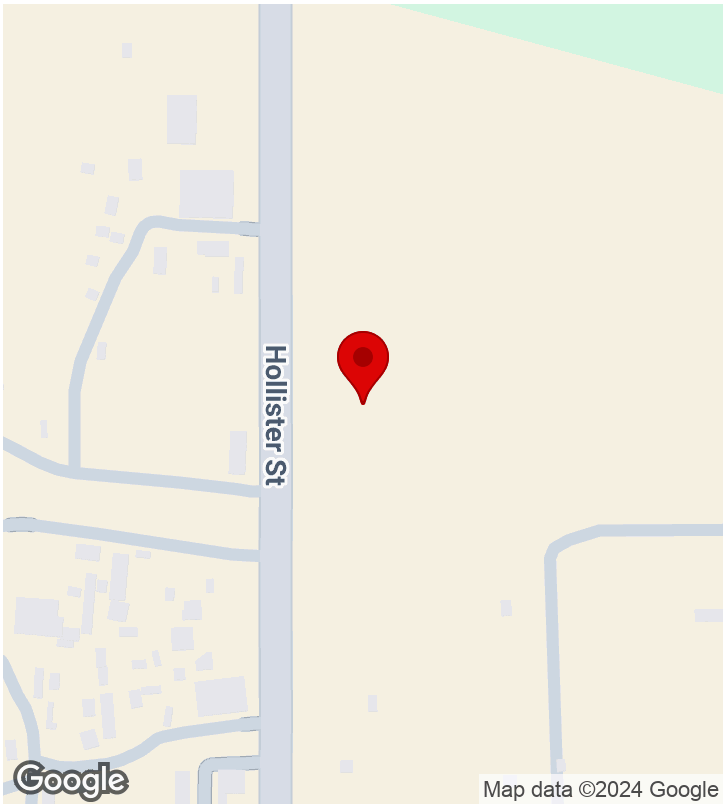
2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Northern Harrier

7/2/2024, 2:57:48 PM UTC





CREATED

6/4/2024, 3:36:28 PM UTC
by SC Fulcrum03

UPDATED

7/2/2024, 2:57:48 PM UTC
by SC Fulcrum05

LOCATION

32.547782, -117.083629

Parent Form

Project Name:	TMP Monitoring ▸ Northern Harrier
Preserve/Park Name	Tijuana River Valley Regional Park
General Survey Type	TMP Monitoring
Specific Survey Type	NOHA Threats Assessment
Observer/Surveyor:	Brennan Mulrooney
Assistant Observer/Surveyor:	Alissa Lun
Date:	June 4, 2024

START Weather Details:

Start - Time:	08:36
Start - Temperature:	
Start - Wind Direction From (select one):	
Start - Low Wind Speed:	
Start - High Wind Speed:	
Start - Average Wind Speed:	
Start - Cloud Cover (%):	
Start - Precipitation (select one):	None
Start - Visibility (select one):	
Start - Notes (if applicable):	

END Weather Details:

Time Out:	09:19
End - Temperature:	
End - Wind Direction From (select one):	
End - Low Wind Speed:	
End - High Wind Speed:	
End - Average Wind Speed:	
End - Cloud Cover (%):	
End - Precipitation (select one):	None
End - Visibility (select one):	
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	Hollister area

Notes	
Observation Type:	Bird

Photos





Bird

Bird Observation:

NOHA Threats Assessment

Survey Round	Round 3
Subpolygon Name	Tijuana Estuary 05
Is this an existing subpolygon?	Yes
Date	June 4, 2024
Primary Observer	Brennan Mulrooney
Secondary Observer	Alissa Lun
Suitable For Nesting?	Yes
Subpolygon Occupied?	Yes

Occupied Subpolygon

Breeding Behavior Observed?	
Nest Site Located?	
Foraging Behavior Observed?	
# Fledglings	
NOHA Comments	
Habitat Description	Mix of riparian scrub, salt bush scrub and non-native weeds

Habitat Management Recs	Removing non-native weeds from habitat.
Invasive Species Risk	Yes
If yes, Invasive Species Description	Shortpod mustard, Daisy, tamarisk, radish, artichoke thistle, fennel, tree tobacco, castor bean, Peruvian peppertree
Invasive Spp Management Recs	Remove non-native weeds and plants from habitat.
Risk from Ag Practices	No
Other Habitat Risks?	No
NOHA Foraging Habitat at Risk?	Yes
If yes, describe NOHA Foraging Habitat	Salt bush scrub
Foraging Habitat Management Recs	Remove non-native weeds and plants from habitat.
Predators Present?	Yes
Predation Risk Level	Medium
Description of Predation Risk	Raccoon, coyote, crows
Predator Management Recs	None
Risk from Humans?	Yes
Description of Human Risks	Unauthorized Trail Use, Border Patrol Activities
Human Management Recs	Close unauthorized trails.
Description of Other Threats	N/A
Management Recs Other Threats	N/A
Dominant Surrounding Land Use	Agriculture, Urban/Developed, Riparian Forest/Woodland
Subpolygon Notes	Adjacent to ponyland and other horse facilities.

Subpolygon Photos



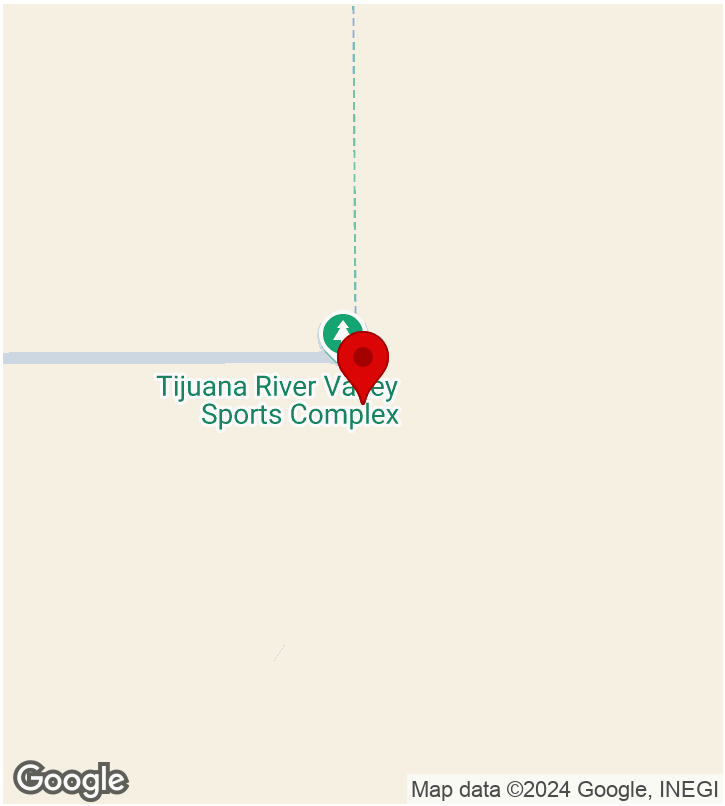
2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Northern Harrier

7/2/2024, 5:44:59 PM UTC





CREATED

6/4/2024, 1:58:17 PM UTC
by SC Fulcrum03

UPDATED

7/2/2024, 5:44:59 PM UTC
by SC Fulcrum05

LOCATION

32.558001, -117.075377

Parent Form

Project Name:	TMP Monitoring ▸ Northern Harrier
Preserve/Park Name	Tijuana River Valley Regional Park
General Survey Type	TMP Monitoring
Specific Survey Type	NOHA Threats Assessment
Observer/Surveyor:	Brennan Mulrooney
Assistant Observer/Surveyor:	Alissa Lun
Date:	June 4, 2024

START Weather Details:

Start - Time:	06:58
Start - Temperature:	
Start - Wind Direction From (select one):	
Start - Low Wind Speed:	
Start - High Wind Speed:	
Start - Average Wind Speed:	
Start - Cloud Cover (%):	
Start - Precipitation (select one):	None
Start - Visibility (select one):	
Start - Notes (if applicable):	

END Weather Details:

Time Out:	08:00
End - Temperature:	
End - Wind Direction From (select one):	
End - Low Wind Speed:	
End - High Wind Speed:	
End - Average Wind Speed:	
End - Cloud Cover (%):	
End - Precipitation (select one):	None
End - Visibility (select one):	
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

Notes	
Observation Type:	Bird

Photos





Bird

Bird Observation:

NOHA Threats Assessment

Survey Round	Round 3
Subpolygon Name	Tijuana Estuary 12 (ESA)
Is this an existing subpolygon?	No

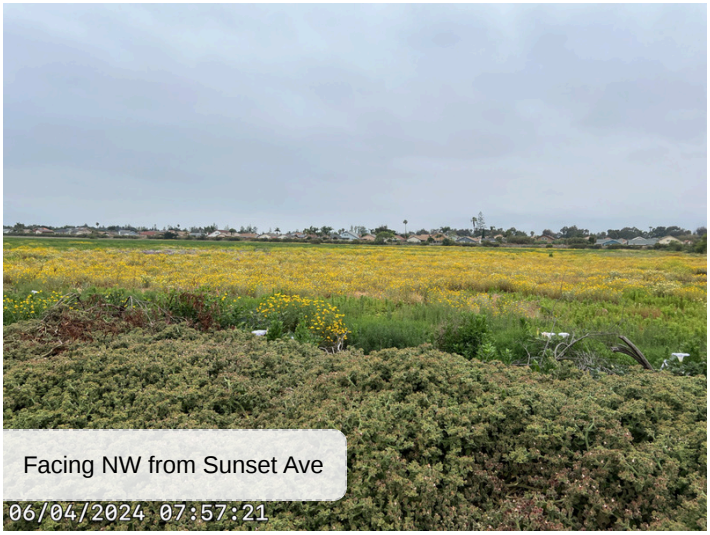
New Subpolygon

Primary Habitat	Riparian Scrub
% Primary Habitat	60
Secondary Habitat	Disturbed Habitat
% Secondary Habitat	40
Other Habitat	
% Other Habitat	

Date	June 4, 2024
Primary Observer	Brennan Mulrooney
Secondary Observer	Alissa Lin
Suitable For Nesting?	Yes
Subpolygon Occupied?	Yes

Occupied Subpolygon

Breeding Behavior Observed?	Yes
If yes, what breeding behavior was observed?	Prey Delivery
Other Behavior	
Nest Site Located?	No
Foraging Behavior Observed?	Yes
Foraging Habitat	Non-native Grassland
# Fledglings	
NOHA Comments	Just seen carrying prey item to the SW. Maybe the same territory by Hollister.
Habitat Description	Mix riparian scrub and non-native weedy scrub (Glebonius and Conium)
Habitat Management Recs	Removing non-native plants
Invasive Species Risk	Yes
If yes, Invasive Species Description	Non-native weeds (Glebonius and Conium)
Invasive Spp Management Recs	Remove non-native weeds
Risk from Ag Practices	No
Other Habitat Risks?	No
NOHA Foraging Habitat at Risk?	Yes
If yes, describe NOHA Foraging Habitat	Invasive non-native weeds and plants.
Foraging Habitat Management Recs	
Predators Present?	Yes
Predation Risk Level	Medium
Description of Predation Risk	American crow
Predator Management Recs	None.
Risk from Humans?	Yes
Description of Human Risks	Unauthorized Trail Use, Off-leash Dog(s), Border Patrol Activities
Human Management Recs	Close unauthorized trails and enforce off-leash dog policy.
Description of Other Threats	
Management Recs Other Threats	
Dominant Surrounding Land Use	Urban/Developed, Riparian Forest/Woodland
Subpolygon Notes	
Subpolygon Photos	


Facing NW from Sunset Ave
06/04/2024 07:57:21


NO AVAILABLE DATA


Facing north from south of ball field
NO AVAILABLE DATA


Facing east from end of sunset
NO AVAILABLE DATA

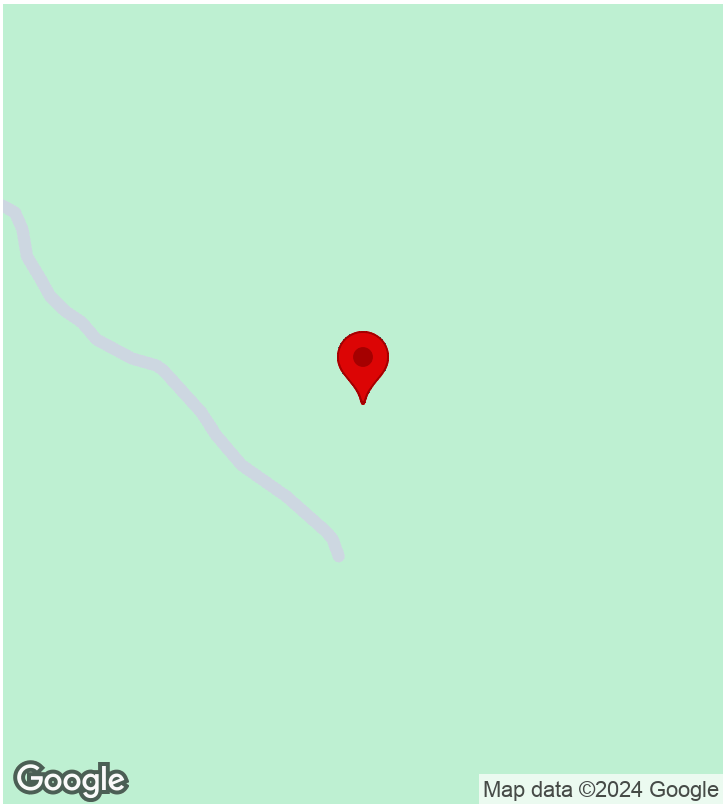
2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Northern Harrier

7/2/2024, 4:51:29 PM UTC





CREATED

6/4/2024, 5:23:55 PM UTC
by SC Fulcrum03

UPDATED

7/2/2024, 4:51:29 PM UTC
by SC Fulcrum05

LOCATION

32.555497, -117.095855

Parent Form

Project Name:	TMP Monitoring ▸ Northern Harrier
Preserve/Park Name	Tijuana River Valley Regional Park
General Survey Type	TMP Monitoring
Specific Survey Type	NOHA Threats Assessment
Observer/Surveyor:	Brennan Mulrooney
Assistant Observer/Surveyor:	Alissa Lun
Date:	June 4, 2024

START Weather Details:

Start - Time:	10:23
Start - Temperature:	
Start - Wind Direction From (select one):	
Start - Low Wind Speed:	
Start - High Wind Speed:	
Start - Average Wind Speed:	
Start - Cloud Cover (%):	
Start - Precipitation (select one):	None
Start - Visibility (select one):	
Start - Notes (if applicable):	

END Weather Details:

Time Out:	11:06
End - Temperature:	
End - Wind Direction From (select one):	
End - Low Wind Speed:	
End - High Wind Speed:	
End - Average Wind Speed:	
End - Cloud Cover (%):	
End - Precipitation (select one):	None
End - Visibility (select one):	
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

Notes	
Observation Type:	Bird

Photos







Bird

Bird Observation:

NOHA Threats Assessment

Survey Round	Round 3
Subpolygon Name	Tijuana Estuary 13 (ESA)
Is this an existing subpolygon?	No

New Subpolygon

Primary Habitat	Riparian Scrub
% Primary Habitat	50
Secondary Habitat	Coastal Scrub
% Secondary Habitat	40
Other Habitat	Disturbed, Wetland
% Other Habitat	10

Date	June 4, 2024
Primary Observer	Brennan Mulrooney
Secondary Observer	Alissa Lun
Suitable For Nesting?	Yes
Subpolygon Occupied?	Yes

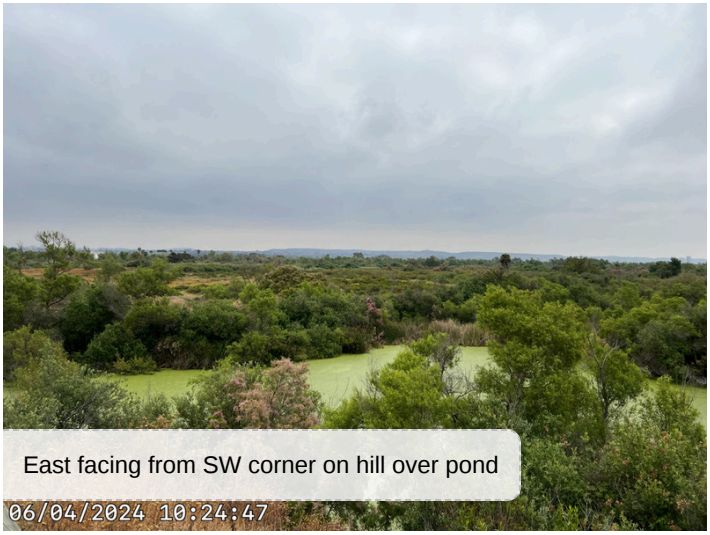
Occupied Subpolygon

Breeding Behavior Observed?	Yes
If yes, what breeding behavior was observed?	Prey Delivery, Territorial Display
Other Behavior	
Nest Site Located?	Yes
Nesting Habitat	Coastal Scrub
Foraging Behavior Observed?	Yes
Foraging Habitat	Disturbed Habitat, Coastal Scrub, Riparian Scrub
# Fledglings	
NOHA Comments	Prey deliverable from the male to the female. Female took prey to nest site. Female would not come back to nest when surveyors were on trail, likely disturbed due to human presence.

Habitat Description	Mix of Mule fat, Baccharis scrub, riparian trees, weedy undergrowth, and pond with wetland habitat.
Habitat Management Recs	Remove non-native weeds and plants from habitat.
Invasive Species Risk	Yes
If yes, Invasive Species Description	Tamarisk, arundo, daisy, tree tobacco, caster bean, Mexican fan palm
Invasive Spp Management Recs	Remove non-native weeds and plants from habitat.
Risk from Ag Practices	No
Other Habitat Risks?	No
NOHA Foraging Habitat at Risk?	Yes
If yes, describe NOHA Foraging Habitat	Non-native plant species are reducing the quality of NOHA foraging habitat.
Foraging Habitat Management Recs	Remove non-native weeds and plants from habitat.
Predators Present?	Yes
Predation Risk Level	Medium

Description of Predation Risk	Raccoon, coyote, crows
Predator Management Recs	None
Risk from Humans?	Yes
Description of Human Risks	Unauthorized Trail Use, Border Patrol Activities
Human Management Recs	Close unauthorized trails.
Description of Other Threats	N/A
Management Recs Other Threats	N/A
Dominant Surrounding Land Use	Urban/Developed, Agriculture, Riparian Forest/Woodland
Subpolygon Notes	

Subpolygon Photos



East facing from SW corner on hill over pond



West facing view from northern hilltop south of sunset

Appendix G

Least Bell's Vireo USFWS 45-Day Report and Brown-Headed Cowbird Trapping Annual Report

G-1 Least Bell's Vireo USFWS 45-Day Report

ESA

2355 Northside Drive
Suite 100
San Diego, CA 92108
619.719.4200 phone
619.719.4201 fax

esassoc.com

August 27, 2024

Stacey Love
Carlsbad Fish and Wildlife Service Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

Subject: Results of 2024 Least Bell's Vireo Nest Monitoring Study at Santa Margarita County Preserve, Unincorporated San Diego County, California – Implementation of Targeted Monitoring Plan

Dear Ms. Love:

This letter report presents the methodology and results of nest monitoring conducted for least Bell's vireo (*Vireo bellii pusillus*; LBVI) at the Santa Margarita County Preserve (Preserve) located in unincorporated San Diego County, California. Surveys and nest monitoring were conducted by Environmental Science Associates (ESA) biologist Florence Chan under U.S. Fish and Wildlife Service (USFWS) Section 10(a)(1)(A) recovery permit TE ES06873C-2. Nest monitoring of the species within the Preserve was recommended based on 2023 least Bell's vireo presence/absence survey and brown-headed cowbird (BHCO; *Molothrus ater*) trapping results associated with the implementation of the County of San Diego (County) Department of Parks and Recreation (DPR) Targeted Monitoring Plan (TMP) (ESA 2024).

Project Description and Location

The Preserve is approximately 211acres located in northern San Diego County, west of Interstate 15 and north of State Route 76 (**Figure 1**; see **Attachment A** for figures). The Preserve is located just east of the northeastern portion of the Camp Pendleton Marine Corps Base; it is directly west of Sandia Creek Drive and the southern portion of the Preserve is bisected by De Luz Road. It is within the Temecula and Fallbrook U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles (**Figure 2**).

Site Description

The Preserve contains a total of 21 vegetation communities and land cover types (**Figure 3**). For the purposes of LBVI nest monitoring, vegetation communities that support potentially suitable nesting habitat within the Santa Margarita River channel were surveyed, including southern riparian forest (13.41 acres), southern coast live oak riparian forest (0.43 acres), southern cottonwood-willow riparian forest (2.71 acres), southern sycamore-alder riparian woodland (0.47 acres), southern riparian woodland (20.41 acres), southern riparian scrub (0.67 acres), and southern willow scrub (4.94 acres), all together totaling 43.04 acres. Brief descriptions of suitable LBVI vegetation communities within the Preserve are presented below.

Southern Riparian Forest (13.41 acres)

Southern riparian forest consists of stands that are dominated or codominated by western sycamore and coast live oak. Additional tree species within this community include white alder (*Alnus rhombifolia*), Fremont's cottonwood (*Populus fremontii*), Goodding's black willow (*Salix gooddingii*), red willow (*Salix laevigata*), and arroyo willow (*Salix lasiolepis*). Associated sub-dominant shrubs in this community include mulefat (*Baccharis*

salicifolia), poison oak (*Toxicodendron diversilobum*), blue elderberry (*Sambucus nigra* ssp. *caerulea*), desert wild grape (*Vitis girdiana*), and California rose (*Rosa californica*). Herbaceous diversity is moderate and cover is continuous to open, including mugwort (*Artemisia douglasiana*), western ragweed (*Ambrosia psilostachya*), and many ruderal species.

Southern Coast Live Oak Riparian Forest (0.43 acres)

In this vegetation community, western sycamore (*Platanus racemosa*) and coast live oak (*Quercus agrifolia*) are codominant in an open to closed tree canopy. Scattered within this community are red willow, Gooding's black willow, and Fremont's cottonwood trees. Associated understory plant species include blue elderberry, mugwort, poison oak, desert wild grape, and California rose.

Southern Cottonwood–Willow Riparian Forest (2.71 acres)

This habitat is characterized by stands dominated or codominated by Fremont's cottonwood, Goodding's black willow, arroyo willow, and western sycamore, forming an open to intermittent tree canopy. The understory is composed of mulefat, desert wild grape, California rose, and poison oak. Herbaceous vegetation occurs in openings, often in flood scour or depositional areas.

Southern Sycamore–Alder Riparian Woodland (0.47 acres)

In general, western sycamore and white alder are dominant or codominant in the tree canopy; additional tree species may include coast live oak, southern California black walnut (*Juglans californica*), Fremont's cottonwood, coast live oak, Goodding's black willow, red willow, and arroyo willow. Trees are generally <35 meters tall with open canopy. The shrub and herb canopies are open with sparse cover.

Southern Riparian Woodland (20.41 acres)

Within this community, red willow, western sycamore, Fremont's cottonwood, coast live oak, and arroyo willow are dominant in an open tree canopy. Shrub species in the understory include mulefat, coyote brush (*Baccharis pilularis*), poison oak, desert wild grape, and blue elderberry.

Southern Riparian Scrub (0.67 acres)

Within this vegetation community, western sycamore is dominant or codominant in an open tree canopy with mulefat dominant in an open shrub canopy. Associated sub-dominant riparian shrubs include poison oak, blue elderberry, broom baccharis (*Baccharis sarothroides*), desert wild grape, and California rose. The herbaceous diversity is low, and cover is sparse; characteristic species include mugwort and western ragweed.

Southern Willow Scrub (4.94 acres)

Several willow species (red willow, arroyo willow, narrowleaf willow [*Salix exigua*], Pacific willow [*Salix lasiandra*], and Goodding's black willow) dominate this dense, broad-leafed, winter-deciduous riparian thicket

community. Scattered emergent Fremont's cottonwood and western sycamore also occur within this community. Shrub species that make up the understory include mulefat, coyote brush, or poison oak.

Methodology

Nest monitoring for LBVI was conducted and led by ESA biologist Florence Chan (TE ES06873C-2) and assisted by Brennan Mulrooney, Dillon Travis, Mary Cozy, and Stefanie Lehner. Survey and monitoring methodology followed the USFWS's *Least Bell's Vireo Survey Guidelines* issued January 19, 2001 (USFWS 2001) and Pike et al. (1999) *The Status and Management of the Least Bell's Vireo and Southwestern Willow Flycatcher within the Prado Basin, California, 1986–1999*. Weekly surveys were conducted between April 4 and July 30, 2024, within all portions of the survey area containing potentially suitable habitat. All vegetation communities within the Santa Margarita River channel were surveyed to encompass all potentially suitable nesting habitat and adjacent habitat potentially used for foraging. Monitoring was conducted between 6:05 a.m. and 12:57 p.m. Weather conditions were suitable for all surveys, with overcast to clear skies, winds of 7 miles per hour or less, and temperatures between 47°F and 85°F.

Results

Monitoring results are summarized in **Table 1** and depicted in **Figure 4**. Brown-headed cowbirds, which are brood parasites, were detected within the survey area during LBVI surveys as summarized in **Table 2** below. BHCO trapping occurred within the Preserve from April 1 to June 30, 2024, and trap locations are depicted in Figure 4. A total of eleven brown-headed cowbirds, including four adult males and seven adult females, were removed from the Preserve in 2024.

TABLE 1
LBVI MONITORING RESULTS

Category	Count
Number of territorial males	15
Number of known pairs	15
Number of known breeding (nesting) pairs	15
Number of known successful breeding pairs	14
Number of known fledged young observed	35
Number of nests that were discovered	13
Number of successful nests	8
Number of nests that failed as a result of reproductive failure	0
Number of nests that failed as a result of predation	4
Number of nests that failed as a result of parasitism	0
Number of nests that failed for unknown reasons	1

TABLE 2
BROWN-HEADED COWBIRD DETECTIONS

Date	Count	Latitude (Y)[a]	Longitude (X)[a]
4/24/2024	2	33.406922	-117.250035
5/08/2024	1	33.407813	-117.249821
6/26/2024	2	33.409073	-117.249368

a. Coordinates are in WGS 84

Incidental Observations

A complete list of all wildlife observed during the surveys is included in **Attachment B**. Incidentally observed special-status species included Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), red diamond rattlesnake (*Crotalus ruber*), great blue heron (*Ardea herodias*), green heron (*Butorides virescens*), turkey vulture (*Cathartes aura*), Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), yellow-breasted chat (*Icteria virens*), and yellow warbler (*Setophaga petechia*). Belding's orange-throated whiptail is a California Department of Fish and Wildlife (CDFW) watch list species and a County Group 2 species. Red diamond rattlesnake and yellow warbler are CDFW species of special concern and County Group 2 species. Cooper's hawk is a CDFW watch list species and a County Group 1 species. Great blue heron and green heron are County Group 2 species. Red-shouldered hawk and turkey vulture are County Group 1 species. Southern California rufous-crowned sparrow is a CDFW watch list species and a County Group 1 species. Yellow-breasted chat is a CDFW species of special concern and a County Group 1 species. CDFW California Natural Diversity Database forms for all state and federal special-status species are provided in **Attachment C**. Locations of special-status species are shown in Figure 4, with the exception of yellow warbler and yellow-breasted chat. These two species were very common in the survey area and the location for each individual was not recorded as this was not the focus of the survey.

On May 22, 2024, during the weekly LBVI nest monitoring survey, utility contractors were observed working on overhead powerlines in the area. This work involved flying a helicopter low and placing safety ball markers on an electrical line crossing the Preserve. The helicopter operations caused mature riparian trees to shake and sway violently due to the strong downdrafts. After the helicopter departed, numerous avian alarm calls were heard throughout the habitat beneath the powerlines. Due to the stress response exhibited, the biologists immediately halted the monitoring survey and left the area.

Nest Parasitism by Brown-Headed Cowbird

A parasitized song sparrow (*Melospiza melodia*) nest was incidentally detected during the April 24, 2024, survey within an active LBVI territory. A BHCO chick, a BHCO egg, and a song sparrow egg were found in the nest and adult song sparrows were observed feeding the BHCO chick. This nest was found to be empty during the following survey.

Discussion

In 2024, fifteen LBVI territories were detected in the Preserve, an increase of two territories from 2023. Of the fifteen LBVI pairs, fourteen pairs successfully produced at least one fledgling, and one pair produced six fledglings over the course of two broods. Two LBVI pairs attempted and successfully completed second broods. No parasitized LBVI nests were found and no juvenile BHCO were observed during the season. It is highly likely that ongoing BHCO trapping has had a positive impact on the success of common avian species and LBVI in the Preserve.

Conclusion

Based on the results of LBVI nest monitoring, fifteen LBVI territories were documented within the Preserve this season. No juvenile BHCOs were observed during the season, which could be attributed to ongoing BHCO trapping efforts.

If there are any questions regarding this report or the results, please feel free to reach out to Florence Chan at 949.491.2528 or fchan@esassoc.com.

Sincerely,



Florence Chan
Senior Biologist

Attachments:

Attachment A: Figures

- Figure 1: Regional Location
- Figure 2: Vicinity Map
- Figure 3: Vegetation Communities – Holland-Oberbauer Classification
- Figure 4: Least Bell's Vireo Nest Monitoring and Management Results

Attachment B: Wildlife Compendium
Attachment C: California Natural Diversity Database Forms

Certification Statement

I certify that the information in this survey report and attached exhibits fully and accurately represents my work.



Florence Chan
Senior Biologist

References

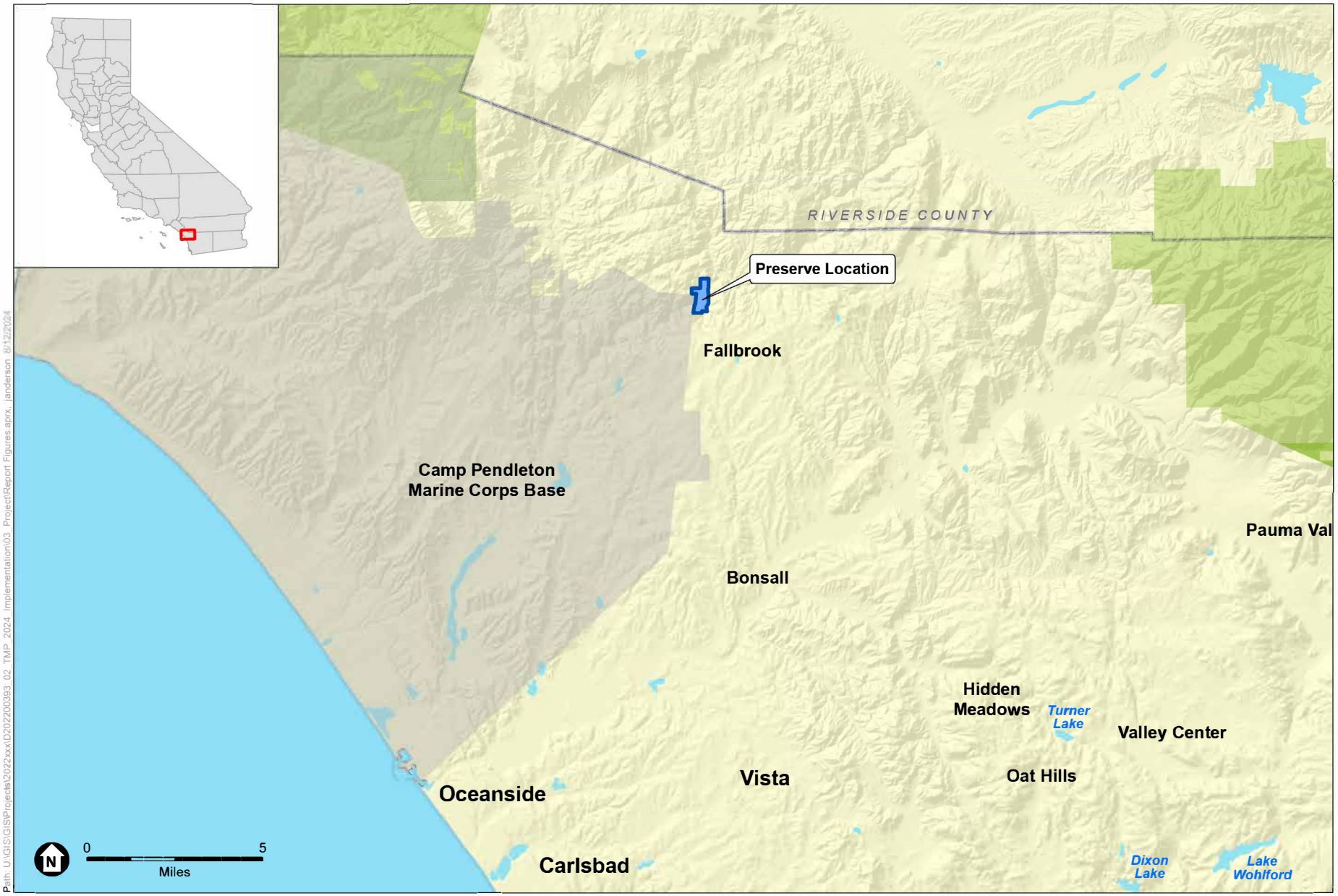
ESA (Environmental Science Associates). 2024. *Updated Final Targeted Monitoring Plan Resource-Specific Monitoring & Management 2023 Annual Report*. Prepared for the County of San Diego Department of Parks and Recreation. March 2024.

Pike, J., D. Pellegrini, S. Reynolds, and L.R. Hays. 1999. *The status and management of the Least Bell's Vireo and Southwestern Willow Flycatcher within the Prado Basin, California, 1986–1999*.

San Diego Association of Governments. 2011. *Vegetation Classification Manual for Western San Diego County*. First ed. February 2011.

USFWS (U.S. Fish and Wildlife Service). 2001. *Least Bell's Vireo Survey Guidelines*. January 19, 2001.

Attachment A
Figures

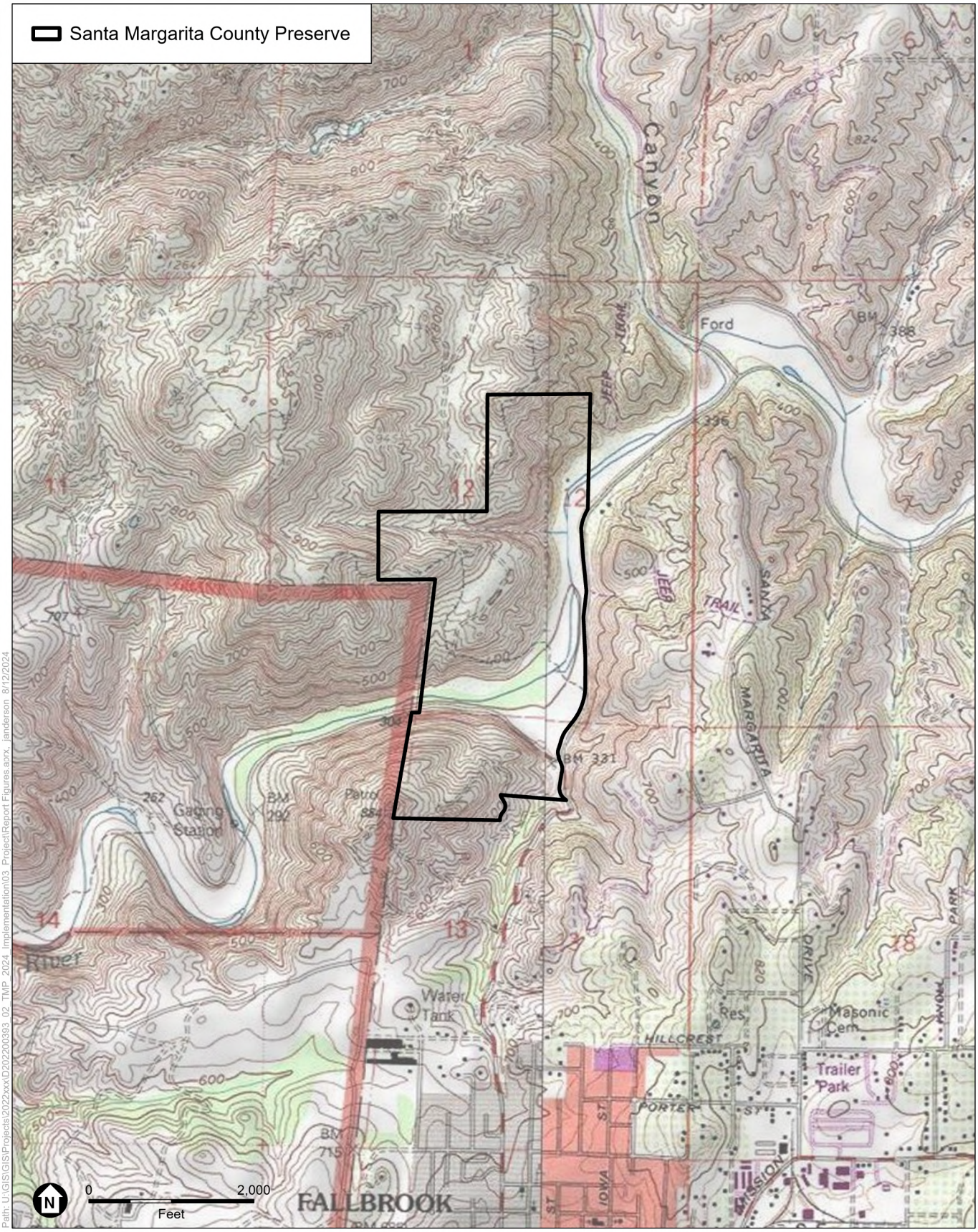


SOURCE: SanGIS

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan –
2024 Resource-Specific Monitoring and Management
2024 Focused Least Bell's Vireo Nest Monitoring for the Santa Margarita County Preserve

Figure 1
Regional Location

ESA



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SOURCE: USGS Topoquads
Fallbrook and Temecula

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan –
2024 Resource-Specific Monitoring and Management
2024 Focused Least Bell's Vireo Nest Monitoring for the Santa Margarita County Preserve

Figure 2
Vicinity Map

ESA

Santa Margarita County Preserve

Holland-Oberbauer

Scrub
- 32500 Diegan Coastal Sage Scrub
- 32520 Diegan Coastal Sage Scrub: Inland form

Chaparral
- 37120 Southern Mixed Chaparral
- 37200 Chamise Chaparral
- 37900 Scrub Oak Chaparral
- 37G00 Coastal Sage-Chaparral Transition

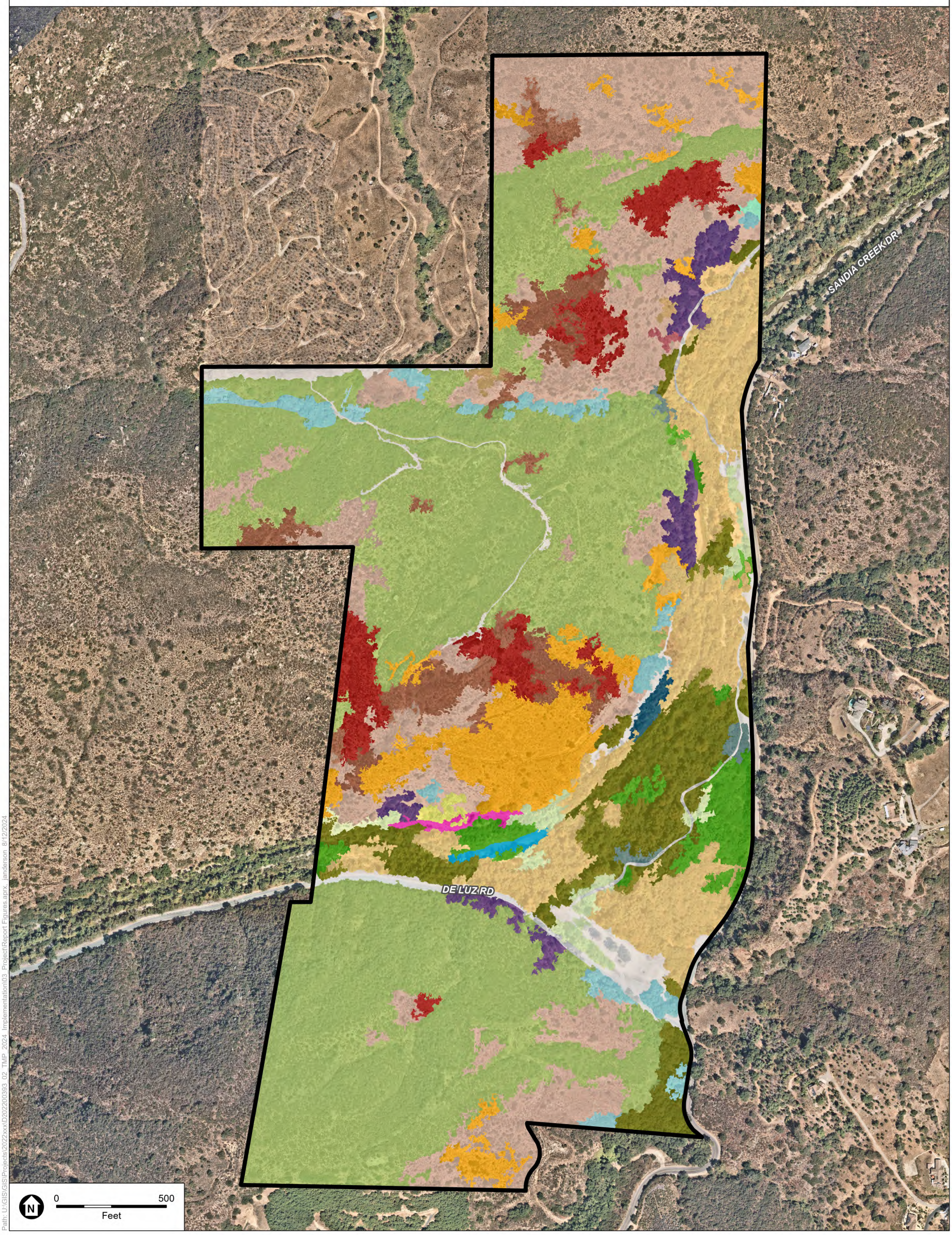
Herbaceous
- 42200 Non-Native Grassland
- 42300 Wildflower Field

Riparian
- 61300 Southern Riparian Forest
- 61310 Southern Coast Live Oak Riparian Forest
- 61330 Southern Cottonwood-Willow Riparian Forest
- 62400 Southern Sycamore-Alder Riparian Woodland
- 62500 Southern Riparian Woodland
- 63300 Southern Riparian Scrub
- 63320 Southern Willow Scrub

Woodland
- 71160 Coast Live Oak Woodland
- 71161 Open Coast Live Oak Woodland

Forest
- 81310 Coast Live Oak Forest

Disturbed/Developed
- 11300 Disturbed Habitat
- Open Water



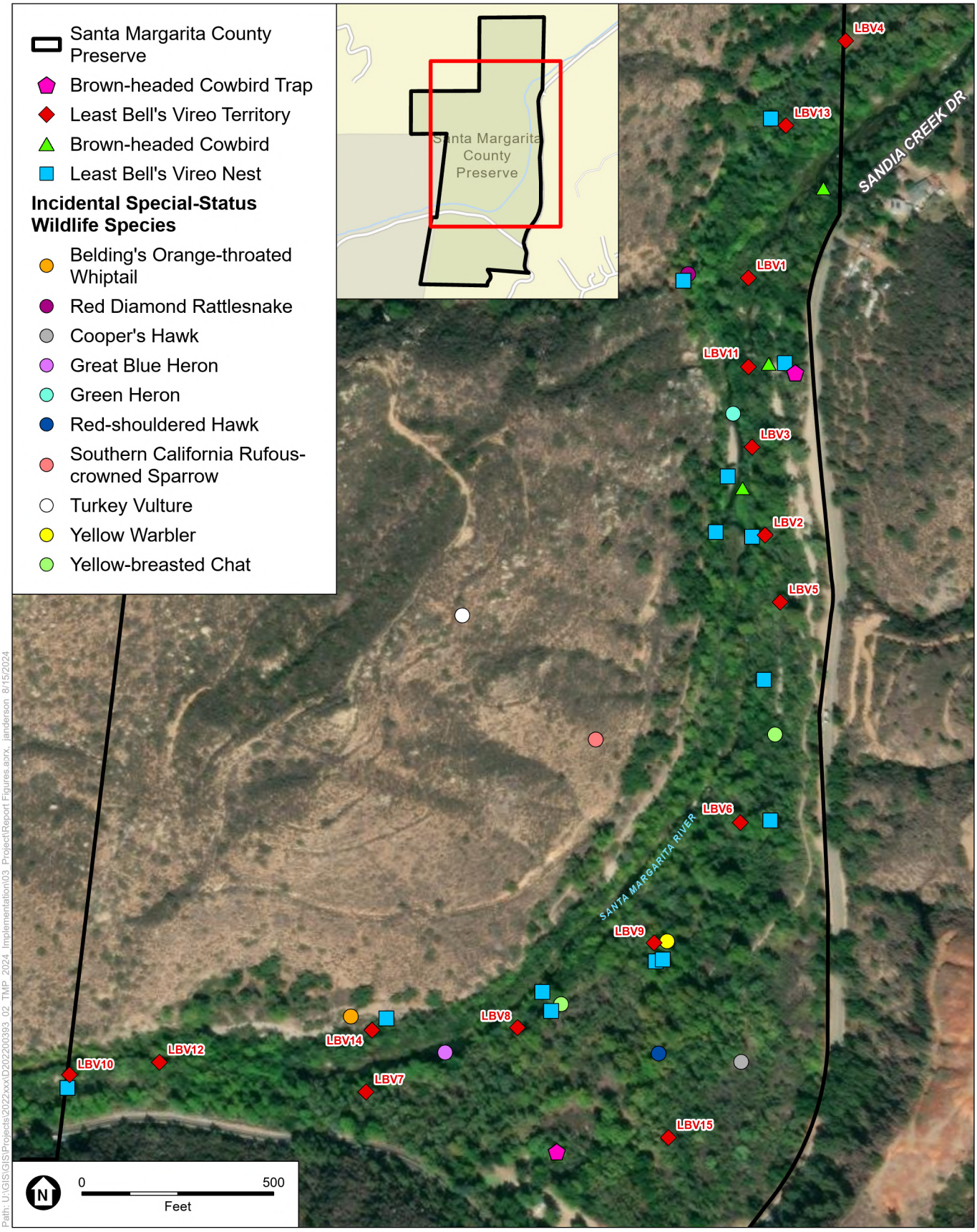
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SOURCE: Nearmap, 9/5/2020; ESA, 2023.

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management
2024 Focused Least Bell's Vireo Nest Monitoring for the Santa Margarita County Preserve

Figure 3
Vegetation Communities - Holland-Oberbauer Classification
Santa Margarita County Preserve

ESA



SOURCE: ESRI, 2021; ESA, 2024

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management
2024 Focused Least Bell's Vireo Nest Monitoring for the Santa Margarita County Preserve

Figure 4
Least Bell's Vireo Nest Monitoring and Management Results
Santa Margarita County Preserve

ESA

Attachment B
Wildlife Compendium

ATTACHMENT B
Wildlife Compendium

Scientific Name	Common Name	Status (Federal/State/Local)
AMPHIBIANS		
Ranidae	**True Frogs**	
**Lithobates catesbeianus*	American bullfrog	None/None/None
REPTILES		
Phrynosomatidae	**Zebratail, Earless, Horned, Spiny, Fringe-Toed Lizards**	
Sceloporus occidentalis	Western fence lizard	None/None/None
Uta stansburiana	Common side-blotched lizard	None/None/None
Teiidae	**Whiptail Lizards**	
Aspidoscelis hyperythra beldingi	Belding's orange-throated whiptail	None/WL/Group 2
Viperidae	**Vipers**	
Crotalus ruber	Red diamond rattlesnake	None/SSC/Group 2
BIRDS		
ANSERIFORMES		
Anatidae	**Waterfowl**	
Anas platyrhynchos	Mallard	None/None/None
COLUMBIFORMES		
Columbidae	**Pigeons and Doves**	
Patagioenas fasciata	Band-tailed pigeon	None/None/None
**Streptopelia decaocto*	Eurasian collared-dove	None/None/None
Zenaida macroura	Mourning dove	None/None/None
CAPRIMULGIFORMES		
Apodidae	**Swifts**	
Aeronautes saxatalis	White-throated swift	None/None/None
Trochilidae	**Hummingbirds**	
Archilochus alexandri	Black-chinned hummingbird	None/None/None
Calypte anna	Anna's hummingbird	None/None/None
Calypte costae	Costa's hummingbird	None/None/None
Selasphorus sasin	Allen's hummingbird	None/None/None

Scientific Name	Common Name	Status (Federal/State/Local)
PELECANIFORMES		
Ardeidae	**Herons and Egrets**	
Ardea herodias	Great blue heron	None/None/Group 2
Butorides virescens	Green heron	None/None/Group 2
CATHARTIFORMES		
Cathartidae	**New World Vultures**	
Cathartes aura	Turkey vulture	None/None/Group 1
ACCIPITRIFORMES		
Accipitridae	**Hawks**	
Accipiter cooperii	Cooper's hawk	None/WL/Group 1
Buteo jamaicensis	Red-tailed hawk	None/None/None
Buteo lineatus	Red-shouldered hawk	None/None/Group 1
STRIGIFORMES		
Strigidae	**Typical Owls**	
Bubo virginianus	Great horned owl	None/None/None
CORACIIFORMES		
Alcedinidae	**Kingfishers**	
Megaceryle alcyon	Belted kingfisher	None/None/None
PICIFORMES		
Picidae	**Woodpeckers**	
Colaptes auratus	Northern flicker	None/None/None
Dryobates pubescens	Downy woodpecker	None/None/None
Melanerpes formicivorus	Acorn woodpecker	None/None/None
Picoides nuttallii	Nuttall's woodpecker	None/None/None
PASSERIFORMES		
Tyrannidae	**Tyrant Flycatchers**	
Empidonax difficilis	Western flycatcher	None/None/None
Myiarchus cinerascens	Ash-throated flycatcher	None/None/None
Sayornis nigricans	Black phoebe	None/None/None
Vireonidae	**Vireo**	
Vireo bellii pusillus	Least Bell’s vireo	FE/SE/Draft North County MSCP, Group 1
Vireo gilvus	Warbling vireo	None/None/None
Vireo huttoni	Hutton’s vireo	None/None/None
Corvidae	**Jays and Crows**	
Aphelocoma californica	California scrub-jay	None/None/None
Corvus brachyrhynchos	American crow	None/None/None
Corvus corax	Common raven	None/None/None
Paridae	**Chickadees and Tits**	
Baeolophus inornatus	Oak titmouse	None/None/None

Scientific Name	Common Name	Status (Federal/State/Local)
Hirundinidae	**Swallows and Martins**	
Stelgidopteryx serripennis	Northern rough-winged swallow	None/None/None
Tachycineta bicolor	Tree swallow	None/None/None
Aegithalidae	**Bushtits**	
Psaltriparus minimus	Bushtit	None/None/None
Sylviidae	**Wrentits**	
Chamaea fasciata	Wrentit	None/None/None
Regulidae	**Kinglets**	
Corthylio calendula	Ruby-crowned kinglet	None/None/None
Sittidae	**Nuthatches**	
Sitta carolinensis	White-breasted nuthatch	None/None/None
Polioptilidae	**Gnatcatchers and Allies**	
Polioptila caerulea	Blue-gray gnatcatcher	None/None/None
Troglodytidae	**Wrens**	
Catherpes mexicanus	Canyon wren	None/None/None
Salpinctes obsoletus	Rock wren	None/None/None
Troglodytes aedon	House wren	None/None/None
Thryomanes bewickii	Bewick's wren	None/None/None
Turdidae	**True Thrushes**	
Catharus guttatus	Hermit thrush	None/None/None
Fringillidae	**Finches**	
Haemorhous mexicanus	House finch	None/None/None
Spinus psaltria	Lesser goldfinch	None/None/None
Passerellidae	**New World Sparrows**	
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow	None/WL/Group 1
Melospiza lincolnii	Lincoln’s sparrow	None/None/None
Melospiza melodia	Song sparrow	None/None/None
Melozone crissalis	California towhee	None/None/None
Pipilo maculatus	Spotted towhee	None/None/None
Icteriidae	**Chats**	
Icteria virens	Yellow-breasted chat	None/SSC/Group 1
Icteridae	**Orioles, Grackles, and Cowbirds**	
Icterus bullockii	Bullock’s oriole	None/None/None
Icterus cucullatus	Hooded oriole	None/None/None
Molothrus ater	Brown-headed cowbird	None/None/None

Scientific Name	Common Name	Status (Federal/State/Local)
Parulidae	**Wood Warblers**	
Cardellina pusilla	Wilson's warbler	None/None/None
Geothlypis trichas	Common yellowthroat	None/None/None
Leiothlypis celata	Orange-crowned warbler	None/None/None
Setophaga coronata	Yellow-rumped warbler	None/None/None
Setophaga petechia	Yellow warbler	None/SSC/Group 2
Setophaga townsendi	Townsend's warbler	None/None/None
Cardinalidae	**Buntings, Grosbeaks, and Tanagers**	
Passerina amoena	Lazuli bunting	None/None/None
Pheucticus melanocephalus	Black-headed grosbeak	None/None/None
Piranga ludoviciana	Western tanager	None/None/None
MAMMALS		
Canidae	**Canines**	
Canis latrans	Coyote	None/None/None
Leporidae	**Rabbits and Hares**	
Sylvilagus audubonii	Audubon's cottontail	None/None/None
Talpidae	**Moles and Desmans**	
Scapanus latimanus	Broad-footed mole	None/None/None

NOTES:

1. FE: Federally Endangered
   SE: State Endangered
   WL: California Department of Fish and Wildlife Watch List
   SSC: California Department of Fish and Wildlife Species of Special Concern
   Draft North County MSCP: Covered under the Draft North County MSCP
   Group 1: Animals of high sensitivity (listed or specific natural history requirements) (County)
   Group 2: Animals declining but not in immediate threat of extinction or extirpation (County)
* Non-native species

Attachment C

California Natural Diversity Database Forms

Attachment C. California Natural Diversity Database (CNDDB) Forms

ObserverName*	**ObserverContact***	**SciName***	ComName	SpFound(Y/N)	SpDetermine	ID_Confidence	**ObservationDate***	**NumberObserved***	Phenology	Collection	AnimalAgeClass	**AnimalSiteUse***	**AnimalBehavior***
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	5/1/2024	2			adult	foraging, nesting	singing, foraging, nesting activity
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	5/1/2024	2			adult	foraging, nesting	singing, foraging, nesting activity
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	5/1/2024	2			adult	foraging, nesting	singing, foraging, nesting activity
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	5/1/2024	2			adult	foraging, nesting	singing, foraging, nesting activity
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	5/1/2024	2			adult	foraging, nesting	singing, foraging, nesting activity
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	5/1/2024	2			adult	foraging, nesting	singing, foraging, nesting activity
Florence Chan	fchan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	5/8/2024	2			adult	foraging, nesting	singing, foraging, nesting activity
Florence Chan	fchan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	5/8/2024	2			adult	foraging, nesting	singing, foraging, nesting activity
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	5/8/2024	2			adult	foraging, nesting	singing, foraging, nesting activity
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	5/15/2024	2			adult	foraging, nesting	singing, foraging, nesting activity
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	6/12/2024	2			adult	foraging, nesting	singing, foraging, nesting activity
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	6/19/2024	2			adult	foraging, nesting	singing, foraging, nesting activity
Brennan Mulrooney	bmulrooney@esassoc.com	Setophaga petechia	Yellow Warbler	y		very confident	4/4/2024	10			10 adults	foraging, nesting	singing, foraging
Brennan Mulrooney	bmulrooney@esassoc.com	Icteria virens	Yellow-breasted Chat	y		very confident	7/3/2024	3			3 adult	foraging, nesting	singing, foraging
Brennan Mulrooney	bmulrooney@esassoc.com	Icteria virens	Yellow-breasted Chat	y		very confident	5/8/2024	3			3 adult	foraging, nesting	singing, foraging
Brennan Mulrooney	bmulrooney@esassoc.com	Cathartes aura	Turkey Vulture	y		very confident	7/30/2024	1			1 unknown age	foraging	in flight
Brennan Mulrooney	bmulrooney@esassoc.com	Buteo lineatus	Red-shouldered Hawk	y		very confident	7/17/2024	1			1 unknown age	foraging, nesting	singing/calling
Brennan Mulrooney	bmulrooney@esassoc.com	Butorides virescens	Green Heron	y		very confident	7/30/2024	1			1 unknown age	foraging	in flight
Brennan Mulrooney	bmulrooney@esassoc.com	Ardea herodias	Great Blue Heron	y		very confident	7/30/2024	1			1 adult	foraging	foraging
Brennan Mulrooney	bmulrooney@esassoc.com	Accipter cooperii	Cooper's Hawk	y		very confident	4/10/2024	1			1 unknown age	foraging, nesting	calling/in flight
Brennan Mulrooney	bmulrooney@esassoc.com	Aimophila ruficeps canescens	Southern California Rufous-crov	y		very confident	7/30/2024	1			1 adult	foraging	singing/calling
Brennan Mulrooney	bmulrooney@esassoc.com	Crotalus ruber	Red Diamond Rattlesnake	y		very confident	5/1/2024	1			adult	foraging	
Brennan Mulrooney	bmulrooney@esassoc.com	Aspidoscelis hyperythra	Orange-throated Whiptail	y		very confident	6/19/2024	3			3 unknown age	foraging	

Attachment C. California Natural Diversity Database (CNDDB) Forms

ObserverName*	ObserverContact*	SciName*	ComName	AnimalDetectionMethod*	LocationDescription	X_Coordinate*	Y_Coordinate*	Datum*	UTM_zone*	CoordSource*	CoordAccuracy	SurveyEffort*	Habitat	SiteQuality	LandUse	Disturbances	Threats	Landowner	Comments	Other
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard	Santa Margarita County	33.403512	-117.250726			GoogleEarth		LBVI Nest Monitoring								
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard	Santa Margarita County	33.404528	-117.249758			GoogleEarth		LBVI Nest Monitoring								
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard	Santa Margarita County	33.406563	-117.249937			GoogleEarth		LBVI Nest Monitoring								
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard	Santa Margarita County	33.406993	-117.25015			GoogleEarth		LBVI Nest Monitoring								
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard	Santa Margarita County	33.40839	-117.250545			GoogleEarth		LBVI Nest Monitoring								
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard	Santa Margarita County	33.407808	-117.249671			GoogleEarth		LBVI Nest Monitoring								
Florence Chan	fchan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard	Santa Margarita County	33.403085	-117.253022			GoogleEarth		LBVI Nest Monitoring								
Florence Chan	fchan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard	Santa Margarita County	33.403285	-117.251692			GoogleEarth		LBVI Nest Monitoring								
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard	Santa Margarita County	33.409557	-117.24981			GoogleEarth		LBVI Nest Monitoring								
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard	Santa Margarita County	33.40554	-117.249824			GoogleEarth		LBVI Nest Monitoring								
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard	Santa Margarita County	33.406594	-117.250247			GoogleEarth		LBVI Nest Monitoring								
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard	Santa Margarita County	33.402565	-117.255741			GoogleEarth		LBVI Nest Monitoring								
Brennan Mulrooney	bmulrooney@esassoc.com	Setophaga petechia	Yellow Warbler	seen and heard	Santa Margarita County	33.403656	-117.250629			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Icteria virens	Yellow-breasted Chat	seen and heard	Santa Margarita County	33.405149	-117.249725			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Icteria virens	Yellow-breasted Chat	seen and heard	Santa Margarita County	33.403199	-117.25153			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Cathartes aura	Turkey Vulture	seen	Santa Margarita County	33.40598	-117.252406			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Buteo lineatus	Red-shouldered Hawk	heard	Santa Margarita County	33.402852	-117.250693			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Butorides virescens	Green Heron	seen	Santa Margarita County	33.407443	-117.250109			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Ardea herodias	Great Blue Heron	seen	Santa Margarita County	33.402845	-117.252517			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Accipter cooperii	Cooper's Hawk	seen and heard	Santa Margarita County	33.402798	-117.249987			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Aimophila ruficeps canescens	Southern California Rufous-crov	heard	Santa Margarita County	33.405101	-117.251256			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Crotalus ruber	Red Diamond Rattlesnake	seen	Santa Margarita County	33.408438	-117.250504			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Aspidoscelis hyperythra	Orange-throated Whiptail	seen	Santa Margarita County	33.403096	-117.253326			GoogleEarth		Incidental								

G-2 Brown-Headed Cowbird Trapping Annual Report

SANTA MARGARITA COUNTY PRESERVE
BROWN-HEADED COWBIRD TRAPPING PROGRAM 2024

PREPARED FOR
COUNTY OF SAN DIEGO DEPARTMENT OF PARKS AND RECREATION
5500 OVERLAND AVENUE, SUITE 410
SAN DIEGO, CA 92123





SEPTEMBER 2024

SANTA MARGARITA COUNTY PRESERVE
BROWN-HEADED COWBIRD TRAPPING PROGRAM 2024

PREPARED FOR

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5500 OVERLAND AVENUE, SUITE 410
SAN DIEGO, CA 92123

PREPARED BY

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UNDER SUBCONTRACT TO

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SEPTEMBER 2024

SANTA MARGARITA COUNTY PRESERVE
BROWN-HEADED COWBIRD TRAPPING PROGRAM 2024

TABLE OF CONTENTS

EXECUTIVE SUMMARY II
1. INTRODUCTION 1
2. BACKGROUND 1
   2.1 LEAST BELL'S VIREO 1
   2.2 BROWN-HEADED COWBIRD 2
   2.3 BROWN-HEADED COWBIRD CONTROL 3
3. PROJECT SITE 3
4. TRAP LOCATIONS 3
5. METHODS 4
6. RESULTS 4
   6.1 BROWN-HEADED COWBIRD CAPTURES 4
   6.2 NON-TARGET SPECIES 5
   6.3 TRAP VANDALISM 5
   6.4 PARASITISM 5
7. DISCUSSION AND RECOMMENDATIONS 5
8. REFERENCES 6

TABLES

Table 6-1 Brown-Headed Cowbirds Captured per Trap in 2024 4
Table 6-2 Non-Target Species Capture Events in 2024 5
Table 7-1 Brown-Headed Cowbirds Captured per Trap from 2022-2024 6

APPENDICES

A. Figures
B. Raw Data Tables
C. Cowbird Trap Information/Do Not Disturb Sign Attached to Each Trap

EXECUTIVE SUMMARY

A brown-headed cowbird (*Molothrus ater*) trapping program was implemented on Santa Margarita County Preserve (Preserve), San Diego County, California, in 2022, to reduce the threat and impact of brown-headed cowbird brood parasitism on least Bell's vireo (*Vireo bellii pusillus*). The trapping program was initiated in 2022 in response to detections of least Bell's vireo nest parasitism incidentally observed during 2021 Targeted Monitoring Plan (TMP) surveys (ESA 2022). Trapping continued in 2023 based on 2022 brown-headed cowbird trappings results (ESA 2023) and was recommended to continue in 2024 based on 2023 brown-headed cowbird trapping results (ESA 2024). The trapping program is consistent with the TMP's management goals and objectives for least Bell's vireo (ESA and ICF 2022).

A total of two brown-headed cowbird traps were operated along the Santa Margarita River within the Preserve in 2024. Traps were placed within riparian habitat that provides suitable nesting habitat for the vireo.

A total of eleven brown-headed cowbirds were removed from the project area between April 1 and June 30, 2024. Captures included four adult males, and seven adult females. Newly captured cowbirds not used as decoys were removed daily and humanely euthanized. There were six non-target species capture events in the project area in 2024. Non-target captures included four California towhees (*Melozone crissalis*), one song sparrow (*Melospiza melodia*), and one house finch (*Haemorhous mexicanus*). All non-targets were captured in Trap #1 and were released from the trap site unharmed the same day they were captured.

1. INTRODUCTION

A brown-headed cowbird (*Molothrus ater*) trapping program was implemented beginning in 2022 within the Santa Margarita County Preserve (Preserve) on behalf of the County of San Diego Department of Parks and Recreation. The purpose of the trapping program was to reduce the threat and impact of brown-headed cowbird brood parasitism on the Preserve's least Bell's vireo (*Vireo bellii pusillus*) population. The least Bell's vireo is a federally and state endangered migratory songbird species that nests in riparian habitat within the Preserve. The least Bell's vireo is subject to reproductive pressure through nest parasitism by the brown-headed cowbird. Studies have shown that a program of cowbird trapping effectively reduces this reproductive pressure (Kus and Whitfield 2005). The trapping program was initiated in 2022 in response to detections of least Bell's vireo nest parasitism incidentally observed during 2021 Targeted Monitoring Plan (TMP) surveys (ESA 2022). Trapping continued in 2023 based on 2022 brown-headed cowbird trappings results (ESA 2023) and was recommended to continue in 2024 based on 2023 brown-headed cowbird trapping results (ESA 2024). The trapping program is consistent with the management goals and objectives detailed in the TMP and are as follows (ESA and ICF 2022):

- **Management Goal**: Maintain suitable breeding habitat for least Bell's vireo and maintain vireo breeding pairs within the Santa Margarita County Preserve.
- **Management Objective**: Control brown-headed cowbird parasitism through trapping and removal program, as necessary based on monitoring results.

2. BACKGROUND

During 2021 TMP surveys, Environmental Science Associates (ESA) biologists detected a brown-headed cowbird adult, fledgling, and egg in a least Bell's vireo nest (ESA 2022). A pair of cowbirds was observed copulating during the first survey and cowbirds were observed during five out of the eight protocol surveys (ESA 2022). While the number of observations of cowbirds was relatively low, at least 2 of 11 least Bell's vireo territories suffered direct impacts to productivity during the 2021 season (ESA 2022). These results were indicative of parasitism occurring within the Preserve. In response to these results, a brown-headed cowbird trapping program was established in 2022 within the Preserve to reduce the threat of brood parasitism on least Bell's vireo and other native songbirds.

During 2022 TMP surveys, ESA biologists did not observe direct evidence of cowbird parasitism; however, cowbirds were observed during three out of the eight protocol surveys and 20 cowbirds, including 1 juvenile, were captured during 2022 cowbird trapping, suggesting parasitism still occurred within the Preserve (ESA 2023). As a result, implementation of the cowbird trapping program was recommended to continue in 2023.

During 2023 TMP surveys, ESA biologists incidentally discovered a parasitized least Bell's vireo nest that was subsequently abandoned by the vireo pair. Additionally, cowbirds were observed during two out of the eight protocol surveys and 7 cowbirds, including 1 juvenile, were captured during 2023 cowbird trapping, suggesting parasitism still occurred within the Preserve (ESA 2024). As a result, implementation of the cowbird trapping program was recommended to continue in 2024.

2.1 Least Bell's Vireo

The least Bell's vireo is a small migratory songbird and an obligate summer resident of riparian habitat within Southern California and northwestern Baja California, Mexico. Historically, the least Bell's vireo

was considered a common breeding resident within lowland riparian habitat areas throughout California from the northern Sacramento Valley south into northwestern Baja California, Mexico (Franzreb 1989). Beginning in the mid-1900s, the least Bell's vireo experienced widespread declines due to extensive habitat destruction and brood parasitism by the brown-headed cowbird (Kus and Whitfield 2005; Goldwasser et al. 1980). With the loss of over 90 percent of the riparian habitat within the state of California and persistent pressure from cowbird parasitism, the least Bell's vireo was found in only small, localized populations within seven California counties during survey efforts conducted in 1978 (Goldwasser et al. 1980). First listed as an endangered species by the State of California in 1980, the least Bell's vireo was listed as federally endangered in 1986 with a statewide population of 291 known territories (USFWS 1998). After receiving endangered species status, intensive management efforts, including cowbird control, habitat restoration, and nest monitoring programs, were instituted to reverse the decline of the least Bell's vireo population within California. A 5-year study completed in 2006 by the U.S. Fish and Wildlife Service reported a statewide least Bell's vireo population of 2,968 known territories (USFWS 2006; USGS [unpublished data] 2006). This represents a tenfold population increase from the number that existed at the time of listing.

2.2 Brown-Headed Cowbird

The brown-headed cowbird is an obligate brood parasite that lays its eggs in the nests of other songbird species and is dependent upon the host to incubate its eggs and rear its young. The cowbird is a medium-sized songbird averaging 6 to 7 inches in length with sexually dimorphic plumage. Adult males are glossy black with a brown head and neck. Females are slightly smaller than males and are dull tan to light brown with indistinct streaking on the breast. The cowbird was historically restricted to the central regions of North America and expanded in both range and abundance following the alteration of natural habitats particularly associated with the increase in agriculture and livestock production (Mayfield 1977). This species reached California in the late 1800s. Specimens (adult female and eggs) collected in 1915 represent the first documented evidence of breeding in San Diego County (Unitt 1984). The species was well established within Southern California by the 1930s (Willett 1933; Rothstein 1994). The cowbird egg-laying period is generally considered to extend from mid-April to mid-July (Robinson et al. 1993); however, cowbird parasitism of local least Bell's vireo populations has been noted as early as the first week of April (B. Kus, pers. comm. 2009). Regional observations during vireo surveys and monitoring conducted by TW Biological Services over the past two decades are consistent with this earlier timing (Sexton pers. obs.).

Songbird species or populations that have not evolved with the cowbird may be subject to significantly reduced reproductive success due to brood parasitism (Mayfield 1977). Female cowbirds can lay an average of at least 30 to 40 eggs per season, allowing a small number of cowbirds to parasitize a large number of nests (Robinson et al. 1995). When female cowbirds locate a host's nest during or shortly after egg laying, they will typically remove a host egg and replace it with one of their own. Cowbird egg incubation is shorter than that of most host species (Robinson et al. 1993) and the cowbird egg will usually hatch days before the host's eggs. Cowbird nestlings do not typically directly cause the death of host nestlings by kicking them from the nests like some other brood parasites (USFWS 2002). More commonly, nestling cowbirds divert the attention of the adults and out-compete host nestlings for food because of their earlier hatch date, faster growth rate, louder begging calls, and larger gapes compared to host nestlings (Robinson et al. 1993). Brood parasitism combined with other impacts, such as habitat loss and fragmentation, can lead to declines and potential extirpation of host species, particularly those with an already limited population and distribution (Kus and Whitfield 2005; Mayfield 1977, Rothstein et al. 1987).

The cowbird is migratory and somewhat nomadic throughout most of its range. In areas where it is considered a year-round resident, the cowbird exhibits significant dispersal movements between breeding and wintering areas (Ortega 1998). Two subspecies of brown-headed cowbird occur in California, the dwarf cowbird (*M. a. obscurus*) and Great Basin cowbird (*M. a. artemisiae*) (Rothstein 1994; Ortega 1998). While

both subspecies occur in Southern California as winter residents and spring/fall migrants, only dwarf cowbird breeds in Southern California (Fleischer and Rothstein 1988; Unitt 2004). In San Diego County, cowbird populations are at the highest levels during spring and fall migration, with peak numbers generally occurring between April 1 and May 15, and again from early August through September (TW Biological Services unpubl. data). During these periods there is considerable overlap of both migrant and breeding residents, as well as subspecies. During the breeding season, cowbirds also exhibit a wide range of movement and have been shown to commute up to 7 kilometers (km) between foraging and breeding sites (Robinson et al. 1993; Rothstein et al. 1984).

2.3 Brown-Headed Cowbird Control

Brown-headed cowbird control through breeding-season trapping is proven to be an effective method in controlling cowbirds and reducing brood parasitism of sensitive songbird populations throughout the United States; this method was initially used in the recovery efforts of the Kirtland's Warbler (*Dendroica kirtlandii*) in Michigan (Mayfield 1977). Subsequently, cowbird trapping has become an important tool in the conservation of several sensitive songbird species, including the black-capped vireo (*Vireo atricapillus*) (Eckrich et al. 1999), least Bell's vireo (Kus 1999; Kus and Whitfield 2005), and southwestern willow flycatcher (*Empidonax traillii extimus*) (Whitfield et al. 1999). A study was conducted in 2005 to evaluate the effectiveness of cowbird trapping on California least Bell's vireo populations. The study evaluated data from three California sites over a 20-year period and concluded that cowbird control reduces the incidence of parasitism and consequently increases least Bell's vireo productivity (Kus and Whitfield 2005).

3. PROJECT SITE

The Preserve is approximately 211acres located just east of Camp Pendleton Marine Corps Base and north of the city of Fallbrook (Appendix A: Figure A-1). Trapping in 2024 was conducted along a 1.25 km section of the Santa Margarita River where it passes through the Preserve. The southerly edge of the river is bordered by De Luz Road and Sandia Creek Drive, and the northerly edge of the river is bordered by undeveloped hilly terrain that rises to the north and northwest.

4. TRAP LOCATIONS

In 2024, two traps were placed along the Santa Margarita River within the Preserve in the same general areas trapped in 2023 (Appendix A: Figure A-2). The area around Trap #1 developed an overgrowth of grapevine during the 2023 trapping period. This trap in 2024 was moved approximately 170 feet east of the 2023 location to a somewhat less vegetated area. The primary goal of this trapping program is to maintain suitable breeding habitat for least Bell's vireo and maintain vireo breeding pairs within the Preserve. A primary consideration is to locate traps in those habitats most suitable for nesting, and to do so in a manner that provides acceptable coverage of the project area. Traps were placed within the riparian habitat, approximately 0.7 km from each other, in locations that were easily accessible by vehicle. Trap #1 was located approximately 0.2 km northwest of the intersection of De Luz Road and Sandia Creek Drive. This trap was placed adjacent to a trail at the north end of the Preserve staging area. Trap #2 was placed approximately 0.8 km north of the De Luz Road/Sandia Creek Drive intersection a short distance west of the road. Both traps were placed within riparian habitat, behind brush, to obscure view by the public.

5. METHODS

TW Biological Services personnel performed trapping operations from April 1 through June 30, 2024. The two traps were delivered to the project area, assembled, and activated on April 1, 2024. Upon activation, the traps were supplied with fresh water, seed, perches, shade, and live decoy cowbirds. The right primary wing feathers of both male and female decoy cowbirds were clipped for identification and prevention of accidental escape or release back into the wild. This practice also greatly diminishes their likelihood of survival in the wild should they escape. GPS coordinates for trap locations were recorded with a Garmin 276C handheld GPS unit (Appendix B: Table B-1). Coordinates were recorded in World Geographic System 1984 (WGS 84). A sign was placed on each trap providing trap information and contact phone numbers (Appendix C).

Traps were checked daily, during daylight hours, from April 1 through June 30, 2024. This was done to record trap capture events, release non-target species incidentally captured, add or remove cowbirds to maintain the 2:3 (male:female) decoy ratio, provide fresh seed and water, and repair trap damage if needed. Information recorded for all newly captured cowbirds included capture location, date, sex, and age. Newly captured cowbirds not used as decoys were removed daily and humanely euthanized off-site. All other non-target birds captured were released unharmed at the trap sites. On June 30, 2024, both traps were deactivated and on July 6, 2024, the traps were dismantled and removed from the project area.

6. RESULTS

6.1 Brown-Headed Cowbird Captures

A total of eleven cowbirds were captured within the Preserve between April 1 and June 30, 2024 (Table 6-1; Appendix B: Table B-2). These included four adult males, seven adult females. The first adult male and female cowbird captures occurred on April 11, 2024. There were 181 actual trap days out of a potential of 182. Total trap days are calculated by multiplying the number of traps by the number of days they are in operation, then subtracting the number of days individual traps are inactive for various reasons such as vandalism. One trap day was lost as a result of vandalism to Trap #1 on June 18 as discussed below. There were 0.06 cowbirds captured per trap day during the 2024 project period. The ratio of male to female captures was 0.57:1.

Table 6-1
Brown-Headed Cowbirds Captured per Trap in 2024

	Cowbirds Captured			
Trap Number	**Adult Male**	**Adult Female**	**Juvenile**	**Total**
1	2	3	0	**5**
2	2	4	0	**6**
Total	**4**	**7**	**0**	**11**

6.2 Non-Target Species

There were six non-target species capture events in the project area in 2024 (Table 6-2). Non-target captures included four California towhees, one song sparrow, and one house finch. All non-targets were captured in Trap #1 and were released from the trap site unharmed the same day they were captured.

Table 6-2
Non-Target Species Capture Events in 2024

Common Name	Scientific Name	Capture Events
California Towhee	*Melozone crissalis*	4
Song Sparrow	*Melospiza melodia*	1
House Finch	*Haemorhous mexicanus*	1
Total		6

6.3 Trap Vandalism

One incident of vandalism occurred during the 2024 trapping period. On June 18 the slot board of Trap#1 was removed by an unknown individual. As a result, 3 male and 2 female bait birds escaped. The trap was repaired and re-activated with new cowbirds on June 19. This vandalism event resulted in the loss of one trap day. All decoy cowbirds were wing-clipped, reducing the likelihood of survival in the wild.

6.4 Parasitism

No parasitism to least Bell's vireo was observed during the 2024 trapping period; however, a parasitized song sparrow (*Melospiza melodia*) nest was incidentally detected during the April 24, 2024 nest monitoring survey within an active least Bell's vireo territory.

7. DISCUSSION AND RECOMMENDATIONS

A total of eleven brown-headed cowbirds, including four adult males, and seven adult females were removed from the project area in 2024.

Total capture numbers in Trap #2 have not varied significantly between 2022 and 2024. Captures in Trap #1 have varied over the same period with significantly fewer captures in 2023 than in 2022, and higher captures in 2024 than in 2023 (Table 7-1). In general, variations in capture numbers in individual traps can vary from one year to the next. The Trap #1 location experienced a rapid growth of wild grape during the 2023 trapping period – probably the result of increased rainfall in 2023 compared to 2022. Trap #1 was moved to a more open location in 2024. This may have contributed to improved capture results. The significance of the capture numbers for this trap is difficult to assess given the limited number of years for comparison.

Table 7-1
Brown-Headed Cowbirds Captured per Trap from 2022-2024

	Trap #1				Trap #2			
	Number of Cowbirds Removed				Number of Cowbirds Removed			
Year	Male	Female	Juvenile	Total	Male	Female	Juvenile	Total
2022	8	5	0	13	4	2	1	7
2023	1	0	0	1	3	2	1	6
2024	2	3	0	5	2	4	0	6

Evaluating trap placement requires consideration of several elements, including the number of available traps and their effective trapping radius, locations of suitable nesting habitat, the total target area to be protected, the locations of travel corridors and foraging areas, access and physical limitations to trap placement, proximity of any nearby trapping programs, and historic locations of least Bell's vireo nest sites.

TW Biological Services considers the current general trap placement on the Preserve to be suitable with respect to overall trap distribution and proximity to least Bell's vireo nesting habitat.

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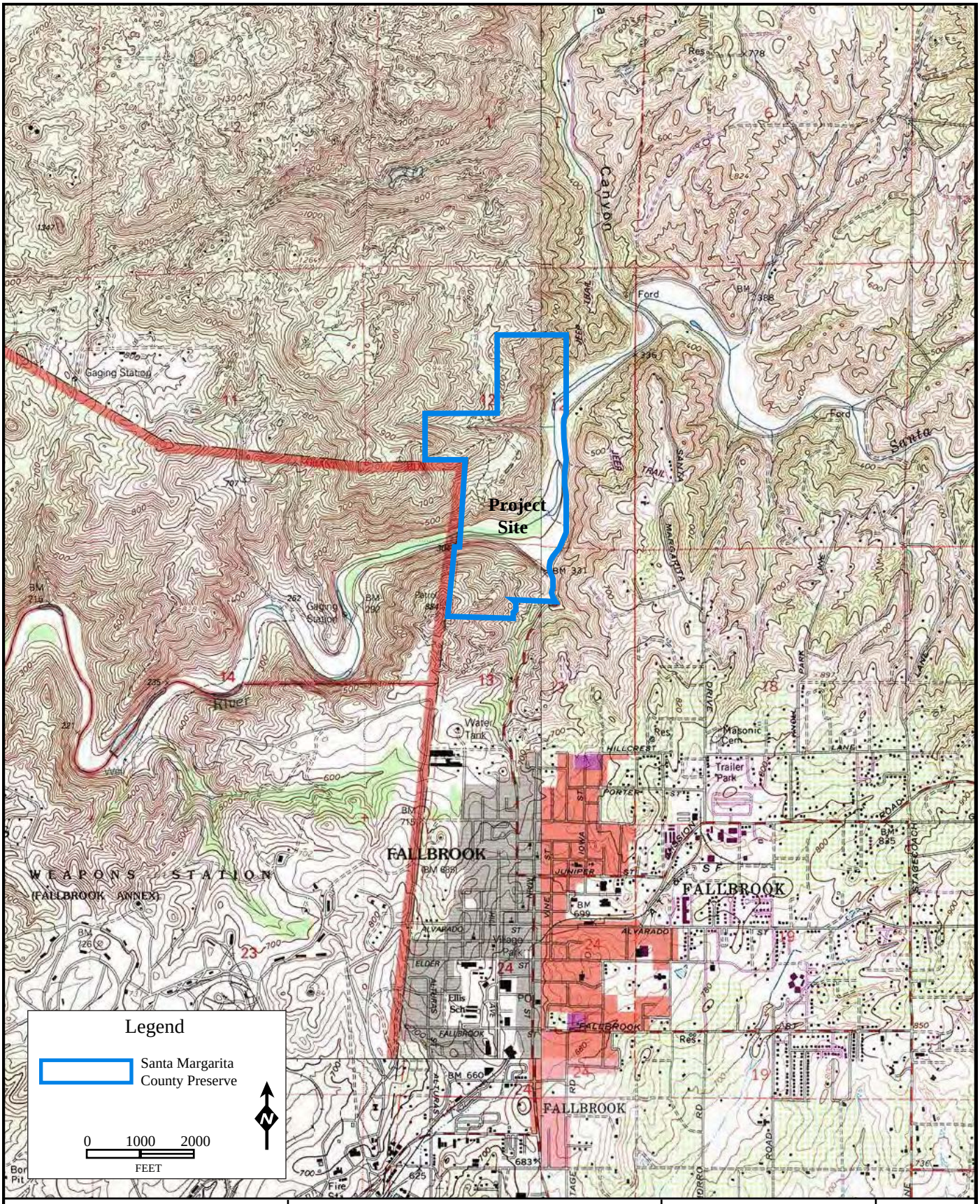
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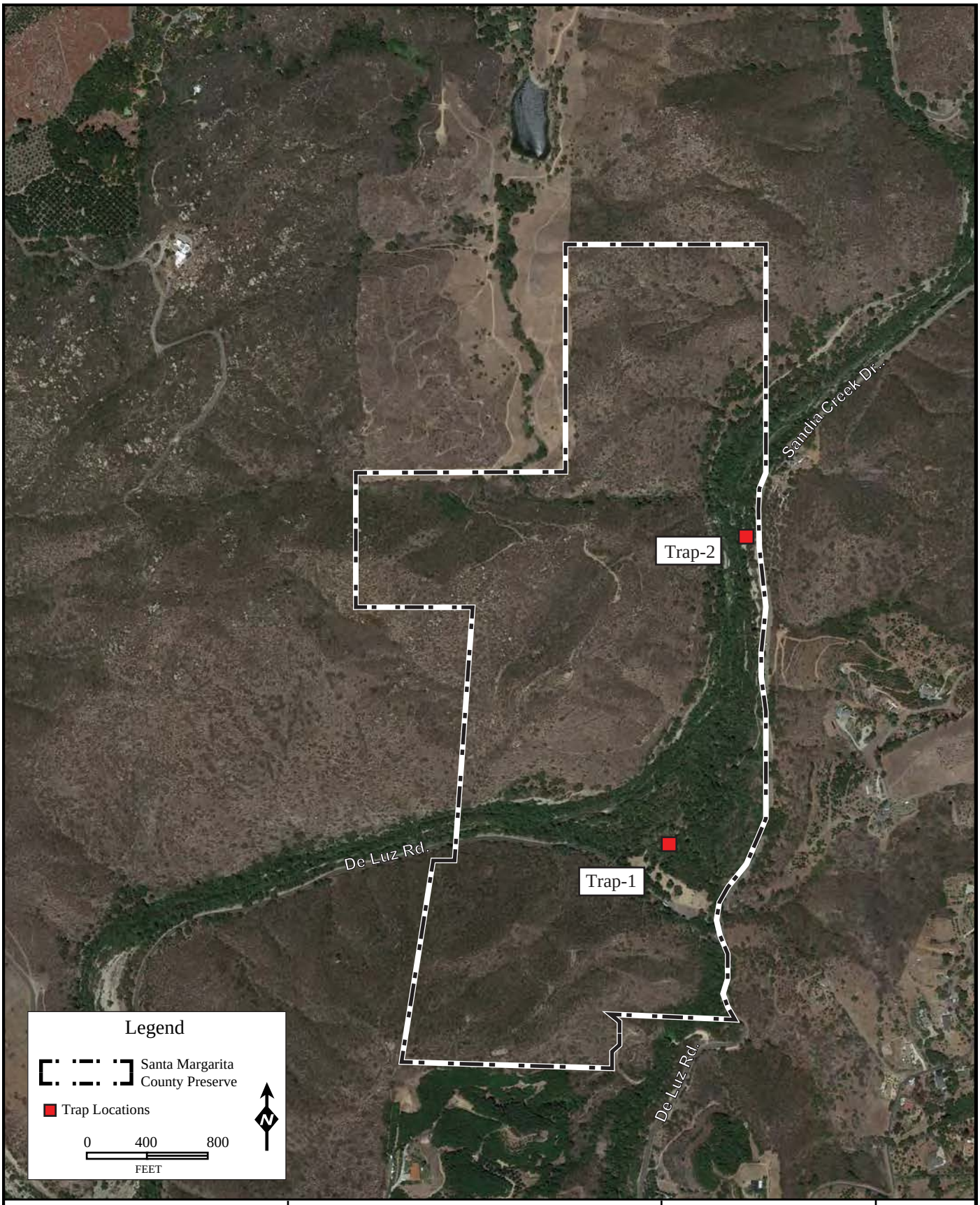
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APPENDIX A

FIGURES



TW Biological Services	2024 SANTA MARGARITA COUNTY PRESERVE BROWN-HEADED COWBIRD TRAPPING PROJECT Project No: SMCP-01-24	Project Site Map Source: Fallbrook and Temecula 7.5' USGS Quadrangle Maps	FIGURE A-1



TW Biological Services

2024 SANTA MARGARITA COUNTY PRESERVE
BROWN-HEADED COWBIRD
TRAPPING PROJECT

Project No: SMCP-01-24

Trap Locations

Aerial Source: Google Earth Pro.
August 2021

FIGURE
A-2

APPENDIX B

RAW DATA TABLES

TABLE B-1
Brown-Headed Cowbird Trap GPS Coordinates in 2024

	Trap GPS Coordinates (Decimal Degrees WGS84)		
Trap Number	**Y-North**	**X-West**	**Elevation (feet)**
1	33.40226	-117.25130	326
2	33.40774	-117.24958	317

TABLE B-2
Brown-Headed Cowbirds Captured per Trap per Week in 2024

		Trap 1			**Trap 2**			**Total**		
Week No.	**Date**	**M**	**F**	**J**	**M**	**F**	**J**	**M**	**F**	**J**
1	1-7 April	0	0	0	0	0	0	**0**	**0**	**0**
2	8-14 April	1	1	0	0	0	0	**1**	**1**	**0**
3	15-21 April	0	1	0	0	1	0	**0**	**2**	**0**
4	22-28 April	0	0	0	0	0	0	**0**	**0**	**0**
5	29 April-5 May	1	0	0	0	0	0	**1**	**0**	**0**
6	6-12 May	0	0	0	0	2	0	**0**	**2**	**0**
7	13-19 May	0	1	0	0	0	0	**0**	**1**	**0**
8	20-26 May	0	0	0	0	0	0	**0**	**0**	**0**
9	27 May-2 June	0	0	0	0	0	0	**0**	**0**	**0**
10	3-9 June	0	0	0	1	1	0	**1**	**1**	**0**
11	10-16 June	0	0	0	0	0	0	**0**	**0**	**0**
12	17-23 June	0	0	0	0	0	0	**0**	**0**	**0**
13	24-30 June	0	0	0	1	0	0	**1**	**0**	**0**
Total		**2**	**3**	**0**	**2**	**4**	**0**	**4**	**7**	**0**

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APPENDIX C

COWBIRD TRAP INFORMATION/DO NOT DISTURB SIGN ATTACHED TO EACH TRAP

PLEASE DO NOT DISTURB

THIS TRAP IS OPERATED IN COOPERATION WITH THE U.S. FISH AND WILDLIFE SERVICE AND CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

THE OPERATION OF THIS TRAP IS PART OF A MANAGEMENT PROGRAM FOR THE ENDANGERED LEAST BELL'S VIREO

ALL TRAPPED BIRDS ARE TREATED HUMANELY IN ACCORDANCE WITH ESTABLISHED FEDERAL AND STATE PROTOCOL.

FOR ADDITIONAL INFORMATION ON THE OPERATION OF THIS TRAP PLEASE CONTACT:

Jennifer Sexton, TW Biological Services
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Appendix H

Stephens' Kangaroo Rat Habitat Monitoring Memorandums

H-1 Stephens' Kangaroo Rat Habitat Assessment Memorandum: Ramona Grasslands County Preserve

FALL 2024 STEPHENS' KANGAROO RAT MONITORING

RAMONA GRASSLANDS COUNTY PRESERVE

RAMONA, SAN DIEGO COUNTY, CALIFORNIA

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November 27, 2024

TABLE OF CONTENTS

EXECUTIVE SUMMARY **2**
1.0 INTRODUCTION **3**
Purpose and Regulatory Background 3
Project Location and Description 3
2.0 METHODS **4**
SKR Monitoring Area Determination 4
Monitoring Plots 5
3.0 RESULTS **6**
4.0 DISCUSSION **8**
5.0 SURVEYOR CERTIFICATION **9**
6.0 REFERENCES **10**

LIST OF ATTACHMENTS

A: FIGURES
B: FIELD FORMS AND SITE PHOTOGRAPHS

EXECUTIVE SUMMARY

Environmental Science Associates (ESA) was contracted by the County of San Diego (County) Department of Parks and Recreation (DPR) with Blackhawk Environmental, Inc. as a sub-consultant to conduct resource-specific monitoring for the federal- and state-threatened Stephens' kangaroo rat (*Dipodomys stephensi*) (SKR) within the Ramona Grasslands County Preserve (Preserve) during the fall of 2024. Survey methodology followed the Targeted Monitoring Plan (ESA and ICF 2022). The monitoring was a habitat assessment of (1) the 16 permanent plots, established during the 2016 SKR monitoring effort (ICF 2017), and (2) 12 randomly selected plots, including 6 within the SKR monitoring area and 6 within the SKR discovery area.

This report summarizes results of the SKR habitat assessment within the Preserve for the fall of 2024. While fall 2024 monitoring was conducted at a similar time of year compared to previous monitoring efforts, because of the above-average rainfall for 2 years in a row between fall 2022 and fall 2024, there was a continued increase in percentage of annual vegetation living/standing compared to the typical dry and largely senesced conditions observed during 2022 and previous monitoring years. The winter 2019 monitoring occurred during a period when abundant, green, and freshly growing annual vegetation was present following recent, above-average rainfall. In comparison, the 2017–2018, fall 2021, and fall 2022 monitoring occurred when the annual vegetation was generally dry and senesced, following some of the worst drought years in recorded California history. In 2023, monitoring results found an increase in vegetation coverage compared to 2022 after an above-average rain year, and this year, that trend has continued with a subsequent above-average rain year between fall 2023 and fall 2024. As a result, monitoring plots in fall 2024 showed even more of an increase in living herb density, dense grasses, and obstruction factors as compared to fall 2023 and other previous monitoring years. This, in turn, resulted in lower evidence of SKR runways, tracks, scat, dust-bathing sites, and other surface SKR sign in 2024 compared to 2023 monitoring. While several sites saw an increase in the herbaceous layer and obstruction factors, there were still several sites that consisted of low-growing annual plants, resulting in generally low obstruction factors and thus the potential for SKR occupancy.

The fall 2024 monitoring results demonstrated a decrease in occupancy compared to all other monitoring years, and there was a notable reduction in SKR habitat suitability when compared to the fall 2023 monitoring. While there was a slight increase in the number of high-potential plots in 2024 compared to the previous year, there was also a significant increase in the number of low-potential plots, indicating that conditions were less favorable for SKR from 2023 to 2024. This result is likely due to a subsequent year consisting of above-average rainfall between 2023 and 2024 in the greater San Diego area, similar to what was observed between 2022 and 2023. These findings could also be due to a combination of other factors, such as annual fluctuations in habitat characteristics, SKR population dynamics, grazing regimes, different timings of monitoring, and other variables that may affect SKR occupancy/suitability of a given monitoring plot at a given time. However, long-term SKR population viability on a landscape level within the Preserve is not expected to have decreased, despite a reduction in occupancy and suitability over the past 2 years, and SKR is not anticipated to be in any danger of extirpation as currently managed.

1.0 INTRODUCTION

Purpose and Regulatory Background

As a participant in the Multiple Species Conservation Program (MSCP) and the adopted MSCP South County Subarea Plan, the County of San Diego (County) is obligated to conduct biological monitoring of habitats and species covered under the MSCP to ensure that the MSCP biological conservation goals and conditions for species coverage are being met. The County Department of Parks and Recreation (DPR) prepared the TMP to provide detailed specifications for implementation of adaptive management and monitoring within 10 County-owned and -managed conserved lands (open space parks and preserves) overseen by DPR (ESA and ICF 2015). The Targeted Monitoring Plan (TMP) was revised in December 2022 (ESA and ICF 2022) to incorporate 10 additional open space parks and preserves (Preserve Group 2) and again in August 2024 (ESA 2024) to incorporate 11 additional open space parks and preserves (Preserve Group 3). The revised TMP also confirmed monitoring and management goals and objectives for TMP-covered species at the newly added open space parks and preserves. The TMP is an adaptive management plan that includes both focused goals and objectives for target resources and detailed monitoring protocols and is intended to achieve the management directives for species per the adopted South County MSCP Framework Management Plan. The regional framework that guides monitoring at the preserve level has been refined over time and is still evolving through a collaborative effort among U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, MSCP jurisdictions, and outside experts. Stakeholders (e.g., state and federal resource agencies, municipal and county agencies, land managers) understand that adaptive management is an iterative process in which lessons are learned and used to further refine priorities, goals, objectives, and monitoring methods. The TMP currently addresses monitoring within the following 31 open space parks and preserves: Barnett Ranch County Preserve, Bottle Peak County Preserve, Boulder Oaks County Preserve, Del Dios Highlands County Preserve, Dictionary Hill County Preserve, El Capitan County Preserve, El Monte Regional Park, Escondido Creek County Preserve, Furby-North Property, Hellhole Canyon County Preserve, Iron Mountain County Preserve, Keys Creek County Preserve, Lakeside Linkage County Preserve, Lawrence and Barbara Daley County Preserve, Los Peñasquitos Canyon County Preserve, Louis A. Stelzer County Park, Lusardi Creek County Preserve, Mount Olympus County Preserve, Mountain Meadow County Preserve, Oakoasis County Preserve, Peutz Valley County Preserve, Ramona Grasslands County Preserve, Sage Hill County Preserve, San Luis Rey River Park, Santa Margarita County Preserve, Simon County Preserve, Skyline County Preserve, Stoneridge County Preserve, Sycamore Canyon/Goodan Ranch County Preserve, Tijuana River Valley Regional Park, and Wilderness Gardens County Preserve.

Project Location and Description

Ramona Grasslands County Preserve (Preserve) is located within both the MSCP South County Subarea Plan Area and the draft North County MSCP Plan Area. The Preserve is in the Santa Maria Valley west of the unincorporated community of Ramona, San Diego County, California.

Ramona Grasslands County Preserve is within part of the historic Santa Maria Rancho in the western portion of the Santa Maria Valley, approximately 2 miles west of downtown Ramona, California, and 6 miles east of Interstate 15 (Attachment A, Figure 1). The Preserve is in Township 13 South, Range 1 East, and Range 1 West as depicted on the United States Geological Survey (USGS) 7.5-minute *San Pasqual, California* quadrangle (Attachment A, Figure 2). The Preserve is within the Santa Maria Valley, consisting of a broad basin surrounded by gentle hills and steep, rocky slopes ranging in elevation from

approximately 410 meters (1,350 feet) above mean sea level along the valley floor to over 518 meters (1,700 feet) above mean sea level in the rocky hills of the northern sections of the Preserve.

Historic use of the Preserve has consisted of cattle grazing and other anthropogenic uses. The site contains a network of dirt roads and trails used primarily for ranch access as well as DPR maintenance purposes. Cattle grazing is generally confined to lowland areas within the Preserve and occurs year-round without formalized rotation or rest periods. Stocking rates are established on an annual basis, primarily based on weather and forage conditions.

The northwest portion of the Preserve, west of Rangeland Road and generally north of the Ramona Municipal Water District (RMWD) property, is characterized by rocky hills bisected by Bandy Canyon, through which the Santa Maria Creek flows. The southwest portion of the Preserve consists of rolling hills with rocky outcrops and areas of oak woodland that transition into the lower topography grasslands to the south. The northeast portion of the Preserve, east of Rangeland Road and north of Ramona Airport, is characterized by rocky chaparral-covered hillsides in the north and lower-lying valley grasslands in the south. The southeast portion of the Preserve, east of Rangeland Road and south of the Ramona Airport, consists of low, rolling hills supporting grasslands and rocky outcrops.

RMWD utilizes land west of Rangeland Road for storage and infiltration of treated sewage effluent. Treated effluent is piped from a treatment facility to two storage reservoirs that exist on the property. Treated effluent is disposed of on RMWD property and on ranchland east of Rangeland Road through infiltration in a series of spray fields. The irrigated spray fields are an important year-round source of green forage for cattle grazing. The RMWD property is located west and east of Rangeland Road and is bordered by the Preserve to the north, south, and west.

The Ramona Airport is east of Rangeland Road and borders the Preserve to the north and south. Low-density residential areas are present to the north of the Preserve (accessible by Rangeland Road), adjacent to the Preserve's southern boundary, and along much of the Preserve's western and eastern boundary. Other areas around the periphery of the Preserve are used for dry farming and small citrus and avocado orchards.

2.0 METHODS

SKR Monitoring Area Determination

SKR monitoring areas were originally determined based on potentially suitable SKR habitat. Within the Preserve, specific management areas have been developed by DPR and are referred to as Grazing Management Units (i.e., 1A, 1B, 1C, 2A, 2B, 3A, 3B, 3C, 3D, 3E, 4A, 4B, 4C, and 5) and SKR Management Areas (i.e., 1, 2, and 3). Grazing Management Units that provide potentially suitable SKR habitat (i.e., flat terrain and/or gentle slopes that support open, low-growing grasslands) were included within the SKR monitoring area; however, only portions of the associated Grazing Management Units are within SKR Management Areas. The current SKR monitoring areas are focused on Grazing Management Units 1A, 1C, 2A (which contains portions of SKR Management Area 1), 2B (which contains portions of SKR Management Areas 1 and 2), 3A, 3B (which contains SKR Management Area 3), 3C, 3D, 3E, and 4A, as these areas provide suitable SKR habitat (Attachment A, Figure 3). Additional SKR discovery areas are located within Grazing Management Units 3B and 4C. It is important to note that Grazing Management Unit 3A is not located within an SKR Management Area, but it is included in the monitoring based on previously determined SKR suitability.

Monitoring Plots

Monitoring plots were initially established within SKR core habitat areas on the Preserve in 2016, following an adapted methodology used by USGS for SKR monitoring at Camp Pendleton (Brehme et al. 2016). A 50-meter by 50-meter grid pattern was overlain onto a georeferenced aerial map over each of the core SKR monitoring areas, and 28 plots were established. Of these 28 plots, 16 were determined to be permanent sampling plots that have been monitored since 2016: A1-1 to A1-6, A2-1, A2-6, A2-7, 3A-1, 3A-6, 3A-7, 3A-8, A3-1, A3-2, and A3-3. Per the TMP (ESA and ICF 2022), the 2024 SKR monitoring sampled these 16 permanent sampling plots for consistency with previous monitoring, and 12 randomly selected plots—6 within the SKR monitoring area and 6 within the SKR discovery area—for a total of 28 sampling plots. Monitoring details, including dates, weather conditions, and personnel are shown in Table 1.

Table 1. Survey Conditions

Biologist(s)	Date	Start/End Time	Start/End Air Temperature (°F)	Start/End Wind Speed (mph)	Start/End Cloud Cover (%)	Precipitation
Kris Alberts Dillon Travis	10-17-24	0850–1450	62–67	0 / 2–8	100 / 100	None
Kris Alberts Dillon Travis	10-18-24	0845–1235	63–70	0–2 / 2–6	40 / 20	None

All monitoring plots were located in the field using the cellular ArcGIS FieldMaps application. Representative photographs were taken from the southeast corner of each plot, facing northwest (Attachment B). The biologists then walked systematic transects through each plot, searching for kangaroo rat sign (e.g., burrows, scat, tracks, trails through vegetation, dust-bathing sites) until 100 percent coverage of the plot was achieved. All kangaroo rat sign was recorded on the Survey123 application. Presence or absence of SKR within a given plot was determined solely on whether or not kangaroo rat sign was observed within the plot.

Habitat assessment forms on the Survey123 application were also completed for each plot specifically noting habitat characteristics critical to SKR habitat suitability, including percent bare ground, living herb density, shrub/tree density, percentage of dead plant litter, gopher or ground squirrel density, obstruction factor, types of disturbance and land use (Attachment B). These assessment variables were modeled after field forms used by Brehme et al. (2016) (adapted from a field form in Montgomery et al. 2008). Based on the quality of potentially suitable SKR habitat and the density of apparent kangaroo rat sign, each plot was assigned an SKR-potential rating using primarily the following criteria:

- High Potential
    - Readily apparent potential SKR sign (particularly scat and burrows)
    - Relatively flat to gently sloping topography
    - Presence of bare ground common
    - Relatively low living herb density
    - Extremely low to no shrub cover
    - Relatively low obstruction factor (O.F.)[1]

[1] Obstruction factor (O.F.) is the observable ground-level conditions of herbaceous vegetation or dead litter that has the potential to obstruct movement of kangaroo rats across the landscape. High O.F. would consist of a very high density of herb and/or dead litter at the ground level. Low O.F. would consist of a low density of herb or dead litter at the ground level, with a high proportion of patches of bare ground.

- Moderate Potential
    - Some potential SKR sign (particularly scat and burrows) observed, but infrequent and/or appearing dated or inactive
    - Gently to moderately sloping topography
    - Presence of bare ground moderate
    - Low shrub percent cover
    - Relatively low herb cover
    - Low to moderate O.F.
- Low Potential
    - Trace to no apparent potential SKR sign
    - Moderately sloping topography
    - Minimal bare ground
    - Moderate to high shrub percent cover
    - Moderate to very high living herb density
    - Moderate to high O.F.
- No Potential
    - No apparent potential SKR sign
    - Moderate to steep sloping topography
    - No bare ground
    - High shrub percent cover
    - High living herb density
    - High O.F.

3.0 RESULTS

A comparison between the overall rating of SKR potential at each plot from the winter of 2017–2018 (ICF 2018), winter of 2019 (ESA and Blackhawk Environmental, Inc. 2019), fall of 2021 (ESA and Blackhawk Environmental, Inc. 2021), fall of 2022 (ESA and Blackhawk Environmental, Inc. 2022), fall of 2023 (ESA and Blackhawk Environmental, Inc. 2023), and fall of 2024 is included in Table 2. Increased or decreased changes for the analyzed elements are provided in the final column of Table 2 comparing the fall 2023 and fall 2024 results only. Results of the 2024 SKR habitat assessment for each sample plot are provided in Table 3. In 2024, habitat assessments were conducted at 28 sample plots; 10 were determined to be potentially or likely occupied by SKR, and 18 were determined to be unoccupied. Each plot was rated for SKR potential and, in total, 10 sample plots were characterized as having a high potential, 1 was characterized as having a medium potential, 17 were characterized as having low potential, and none were characterized as having no potential (Attachment A, Figure 4).

Table 2. SKR Habitat Assessment Comparison

		Winter 2017–2018	Winter 2019	Fall 2021	Fall 2022	Fall 2023	Fall 2024	2023–2024 Change
SKR Occupancy	**Occupied**	14	19	14	15	14	10	-4
	Unoccupied	14	9	14	13	14	18	+4
SKR Potential	**High**	11	21	17	15	8	10	+2
	Medium	5	1	5	7	10	1	-9
	Low	7	6	6	5	10	17	+7
	No	5	0	0	1	0	0	0

Table 3. SKR Habitat Assessment Summary

Fall 2024										Fall 2023
Plot ID	**% Bare Ground**	**Living Herb Density**	**Shrub/Tree Density (%)**	**Plant Litter (Dead) (%)**	**Gopher/ Ground Squirrel Density^**	**Obstruction Factor**	***Potential K-Rat Sign**	**SKR Occupancy Determination**	**Rating†**	**Rating†**
A1-1	**0–5**	**High**	**0**	**75–95**	**Low/Medium**	**High**	**None**	**Not Occupied**	**Low**	**Medium****
A1-2	**0–5**	**High**	**0**	**75–95**	**Low/Low**	**High**	**None**	**Not Occupied**	**Low**	**Low**
A1-3	**0–5**	**Medium**	**0**	**75–95**	**Low/Medium**	**Medium**	**None**	**Occupied**	**High****	**Medium**
A1-4	**0–5**	**High**	**0**	**75–95**	**Medium/Medium**	**High**	**None**	**Not Occupied**	**Low**	**Low**
A1-5	**0–5**	**High**	**0–5**	**75–95**	**Medium/Low**	**High**	**None**	**Not Occupied**	**Low**	**Low**
A1-6	**0–5**	**Low**	**5–25**	**75–95**	**Medium/Low**	**Low**	**None**	**Not Occupied**	**Low**	**Medium****
A2-1	**5–25**	**Low**	**0–5**	**75–95**	**Medium/Medium**	**Low**	**B, S**	**Occupied**	**High****	**High****
A2-6	**5–25**	**Medium**	**0**	**75–95**	**Medium/Low**	**Medium**	**B, S, CF**	**Occupied**	**High****	**High****
A2-7	**0–5**	**High**	**0**	**50–75**	**Low/Medium**	**High**	**B, S, CF**	**Occupied**	**High****	**Low**
A3-1	**50–75**	**Low**	**0**	**50–75**	**Low/Low**	**Low**	**B, S, CF**	**Occupied**	**High****	**High****
A3-2	**50–75**	**Low**	**0**	**25–50**	**Low/Medium**	**Low**	**B, S, TD, CF**	**Occupied**	**High****	**High****
A3-3	**50–75**	**Low**	**0**	**25–50**	**Low/Medium**	**Low**	**S, TD, CF**	**Occupied**	**High****	**High****
2A-1	0–5	High	5–25	75–95	Medium/Medium	High	None	Not Occupied	Low	Low
2B-1	0–5	Medium	0	75–95	Low/Low	Low	None	Not Occupied	Medium	High**
2B-2	0–5	High	0–5	50–75	Medium/Low	High	None	Not Occupied	Low	Low**
2B-3	0–5	Medium	0–5	75–95	Medium/Low	High	None	Not Occupied	Low	High**
2B-4	0–5	High	0–5	75–95	Medium/Low	High	None	Not Occupied	Low	Low
3A-1	**0**	**High**	**0**	**50–75**	**Low/Low**	**High**	**None**	**Not Occupied**	**Low**	**Low**
3A-6	**0–5**	**Medium**	**0**	**75–95**	**Medium/Medium**	**Medium**	**None**	**Not Occupied**	**Low**	**Medium**
3A-7	**0–5**	**High**	**0**	**75–95**	**Medium/Low**	**High**	**None**	**Not Occupied**	**Low**	**Medium****
3A-8	**0–5**	**Medium**	**0**	**75–95**	**Medium/Low**	**High**	**None**	**Not Occupied**	**Low**	**Medium**
3B-1	0–5	Medium	5–25	50–75	Medium/High	Medium	B, S, CF	Occupied	High**	Low
3B-2	0–5	Medium	0–5	75–95	Low/Medium	Medium	B, S, CF	Occupied	High**	Medium
3B-3	0–5	Low	0	75–95	Low/Medium	Medium	S, CF	Occupied	High**	Medium
3C-1	0-5	Medium	0–5	75–95	High/Low	Medium	B	Not Occupied	Low	NA
3C-2	0–5	Medium	0–5	75–95	High/Low	Medium	None	Not Occupied	Low	NA
3C-3	0–5	Medium	5–25	75–95	High/Low	Medium	None	Not Occupied	Low	NA
3C-4	0–5	High	0–5	50–75	High/Low	High	None	Not Occupied	Low	NA

^= Active gopher excavation density ratings used; inactive excavations excluded.
* = Potential Kangaroo Rat Sign: B = Burrow(s); S = Scat; T = Tracks; TD = Tail Drag; TV = Trails in Vegetation; CF = Caching/Foraging Craters; O = Other
** = Exhibited habitat conditions and observed sign indicates plot is likely occupied by SKR.
† = Estimated potential for SKR occupancy based on habitat community condition and observed kangaroo rat sign.
bold = permanent sampling plot

4.0 DISCUSSION

Overall occupancy for fall 2024 showed a decrease in occupied plots from previous years, with only 10 plots occupied or assumed occupied. This is the lowest occupancy observed since these monitoring efforts have been conducted, with previous years ranging from 14 to 19 occupied plots (Table 2). The fall 2024 monitoring resulted in 10 plots with high potential for SKR compared to 8 plots in fall 2023, 15 plots in fall 2022, 17 plots in fall 2021, 21 plots in fall 2019, and 11 plots in winter 2017–2018 (Table 2). While there was a slight increase in the number of high-potential plots in 2024 compared to the previous year, there was also a significant increase in the number of low-potential plots. There were 17 plots categorized as low potential in fall of 2024, compared to only 10 plots in fall 2023 and other previous years ranging from 5 to 7 low-potential plots (Table 2). When assessing only the 16 permanent plots, fall 2024 resulted in 7 plots with high SKR potential and 9 plots with low potential; no plots were categorized as medium or no potential (Table 3). Comparatively, fall 2023 resulted in five plots with high SKR potential, six plots with medium potential, five plots with low potential, and zero plots with no potential. These results indicate similar findings as the whole 28 plots, with a slight increase in high-potential plots, but also a significant increase in the number of low-potential plots in 2024.

The results, when considered collectively, indicate slight shifts in overall SKR suitability that can increase or decrease at given sites between monitoring years due to certain variables. Various factors that can affect suitability include randomized assignment of non-permanent sampling plots that varies between survey years, annual grazing practices, precipitation, survey timing, predation, weather, food availability, competition among sympatric species, microtopographic differences, proximity of groundwater, and/or availability of natural or artificial water sources that could affect localized plant phenologies, which in turn can affect vegetative density and food availability, etc.

The findings of fall 2024 monitoring efforts showed an overall decrease in SKR potential and occupancy, similar to the fall 2023 monitoring efforts. This continued decrease may be partly attributed to the heavy above-average rainfall observed in the greater San Diego region between fall 2022 and fall 2024. An increase in overall rainfall can be beneficial for SKR suitability in that it can increase food availability; however, significant increases in rainfall is likely to increase vegetation density and height, which may increase obstruction factors. In an ecological regime that is free of anthropogenic influences such as cattle grazing, consistently higher rainfall could result in a reduction of suitable habitat for SKR by promoting vegetation cover that excludes SKR.

Historically, much of the SKR monitoring areas are actively grazed, thereby helping to reduce significant vegetative growth during years of above-average rainfall. However, grazing was suspended from May through December of 2022 and reinstated in January 2023. This change in grazing regime likely contributed to the continued decrease in SKR potential and occupancy within the Preserve.

While grazing can help reduce vegetation coverage, thus potentially increasing SKR suitability, it does not always result in highly suitable SKR habitat. In 2024, monitoring results found that areas in which grazing was observed within the past 3 to 6 months did not directly correlate to high SKR potential. Two areas in particular (3B-1 and 3B-2) showed no signs of grazing, with medium living vegetation coverage and medium obstruction factors, but were determined to have high-potential for SKR based on habitat and observed sign. Furthermore, several of the areas determined to have low potential for SKR had been grazed within the past 3 months, yet still maintained high living vegetative cover. These findings indicate that while grazing can increase SKR suitability, there are several other factors that influence overall habitat suitability.

The majority of the annual vegetation present in the high- or medium-potential SKR monitoring plots consisted of red stemmed filaree (*Erodium cicutarium*), doveweed (*Croton setiger*), western ragweed (*Ambrosia psilostachya*), short pod mustard (*Hirschfeldia incana*), and vinegar weed (*Trichostema lanceolatum*). Annual vegetation in the low-potential areas comprised similar species, as well as curly dock (*Rumex crispus*). Dense annual grasses were also observed in several low-potential plots, which may preclude or reduce SKR movement.

To enable more consistent data comparisons on a year-to-year basis, it is recommended that future monitoring be conducted during the dry season (June through November). Annual weather patterns in the greater San Diego region are known to have significant variability in rainfall quantities, while generally dry conditions prevail for the majority of the year. This rainfall variability can cause significant, albeit temporary, changes in herb density, dead plant litter, bare ground, and obstruction factors that tend to be most dramatic when comparing site conditions during the wet season. Dry season monitoring is likely to yield a more consistent comparison of the assessment areas.

5.0 SURVEYOR CERTIFICATION

All data, statements, analyses, findings, and attachments within this report are accurate and truthful in terms of describing the existing conditions and the Project as proposed to Blackhawk Environmental, Inc.



Kris Alberts
Principal Biologist

6.0 REFERENCES

Brehme, C. S., D. R. Clark, and R. N. Fisher
2016 *Stephens' Kangaroo Rat Monitoring on MCB Camp Pendleton, Results and Trends Analyses for Fall-Winter 2014*. Prepared for Wildlife Management Branch, AC/S Environmental Security, Marine Corps Base Camp Pendleton. 52pp.

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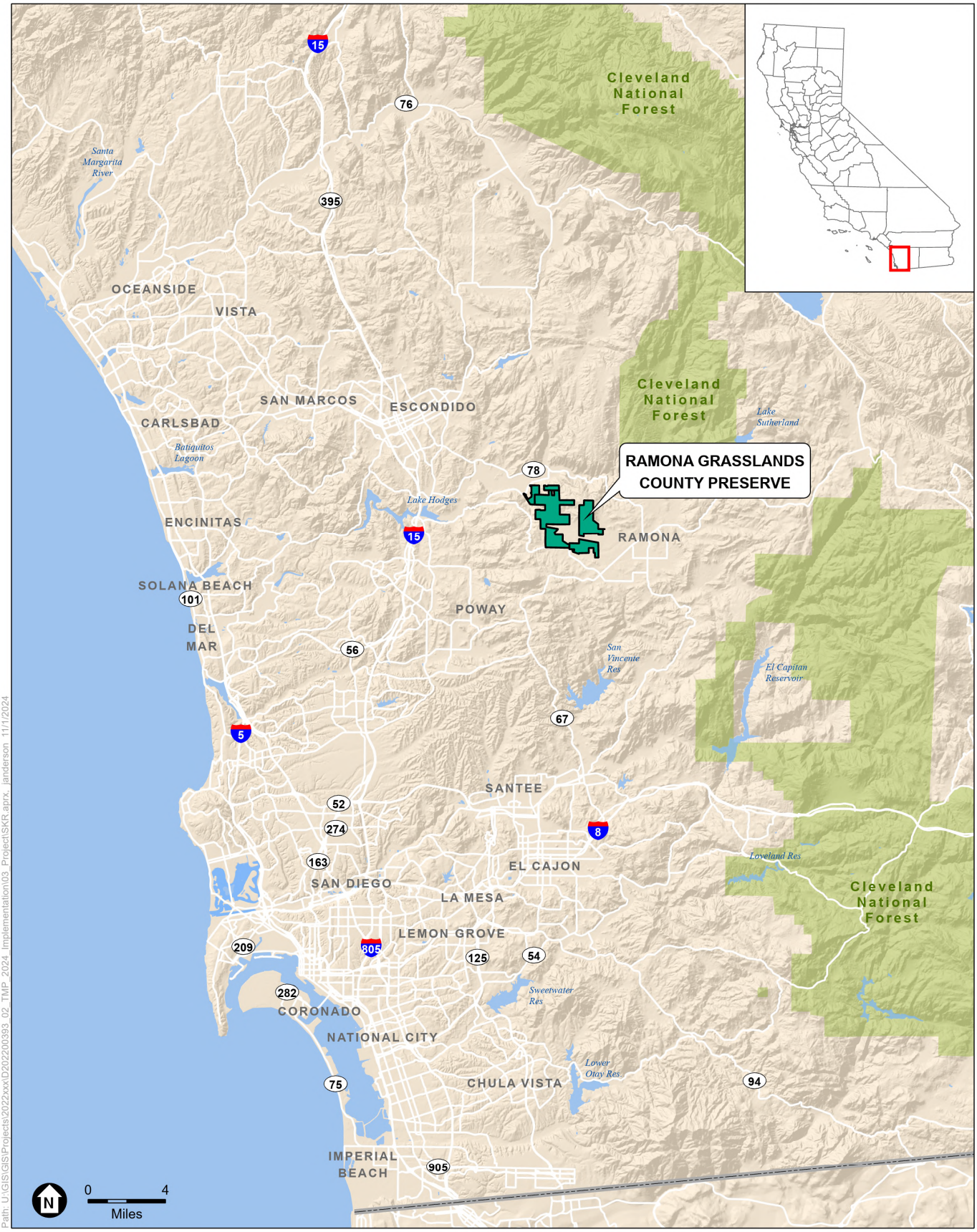
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ICF
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2008 *Stephens' kangaroo rat monitoring program, and results of annual monitoring sessions between spring 2002 and fall 2004, at Naval Weapons Station Seal Beach Detachment Fallbrook*. Unpublished report submitted by SJM Biological Consultants to the Environmental Programs and Services Office, Naval Weapons Station Seal Beach Detachment Fallbrook, Fallbrook, CA.

ATTACHMENT A
FIGURES



Path: U:\GIS\GIS\Projects\2022xxx\D2022200393_02_TMP_2024_Implementation\03_Project\SKR aprx, janderson 11/1/2024

SOURCE: ESRI; SanGIS, 2024

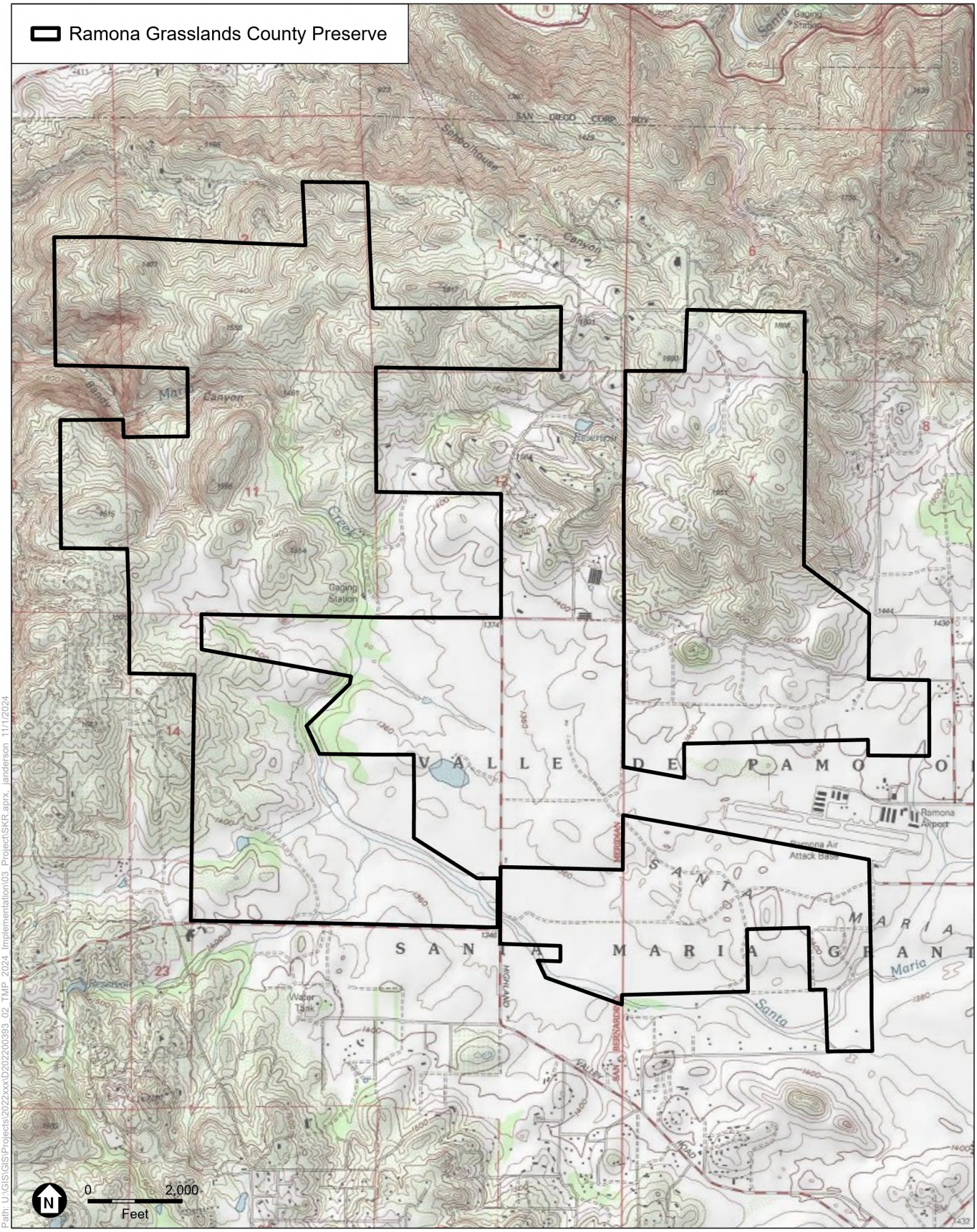
COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management

Fall 2024 SKR Habitat Monitoring Memorandum – Ramona Grasslands County Preserve

Figure 1

Regional Location

ESA



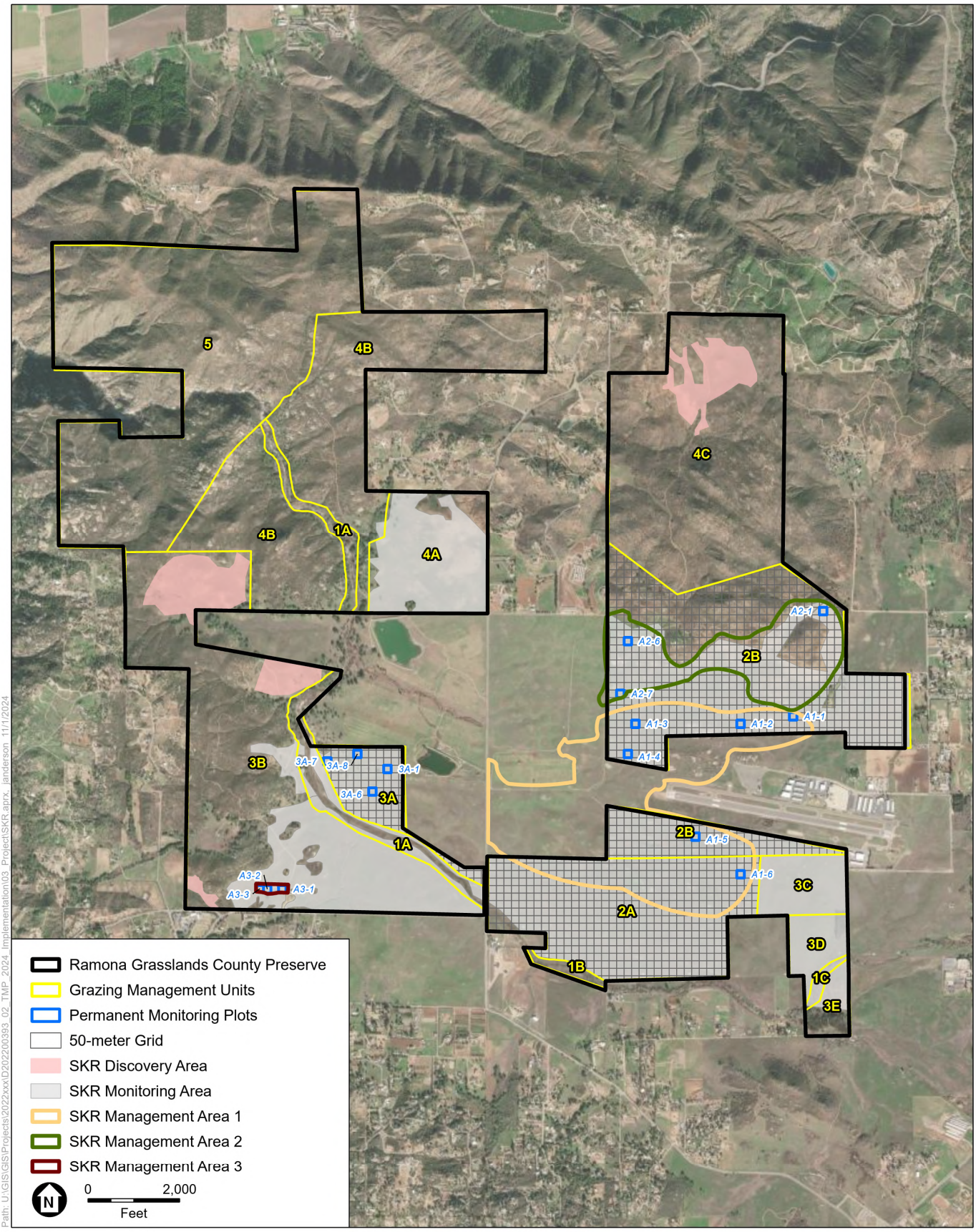
Path: U:\GIS\GIS\Projects\2022xxx\D2022000393_02_TMP_2024_Implementation\03_Project\SKR aprx, janderson 11/1/2024

SOURCE: USGS 7.5 minute, San Pasqual quadrangle

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management
Fall 2024 SKR Habitat Monitoring Memorandum – Ramona Grasslands County Preserve

Figure 2
Project Location

ESA

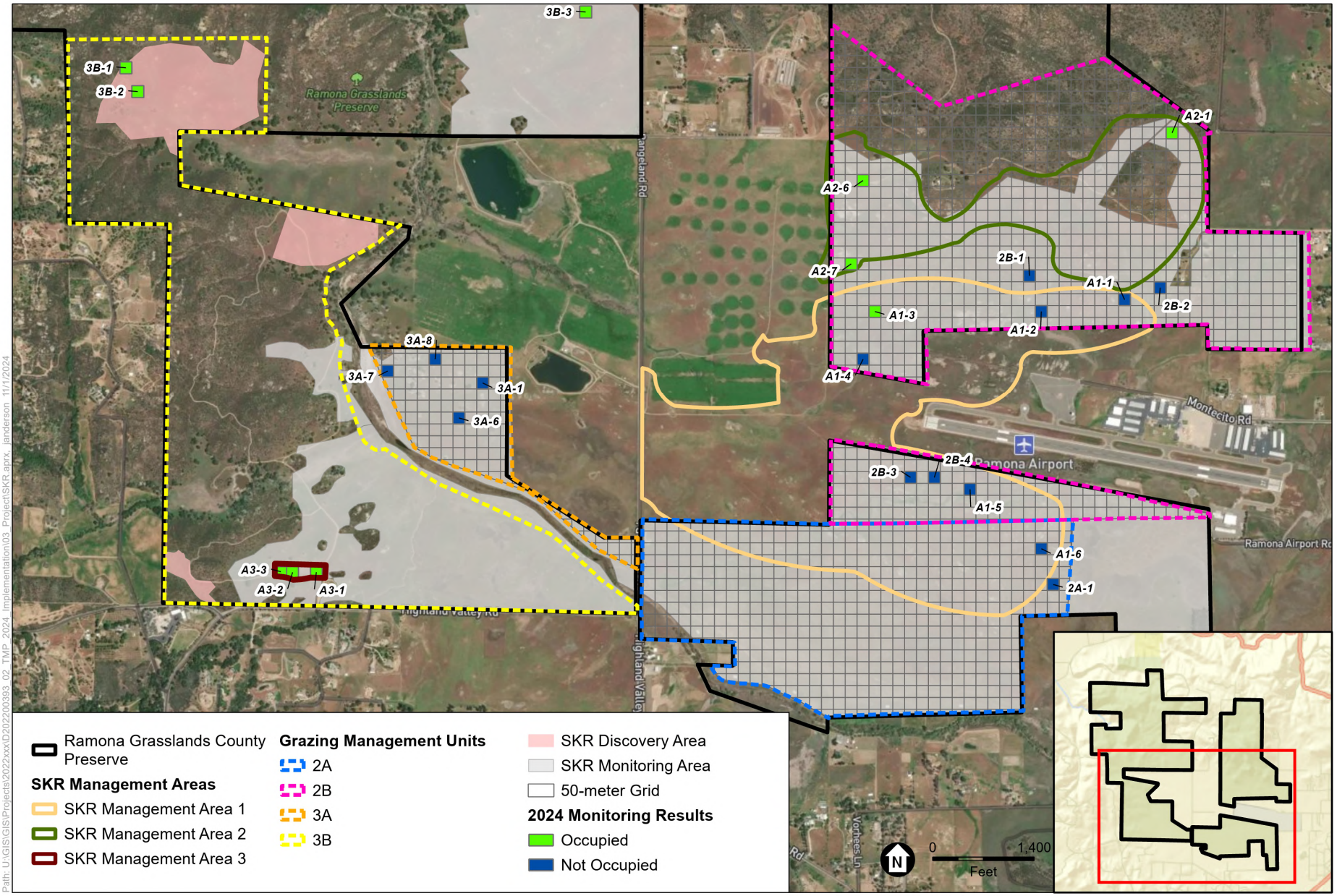


SOURCE: ESRI, 2024

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management
Fall 2024 SKR Habitat Monitoring Memorandum – Ramona Grasslands County Preserve

Figure 3
SKR Monitoring and Management Areas

ESA



Path: U:\GIS\GIS\Projects\2022xxx\D202200393_02_TMP_2024_Implementation\03_Project\SKR.aprx, janderson 11/1/2024

SOURCE: Mapbox; ESA, 2024

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management

Fall 2024 SKR Habitat Monitoring Memorandum – Ramona Grasslands County Preserve

Figure 4

2024 SKR Monitoring Results

ESA

ATTACHMENT B
FIELD FORMS WITH SITE PHOTOGRAPHS

SKR Monitoring – Habitat Assessment Form

Plot Number: A1-1 **Date/ Time:** 10/17/2024 08:52

Grazing Management Unit: 2B **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: High vegetation density. No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton setiger, Ambrosia psilostachya, Hirschfeldia incana.

Grasses - List 3 Dominant Species: Avena sp., Bromus diandrus, Bromus madritensis.

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☑ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 17, 2024 8:52 AM	**Preserve:** Ramona Grasslands Preserve
Plot: A1-1	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: A1-2 **Date/ Time:** 10/17/2024 11:15

Grazing Management Unit: 2B **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Wet grassland/ wetland area. No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Rumex crispus, Herschfeldia incana.

Grasses - List 3 Dominant Species: Avena sp., Bromus sp., Distichlis spicata.

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 17, 2024 11:15 AM	**Preserve:** Ramona Grasslands Preserve
Plot: A1-2	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: A1-3 **Date/ Time:** 10/17/2024 10:37

Grazing Management Unit: 2B **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: No SKR sign, but low stature of biomass.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton setiger, Ambrosia psilostachya, Hirschfeldia incana.

Grasses - List 3 Dominant Species: Distichlis spicata, Avena sp., Bromus madritensis.

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☑ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters Other(Describe):

Date: October 17, 2024 10:37 AM	**Preserve:** Ramona Grasslands Preserve
Plot: A1-3	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: A1-4 **Date/ Time:** 10/17/2024 10:46

Grazing Management Unit: 2B **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Rumex crispus, Croton setiger.

Grasses - List 3 Dominant Species: Distichlis spicata, Avena sp., Bromus hordaceous.

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☑ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters Other(Describe):

Date: October 17, 2024 10:46 AM	**Preserve:** Ramona Grasslands Preserve
Plot: A1-4	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: A1-5 **Date/ Time:** 10/17/2024 14:11

Grazing Management Unit: 2B **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Rumex crispus, Lactuca serriola.

Grasses - List 3 Dominant Species: Distichlis spicata, Avena sp., Bromus diandrus, Bromus hordaceous.

Shrubs - List 3 Dominant Species: Isocoma menzesii, Corethrogyne filaginifolia.

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 17, 2024 2:11 PM	**Preserve:** Ramona Grasslands Preserve
Plot: A1-5	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: A1-6 **Date/ Time:** 10/17/2024 14:26

Grazing Management Unit: 2B **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☐ Medium ☑ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☐ 75-95% ☑ 95-100%

Shrub Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton setiger, Ambrosia psilostachya.

Grasses - List 3 Dominant Species: Avena sp., Bromus sp., Distichlis spicata.

Shrubs - List 3 Dominant Species: Corethrogyne filaginifolia, Isocoma menzesii.

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☑ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 17, 2024 2:26 PM	**Preserve:** Ramona Grasslands Preserve
Plot: A1-6	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: A2-1 **Date/ Time:** 10/17/2024 09:31

Grazing Management Unit: 2B **SKR Management Area:** 2

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: On edge of shrub habitat, so recommend trapping for SKR. Recent, active KR sign.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☑ Hard ☐ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☐ Medium ☑ Low

Bare Ground: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Grass Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton setiger, Hirschfeldia incana, Eriodium sp.

Grasses - List 3 Dominant Species: Bromus madritensis, Bromus sp.

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum, Artemisia californica.

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 17, 2024 9:31 AM	**Preserve:** Ramona Grasslands Preserve
Plot: A2-1	**Observers:** Dillon Travis and Kris Alberts







SKR Monitoring – Habitat Assessment Form

Plot Number: A2-6 **Date/ Time:** 10/17/2024 10:07

Grazing Management Unit: 2B **SKR Management Area:** 2

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Recent, active SKR sign.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Hirschfeldia incana, Croton setiger.

Grasses - List 3 Dominant Species: Bromus diandrus, Bromus hordaceous, Avena sp.

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☑ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☑ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☑ Caching/foraging craters

Other(Describe):

Date: October 17, 2024 10:07 AM	**Preserve:** Ramona Grasslands Preserve
Plot: A2-6	**Observers:** Dillon Travis and Kris Alberts







SKR Monitoring – Habitat Assessment Form

Plot Number: A2-7 **Date/ Time:** 10/17/2024 10:24

Grazing Management Unit: 2B **SKR Management Area:** 2

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Recent, active SKR sign.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Croton setiger, Herschfeldia incana

Grasses - List 3 Dominant Species: Avena sp, Bromus diandrus, Distichlis spicata

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☑ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☑ Caching/foraging craters

Other(Describe):

Date: October 17, 2024 10:24 AM	**Preserve:** Ramona Grasslands Preserve
Plot: A2-7	**Observers:** Dillon Travis and Kris Alberts







SKR Monitoring – Habitat Assessment Form

Plot Number: A3-1 **Date/ Time:** 10/18/2024 11:21

Grazing Management Unit: NA **SKR Management Area:** 3

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Recent, active SKR sign.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☐ Medium ☑ Low

Bare Ground: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75% ☐ 75-95%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton setiger, Trichostema lanceolatum, Hirschfeldia incana.

Grasses - List 3 Dominant Species: Bromus sp.

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☑ Caching/foraging craters

Other(Describe):

Date: October 18, 2024 11:21 AM	**Preserve:** Ramona Grasslands Preserve
Plot: A3-1	**Observers:** Dillon Travis and Kris Alberts







SKR Monitoring – Habitat Assessment Form

Plot Number: A3-2 **Date/ Time:** 10/18/2024 11:36

Grazing Management Unit: NA **SKR Management Area:** 3

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Recent, active SKR sign.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☐ Medium ☑ Low

Bare Ground: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton setiger, Hirschfeldia incana, Trichostema lanceolatum.

Grasses - List 3 Dominant Species: Bromus sp.

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☑ Tail Drag ☑ Caching/foraging craters

Other(Describe):

Date: October 18, 2024 11:36 AM	**Preserve:** Ramona Grasslands Preserve
Plot: A3-2	**Observers:** Dillon Travis and Kris Alberts







SKR Monitoring – Habitat Assessment Form

Plot Number: A3-3 **Date/ Time:** 10/18/2024 11:43

Grazing Management Unit: NA **SKR Management Area:** 3

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Recent, active SKR sign.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☐ Medium ☑ Low

Bare Ground: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Croton setiger, Hirschfeldia incana.

Grasses - List 3 Dominant Species: Bromus sp.

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☐ Burrow(s) ☐ Tracks ☑ Tail Drag ☑ Caching/foraging craters

Other(Describe):

Date: October 18, 2024 11:43 AM	**Preserve:** Ramona Grasslands Preserve
Plot: A3-3	**Observers:** Dillon Travis and Kris Alberts







SKR Monitoring – Habitat Assessment Form

Plot Number: 2A-1 **Date/ Time:** 10/17/2024 14:34

Grazing Management Unit: 2A **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Shrub Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton setiger, Hirschfeldia incana, Trichostema lanceolatum

Grasses - List 3 Dominant Species: Avena sp., Bromus madritensis, Bromus hordaceous

Shrubs - List 3 Dominant Species: Isocoma menzesii, Corethrogyne filaginifolia, Eriogonum fasciculatum

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☑ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 17, 2024 2:34 PM	**Preserve:** Ramona Grasslands Preserve
Plot: 2A-1	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: 2B-1 **Date/ Time:** 10/17/2024 11:06

Grazing Management Unit: 2B **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☑ Medium ☐ Low ☐ None

Comments: Low vegetative cover and height, but no SKR sign.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Croton setiger

Grasses - List 3 Dominant Species: Avena sp., Bromus hordaceous, Bromus sp.

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☑ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters Other(Describe):

Date: October 17, 2024 11:06 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 2B-1	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: 2B-2 **Date/ Time:** 10/17/2024 09:14

Grazing Management Unit: 2B **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Wetland indicator plants in plot; no SKR sign.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Rumex crispus, Hirschfeldia incana

Grasses - List 3 Dominant Species: Distichlis spicata, Bromus sp., Avena sp.

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☑ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters Other(Describe):

Date: October 17, 2024 9:14 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 2B-2	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: 2B-3 **Date/ Time:** 10/17/2024 13:58

Grazing Management Unit: 2B **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%, ☑ 75-95%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Croton setiger, Hirschfeldia incana

Grasses - List 3 Dominant Species: Avena sp., Bromus hordaceous, Bromus diandrus

Shrubs - List 3 Dominant Species: Corethrogyne filaginifolia

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 17, 2024 1:58 PM	**Preserve:** Ramona Grasslands Preserve
Plot: 2B-3	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: 2B-4 **Date/ Time:** 10/17/2024 14:04

Grazing Management Unit: 2B **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Contains wetland area in plot. No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Rumex crispus, Heterotheca grandiflora

Grasses - List 3 Dominant Species: Distichlis spicata, Avena sp., Bromus sp.

Shrubs - List 3 Dominant Species: Isocoma menzesii

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 17, 2024 2:04 PM	**Preserve:** Ramona Grasslands Preserve
Plot: 2B-4	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: 3A-1 **Date/ Time:** 10/18/2024 10:47

Grazing Management Unit: 3A **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Plot contains wetland. No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Carex sp., Rumex crispus

Grasses - List 3 Dominant Species: Avena sp., Bromus diandrus, Distichlis spicata

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☑ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters Other(Describe):

Date: October 18, 2024 10:47 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 3A-1	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: 3A-6 **Date/ Time:** 10/18/2024 10:59

Grazing Management Unit: 3A **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Croton setiger, Hirschfeldia incana

Grasses - List 3 Dominant Species: Bromus diandrus, Bromus madritensis, Bromus sp.

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☑ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters Other(Describe):

Date: October 18, 2024 10:59 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 3A-6	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: 3A-7 **Date/ Time:** 10/18/2024 10:26

Grazing Management Unit: 3A **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Hirschfeldia incana, Croton setiger

Grasses - List 3 Dominant Species: Avena sp., Distichlis spicata, Bromus sp.

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☑ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters Other(Describe):

Date: October 18, 2024 10:26 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 3A-7	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: 3A-8 **Date/ Time:** 10/18/2024 10:36

Grazing Management Unit: 3A **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton setiger, Hirschfeldia incana, Ambrosia psilostachya

Grasses - List 3 Dominant Species: Avena sp., Bromus madritensis, Distichlis spicata

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☑ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters Other(Describe):

Date: October 18, 2024 10:36 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 3A-8	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: 3B-1 **Date/ Time:** 10/18/2024 09:30

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Need to trap for SKR. A lot of KR burrows near NW border of plot next to scrub.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton setiger, Erodium sp., Ambrosia psilostachya

Grasses - List 3 Dominant Species: Bromus sp.

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum, Artemisia californica, Salvia apiana

Trees - Dominant Species: Quercus sp., Malosma laurina

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☑ High ☐ Medium ☐ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☑ Caching/foraging craters

Other(Describe):

Date: October 18, 2024 9:30 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 3B-1	**Observers:** Dillon Travis and Kris Alberts





SKR Monitoring – Habitat Assessment Form

Plot Number: 3B-2 **Date/ Time:** 10/18/2024 09:44

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: KR burrows found on border of scrub area. Trap for SKR or DKR.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton setiger, Deinandra fasciculata, Trichostema lanceolatum

Grasses - List 3 Dominant Species: Distichlis spicata, Bromus sp.

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum, Artemisia californica

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☑ Caching/foraging craters

Other(Describe):

Date: October 18, 2024 9:44 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 3B-2	**Observers:** Dillon Travis and Kris Alberts







SKR Monitoring – Habitat Assessment Form

Plot Number: 3B-3 **Date/ Time:** 10/18/2024 12:21

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Trapping recommended at this site. KR sign found.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☐ Medium ☑ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton setiger, Hirschfeldia incana

Grasses - List 3 Dominant Species: Distichlis spicata, Avena sp., Bromus madritensis

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☑ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☑ Caching/foraging craters

Other(Describe):

Date: October 18, 2024 12:21 PM	**Preserve:** Ramona Grasslands Preserve
Plot: 3B-3	**Observers:** Dillon Travis and Kris Alberts





SKR Monitoring – Habitat Assessment Form

Plot Number: 3C-1 **Date/ Time:** 10/17/2024 12:38

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Active KR burrows and scat found close to this plot.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton setiger, Hirschfeldia incana, Ambrosia psilostachya

Grasses - List 3 Dominant Species: Avena sp., Bromus diandrus, Bromus madritensis

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum, Acmispon glaber

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 17, 2024 12:38 PM	**Preserve:** Ramona Grasslands Preserve
Plot: 3C-1	**Observers:** Dillon Travis and Kris Alberts





SKR Monitoring – Habitat Assessment Form

Plot Number: 3C-2 **Date/ Time:** 10/17/2024 12:57

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Adjacent burrows may be SKR. North of this plot.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton setiger, Hirschfeldia incana, Ambrosia psilostachya

Grasses - List 3 Dominant Species: Avena sp., Bromus diandrus, Bromus sp.

Shrubs - List 3 Dominant Species: Artemisia californica, Eriogonum fasciculatum

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters Other(Describe):

Date: October 17, 2024 12:57 PM	**Preserve:** Ramona Grasslands Preserve
Plot: 3C-2	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: 3C-3 **Date/ Time:** 10/17/2024 13:09

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75% ☑ 75-95%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Shrub Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton setiger, Hirschfeldia incana.

Grasses - List 3 Dominant Species: Avena sp., Bromus sp.

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum, Corethrogyne filaginifolia

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 17, 2024 1:09 PM	**Preserve:** Ramona Grasslands Preserve
Plot: 3C-3	**Observers:** Dillon Travis and Kris Alberts



SKR Monitoring – Habitat Assessment Form

Plot Number: 3C-4 **Date/ Time:** 10/17/2024 12:27

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Plot includes wetland area. No SKR sign. Plot is in area that is not contiguous with the main SKR plot in the preserve, so trap to determine if SKR or DKR.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Hirschfeldia incana, Pseudognaphalium confertiflorum.

Grasses - List 3 Dominant Species: Avena sp., Bromus hordaceous, Bromus madritensis

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum, Artemisia californica

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☑ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Date: October 17, 2024 12:27 PM	**Preserve:** Ramona Grasslands Preserve
Plot: 3C-4	**Observers:** Dillon Travis and Kris Alberts

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters
Other(Describe):



H-2 Stephens' Kangaroo Rat Habitat Assessment Memorandum: Hellhole Canyon County Preserve

FALL 2024 STEPHENS' KANGAROO RAT MONITORING

HELLHOLE CANYON COUNTY PRESERVE

VALLEY CENTER, SAN DIEGO COUNTY, CALIFORNIA

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November 27, 2024

TABLE OF CONTENTS

EXECUTIVE SUMMARY **2**
1.0 INTRODUCTION **3**
Purpose and Regulatory Background 3
Project Location and Description 3
2.0 METHODS **4**
SKR Monitoring Area Determination 4
Monitoring Plots 4
3.0 RESULTS **6**
4.0 DISCUSSION **8**
5.0 SURVEYOR CERTIFICATION **9**
6.0 REFERENCES **10**

LIST OF ATTACHMENTS

A: FIGURES
B: FIELD FORMS WITH SITE PHOTOGRAPHS

EXECUTIVE SUMMARY

Environmental Science Associates (ESA) was contracted by the County of San Diego (County) Department of Parks and Recreation (DPR) with Blackhawk Environmental, Inc. as a sub-consultant to conduct resource-specific monitoring for the federal- and state-threatened Stephens' kangaroo rat (*Dipodomys stephensi*) (SKR) within the Hellhole Canyon County Preserve (Preserve) during the fall of 2024. Survey methodology followed the Targeted Monitoring Plan (TMP) (ESA and ICF 2022). The monitoring was a habitat assessment of the three plots established during the 2020 live-trapping conducted by ESA and sub-consultant Aardvark Environmental (ESA 2021) and monitored during the fall 2021, 2022, and 2023 SKR habitat assessments (ESA and Blackhawk Environmental, Inc. 2021, 2022, 2023) associated with 2021, 2022, and 2023 TMP resource-specific monitoring (ESA 2022, 2023, 2024).

This report summarizes results of the SKR habitat assessment within the Preserve for the fall of 2024. The fall 2024 monitoring was conducted at a similar time of year compared to previous monitoring efforts, but no mowing/weed whipping had occurred, as was the case in 2023. Therefore, a greater percentage of annual vegetation was standing, compared to the typical dry and largely senesced conditions observed during the 2020 trapping surveys, the fall 2021 and 2022 monitoring efforts, and the mowed/weed whipped conditions present during the 2023 monitoring effort. As a result, monitoring plots in fall 2024 were anticipated to yield lower SKR presence results. Some of the SKR monitoring areas in 2024 consisted of an herbaceous layer comprising low-growing annual plants interspersed among open coastal sage scrub habitat, resulting in generally low SKR obstruction factors similar to those in 2020–2023; however, more areas saw an increase in obstruction factors, thus decreasing suitable habitat for SKR.

The fall 2024 monitoring results demonstrated a reduction in SKR habitat suitability compared to that of the fall 2020 trapping survey and fall 2021, 2022, and 2023 monitoring efforts. The fall 2020 live trapping survey yielded 1 SKR in plot 2 and 17 Dulzura kangaroo rats (*Dipodomys simulans*) spread among all three plots. The three plots are all within 150 feet of one another, and there are no factors that could preclude SKR movement between the three plots. In 2021, 2022, and 2023, kangaroo rat sign was detected at all three monitoring plots; therefore, all three plots were assumed potentially occupied by SKR. This assumption considered the positive detection of SKR in plot 2 in fall 2020; kangaroo rat sign in all three plots in fall 2021, fall 2022, and fall 2023; and the lack of obstruction factors that would preclude SKR potential between the three proximal plots. In 2024, only inactive burrows were observed in plot 1, with no recent kangaroo rat sign observed, suggesting plot 1 is potentially not currently occupied. However, since at least one inactive burrow was found, the finding was defaulted to "occupied." Additionally, the potential for SKR was reduced to medium for plots 2 and 3, respectively, compared to high potential ratings in one to three plots in previous years. Kangaroo rat sign was significantly reduced across all three plots in 2024 compared with previous years, with scant recent sign found only in plot 3. Despite these 2024 findings, long-term SKR population viability on a landscape level within the Preserve is not anticipated to be in any danger of extirpation as currently managed, given that anthropogenic influence is minimal within the monitoring area.

1.0 INTRODUCTION

Purpose and Regulatory Background

As a participant in the Multiple Species Conservation Program (MSCP) and the adopted MSCP South County Subarea Plan, the County of San Diego (County) is obligated to conduct biological monitoring of habitats and species covered under the MSCP to ensure that the MSCP biological conservation goals and conditions for species coverage are being met. The County Department of Parks and Recreation (DPR) prepared the Targeted Monitoring Plan (TMP) to provide detailed specifications for implementation of adaptive management and monitoring within 10 County-owned and managed conserved lands (open space parks and preserves) overseen by DPR (ESA and ICF 2015). The TMP was revised and updated in December 2022 (ESA and ICF 2022) to incorporate 10 additional open space parks and preserves (Preserve Group 2) and again in August 2024 (ESA 2024) to incorporate 11 additional open space parks and preserves (Preserve Group 3). The revised TMP also confirmed monitoring and management goals and objectives for TMP-covered species at the newly added open space parks and preserves. The TMP is an adaptive management plan that includes both focused goals and objectives for target resources and detailed monitoring protocols and is intended to achieve the management directives for species per the adopted South County MSCP Framework Management Plan. The regional framework that guides monitoring at the preserve level has been refined over time and is still evolving through a collaborative effort among U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, MSCP jurisdictions, and outside experts. Stakeholders (e.g., state and federal resource agencies, municipal and county agencies, land managers) understand that adaptive management is an iterative process in which lessons are learned and used to further refine priorities, goals, objectives, and monitoring methods. The TMP addresses monitoring within the following 31 open space parks and preserves: Barnett Ranch County Preserve, Bottle Peak County Preserve, Boulder Oaks County Preserve, Del Dios Highlands County Preserve, Dictionary Hill County Preserve, El Capitan County Preserve, El Monte Regional Park, Escondido Creek County Preserve, Furby-North Property, Hellhole Canyon County Preserve, Iron Mountain County Preserve, Keys Creek County Preserve, Lakeside Linkage County Preserve, Lawrence and Barbara Daley County Preserve, Los Peñasquitos Canyon County Preserve, Louis A. Stelzer County Park, Lusardi Creek County Preserve, Mount Olympus County Preserve, Mountain Meadow County Preserve, Oakoasis County Preserve, Peutz Valley County Preserve, Ramona Grasslands County Preserve, Sage Hill County Preserve, San Luis Rey River Park, Santa Margarita County Preserve, Simon County Preserve, Skyline County Preserve, Stoneridge County Preserve, Sycamore Canyon/Goodan Ranch County Preserve, Tijuana River Valley Regional Park, and Wilderness Gardens County Preserve.

Project Location and Description

Hellhole Canyon County Preserve (Preserve) is located within the draft North County MSCP Plan Area. The Preserve is located northeast of Escondido within Valley Center, an unincorporated community of San Diego County.

The Preserve is in the eastern portion of the unincorporated area of Valley Center (Attachment A, Figure 1). The Preserve is in Township 11 South, Range 1 West, and Range 1 East as depicted on the United States Geological Survey (USGS) 7.5-minute Rodriguez Mountain quadrangle (Attachment A, Figure 2). The Preserve is in northeastern San Diego County in the Peninsular Geomorphic Range and consists of mountain and peak faces of Rodriguez Mountain, rocky hills, unnamed streams, drainages, Hell Creek, and valleys north and east of Paradise Mountain. Elevations range from approximately 457 meters (1,500 feet) above mean sea level within Hell Creek to approximately 1,143 meters (3,750 feet) above mean sea level on the western face of Rodriguez Mountain in the eastern section of the Preserve. SKR were

historically observed within the Sierra Verde Addition of the Preserve. Suitable annual and perennial grassland and open coastal sage scrub habitat for SKR is present within the northeast corner of the Sierra Verde Addition of the Preserve, and SKR and Dulzura kangaroo rat (*Dipodomys simulans*) presence were confirmed during baseline trapping surveys conducted in 2020.

2.0 METHODS

SKR Monitoring Area Determination

The SKR monitoring area was originally determined based on the 2020 baseline visual habitat assessment and live-trapping results. Within the Preserve, suitable SKR habitat is confined to the northeastern corner of the Sierra Verde Addition. Potentially suitable SKR habitat (i.e., flat terrain and/or gentle slopes that support low-growing, open habitat) were included within the SKR monitoring area. The current SKR monitoring area focused on open coastal sage scrub and annual and perennial grassland habitats as the only area in the larger Hellhole Canyon County Preserve that provides suitable SKR habitat with connectivity to the high-quality expansive grassland habitat within the adjacent Rancho Guejito property (Attachment A, Figure 3).

Monitoring Plots

Baseline SKR trapping surveys were conducted in 2020 within the northeastern corner of the Sierra Verde Addition and confirmed SKR presence in one of the three trapping plots (plot 2). Per the updated TMP (ESA and ICF 2022), the 2024 SKR monitoring effort sampled the same three sampling plots established during 2020 baseline trapping surveys due to the limited size of suitable SKR habitat within the Preserve. In accordance with the TMP, specific monitoring protocols followed an adapted methodology used by USGS for SKR monitoring at Camp Pendleton (Brehme et al. 2016). Monitoring details, including dates, weather conditions, and field personnel are listed in Table 1.

Table 1. Survey Conditions

Biologists	Date	Start/End Time	Start/End Air Temperature (°F)	Start/End Wind Speed (mph)	Start/End Cloud Cover (%)	Precipitation
Kris Alberts Dillon Travis	10-9-24	1000–1130	84–87	0 / 0	0 / 0	None

A cellular ArcGIS Collector application was used to determine the locations of all monitoring plots in the field. Representative photographs were taken from the southeast corner of each plot, facing northwest (Attachment B). The biologists then walked systematic transects through each plot searching for kangaroo rat sign (e.g., burrows, scat, tracks, trails through vegetation, dust-bathing sites) until 100 percent coverage of the plot was achieved. All kangaroo rat sign was recorded on the Survey123 application. Potential presence or absence of SKR within a given plot was determined solely on whether or not kangaroo rat sign was observed within the plot.

Habitat assessment forms on the Survey123 application were also completed for each plot, specifically noting habitat characteristics critical to SKR habitat suitability, including percent bare ground, living herb density, shrub/tree density, percentage of dead plant litter, gopher or ground squirrel density, obstruction factor, types of disturbance, and land use (Attachment B). These assessment variables were modeled after field forms used by Brehme et al. (2016) (adapted from a field form in Montgomery et al. 2008).

Based on the quality of potentially suitable SKR habitat and the density of apparent kangaroo rat sign, each plot was assigned an SKR-potential rating using primarily the following criteria:

- High Potential
    - Readily apparent potential SKR sign (particularly scat and burrows)
    - Relatively flat to gently sloping topography
    - Presence of bare ground common
    - Relatively low living herb density
    - Extremely low to no shrub cover
    - Relatively low obstruction factor (O.F.)[1]

- Moderate Potential
    - Some potential SKR sign (particularly scat and burrows) observed, but infrequent and/or appearing dated or inactive
    - Gently to moderately sloping topography
    - Presence of bare ground moderate
    - Low shrub percent cover
    - Relatively low herb cover
    - Low to moderate O.F.

- Low Potential
    - Trace to no apparent potential SKR sign
    - Moderately sloping topography
    - Minimal bare ground
    - Moderate to high shrub percent cover
    - Moderate to very high living herb density
    - Moderate to high O.F.

- No Potential
    - No apparent potential SKR sign
    - Moderate to steep sloping topography
    - No bare ground
    - High shrub percent cover
    - High living herb density
    - High O.F

[1] Obstruction factor (O.F.) is the observable ground-level conditions of herbaceous vegetation or dead litter that has the potential to obstruct movement of kangaroo rats across the landscape. High O.F. would consist of a very high density of herb and/or dead litter at the ground level. Low O.F. would consist of a low density of herb or dead litter at the ground level, with a high proportion of patches of bare ground.

3.0 RESULTS

A comparison between the overall rating of SKR potential at each plot from the fall 2020 trapping survey to the fall 2021, fall 2022, fall 2023, and fall 2024 monitoring is included in Table 2; increased or decreased changes for the analyzed elements are provided in the final column of Table 2 comparing fall 2023 to fall 2024 (ESA and Blackhawk Environmental, Inc. 2022, 2023). Results of the 2024 SKR habitat assessment for each sample plot are provided in Table 3. In 2024, habitat assessments were conducted at three monitoring plots, and all three were determined to be occupied or potentially occupied by SKR. Each plot was rated for SKR potential; two plots were characterized as medium potential and one as low potential. None of the sample plots were found to have high or no potential for SKR (Attachment A, Figure 4).

Table 2. SKR Habitat Assessment Comparison

		Fall 2020	Fall 2021	Fall 2022	Fall 2023	Fall 2024	2023–2024 Change
SKR Occupancy	**Occupied**	1	3*	3*	2*	3*	+1
	Unoccupied	2	0	0	1	0	-1
SKR Potential	**High**	3	3	3	1	0	-1
	Medium	0	0	0	1	2	+1
	Low	0	0	0	1	1	0
	No	0	0	0	0	0	0
	*Occupancy status in fall 2024 was determined as "potentially occupied" based on the positive detection of one SKR in plot 2 in fall 2020 live-trapping surveys, as well as positive but scant and/or dated kangaroo rat sign in plots 1, 2, and 3 during fall 2024; the proximity of the two plots (within 150 feet of one another); and no factors that could reasonably be expected to entirely preclude SKR movement between the two plots.						

Table 3. SKR Habitat Assessment Summary

Fall 2024										Fall 2023
Plot ID	**% Bare Ground**	**Living Herb Density**	**Shrub/Tree Density (%)**	**Plant Litter (Dead) (%)**	**Gopher/ Ground Squirrel Density^**	**Obstruction Factor**	**Potential K-Rat Sign***	**SKR Occupancy Determination+**	**Rating†**	**Rating†**
1	0–5	Medium	5–25	50–75	High/Low	Medium	B	Occupied	Low	Low
2	5–25	Medium	5–25	50–75	High/Low	Medium	B	Occupied	Medium**	High**
3	0–5	High	25–50	50–75	Med/Low	High	B, S	Occupied	Medium**	Medium**

^ = Active gopher excavation density ratings used; inactive excavation density ratings excluded.
* = Potential kangaroo rat sign: B = Burrow(s); S = Scat; T = Tracks; TD = Tail Drag; TV = Trails in Vegetation; O = Other
** = Exhibited habitat conditions and observed sign indicates plot is likely or potentially occupied by SKR.
† = Estimated potential for SKR occupancy based on habitat community condition and observed kangaroo rat sign.
+ = Occupancy status in fall 2024 was determined as "potentially occupied," as described in the footnote on Table 2.

4.0 DISCUSSION

SKR sign decreased in both abundance and recentness in 2024 at all monitoring plots compared to 2023. Occupancy potential in plot 2 also decreased slightly in fall 2024 compared to prior monitoring efforts in fall 2023 and previous years, while plots 1 and 3 remained unchanged for occupancy potential from 2023. SKR was found present at only one of the three monitoring plots during the fall 2020 trapping survey but was potentially detected at all three monitoring plots during the fall 2021, 2022, and 2023 habitat assessments. During the 2024 monitoring efforts, monitoring at all three plots detected potential for SKR, though all sign was minimal, apparently inactive, and/or dated (Table 3). Differentiating between SKR and Dulzura kangaroo rat sign is not conclusive in and of itself; however, there are no obstruction factors that could preclude the possibility of SKR from any of the three sites, especially considering the proximity of the three sites (within 150 feet of one another). Therefore, monitoring results from 2021 and 2022 suggested high potential for SKR in all three plots, whereas in 2023, potential for SKR was high only in plot 2. In 2024, potential for SKR remained low in plot 1 and was medium in plots 2 and 3, indicating a trend toward declining potential as evidenced by the near absence of any recent sign in fall 2024. The results indicate seasonal SKR occupancy can increase or decrease at given sites between monitoring years due to variables such as precipitation, survey timing, predation, weather, food availability, competition among sympatric species, microtopographic differences, proximity of groundwater, habitat maintenance activities, and/or availability of natural or artificial water sources that could affect localized plant phenologies, which in turn can affect vegetative density and food availability, etc.

An increase in overall rainfall can be beneficial for SKR suitability in that it can increase food availability; however, significant increases in rainfall are likely to increase vegetation density and height, which may increase obstruction factors. The period between the fall 2023 and fall 2024 monitoring efforts was marked by a slightly above-average rainfall year in the greater San Diego region. In an ecological regime that is free of anthropogenic influences such as cattle grazing, consistently higher rainfall could serve to reduce habitat suitability for SKR by promoting vegetation cover that excludes SKR.

During the 2024 monitoring effort, none of the plots were observed to have had any mowing conducted, unlike the 2023 monitoring effort. As a result, and in conjunction with slightly above-average rainfall amounts during the previous rainy season, an increase in living/standing herb density and overall vegetation coverage was broadly observed across all three plots. Plot 2 presented similar findings as previous years, with more open areas primarily vegetated with low-growing filarees (*Erodium spp.*), which facilitates SKR movement and is a potential food source. Comparatively, plots 1 and 3 presented with higher percentages of taller-growing ruderal species (i.e., tocalote [*Centaurea melitensis*] and short-pod mustard [*Hirschfeldia incana*]) that increase obstruction factors and may preclude or reduce SKR movement. Obstruction factors were thus increased for plots 1, 2, and 3, compared to findings from 2021 to 2023, reducing the potential for SKR. Also of note is the significant increase in active gopher excavations observed, most notably in plots 1 and 2.

To enable consistent data comparisons on a year-to-year basis, it is recommended that future monitoring be conducted during the dry season (July through November), following the precedent set by the fall 2020–2024 monitoring efforts. Annual weather patterns within the greater San Diego region are known to have significant variability in rainfall quantities, while generally dry conditions prevail for most of the year. This rainfall variability can cause significant, albeit temporary, changes in herb density, dead plant litter, bare ground, and obstruction factors that tend to be most dramatic when comparing

site conditions during the wet season. Dry season monitoring is likely to yield a more consistent comparison of the assessment areas.

5.0 SURVEYOR CERTIFICATION

All data, statements, analyses, findings, and attachments within this report are accurate and truthful in terms of describing the existing conditions and the project as proposed to Blackhawk Environmental, Inc.

Kris Alberts
Principal Biologist

6.0 REFERENCES

Brehme, C. S., D. R. Clark, and R. N. Fisher
2016 *Stephens' Kangaroo Rat Monitoring on MCB Camp Pendleton, Results and Trends Analyses for Fall-Winter 2014*. Prepared for Wildlife Management Branch, AC/S Environmental Security, Marine Corps Base Camp Pendleton. 52pp.

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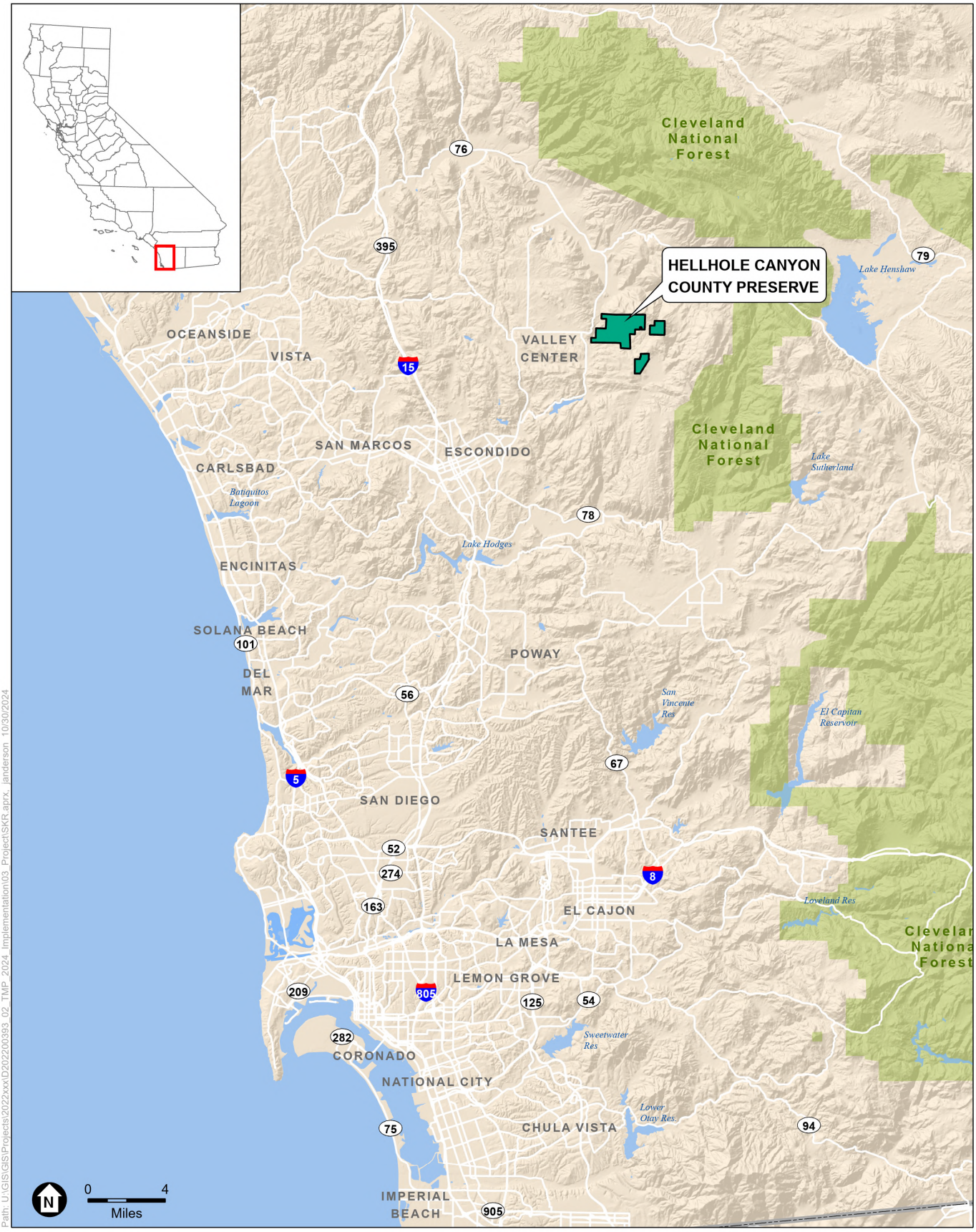
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Montgomery, S. J., D. J. Grout, C. M. Wolf, V. M. Shoblock, A. Davenport, and R. N. Knight
2008 *Stephens' kangaroo rat monitoring program, and results of annual monitoring sessions between spring 2002 and fall 2004, at Naval Weapons Station Seal Beach Detachment Fallbrook*. Unpublished report submitted by SJM Biological Consultants to the Environmental Programs and Services Office, Naval Weapons Station Seal Beach Detachment Fallbrook, Fallbrook, CA.

ATTACHMENT A
FIGURES



Path: U:\GIS\GIS\Projects\2022xxx\D2022000393_02_TMP_2024_Implementation\03_Project\SKR aprx, janderson 10/30/2024

SOURCE: ESRI; SanGIS, 2024

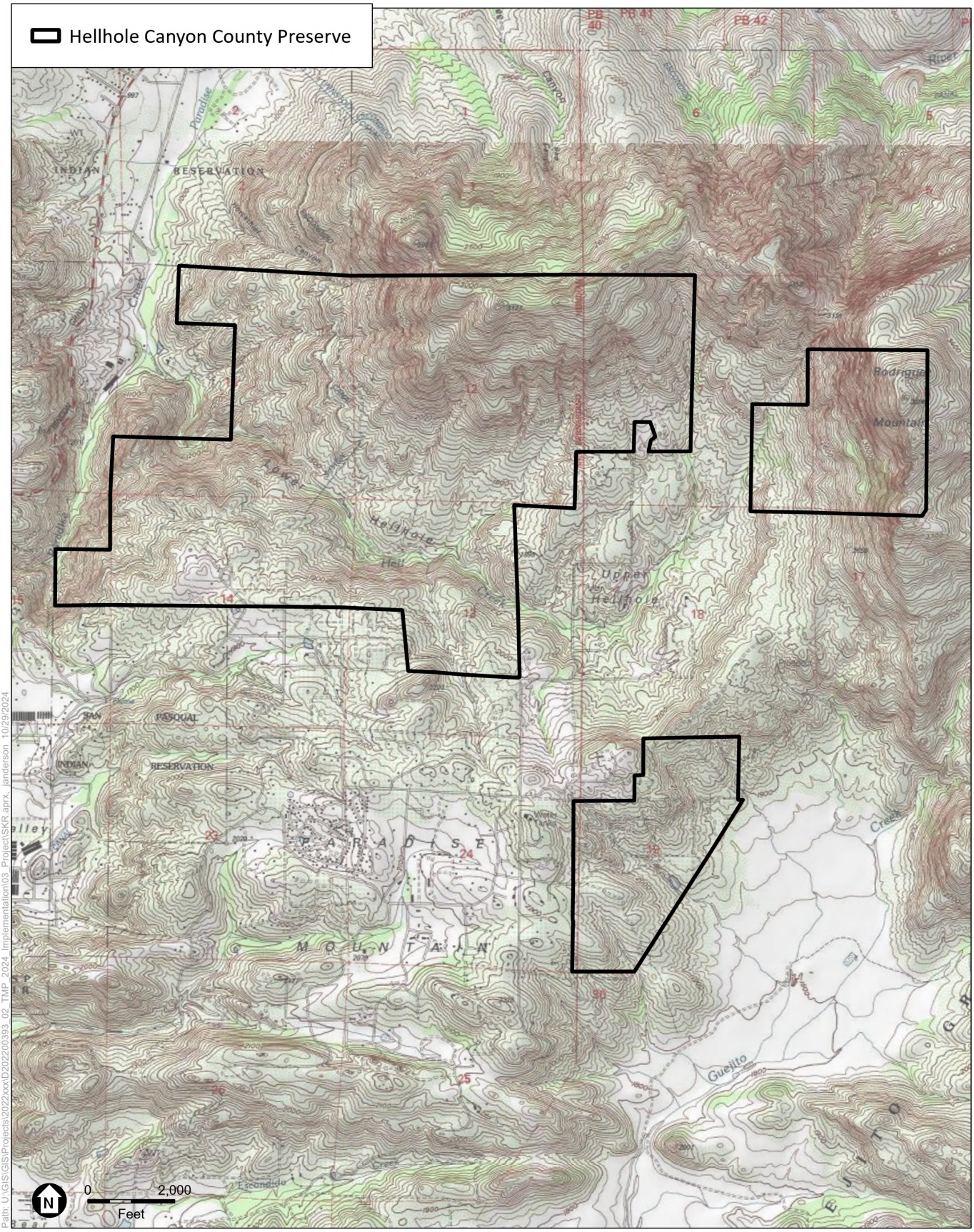
COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management

Fall 2024 SKR Habitat Monitoring Memorandum – Hellhole Canyon County Preserve

Figure 1

Regional Location

ESA



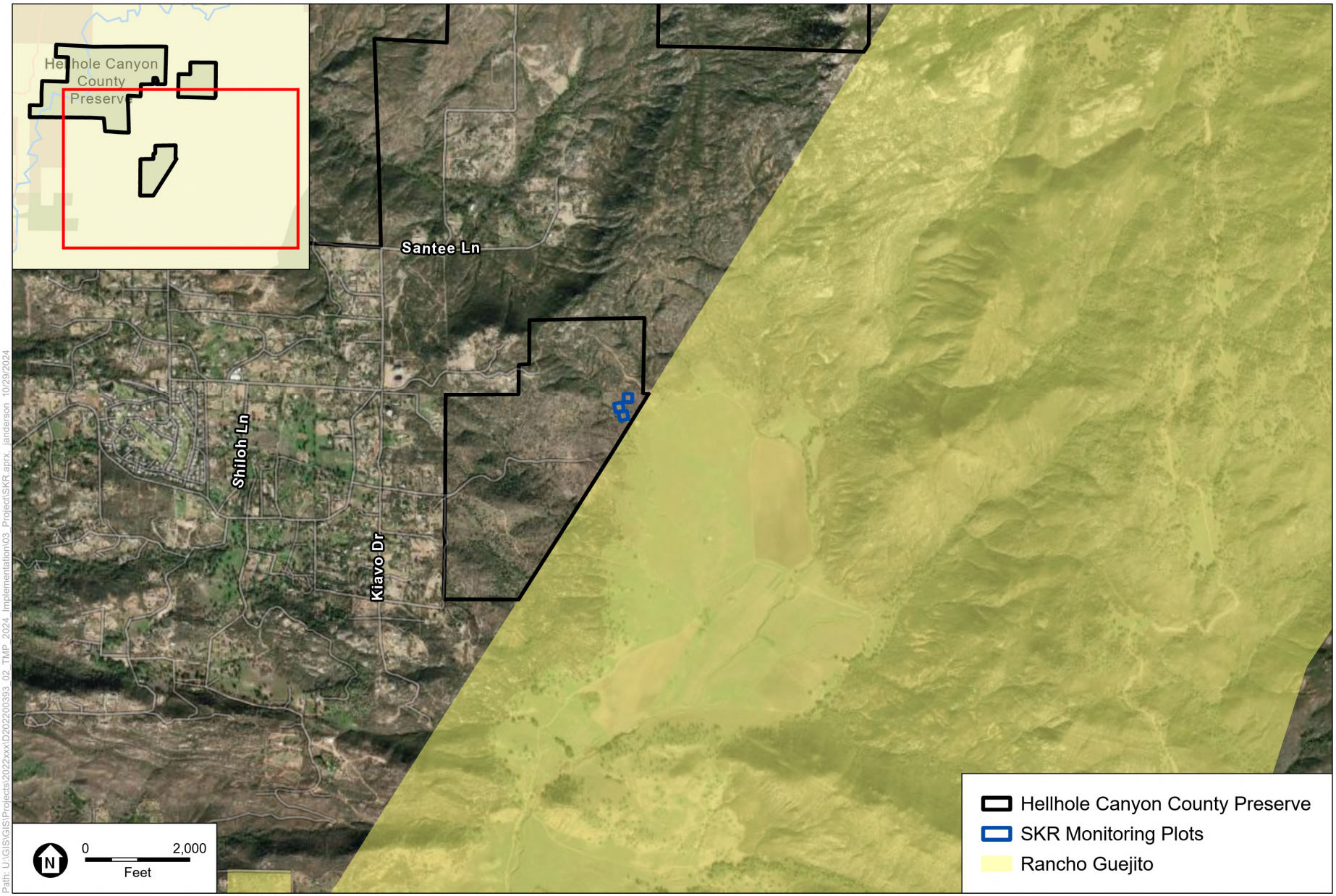
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SOURCE: USGS 7.5 minute,
Rodriguez Mountain quadrangle

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan –
2024 Resource-Specific Monitoring and Management
Fall 2024 SKR Habitat Monitoring Memorandum – Hellhole Canyon County Preserve

Figure 2
Project Location

ESA



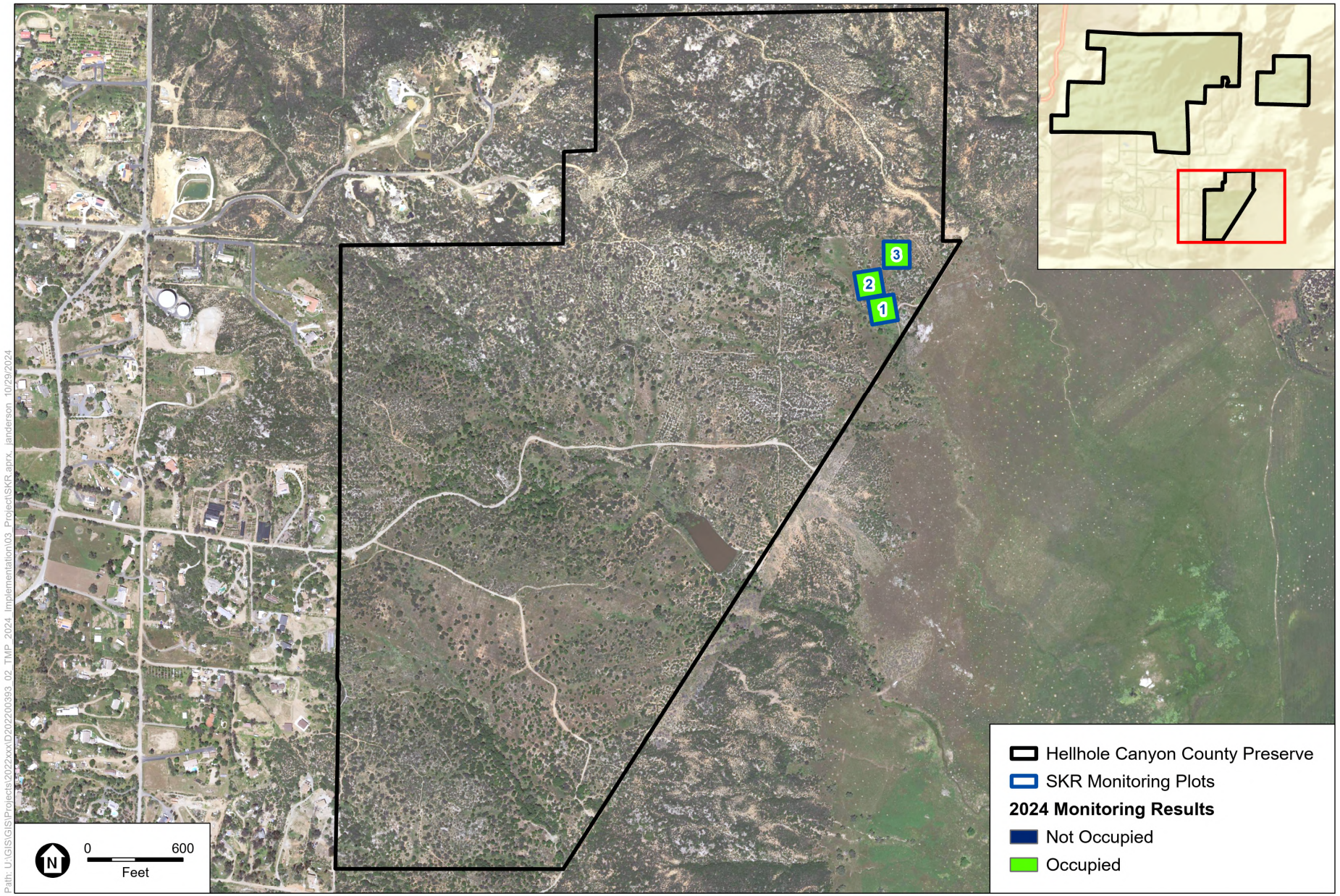
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SOURCE: ESRI, 2024; SanGIS, 2024

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management
Fall 2024 SKR Habitat Monitoring Memorandum – Hellhole Canyon County Preserve

Figure 3
SKR Monitoring Area

ESA



SOURCE: NAIP, 2020; SanGIS, 2024; ESA, 2024.

COSD DPR 569744 TO 4 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management

Fall 2024 SKR Habitat Monitoring Memorandum – Hellhole Canyon County Preserve

Figure 4

2024 SKR Monitoring Results

ESA

ATTACHMENT B
FIELD FORMS WITH SITE PHOTOGRAPHS

SKR Monitoring – Habitat Assessment Form

Plot Number: 1 **Date/ Time:** 10/09/2024 09:48

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: SKR burrows appear inactive. No other sign than burrows.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Hirschfelida incana, Erodium cicutartium, Croton setiger

Grasses - List 3 Dominant Species: Bromus diandrus, Bromus madritensis, Bromus hordaceous

Shrubs - List 3 Dominant Species: Quercus berbidifolia, Eriogonum fasciculatum, Mule fat

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☑ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 9, 2024 9:48 AM	**Preserve:** Hellhole Canyon Preserve
Plot: 1	**Observers:** Dillon Travis and Kris Alberts





SKR Monitoring – Habitat Assessment Form

Plot Number: 2 **Date/ Time:** 10/09/2024 11:00

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☑ Medium ☐ Low ☐ None

Comments:

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Hirschfeldia incana, Croton setiger, Centaurea melitensis

Grasses - List 3 Dominant Species: Bromus hordaceous, Bromus madritensis, Bromus diandrus

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum, Gutierrezia californica, Acmispon glaber

Trees - Dominant Species: Quercus sp, Malosma laurina

Abundance of ACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 9, 2024 11:00 AM	**Preserve:** Hellhole Canyon Preserve
Plot: 2	**Observers:** Dillon Travis and Kris Alberts





SKR Monitoring – Habitat Assessment Form

Plot Number: 3 **Date/ Time:** 10/09/2024 10:51

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis and Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☑ Medium ☐ Low ☐ None

Comments: Burrows, tracks, and scat observed

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Herschfeldia incana, Croton setiger, Centauera melitensis

Grasses - List 3 Dominant Species: Bromus hordaceous, Bromus madritensis

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum, Quercus berbidifolia

Trees - Dominant Species: Orange trees

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 9, 2024 10:51 AM	**Preserve:** Hellhole Canyon Preserve
Plot: 3	**Observers:** Dillon Travis and Kris Alberts







Appendix I

Bat Survey & Habitat Assessment Field Forms and Representative Photograph

I-1 Survey Field Forms

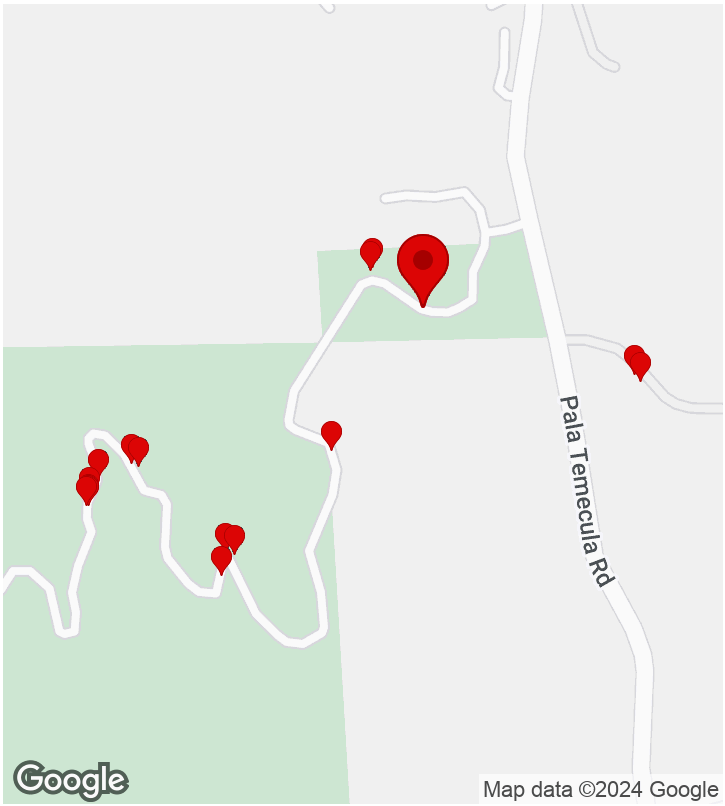
2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Pallid/Townsends Bat

7/12/2024, 5:51:48 PM UTC





CREATED

7/4/2024, 2:29:35 AM UTC
by SC Fulcrum26

UPDATED

7/12/2024, 5:51:48 PM UTC
by SC Fulcrum26

LOCATION

33.423274, -117.089883

Parent Form

Project Name:	TMP Monitoring ▸ Pallid/Townsends Bat
Preserve/Park Name	Mt. Olympus
General Survey Type	TMP Monitoring
Specific Survey Type	Bat Echo Meter Survey
Observer/Surveyor:	Jaclyn Catino-Davenport
Assistant Observer/Surveyor:	Karla Alcaraz
Date:	July 3, 2024

START Weather Details:

Start - Time:	19:29
Start - Temperature:	75.4
Start - Wind Direction From (select one):	SW
Start - Low Wind Speed:	0.2
Start - High Wind Speed:	2.6
Start - Average Wind Speed:	1.2
Start - Cloud Cover (%):	0
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	Clear for night survey.

END Weather Details:

Time Out:	21:51
End - Temperature:	72
End - Wind Direction From (select one):	SW
End - Low Wind Speed:	0.7
End - High Wind Speed:	1.1
End - Average Wind Speed:	0.9
End - Cloud Cover (%):	0
End - Precipitation (select one):	None
End - Visibility (select one):	Good
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

Notes	Talked to adj land owners, next to parking location. Started taking data at 2013.
Observation Type:	Bird, Mammal

Photos



Bird

Bird Observation: (7 Items)

Bird Observation: - 1. 1 record

Bird (Common or Scientific Name):	Phainopepla; Phainopepla nitens; PHAI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 2. 1 record

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record

Bird (Common or Scientific Name):	Red-tailed Hawk; Buteo jamaicensis; RTHA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 4. 1 record

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record

Bird (Common or Scientific Name):	Bewick's Wren; Thryomanes bewickii; BEWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record

Bird (Common or Scientific Name):	Common Poorwill; Phalaenoptilus nuttallii; COPO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:	

Mammal

Mammal Observation: (1 Item)

Mammal Observation: - 1. 1 record

Mammal (Common or Scientific Name):	Coyote; Canis latrans
Is the Mammal Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Mammal:	
Notes:	

Bat Echo Meter Survey Details

Survey Station/Location (number)	Transect
Survey Duration (minutes)	50
General Notes (detectability, habitat, etc.)	
Photos	

Observation (8 Items)

Observation - 1. Western pipistrelle (Parastrellus hesperus)

Species Observed	Western pipistrelle (Parastrellus hesperus)
Observation Notes	30/37 2028, visually seen

Observation - 2. Silver-haired bat (Lasionycteris noctivagans)

Species Observed	Silver-haired bat (Lasionycteris noctivagans)
Observation Notes	2/4 2029

Observation - 3. Mexican free-tailed bat (Tadarida brasiliensis)

Species Observed	Mexican free-tailed bat (Tadarida brasiliensis)
Observation Notes	15/21 2031

Observation - 4. Big brown bat (Eptesicus fuscus)

Species Observed	Big brown bat (Eptesicus fuscus)
Observation Notes	2036 3/17 visually seen, 5/14 2036

Observation - 5. Western pipistrelle (Parastrellus hesperus)

Species Observed	Western pipistrelle (Parastrellus hesperus)
Observation Notes	46/49 2047, 1/2 2036, 11/11 2040

Observation - 6. Western small-footed myotis (Myotis ciliolabrum)

Species Observed	Western small-footed myotis (Myotis ciliolabrum)
Observation Notes	32/57 2048

Observation - 7. Mexican free-tailed bat (Tadarida brasiliensis)

Species Observed	Mexican free-tailed bat (Tadarida brasiliensis)
Observation Notes	2/2 2056, 2059 2/2

Observation - 8. Western pipistrelle (Parastrellus hesperus)

Species Observed	Western pipistrelle (Parastrellus hesperus)
Observation Notes	2107 41/56,

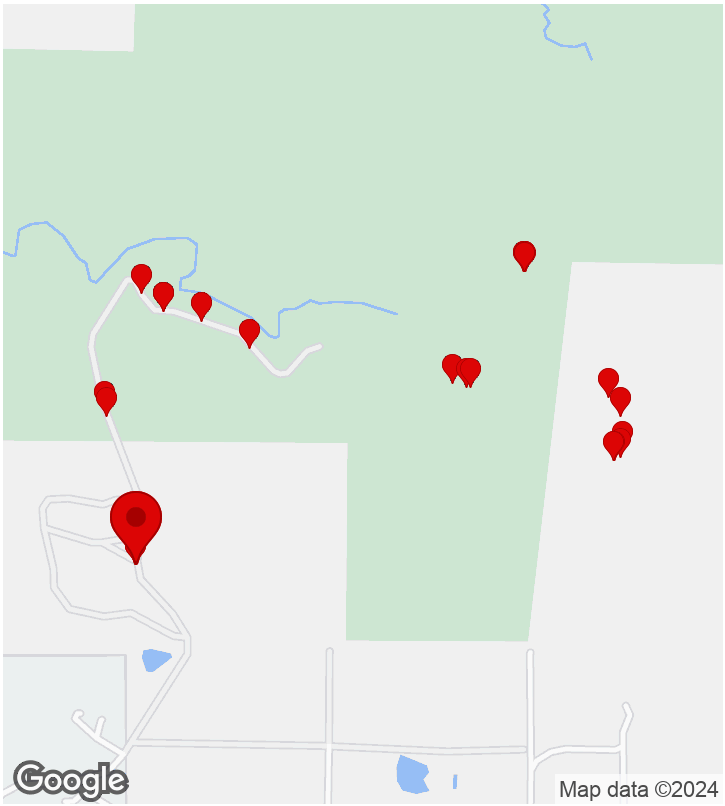
2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Pallid/Townsends Bat

7/12/2024, 5:52:51 PM UTC





CREATED

7/11/2024, 2:21:22 AM UTC
by SC Fulcrum26

UPDATED

7/12/2024, 5:52:51 PM UTC
by SC Fulcrum26

LOCATION

33.221906, -116.953730

Parent Form

Project Name:	TMP Monitoring ▸ Pallid/Townsends Bat
Preserve/Park Name	Hellhole Canyon
General Survey Type	TMP Monitoring
Specific Survey Type	Bat Echo Meter Survey
Observer/Surveyor:	Jaclyn Catino-Davenport
Assistant Observer/Surveyor:	Karla Alcaraz
Date:	July 10, 2024

START Weather Details:

Start - Time:	19:21
Start - Temperature:	86.2
Start - Wind Direction From (select one):	W
Start - Low Wind Speed:	0.2
Start - High Wind Speed:	1.8
Start - Average Wind Speed:	1
Start - Cloud Cover (%):	30
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	

END Weather Details:

Time Out:	21:36
End - Temperature:	76.8
End - Wind Direction From (select one):	N/A
End - Low Wind Speed:	0
End - High Wind Speed:	0
End - Average Wind Speed:	0
End - Cloud Cover (%):	0
End - Precipitation (select one):	None
End - Visibility (select one):	Fair
End - Notes (if applicable):	Clear for night survey
Total Hours:	

Project Location (description):	

Notes	Stopped at 33.2271656, -116.9453890 and set up acoustic equipment at 2000. SM4 unit started collecting at 2003. About quarter moonlight.
Observation Type:	Amphibian, Bird, Mammal, Reptile

Photos



Amphibian

Amphibian Observation: (1 Item)

Amphibian Observation: - 1. 1 record

Amphibian (Common or Scientific Name):	Western Toad; Anaxyrus boreas
Is the Amphibian Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Amphibian:	
Notes:	

Bird

Bird Observation: (18 Items)

Bird Observation: - 1. 1 record

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no

Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 2. 1 record

Bird (Common or Scientific Name):	Ash-throated Flycatcher; Myiarchus cinerascens; ATFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record

Bird (Common or Scientific Name):	Turkey Vulture; Cathartes aura; TUVU
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	2
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 4. 1 record

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:	

Bird Observation: - 5. 1 record

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record

Bird (Common or Scientific Name):	Oak Titmouse; Baeolophus inornatus; OATI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record

Bird (Common or Scientific Name):	Acorn Woodpecker; Melanerpes formicivorus; ACWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record

Bird (Common or Scientific Name):	Anna's Hummingbird; Calypte anna; ANHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record

Bird (Common or Scientific Name):	Bewick's Wren; Thryomanes bewickii; BEWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 13. 1 record

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:

Bird Observation: - 14. 1 record

Bird (Common or Scientific Name):	California Quail; Callipepla californica; CAQU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record

Bird (Common or Scientific Name):	Common Poorwill; Phalaenoptilus nuttallii; COPO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 16. 1 record

Bird (Common or Scientific Name):	Common Raven; Corvus corax; CORA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 17. 1 record

Bird (Common or Scientific Name):	California Scrub-Jay; Aphelocoma californica; CASJ
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 18. 1 record

Bird (Common or Scientific Name):	Oak Titmouse; Baeolophus inornatus; OATI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Mammal

Mammal Observation: (1 Item)

Mammal Observation: - 1. 1 record

Mammal (Common or Scientific Name):	Desert Cottontail; Sylvilagus audubonii
Is the Mammal Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Mammal:	
Notes:	

Reptile

Reptile Observation: (1 Item)

Reptile Observation: - 1. 1 record

Reptile (Common or Scientific Name):	Western Rattlesnake; Crotalus oreganus
Is the Reptile Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Reptile:	
Notes:	

Bat Echo Meter Survey Details

Survey Station/Location (number)	1
Survey Duration (minutes)	90

General Notes (detectability, habitat, etc.)	
Photos	

Observation (8 Items)

Observation - 1. California myotis (Myotis californicus)

Species Observed	California myotis (Myotis californicus)
Observation Notes	2053, 5/5

Observation - 2. Pallid bat (Antrozous pallidus)

Species Observed	Pallid bat (Antrozous pallidus)
Observation Notes	2054, 45/41

Observation - 3. Western small-footed myotis (Myotis ciliolabrum)

Species Observed	Western small-footed myotis (Myotis ciliolabrum)
Observation Notes	2057, 35/48

Observation - 4. California myotis (Myotis californicus)

Species Observed	California myotis (Myotis californicus)
Observation Notes	2105, 31/35

Observation - 5. Western small-footed myotis (Myotis ciliolabrum)

Species Observed	Western small-footed myotis (Myotis ciliolabrum)
Observation Notes	2111, 32/64

Observation - 6. Western yellow bat (Lasiurus xanthinus)

Species Observed	Western yellow bat (Lasiurus xanthinus)
Observation Notes	2111, 1/2

Observation - 7. Hoary bat (Lasiurus cinereus)

Species Observed	Hoary bat (Lasiurus cinereus)
Observation Notes	2128, 1/2

Observation - 8. Pocketed free-tail (Nyctinomops femorosaccus)

Species Observed	Pocketed free-tail (Nyctinomops femorosaccus)
Observation Notes	2128, 1/3

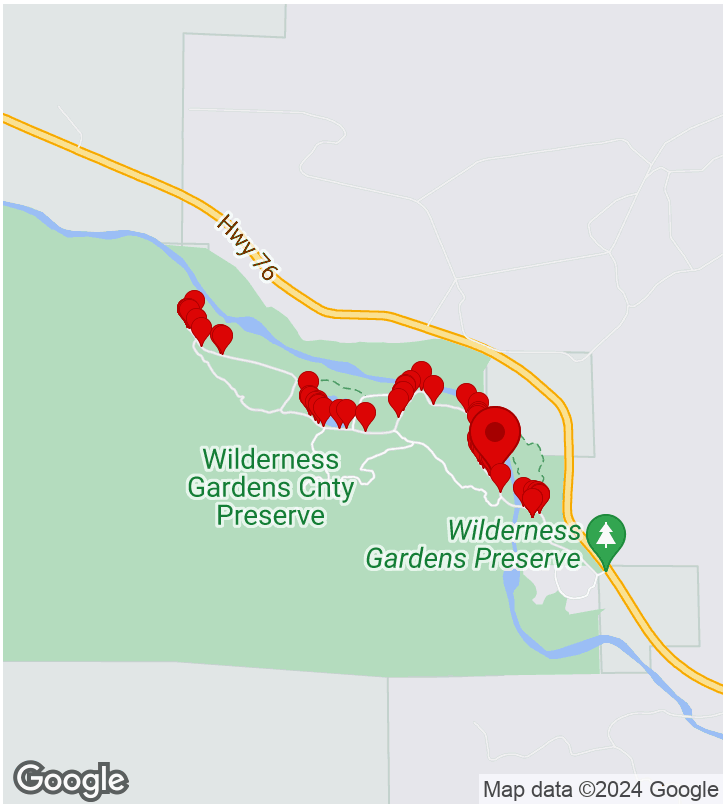
2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Pallid/Townsends Bat

8/12/2024, 7:13:22 AM UTC





CREATED

7/12/2024, 2:07:10 AM UTC
by SC Fulcrum18

UPDATED

8/12/2024, 7:13:22 AM UTC
by SC Fulcrum11

LOCATION

33.349588, -117.028665

Parent Form

Project Name:	TMP Monitoring ▸ Pallid/Townsends Bat
Preserve/Park Name	Wilderness Gardens
General Survey Type	TMP Monitoring
Specific Survey Type	Bat Echo Meter Survey
Observer/Surveyor:	Karla Alcaraz
Assistant Observer/Surveyor:	Amy Orduño-Baez
Date:	July 11, 2024

START Weather Details:

Start - Time:	19:07
Start - Temperature:	79.7
Start - Wind Direction From (select one):	NW
Start - Low Wind Speed:	1.2
Start - High Wind Speed:	4.6
Start - Average Wind Speed:	1.7
Start - Cloud Cover (%):	0
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	Clear for night survey.

END Weather Details:

Time Out:	21:12
End - Temperature:	72.9
End - Wind Direction From (select one):	NW
End - Low Wind Speed:	1.1
End - High Wind Speed:	2.9
End - Average Wind Speed:	0.9
End - Cloud Cover (%):	0
End - Precipitation (select one):	None
End - Visibility (select one):	Good
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

Notes	
Observation Type:	Bird, Mammal, Reptile, Amphibian, Invertebrate

Photos



Amphibian

Amphibian Observation: (3 Items)

Amphibian Observation: - 1. 1 record

Amphibian (Common or Scientific Name):	American Bullfrog; Lithobates catesbeianus
Is the Amphibian Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Amphibian:	
Notes:	

Amphibian Observation: - 2. 1 record

Amphibian (Common or Scientific Name):	Western Toad; Anaxyrus boreas
Is the Amphibian Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Amphibian:	
Notes:	

Amphibian Observation: - 3. 1 record

Amphibian (Common or Scientific Name):	Baja California Treefrog; Pseudacris hypochondriaca
Is the Amphibian Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Amphibian:	
Notes:	

Bird

Bird Observation: (17 Items)

Bird Observation: - 1. 1 record

Bird (Common or Scientific Name):	Red-tailed Hawk; Buteo jamaicensis; RTHA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 2. 1 record

Bird (Common or Scientific Name):	Northern Mockingbird; Mimus polyglottos; NOMO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:

Bird Observation: - 4. 1 record

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record

Bird (Common or Scientific Name):	House Finch; Haemorhous mexicanus; HOFI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record

Bird (Common or Scientific Name):	American Robin; Turdus migratorius; AMRO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record

Bird (Common or Scientific Name):	Common Raven; Corvus corax; CORA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record

Bird (Common or Scientific Name):	Ash-throated Flycatcher; Myiarchus cinerascens; ATFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record

Bird (Common or Scientific Name):	Bewick's Wren; Thryomanes bewickii; BEWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record

Bird (Common or Scientific Name):	Acorn Woodpecker; Melanerpes formicivorus; ACWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	

Notes:	

Bird Observation: - 13. 1 record

Bird (Common or Scientific Name):	Phainopepla; Phainopepla nitens; PHAI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record

Bird (Common or Scientific Name):	American Kestrel; Falco sparverius; AMKE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 16. 1 record

Bird (Common or Scientific Name):	Great Horned Owl; Bubo virginianus; GHOW
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Bird Observation: - 17. 1 record

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Bird:	
Notes:	

Invertebrate

Invertebrate Observation: (4 Items)

Invertebrate Observation: - 1.

Invertebrate (Common or Scientific Name):	
Other Invertebrate Species	Wolf spider (Family Lycosidae)
Is the Invertebrate Sensitive ?	No
Is the Invertebrate Sensitive ?	
Sub-Species Info:	

Invertebrate Observation: - 2.

Invertebrate (Common or Scientific Name):	
Other Invertebrate Species	Pogonomyrmex rugosus
Is the Invertebrate Sensitive ?	No
Is the Invertebrate Sensitive ?	
Sub-Species Info:	

Invertebrate Observation: - 3.

Invertebrate (Common or Scientific Name):	
Other Invertebrate Species	Paruroctonus silvestrii
Is the Invertebrate Sensitive ?	No
Is the Invertebrate Sensitive ?	
Sub-Species Info:	

Invertebrate Observation: - 4.

Invertebrate (Common or Scientific Name):	
Other Invertebrate Species	Eleodes sp. (desert stink beetles)
Is the Invertebrate Sensitive ?	No
Is the Invertebrate Sensitive ?	
Sub-Species Info:	
Photo(s) of Invertebrate:	
Notes:	

Mammal

Mammal Observation: (2 Items)

Mammal Observation: - 1. 1 record

Mammal (Common or Scientific Name):	Desert Cottontail; Sylvilagus audubonii
Is the Mammal Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Mammal:	
Notes:	

Mammal Observation: - 2. 1 record

Mammal (Common or Scientific Name):	California Ground Squirrel; Ostospermophilus beecheyi
Is the Mammal Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Mammal:	
Notes:	

Reptile

Reptile Observation: (2 Items)

Reptile Observation: - 1. 1 record

Reptile (Common or Scientific Name):	Western Fence Lizard; Sceloporus occidentalis
Is the Reptile Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Reptile:	
Notes:	

Reptile Observation: - 2. 1 record

Reptile (Common or Scientific Name):	Western Rattlesnake; Crotalus oreganus
Is the Reptile Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Reptile:	
Notes:	

Bat Echo Meter Survey Details

Survey Station/Location (number)	Wilderness Gardens
Survey Duration (minutes)	60
General Notes (detectability, habitat, etc.)	SM started collecting data at 8000. First bats seen at 8008.
Photos	

Observation (44 Items)

Observation - 1. Silver-haired bat (Lasionycteris noctivagans)

Species Observed	Silver-haired bat (Lasionycteris noctivagans)
Observation Notes	24/30 2009

Observation - 2. Big brown bat (Eptesicus fuscus)

Species Observed	Big brown bat (Eptesicus fuscus)
Observation Notes	40/124 2010, 18/89 2010, 15/76 2010, 6/40 2010, observed 3 plus

Observation - 3. Silver-haired bat (Lasionycteris noctivagans)

Species Observed	Silver-haired bat (Lasionycteris noctivagans)
Observation Notes	2 observed 2011 16/28, 4/5, 15/36, 6/13, 69/115, 77/134, 13/19

Observation - 4. Big brown bat (Eptesicus fuscus)

Species Observed	Big brown bat (Eptesicus fuscus)
Observation Notes	2012 2 observed

Observation - 5. Mexican free-tailed bat (Tadarida brasiliensis)

Species Observed	Mexican free-tailed bat (Tadarida brasiliensis)
Observation Notes	11/20 2013, 4/4 2013

Observation - 6. Mexican free-tailed bat (Tadarida brasiliensis)

Species Observed	Mexican free-tailed bat (Tadarida brasiliensis)
Observation Notes	2/2 likely noise 2027

Observation - 7. Pallid bat (Antrozous pallidus)

Species Observed	Pallid bat (Antrozous pallidus)
Observation Notes	2/3 2028

Observation - 8. Big brown bat (Eptesicus fuscus)

Species Observed	Big brown bat (Eptesicus fuscus)
Observation Notes	36/103 2029

Observation - 9. Big brown bat (Eptesicus fuscus)

Species Observed	Big brown bat (Eptesicus fuscus)
Observation Notes	2/9 2030

Observation - 10. California myotis (Myotis californicus)

Species Observed	California myotis (Myotis californicus)
Observation Notes	10/12 2031

Observation - 11. Western small-footed myotis (Myotis ciliolabrum)

Species Observed	Western small-footed myotis (Myotis ciliolabrum)
Observation Notes	2031 46/73

Observation - 12. Yuma myotis (Myotis yumanensis)

Species Observed	Yuma myotis (Myotis yumanensis)
Observation Notes	2/3, 56/68, 20/15, 11/17, 9/28 2033

Observation - 13. Yuma myotis (Myotis yumanensis)

Species Observed	Yuma myotis (Myotis yumanensis)
Observation Notes	33/50 2037

Observation - 14. Yuma myotis (Myotis yumanensis)

Species Observed	Yuma myotis (Myotis yumanensis)
Observation Notes	8/16 2038

Observation - 15. Silver-haired bat (Lasionycteris noctivagans)

Species Observed	Silver-haired bat (Lasionycteris noctivagans)
Observation Notes	36/42 2040

Observation - 16. Western yellow bat (Lasiurus xanthinus)

Species Observed	Western yellow bat (Lasiurus xanthinus)
Observation Notes	18/37 2045

Observation - 17. Silver-haired bat (Lasionycteris noctivagans)

Species Observed	Silver-haired bat (Lasionycteris noctivagans)
Observation Notes	6/7 2046

Observation - 18. Hoary bat (Lasiurus cinereus)

Species Observed	Hoary bat (Lasiurus cinereus)

Observation Notes	1/2 likely noise 2047

Observation - 19. Big brown bat (Eptesicus fuscus)

Species Observed	Big brown bat (Eptesicus fuscus)
Observation Notes	3/8, 3/5 2051

Observation - 20. Silver-haired bat (Lasionycteris noctivagans)

Species Observed	Silver-haired bat (Lasionycteris noctivagans)
Observation Notes	11/16 2059

Observation - 21. Yuma myotis (Myotis yumanensis)

Species Observed	Yuma myotis (Myotis yumanensis)
Observation Notes	54/83 2059

Observation - 22. Greater mastiff bat (Eumops perotis)

Species Observed	Greater mastiff bat (Eumops perotis)
Observation Notes	2102 4/7, 4/5

Observation - 23. Mexican free-tailed bat (Tadarida brasiliensis)

Species Observed	Mexican free-tailed bat (Tadarida brasiliensis)
Observation Notes	17/37 2104

Observation - 24. California myotis (Myotis californicus)

Species Observed	California myotis (Myotis californicus)
Observation Notes	1/4 2105

Observation - 25. Yuma myotis (Myotis yumanensis)

Species Observed	Yuma myotis (Myotis yumanensis)
Observation Notes	29/75 2105

Observation - 26. Pallid bat (Antrozous pallidus)

Species Observed	Pallid bat (Antrozous pallidus)
Observation Notes	32/70 2106

Observation - 27. Big brown bat (Eptesicus fuscus)

Species Observed	Big brown bat (Eptesicus fuscus)
Observation Notes	41/66, 14/29 2106

Observation - 28. Mexican free-tailed bat (Tadarida brasiliensis)

Species Observed	Mexican free-tailed bat (Tadarida brasiliensis)
Observation Notes	38/64, 19/32 2107

Observation - 29. California myotis (Myotis californicus)

Species Observed	California myotis (Myotis californicus)
Observation Notes	8/11 2033

Observation - 30. Cave myotis (Myotis velifer)

Species Observed	Cave myotis (Myotis velifer)
Observation Notes	2035 1/2 likely noise

Observation - 31. Western yellow bat (Lasiurus xanthinus)

Species Observed	Western yellow bat (Lasiurus xanthinus)
Observation Notes	2036 2/2

Observation - 32. Western yellow bat (Lasiurus xanthinus)

Species Observed	Western yellow bat (Lasiurus xanthinus)
Observation Notes	2/2 2037

Observation - 33. Silver-haired bat (Lasionycteris noctivagans)

Species Observed	Silver-haired bat (Lasionycteris noctivagans)
Observation Notes	2042 1/3

Observation - 34. Hoary bat (Lasiurus cinereus)

Species Observed	Hoary bat (Lasiurus cinereus)
Observation Notes	2042 1/3

Observation - 35. Silver-haired bat (Lasionycteris noctivagans)

Species Observed	Silver-haired bat (Lasionycteris noctivagans)
Observation Notes	2043 1/2

Observation - 36. Mexican free-tailed bat (Tadarida brasiliensis)

Species Observed	Mexican free-tailed bat (Tadarida brasiliensis)
Observation Notes	8/19 2043

Observation - 37. Silver-haired bat (Lasionycteris noctivagans)

Species Observed	Silver-haired bat (Lasionycteris noctivagans)
Observation Notes	2043 7/15

Observation - 38. Hoary bat (Lasiurus cinereus)

Species Observed	Hoary bat (Lasiurus cinereus)
Observation Notes	2043 1/3

Observation - 39. Silver-haired bat (Lasionycteris noctivagans)

Species Observed	Silver-haired bat (Lasionycteris noctivagans)
Observation Notes	2045 3/3

Observation - 40. Silver-haired bat (Lasionycteris noctivagans)

Species Observed	Silver-haired bat (Lasionycteris noctivagans)
Observation Notes	8/11 2045

Observation - 41. Mexican free-tailed bat (Tadarida brasiliensis)

Species Observed	Mexican free-tailed bat (Tadarida brasiliensis)

Observation Notes	2049 1/2

Observation - 42. California myotis (Myotis californicus)

Species Observed	California myotis (Myotis californicus)
Observation Notes	2050 1/2

Observation - 43. Western yellow bat (Lasiurus xanthinus)

Species Observed	Western yellow bat (Lasiurus xanthinus)
Observation Notes	1/2 2057 Likely noise

Observation - 44. Western yellow bat (Lasiurus xanthinus)

Species Observed	Western yellow bat (Lasiurus xanthinus)
Observation Notes	2103 1/3

I-2 Threat Assessment Forms

Scientific Name: Antrozous pallidus / Corynorhinus townsendii *Common Name: Pallid Bat / Townsend's big-eared bat*

MSP Occurrence ID: *New MSP Occurrence? Yes:____, No:____, Unknown:____*

Sample Point #: *New Sample Point? Yes:____, No:____, Unknown:____*

Occurrence Name: *CNDDB EO#:* *Translocated? Yes:____, No:____, Unknown:____*

Preserve: Mt Olympus

Land Owner: County of San Diego, DPR *Land Manager:*

Surveyors & Affiliation: Jaclyn Catino-Davenport (ESA), Karla Alcaraz (ESA)

Date: July 3, 2024 *Time Start: 1929*

I. SAMPLE PLOT INFORMATION. *Count # plants in 10m radius sample plot, see p. 4 for category definitions for phenology, herbivory, disease & stunted growth. Record notes on p. 3.*

Plants/Sample Plot:_____Exact:_____Estimate:_____Uncertainty?_____Sample plot radius_____m

For both exact counts and estimates, indicate: Counted/estimated indiv. plants:_____OR Counted/estimated clusters of plants:_____

For geophytes: are counts of flowering or vegetative individuals? Flowering:_____Vegetative:_____

Phenology in Sample Plot (Categories 1-6): Vegetative:_____Flowering:_____Fruiting:_____Dead:_____

Evidence in Sample Plot (Categories 1-6) of: Herbivory:_____Disease:_____Stunted Growth:_____

Is Sample Plot within Current Mapped Extent?_____Yes_____No

II. SAMPLE PLOT LOCATION & SITE PHOTOMONITORING - *consult SDMMP list of GPS coordinates for plot center and photo locations. Enter here only if new habitat plot location or to make a correction to coordinates in list provided.*

GPS/Smartphone Accuracy: +/-_____m Datum:_____(NAD83 Recommended) Coord. Syst: UTM:___State Plane:___

Center of Plot Coord: E:_____N:_____No Change:_____New:_____Correction:_____

Camera type:_____PhotoCoord: E:_____N:_____No Change:____New:_____Correction:_____

Location 1: _____ Direction (facing) _____ Height (m) _____ Camera Angle _____ Up or Down _____ Photo #

E:_____N:_____ Photo Location 2 [Coordinates] _____ Direction (facing) _____ Height (m) _____ Camera Angle _____ Up or Down _____ Photo #

III. SAMPLE PLOT ASSESSMENT - *Assess habitat covariates in **10m radius sample t plot**. Vegetation alliance can be assigned using San Diego vegetation key (AECOM 2012) in office or field using "Associated Species" data. See page 4 for mammal activity categories. Record any notes on p. 3.*

SANDAG 2012 Vegetation Alliance/Association: _____

Cover Classes: 1 (0%); 2 (>0 - <10%); 3 (10 to <25%); 4 (25 to <50%); 5 (50% to <75%); 6 (≥75%)

Cryptogamic Crust Cover:_____(category) Thatch (Non-Native Grass) Cover:_____(category)

Thatch Depth categories: 1 (no thatch); 2 (<1 cm); 3 (1 to <5 cm); 4 (5 to <10 cm); 5 (10 to <15 cm); 6 (15 to < 20 cm); 7 (≥ 20 cm)

Thatch Depth: Ave._____(category) Thatch Depth: Max:_____cm

Dead Standing Biomass? Yes:_____No:_____If yes, species:_____Cover Class (1-6):_____Ave. Height:_____cm

Mammal Species Activity Categories (1-4): Feral Pig Activity:_____Ground Squirrel Activity:_____Gopher Activity: _____

Habitat plot representative of maximum extent? Yes:_____No:_____If no, note differences on Page 3.

IV. ASSOCIATED SPECIES IN SAMPLE PLOT ***Record cover estimate, not cover category***. *See % cover diagram, p. 5. Record substrate, total veg & total cover at bottom of form. Total cover should be at least 100% to account for entire plot. Record notes on p. 3.*

Species	% Cover	Species	% Cover

Bare Ground:_____Cryptogamic Soil Crust:_____ Rock:_____ Litter:_____

Water:_____ Total Live Vegetation:_____ Dead Shrubs:_____ Total Cover:_____(∑ =100%)

Scientific Name: Antrozous pallidus / Corynorhinus townsendii	*MSP Occurrence ID:*
Preserve: Mt. Olympus	*Occurrence Name:*
Date: July 3, 2024	*Surveyors & Affiliation/Agency: Jaclyn Catino-Davenport (ESA), Karla Alcaraz (ESA)*

V. CURRENT MAPPED EXTENT INFORMATION. *Count or estimate number of plants in mapped extent. Area can be calculated based on GIS perimeter mapping or visual mapping on aerial photo in the office.*

Plants/Current Mapped Extent:_____, Exact Count:_____, Estimate (1000s, 10k):_____, Uncertainty?_____

For both exact counts and estimates, indicate: Counted/estimated individual plants:_____OR Counted/estimated clusters of plants:_____

For geophytes: are counts of flowering or vegetative individuals? Flowering:_____Vegetative:_____

Area of Current Mapped Extent:_____Units:_____Exact (GPS mapping):_____Estimate:_____

Perimeter of current extent determined by walking it or estimated by other means (mapped on aerials)? Walked:_____Other (describe p. 3):_____

Species in Maximum Extent? Yes:_____No:_____If not, why

VI. THREATS ASSESSMENT IN MAXIMUM EXTENT - *Assess threats within the **occurrence's maximum extent** (cumulative extent over years of monitoring) **plus 10-m surrounding buffer**. Record notes on p. 3.*

Surrounding Land Use/Activity at or Adjacent to Site: Open Space, Rural Development

Disturbance Classes (rank each threat as 1-7): 1 = no sign of disturbance, 2 = disturbance in 10m surrounding buffer but not within maximum extent, 3 = disturbance occurs in >0 % to <10% of area within maximum extent, 4 = disturbance in 10% to <25% of maximum extent, 5 = disturbance in 25 to < 50% of maximum extent, 6 = disturbance occurs within 50 to <75% of maximum exent, and 7 = disturbance occurs within ≥75% of maximum extent.

Non-Native Forbs	3	Feral Pig Activity	1	Erosion	4
Non-Native Grasses	3	Trampling	1	Urban Runoff	1
Non-Native Woody Plants	3	Vandalism	1	Slope Movement	1
Competitive Native Plants	3	Grazing (Y/N/UNK)	Unknown	Soil Compaction	1
Dumping/Trash	1	Historic Agriculture (Y/N/Unk)	Unknown		
Encampments	1	Altered Hydrology	1		

Fuel Modification Zone/Fire Break 1

Road Construction/Maintenance: 1 If Observed, Briefly Describe: _____

Vegetation Clearing: 3 If Observed, Briefly Describe:_____

Restoration Project (Impacts): 1 If Observed, Briefly Describe: _____

ORV Activity 1 If Observed, List Type(s) of ORV Activity: _____

Evidence of Recent Fire 1 If Sign of Recent Fire: Year Burned?____OR Unknown Burn Year? Unknown

Disturbance from Trails (authorized & unauthorized) 3 If Trails are Present, are they Authorized (circle one)? ☐ Yes / ☑ No / ☐ Both / ☐ Unknown

Type of Trail Use (Yes/No)? Hiking: Yes Biking: Yes Equestrian: No Dog: No Service Vehicles: Yes Other (Describe):_____

Illegal Trail Use? ☐ Yes ☑ No ☐ Unknown

Describe:_____ Other Disturbance? List & Rank: _____

Collection? Yes:_____No:_____Collector:_____

Collection #:_____Herbarium:_____Species Collected: _____

Collection 2, Collector:_____(enter additional collections on p. 3)

Collection #:_____Herbarium:_____Species Collected: _____

Occurrence ID: _____ Species: Pallid Bat, Townsend's Big-eared Bat Date: July 3, 2024

VI. MANAGEMENT RECOMMENDATIONS

Continue to reduce potential illegal access to closed trails.

Reduce non-native plant species along trails, roads, disturbed areas that to provide more foraging opportunities for bats.

Clean up/remove fallen trees along trails.

VII. MANAGEMENT ACTIONS IN LAST YEAR

Stopping illegal access where trails are coming in from BLM land at the top of the Preserve.

VIII. CNDDB SPECIES DETECTED & NOTES

List any sensitive plant or animal species to add to the CNDDB:

N/A

Time Finish: 2151

Categories of % Individuals in Sample Plot for Phenological Stages (Vegetative, Flowering, Fruiting & Dead) and for Evidence of Herbivory, Disease and Stunted Growth.

1 = 0% (not detected)

2 = >0% to <10%

3 = 10% to <25%

4 = 25% to <50%

5 = 50% to <75%

6 = ≥75%

% Cover Class Definitions within Sample Plot for Cryptogamic Crust and Thatch.

See page 5 for illustrations of different cover classes.

1 = 0% cover (not detected)

2 = >0% to <10% cover

3 = 10% to <25% cover

4 = 25% to <50% cover

5 = 50% to <75% cover

6 = ≥75% cover

Feral Pig Activity within Sample Plot:

1 = No feral pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) detected.

2 = Signs of pig activity (rooting, wallowing, vegetation destruction) in sample plot appear months old.

3 = Signs of recent pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) in adjacent area but not within sample plot.

4 = Recent signs of pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pigs) within sample plot.

Ground Squirrel Activity within Sample Plot:

1 = No ground squirrel burrows detected.

2 = Burrows and/or ground squirrels observed in adjacent area but not within sample plot.

3 = Single squirrel or burrow seen within sample plot.

4 = Multiple burrows and/or squirrels seen within sample plot.

Botta's Pocket Gopher Activity within Sample Plot:

1 = No pocket gopher mounds detected.

2 = Mounds or gophers observed in adjacent area but not within sample plot.

3 = <10 mounds observed within sample plot.

4 = ≥10 mounds or one or more gophers seen within sample plot.

Disturbance Categories within the Maximum Extent:

1 = No sign of disturbance within maximum extent or in adjacent 10 m buffer.

2 = Disturbance does not occur within maximum extent but is detected within the surrounding 10 m buffer area.

3 = Disturbance present in >0% to <10% of area within maximum extent.

4 = Disturbance occurs in 10% to <25% of area within maximum extent.

5 = Disturbance occurs in 25% to <50% of area within maximum extent.

6 = Disturbance occurs 50% to <75% of area within maximum extent.

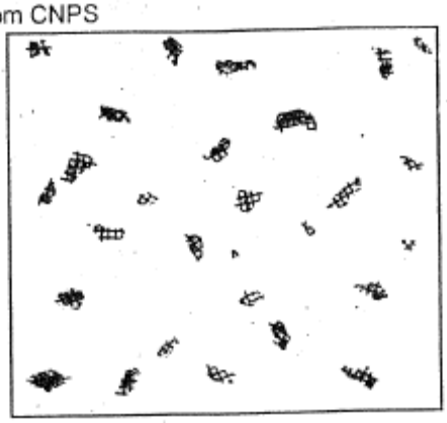
7 = Disturbance occurs ≥75% of area within maximum extent.

CNPS Cover Diagram

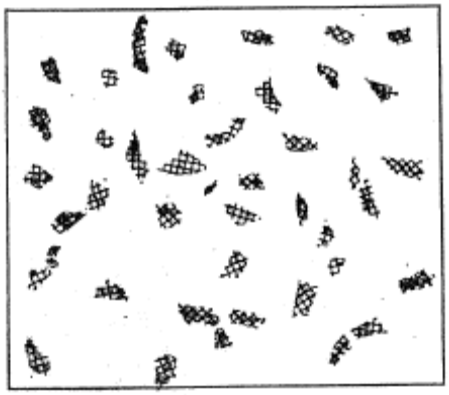
Cover Diagrams from CNPS



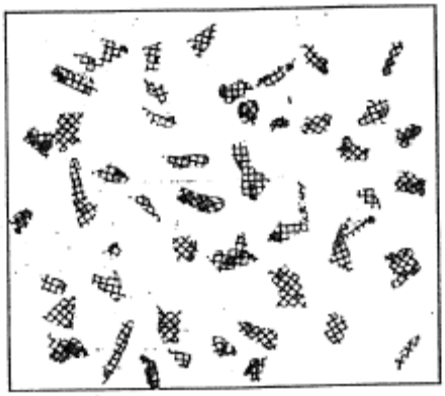
1%



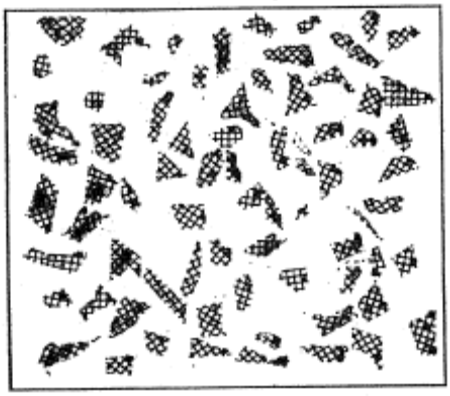
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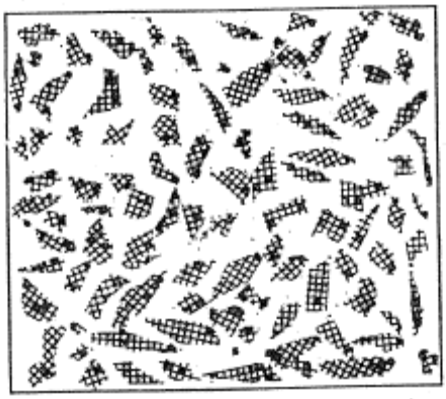
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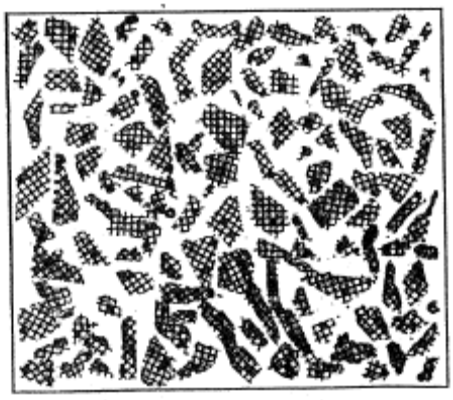
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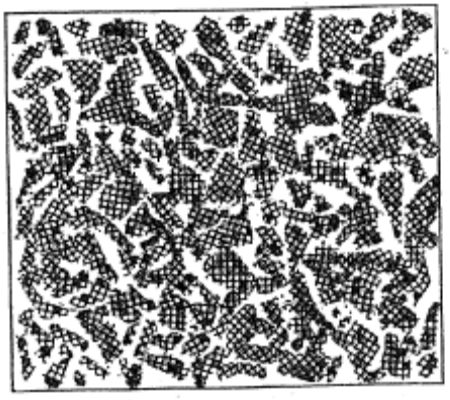
25%



35%



50%



75%

Scientific Name: Antrozous pallidus / Corynorhinus townsendii *Common Name: Pallid Bat / Townsend's big-eared bat*

MSP Occurrence ID: *New MSP Occurrence? Yes:____, No:____, Unknown:____*

Sample Point #: *New Sample Point? Yes:____, No:____, Unknown:____*

Occurrence Name: *CNDDB EO#:* *Translocated? Yes:____, No:____, Unknown:____*

Preserve: Hellhole Canyon

Land Owner: County of San Diego, DPR *Land Manager:*

Surveyors & Affiliation: Jaclyn Catino-Davenport (ESA), Karla Alcaraz (ESA)

Date: July 10, 2024 *Time Start: 1921*

I. SAMPLE PLOT INFORMATION. *Count # plants in 10m radius sample plot, see p. 4 for category definitions for phenology, herbivory, disease & stunted growth. Record notes on p. 3.*

Plants/Sample Plot:_____Exact:_____Estimate:_____Uncertainty?_____Sample plot radius_____m

For both exact counts and estimates, indicate: Counted/estimated indiv. plants:_____OR Counted/estimated clusters of plants:_____

For geophytes: are counts of flowering or vegetative individuals? Flowering:_____Vegetative:_____

Phenology in Sample Plot (Categories 1-6): Vegetative:_____Flowering:_____Fruiting:_____Dead:_____

Evidence in Sample Plot (Categories 1-6) of: Herbivory:_____Disease:_____Stunted Growth:_____

Is Sample Plot within Current Mapped Extent?_____Yes_____No

II. SAMPLE PLOT LOCATION & SITE PHOTOMONITORING - *consult SDMMP list of GPS coordinates for plot center and photo locations. Enter here only if new habitat plot location or to make a correction to coordinates in list provided.*

GPS/Smartphone Accuracy: +/-_____m Datum:_____(NAD83 Recommended) Coord. Syst: UTM:___State Plane:___

Center of Plot Coord: E:_____N:_____No Change:_____New:_____Correction:_____

Camera type:_____PhotoCoord: E:_____N:_____No Change:____New:_____Correction:_____

Location 1: _____ Direction (facing) _____ Height (m) _____ Camera Angle _____ Up or Down _____ Photo #

E:_____N:_____ Photo Location 2 [Coordinates] _____ Direction (facing) _____ Height (m) _____ Camera Angle _____ Up or Down _____ Photo #

III. SAMPLE PLOT ASSESSMENT - *Assess habitat covariates in **10m radius sample t plot**. Vegetation alliance can be assigned using San Diego vegetation key (AECOM 2012) in office or field using "Associated Species" data. See page 4 for mammal activity categories. Record any notes on p. 3.*

SANDAG 2012 Vegetation Alliance/Association: _____

Cover Classes: 1 (0%); 2 (>0 - <10%); 3 (10 to <25%); 4 (25 to <50%); 5 (50% to <75%); 6 (≥75%)

Cryptogamic Crust Cover:_____(category) Thatch (Non-Native Grass) Cover:_____(category)

Thatch Depth categories: 1 (no thatch); 2 (<1 cm); 3 (1 to <5 cm); 4 (5 to <10 cm); 5 (10 to <15 cm); 6 (15 to < 20 cm); 7 (≥ 20 cm)

Thatch Depth: Ave._____(category) Thatch Depth: Max:_____cm

Dead Standing Biomass? Yes:_____No:_____If yes, species:_____Cover Class (1-6):_____Ave. Height:_____cm

Mammal Species Activity Categories (1-4): Feral Pig Activity:_____Ground Squirrel Activity:_____Gopher Activity: _____

Habitat plot representative of maximum extent? Yes:_____No:_____If no, note differences on Page 3.

IV. ASSOCIATED SPECIES IN SAMPLE PLOT ***Record cover estimate, not cover category***. *See % cover diagram, p. 5. Record substrate, total veg & total cover at bottom of form. Total cover should be at least 100% to account for entire plot. Record notes on p. 3.*

Species	% Cover	Species	% Cover

Bare Ground:_____Cryptogamic Soil Crust:_____ Rock:_____ Litter:_____

Water:_____ Total Live Vegetation:_____ Dead Shrubs:_____ Total Cover:_____(∑ =100%)

Scientific Name: Antrozous pallidus / Corynorhinus townsendii *MSP Occurrence ID:*

Preserve: Hellhole Canyon *Occurrence Name:*

Date: July 10, 2024 *Surveyors & Affiliation/Agency: Jaclyn Catino-Davenport (ESA), Karla Alcaraz (ESA)*

V. CURRENT MAPPED EXTENT INFORMATION. *Count or estimate number of plants in mapped extent. Area can be calculated based on GIS perimeter mapping or visual mapping on aerial photo in the office.*

Plants/Current Mapped Extent:_____, Exact Count:_____, Estimate (1000s, 10k):_____, Uncertainty?_____

For both exact counts and estimates, indicate: Counted/estimated individual plants:_____OR Counted/estimated clusters of plants:_____

For geophytes: are counts of flowering or vegetative individuals? Flowering:_____Vegetative:_____

Area of Current Mapped Extent:_____Units:_____Exact (GPS mapping):_____Estimate:_____

Perimeter of current extent determined by walking it or estimated by other means (mapped on aerials)? Walked:_____Other (describe p. 3):_____

Species in Maximum Extent? Yes:_____No:_____If not, why

VI. THREATS ASSESSMENT IN MAXIMUM EXTENT - *Assess threats within the **occurrence's maximum extent** (cumulative extent over years of monitoring) **plus 10-m surrounding buffer**. Record notes on p. 3.*

Surrounding Land Use/Activity at or Adjacent to Site: Rural Development, Open Space

Disturbance Classes (rank each threat as 1-7): 1 = no sign of disturbance, 2 = disturbance in 10m surrounding buffer but not within maximum extent, 3 = disturbance occurs in >0 % to <10% of area within maximum extent, 4 = disturbance in 10% to <25% of maximum extent, 5 = disturbance in 25 to < 50% of maximum extent, 6 = disturbance occurs within 50 to <75% of maximum exent, and 7 = disturbance occurs within ≥75% of maximum extent.

Non-Native Forbs	3	Feral Pig Activity	1	Erosion	3
Non-Native Grasses	3	Trampling	1	Urban Runoff	1
Non-Native Woody Plants	3	Vandalism	1	Slope Movement	1
Competitive Native Plants	3	Grazing (Y/N/UNK)	Unknown	Soil Compaction	1
Dumping/Trash	1	Historic Agriculture (Y/N/Unk)	Unknown		
Encampments	1	Altered Hydrology	1		

Fuel Modification Zone/Fire Break 1

Road Construction/Maintenance: 1 If Observed, Briefly Describe: _____

Vegetation Clearing: 3 If Observed, Briefly Describe:_____

Restoration Project (Impacts): 1 If Observed, Briefly Describe: _____

ORV Activity 1 If Observed, List Type(s) of ORV Activity: _____

Evidence of Recent Fire 1 If Sign of Recent Fire: Year Burned?____OR Unknown Burn Year? Unknown

Disturbance from Trails (authorized & unauthorized) 3 If Trails are Present, are they Authorized (circle one)? ☐ Yes / ☐ No / ☑ Both / ☐ Unknown

Type of Trail Use (Yes/No)? Hiking: Yes Biking: Yes Equestrian: Yes Dog: Yes Service Vehicles: Yes Other (Describe): Escondido Canal

Illegal Trail Use? ☐ Yes ☑ No ☐ Unknown

Describe: _____ Other Disturbance? List & Rank:

Collection? Yes:_____No:_____Collector:_____

Collection #:_____Herbarium:_____Species Collected: _____

Collection 2, Collector:_____(enter additional collections on p. 3)

Collection #:_____Herbarium:_____Species Collected: _____

Occurrence ID: _____ Species: Pallid Bat, Townsend's Big-eared Bat Date: July 10, 2024

VI. MANAGEMENT RECOMMENDATIONS

Continue to reduce potential illegal access to closed trails.

VII. MANAGEMENT ACTIONS IN LAST YEAR

Reducing unauthorized/illegal access to closed trails.

VIII. CNDDB SPECIES DETECTED & NOTES

List any sensitive plant or animal species to add to the CNDDB:

Time Finish: 2136

Categories of % Individuals in Sample Plot for Phenological Stages (Vegetative, Flowering, Fruiting & Dead) and for Evidence of Herbivory, Disease and Stunted Growth.

1 = 0% (not detected)

2 = >0% to <10%

3 = 10% to <25%

4 = 25% to <50%

5 = 50% to <75%

6 = ≥75%

% Cover Class Definitions within Sample Plot for Cryptogamic Crust and Thatch.

See page 5 for illustrations of different cover classes.

1 = 0% cover (not detected)

2 = >0% to <10% cover

3 = 10% to <25% cover

4 = 25% to <50% cover

5 = 50% to <75% cover

6 = ≥75% cover

Feral Pig Activity within Sample Plot:

1 = No feral pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) detected.

2 = Signs of pig activity (rooting, wallowing, vegetation destruction) in sample plot appear months old.

3 = Signs of recent pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) in adjacent area but not within sample plot.

4 = Recent signs of pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pigs) within sample plot.

Ground Squirrel Activity within Sample Plot:

1 = No ground squirrel burrows detected.

2 = Burrows and/or ground squirrels observed in adjacent area but not within sample plot.

3 = Single squirrel or burrow seen within sample plot.

4 = Multiple burrows and/or squirrels seen within sample plot.

Botta's Pocket Gopher Activity within Sample Plot:

1 = No pocket gopher mounds detected.

2 = Mounds or gophers observed in adjacent area but not within sample plot.

3 = <10 mounds observed within sample plot.

4 = ≥10 mounds or one or more gophers seen within sample plot.

Disturbance Categories within the Maximum Extent:

1 = No sign of disturbance within maximum extent or in adjacent 10 m buffer.

2 = Disturbance does not occur within maximum extent but is detected within the surrounding 10 m buffer area.

3 = Disturbance present in >0% to <10% of area within maximum extent.

4 = Disturbance occurs in 10% to <25% of area within maximum extent.

5 = Disturbance occurs in 25% to <50% of area within maximum extent.

6 = Disturbance occurs 50% to <75% of area within maximum extent.

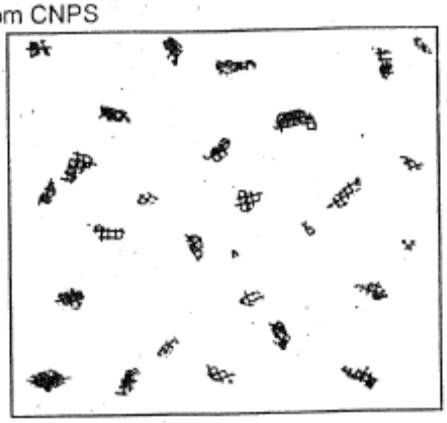
7 = Disturbance occurs ≥75% of area within maximum extent.

CNPS Cover Diagram

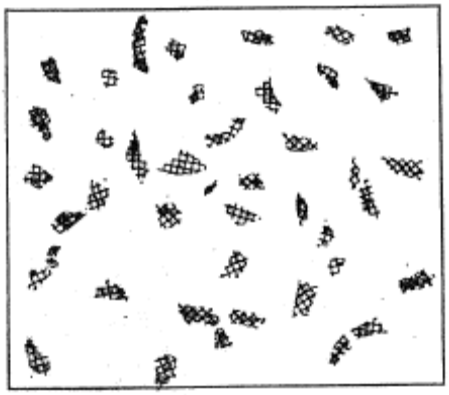
Cover Diagrams from CNPS



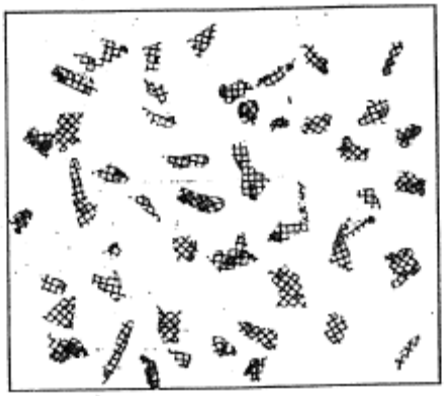
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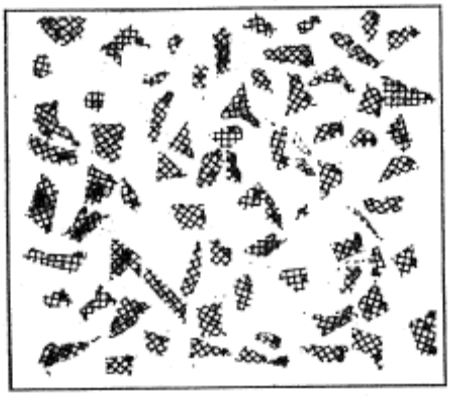
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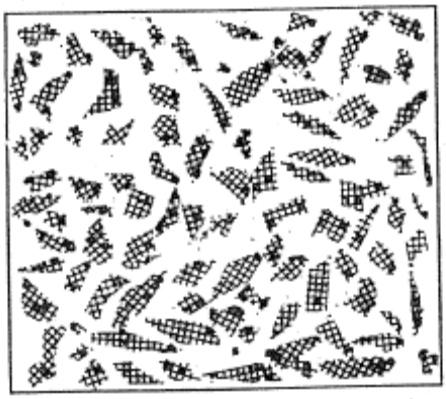
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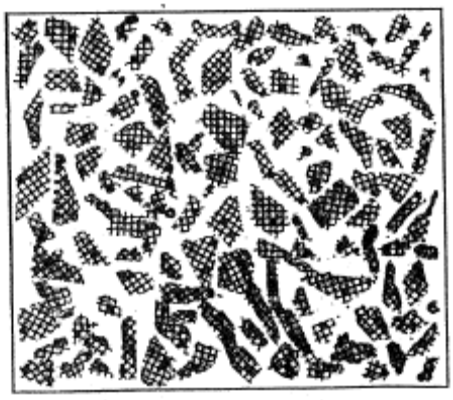
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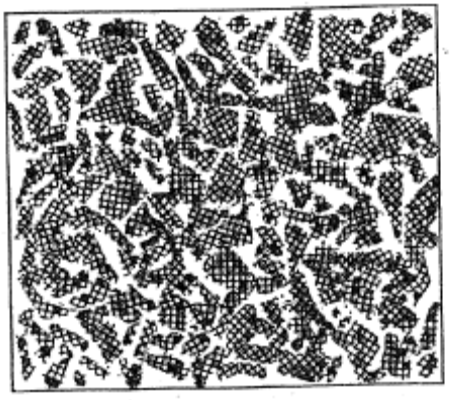
25%



35%



50%



75%

Scientific Name: Antrozous pallidus / Corynorhinus townsendii *Common Name: Pallid Bat / Townsend's big-eared bat*

MSP Occurrence ID: *New MSP Occurrence? Yes:____, No:____, Unknown:____*

Sample Point #: *New Sample Point? Yes:____, No:____, Unknown:____*

Occurrence Name: *CNDDB EO#:* *Translocated? Yes:____, No:____, Unknown:____*

Preserve: Wilderness Gardens

Land Owner: County of San Diego, DPR *Land Manager:*

Surveyors & Affiliation: Karla Alcaraz (ESA), Amy Orduño-Baez (ESA)

Date: July 11, 2024 *Time Start: 1907*

I. SAMPLE PLOT INFORMATION. *Count # plants in 10m radius sample plot, see p. 4 for category definitions for phenology, herbivory, disease & stunted growth. Record notes on p. 3.*

Plants/Sample Plot:_____Exact:_____Estimate:_____Uncertainty?_____Sample plot radius_____m

For both exact counts and estimates, indicate: Counted/estimated indiv. plants:_____OR Counted/estimated clusters of plants:_____

For geophytes: are counts of flowering or vegetative individuals? Flowering:_____Vegetative:_____

Phenology in Sample Plot (Categories 1-6): Vegetative:_____Flowering:_____Fruiting:_____Dead:_____

Evidence in Sample Plot (Categories 1-6) of: Herbivory:_____Disease:_____Stunted Growth:_____

Is Sample Plot within Current Mapped Extent?_____Yes_____No

II. SAMPLE PLOT LOCATION & SITE PHOTOMONITORING - *consult SDMMP list of GPS coordinates for plot center and photo locations. Enter here only if new habitat plot location or to make a correction to coordinates in list provided.*

GPS/Smartphone Accuracy: +/-_____m Datum:_____(NAD83 Recommended) Coord. Syst: UTM:___State Plane:___

Center of Plot Coord: E:_____N:_____No Change:_____New:_____Correction:_____

Camera type:_____PhotoCoord: E:_____N:_____No Change:____New:_____Correction:_____

Location 1: _____ Direction (facing) _____ Height (m) _____ Camera Angle _____ Up or Down _____ Photo #

E:_____N:_____ Photo Location 2 [Coordinates] _____ Direction (facing) _____ Height (m) _____ Camera Angle _____ Up or Down _____ Photo #

III. SAMPLE PLOT ASSESSMENT - *Assess habitat covariates in* ***10m radius sample t plot****. Vegetation alliance can be assigned using San Diego vegetation key (AECOM 2012) in office or field using "Associated Species" data. See page 4 for mammal activity categories. Record any notes on p. 3.*

SANDAG 2012 Vegetation Alliance/Association: _____

Cover Classes: 1 (0%); 2 (>0 - <10%); 3 (10 to <25%); 4 (25 to <50%); 5 (50% to <75%); 6 (≥75%)

Cryptogamic Crust Cover:_____(category) Thatch (Non-Native Grass) Cover:_____(category)

Thatch Depth categories: 1 (no thatch); 2 (<1 cm); 3 (1 to <5 cm); 4 (5 to <10 cm); 5 (10 to <15 cm); 6 (15 to < 20 cm); 7 (≥ 20 cm)

Thatch Depth: Ave._____(category) Thatch Depth: Max:_____cm

Dead Standing Biomass? Yes:_____No:_____If yes, species:_____Cover Class (1-6):_____Ave. Height:_____cm

Mammal Species Activity Categories (1-4): Feral Pig Activity:_____Ground Squirrel Activity:_____Gopher Activity: _____

Habitat plot representative of maximum extent? Yes:_____No:_____If no, note differences on Page 3.

IV. ASSOCIATED SPECIES IN SAMPLE PLOT ***Record cover estimate, not cover category****. See % cover diagram, p. 5. Record substrate, total veg & total cover at bottom of form. Total cover should be at least 100% to account for entire plot. Record notes on p. 3.*

Species	% Cover	Species	% Cover

Bare Ground:_____Cryptogamic Soil Crust:_____ Rock:_____ Litter:_____

Water:_____ Total Live Vegetation:_____ Dead Shrubs:_____ Total Cover:_____(∑ =100%)

Scientific Name: Antrozous pallidus / Corynorhinus townsendii *MSP Occurrence ID:*

Preserve: Wilderness Gardens *Occurrence Name:*

Date: July 11, 2024 *Surveyors & Affiliation/Agency: Karla Alcaraz (ESA), Amy Orduño-Baez (ESA)*

V. CURRENT MAPPED EXTENT INFORMATION. *Count or estimate number of plants in mapped extent. Area can be calculated based on GIS perimeter mapping or visual mapping on aerial photo in the office.*

Plants/Current Mapped Extent:_____, Exact Count:_____, Estimate (1000s, 10k):_____, Uncertainty?_____

For both exact counts and estimates, indicate: Counted/estimated individual plants:_____OR Counted/estimated clusters of plants:_____

For geophytes: are counts of flowering or vegetative individuals? Flowering:_____Vegetative:_____

Area of Current Mapped Extent:_____Units:_____Exact (GPS mapping):_____Estimate:_____

Perimeter of current extent determined by walking it or estimated by other means (mapped on aerials)? Walked:_____Other (describe p. 3):_____

Species in Maximum Extent? Yes:_____No:_____If not, why

VI. THREATS ASSESSMENT IN MAXIMUM EXTENT - *Assess threats within the **occurrence's maximum extent** (cumulative extent over years of monitoring) **plus 10-m surrounding buffer**. Record notes on p. 3.*

Surrounding Land Use/Activity at or Adjacent to Site: Open Space, Rural Development, Orchard

Disturbance Classes (rank each threat as 1-7): 1 = no sign of disturbance, 2 = disturbance in 10m surrounding buffer but not within maximum extent, 3 = disturbance occurs in >0 % to <10% of area within maximum extent, 4 = disturbance in 10% to <25% of maximum extent, 5 = disturbance in 25 to < 50% of maximum extent, 6 = disturbance occurs within 50 to <75% of maximum exent, and 7 = disturbance occurs within ≥75% of maximum extent.

Non-Native Forbs	3	Feral Pig Activity	1	Erosion	1
Non-Native Grasses	4	Trampling		Urban Runoff	3
Non-Native Woody Plants	3	Vandalism		Slope Movement	1
Competitive Native Plants	3	Grazing (Y/N/UNK)	Unknown	Soil Compaction	1
Dumping/Trash	1	Historic Agriculture (Y/N/Unk)	Yes		
Encampments	1	Altered Hydrology	3		

Fuel Modification Zone/Fire Break 1

Road Construction/Maintenance: 1 If Observed, Briefly Describe: _____

Vegetation Clearing: 3 If Observed, Briefly Describe:_____

Restoration Project (Impacts): 1 If Observed, Briefly Describe: _____

ORV Activity 1 If Observed, List Type(s) of ORV Activity: _____

Evidence of Recent Fire 1 If Sign of Recent Fire: Year Burned?____OR Unknown Burn Year? Unknown

Disturbance from Trails (authorized & unauthorized)__If Trails are Present, are they Authorized (circle one)? ☑ Yes / ☐ No / ☐ Both / ☐ Unknown

Type of Trail Use (Yes/No)? Hiking:___Yes___Biking:___Yes___Equestrian:___Yes___Dog:___Yes___Service Vehicles: ___Yes___ Other (Describe):_____

Illegal Trail Use? ☐ Yes ☑ No ☐ Unknown

Describe: _____ Other Disturbance? List & Rank: _____

Collection? Yes:_____No:_____Collector:_____

Collection #:_____Herbarium:_____Species Collected: _____

Collection 2, Collector:_____(enter additional collections on p. 3)

Collection #:_____Herbarium:_____Species Collected: _____

Occurrence ID: _____ Species: Pallid Bat, Townsend's Big-eared Bat Date: July 11, 2024

VI. MANAGEMENT RECOMMENDATIONS

Continue reducing vegetation height within the retention pond to allow more open areas over the water for bats to drink/forage from.

VII. MANAGEMENT ACTIONS IN LAST YEAR

Reducing vegetation height within the retention pond to allow more open areas over the water for bats to drink/forage from.

VIII. CNDDB SPECIES DETECTED & NOTES

List any sensitive plant or animal species to add to the CNDDB:

Time Finish: 21:12

Categories of % Individuals in Sample Plot for Phenological Stages (Vegetative, Flowering, Fruiting & Dead) and for Evidence of Herbivory, Disease and Stunted Growth.

1 = 0% (not detected)

2 = >0% to <10%

3 = 10% to <25%

4 = 25% to <50%

5 = 50% to <75%

6 = ≥75%

% Cover Class Definitions within Sample Plot for Cryptogamic Crust and Thatch.

See page 5 for illustrations of different cover classes.

1 = 0% cover (not detected)

2 = >0% to <10% cover

3 = 10% to <25% cover

4 = 25% to <50% cover

5 = 50% to <75% cover

6 = ≥75% cover

Feral Pig Activity within Sample Plot:

1 = No feral pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) detected.

2 = Signs of pig activity (rooting, wallowing, vegetation destruction) in sample plot appear months old.

3 = Signs of recent pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) in adjacent area but not within sample plot.

4 = Recent signs of pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pigs) within sample plot.

Ground Squirrel Activity within Sample Plot:

1 = No ground squirrel burrows detected.

2 = Burrows and/or ground squirrels observed in adjacent area but not within sample plot.

3 = Single squirrel or burrow seen within sample plot.

4 = Multiple burrows and/or squirrels seen within sample plot.

Botta's Pocket Gopher Activity within Sample Plot:

1 = No pocket gopher mounds detected.

2 = Mounds or gophers observed in adjacent area but not within sample plot.

3 = <10 mounds observed within sample plot.

4 = ≥10 mounds or one or more gophers seen within sample plot.

Disturbance Categories within the Maximum Extent:

1 = No sign of disturbance within maximum extent or in adjacent 10 m buffer.

2 = Disturbance does not occur within maximum extent but is detected within the surrounding 10 m buffer area.

3 = Disturbance present in >0% to <10% of area within maximum extent.

4 = Disturbance occurs in 10% to <25% of area within maximum extent.

5 = Disturbance occurs in 25% to <50% of area within maximum extent.

6 = Disturbance occurs 50% to <75% of area within maximum extent.

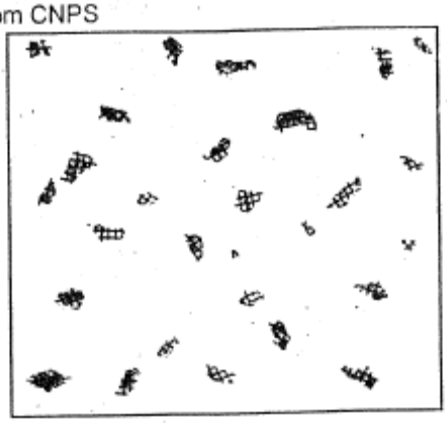
7 = Disturbance occurs ≥75% of area within maximum extent.

CNPS Cover Diagram

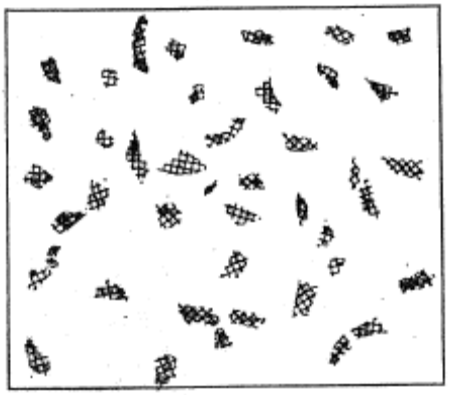
Cover Diagrams from CNPS



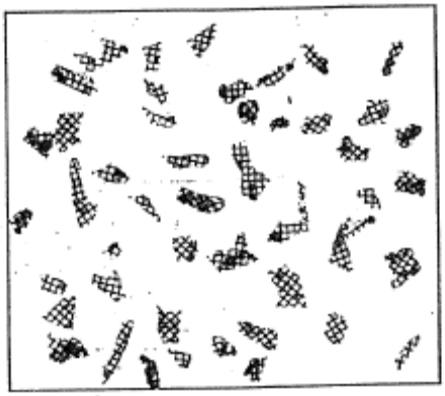
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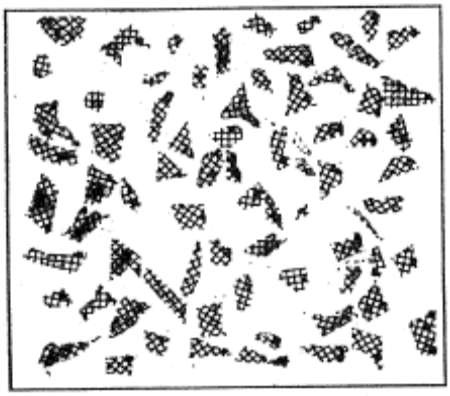
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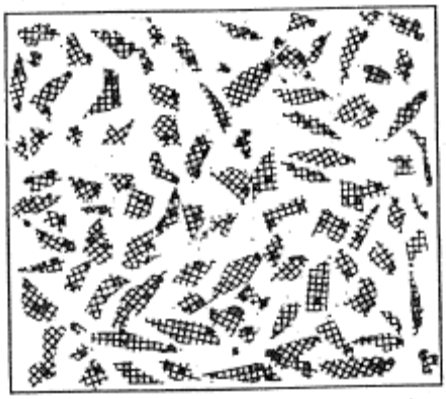
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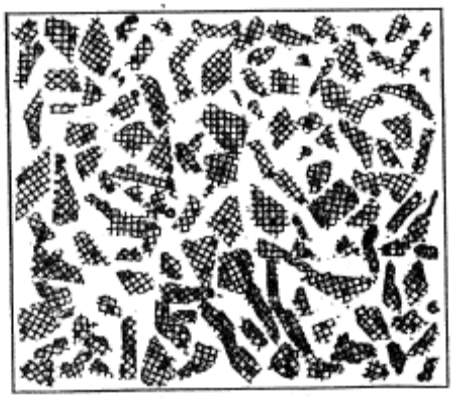
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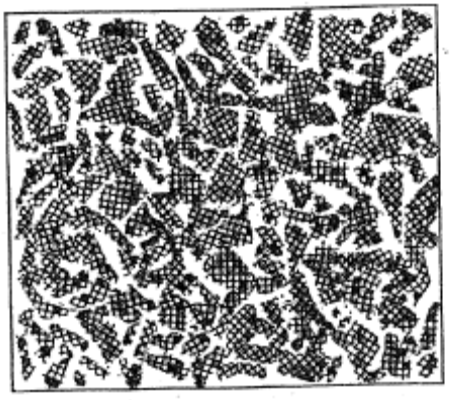
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35%



50%



75%

I-3 Representative Photograph

Mount Olympus County Preserve Invasive Non-Native Plants Representative Photograph



Photo 1. Invasive non-native plant cover, such as grasses, has increased in density along dirt trails and roads within Mount Olympus County Preserve, reducing suitable foraging habitat for pallid bats.

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Appendix J

Residual Dry Matter Monitoring Report

J-1 Ramona Grasslands County Preserve Residual Dry Matter Monitoring Report

ESA

2355 Northside Drive
Suite 100
San Diego, CA 92108
619.719.4200 phone
619.719.4201 fax

esassoc.com

December 3, 2024

Jennifer Price
County of San Diego
Department of Parks and Recreation
5500 Overland Avenue, Suite 410
San Diego, CA 92123

Subject: Residual Dry Matter Monitoring for the Ramona Grasslands County Preserve, September 2024

Dear Ms. Price:

At the request of the County of San Diego (County) Department of Parks and Recreation (DPR), Environmental Science Associates (ESA) performed residual dry matter (RDM) monitoring in September 2024 at 58 predetermined vegetation monitoring plots within the Ramona Grasslands County Preserve (Preserve). The Preserve is in the Santa Maria Valley, southwest of the unincorporated township of Ramona and northeast of the city of Poway in central San Diego County (**Figure 1**; see figures attached to the end of this report).

RDM values for each monitoring plot within management units 1A, 2A, 2B, 3A, 3B, 3C, 3D, 3E, 4A, and 4B were collected following the University of California Division of Agriculture and Natural Resources' *Guidelines for Residual Dry Matter Management on Coastal and Foothill Rangelands in California* recommendations (Bartolome et al. 2002). RDM is determined by measuring the biomass (i.e., the amount of residual plant matter) in the rangeland at the end of fall. RDM acts as soil protection from the compacting and erosive effects of rains and can help conserve initial rainfall soil moisture to facilitate germination of the next season's annual plants. Annual RDM monitoring is a method used to quantify the impact of cattle grazing on grasslands from year to year, to determine if natural community or species-specific RDM targets are achieved, and to provide land managers with information that allows them to make grazing management adjustments to maintain a sustainable rangeland.

DPR's livestock grazing program includes goals for improving and maintaining biodiversity, reducing wildfire hazards, and maintaining soil health. Grazing on the Preserve is managed under the *Ramona Grasslands, Santa Ysabel, and Boulder Oaks Preserves Grazing Management Plan* (Grazing Management Plan) (ESA 2019). The Grazing Management Plan designates grazing management units within the Preserve and monitors the effects of cattle grazing on the land to support the following management goals and objectives:

- Goal 1: Maintain and improve biodiversity:
  - Objective 1.1. Reduce abundance of non-native annual grasses.
  - Objective 1.2. Maintain and improve habitat for raptors.
  - Objective 1.4. Maintain and improve habitat for arroyo toad (*Anaxyrus californicus*).
  - Objective 1.5. Maintain and improve habitat for Stephens' kangaroo rat (SKR; *Dipodomys stephensi*).

- Goal 2: Reduce wildfire hazard:
  - Objective 2.1. Reduce thatch buildup and continuity of fine fuels.
  - Objective 2.2. Reduce the abundance of non-native annual grasses.
- Goal 3: Maintain soil health:
  - Objective 3.1. Maintain minimum RDM standards to protect soil structure.

Sunrise Cattle Company currently holds a grazing agreement with DPR. Through this grazing agreement, cattle were added to the Preserve in January 2024. The monthly AUM (animal unit months) reports from the grazing report are provided in **Table 1**.

TABLE 1
SUMMARY OF MONTHLY AUM REPORTS[1]

Management Unit	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024
1A	0	0	0	0	0	0	0	24	24
2A[2]	0	0	0	0	0	67	67	29	40
2B	30	30	30	30	30	0	0	67	45
3A	40	40[3]	0	0	0	0	0	0	0
3B	20	20	19	19	19	25	25	24	24
3C	0	0	0	0	0	0	0	0	0
3D	0	0	0	0	0	0	0	0	0
3E	0	0	0	0	0	0	0	0	0
4A	0	5 bulls[4]	5 bulls	5 bulls	5 bulls	5 bulls	5 bulls	5 bulls	5 bulls
4B	0	0	0	5 bulls	5 bulls	5 bulls	5 bulls	5 bulls	0[5]
4C	Not grazed	Not grazed	Not grazed	Not grazed	Not grazed	Not grazed	Not grazed	Not grazed	Not grazed
5	Not grazed	Not grazed	Not grazed	Not grazed	Not grazed	Not grazed	Not grazed	Not grazed	Not grazed

NOTES:

1 AUM = animal unit months.
2 Unit 2A was closed to cattle for pipeline infrastructure from January to May 2024.
3 40 AUMs were present from 2/1/24–2/15/24.
4 5 AUMs were brought in on 2/15/24.
5 0 cattle were present in Unit 4B during peak trail times for the safety of both hikers and cattle.

SOURCE: Sunrise Cattle Company 2024.

Methods

RDM monitoring for all 58 vegetation monitoring plots was conducted on September 11 and 12, 2024, by ESA biologists Amy Orduño-Baez, Brenda McMillan, Dillon Travis, and Karla Alcaraz (**Figure 2**).

A sampling hoop with a 13.25-inch interior diameter (hoop area is 0.96 square feet) was tossed randomly and sampled three times within each of the designated monitoring plots. Biomass (i.e., RDM) samples were obtained by collecting all aboveground biomass, including vegetation and thatch, from within the hoop using gardening shears or by gathering manually; samples were then stored in paper bags. Biomass collections did not include tree leaves (e.g., oaks [*Quercus* spp.]) or summer annuals such as doveweed (*Croton setiger*) and tarplant (*Centromadia* spp., *Holocarpha* spp.), as referenced in the RDM methodology (Bartolome et al. 2002). Additionally, woody shrubs (e.g., scrub oak [*Quercus berberidifolia, xacutidens*]) were not collected. Native species seen in the vicinity of the RDM plots were also recorded at the time of sampling, as well as any incidental observations of special-status species or invasive non-native species encountered while traveling to each RDM plot.

ESA biologists processed the samples in the ESA office located at 2355 Northside Drive, Suite 100, San Diego, California 92108. All samples were air-dried and weighed in grams using a digital scale. Biologists excluded the weight of paper bags. The weights of the three biomass samples from each of the vegetation monitoring plots were averaged and then converted to pounds per acre (lb/acre) by a multiplication of 100 (Bartolome et al. 2002). The average lb/acre for each management unit was then calculated by averaging all RDM plots within a management unit.

The average lb/acre for a given management unit was compared to the target RDM values established for each management unit (**Table 2**). Target RDM values for each management unit are based on the management prescriptions detailed in the Grazing Management Plan (ESA 2019). Management prescriptions were based on creating optimal conditions to achieve the management goals and objectives, including those for sensitive biological resources, for each management unit. Target sensitive species and habitats for the Preserve include arroyo toad, SKR, raptor habitat, and vernal pools (ESA 2019).

TABLE 2
SUMMARY MANAGEMENT TARGETS AND TARGET GRAZING INTENSITIES PER MANAGEMENT UNIT

Unit	Management Targets	Target Grazing Intensities (RDM Values[1])
1A	Riparian pasture, Arroyo toad	800 to 2,000 lb/acre
2A, 2B, 3A	SKR	400 to 800 lb/acre
3B, 4A, 4B	Flexible use	800 to 1,500 lb/acre
3C, 3D	Vernal pool	800 to 1,500 lb/acre
3E	Restoration[2]	800 to 1,500 lb/acre
4C	Not proposed for managed grazing due to vegetation community	N/A
5	Not proposed for grazing due to topography	N/A

NOTES: lb/acre = pounds per acre; RDM = residual dry matter; SKR = Stephens' kangaroo rat; Flexible use = managed for species diversity, fire hazard reduction, and soil conservation; N/A = not applicable

1. Target grazing intensities (RDM values) are based on Ramona Grasslands, Santa Ysabel, and Boulder Oaks Preserves Grazing Management Plan (ESA 2019).
2. After recommended restoration (ESA 2019) is completed, this pasture should have a target RDM value of 800 lb/acre.

Results

The following plant species were observed to be the most common within or adjacent to the monitoring plots in 2024: wild oat (*Avena* spp.), brome grass (*Bromus* spp.), western ragweed (*Ambrosia psilostachya*), and short-pod mustard (*Hirschfeldia incana*). Wild oat and brome grass were collected during RDM sampling, while western ragweed and short-pod mustard were not collected, per the protocol (Bartolome et al. 2002).

The following plants were observed but seen less commonly within or near the monitoring plots: chamise (*Adenostema fasciculatum*), California sagebrush (*Artemisia californica*), saltbush (*Atriplex* spp.), mule fat (*Baccharis salicifolia*), thistle (*Carduus* sp.), tocalote (*Centaurea melitensis*), tarweed (*Centromadia* sp.), stiffbranch bird's beak (*Cordylanthus rigidus*), doveweed (*Croton setiger*), Bermuda grass (*Cynodon dactylon*), saltgrass (*Distichlis spicata*), California buckwheat (*Eriogonum fasciculatum*), filaree (*Erodium* spp.), rattail sixweeks grass (*Festuca myuros*), Italian ryegrass (*Festuca perennis*), common sunflower (*Helianthus annus*), barley (*Hordeum* spp.), goldenbush (*Isocoma* sp.), prickly lettuce (*Lactuca serriola*), laurel sumac (*Malosma laurina*), oak (*Quercus* spp.), Goodding's black willow (*Salix gooddingii*), and vinegarweed (*Trichostema lanceolatum*). Bermuda grass, saltgrass, filaree, rattail sixweeks grass, Italian ryegrass, and barley were collected during RDM sampling, per the protocol (Bartolome et al. 2002).

Invasive Non-Native Species Incidental Observations

No high-priority invasive non-native plants or wildlife were observed incidentally during 2024 monitoring.

Special-Status Species Incidental Observations

Turkey vultures (*Cathartes aura*), a County of San Diego Group 1 species, were observed within management unit 2B. San Diego black-tailed jackrabbits (*Lepus californicus bennettii*), a County of San Diego Group 2 species and Multiple Species Conservation Program (MSCP)-covered species, were observed within management unit 2B. Additionally, a vermilion flycatcher (*Pyrocephalus rubinus flammeus*), California Department of Fish and Wildlife Species of Special Concern and a County of San Diego Group 1 species , was observed within management unit 4A. All incidental special-status species observations are depicted in **Figure 3**.

Residual Dry Matter Values and Recommendations

All management units, with the exception of 1A, 4A, and 4B, had RDM values higher than their target values. Management units 1A and 4A fell within their target RDM values, while management unit 4B had a lower RDM value than its target value. Results of the RDM analyses are depicted in Figure 3.

Most management units were above their target RDM values in 2024. This can be attributed to above-average annual rainfall. Ramona Airport reported approximately 13.5 inches of accumulated rainfall from January to September 2024 (NOAA 2024). This increased rainfall in 2024 follows 21.3 inches of rainfall in 2023 (NWS, NOAA 2024). Although 2024 received less rainfall compared to 2023, it still experienced considerable rainfall.

This variability in rainfall over recent years has significantly impacted vegetative growth and RDM levels. The effects of these factors relative to RDM are discussed further in the *Summary and Recommendations* section.

The results of vegetation sampling within each management unit are discussed below, and 2024 RDM values are summarized in **Table 3**. The results of the average RDM values from each of the individual RDM plots from 2011 through 2024 can be found in **Attachment A**.

Management Unit 1A

RDM levels in management unit 1A average 1,867 lb/acre, which is within the target RDM value range of 800 to 2,000 lb/acre in the Grazing Management Plan (Table 3). As prescribed by the Grazing Management Plan, target RDM values for management unit 1A are set to maintain and improve biodiversity for riparian pastures and federally listed arroyo toad habitat.

Cattle grazing should be maintained at its current levels within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (800 to 2,000 lb/acre), which is beneficial for arroyo toad. Arroyo toad breeding season extends from February 1 to July 31; therefore, targeted grazing is recommended to occur between August and January. Targeted cattle grazing prevents overgrowth of riparian vegetation, as cattle will keep riparian vegetation at a mid-successional range (Hancock 2009), providing better habitat conditions for arroyo toad. Natural succession of riparian species and increases in density of riparian vegetation can create a loss of breeding habitat for arroyo toad (Hancock 2009; USFWS 2011). Arroyo toad prefers shallow pools and open, sandy stream terraces. This species uses adjacent upland habitat for feeding and shelter in the nonbreeding seasons (USFWS 2011).

Management Unit 2A

RDM levels in management unit 2A average 2,871 lb/acre, which is above the target RDM value range of 400 to 800 lb/acre in the Grazing Management Plan (Table 3). The loamy grasslands in management unit 2A should continue to be managed for SKR. SKR prefers loamy grassland soils with high forb cover and low overall aboveground biomass (ESA 2019). Grazing can reduce aboveground biomass and shift species composition to higher forb cover to provide better habitat for SKR.

Cattle grazing should be increased within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (400 to 800 lb/acre), which is beneficial for SKR. Grazing in 2025 is recommended to target a RDM value range of 400 to 500 lb/acre. SKR reaches their highest densities in grassland communities dominated by forbs and characterized by moderate to high amounts of bare ground (USFWS 2020).

Rare plant populations in management unit 2A should continue to be monitored by DPR. Previously documented rare plants, including Coulter's saltbush (*Atriplex coulteri*) (California Rare Plant Rank [CRPR] 1B.2), southern tarplant (*Centromadia parryi* ssp. *australis*) (CRPR 1B.1), and graceful tarplant (*Holocarpha virgata subsp. elongata*) (CRPR 1B.2), were not observed during the 2024 surveys. Coulter's saltbush and graceful tarplant were last observed in this management unit in 2013 and 2020. Southern tarplant was last observed in this management unit in 2021. The high RDM levels resulting from thatch buildup could preclude the emergence of rare plants.

TABLE 3
SUMMARY OF 2024 RDM RESULTS

		Average RDM (lb/acre)														
Management Unit	**Target RDM Value**	**2011***	**2012***	**2013***	**2014***	**2015***	**2016***	**2017***	**2018***	**2019***	**2020**	**2021**	**2022**	**2023**	**2024**	**2024 Results**
1A	800 to 2,000 lb/acre	4,900	2,137	586	453	350	843	679	233	2,522	4,178	1,833	2,478	1,333	1,867	Meets grazing requirements.
2A	400 to 800 lb/acre	6,241	3,381	1,728	517	1,137	1,479	1,085	394	3,071	3,352	2,348	2,186	3,886	2,871	Does not meet grazing requirements.
2B	400 to 800 lb/acre	3,957	1,844	933	301	1,124	747	798	338	3,167	3,786	2,962	1,400	2,881	2,086	Does not meet grazing requirements.
3A	400 to 800 lb/acre	3,688	2,796	384	136	238	282	1,521	20	1,767	2,600	2,540	1,627	2,447	1,700	Does not meet grazing requirements.
3B	800 to 1,500 lb/acre	2,450	2,405	635	402	385	880	803	27	2,420	2,587	2,413	1,933	2,193	1,720	Does not meet grazing requirements.
3C	800 to 1,500 lb/acre	4,055	2,890	1,013	810	403	1,543	919	233	2,622	2,100	3,711	2,456	3,600	2,311	Does not meet grazing requirements.
3D	800 to 1,500 lb/acre	6,855	3,740	1,406	1,450	370	1,190	709	167	489	1,800	2,622	2,522	2,667	5,244	Does not meet grazing requirements.
3E	800 to 1,500 lb/acre	0	123	2,540	1,547	1,330	5,883	4,923	5,908	925	1,025	2,675	5,608	6,858	3,300	Does not meet grazing requirements.
4A	800 to 1,500 lb/acre	4,122	2,407	2,086	100	513	890	876	78	2,522	1,889	1,267	911	1,800	833	Meets grazing requirements.
4B	800 to 1,500 lb/acre	2,688	1,140	1,210	400	1,053	633	573	244	1,417	1,594	2,039	1,272	1,294	756	Does not meet grazing requirements.
4C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not proposed for managed grazing.
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not proposed for managed grazing.

NOTES: RDM = residual dry matter; lb/acre = pounds per acre; N/A = not applicable

* RDM values from 2011–2019 were compared to previous target RDM values as described in the Ramona Grasslands Preserve Vegetation Management Plan (ICF 2012).

These results are an average of the RDM values of all monitoring plots per management unit 2011 through 2024.

Management Unit 2B

RDM levels in management unit 2B average 2,086 lb/acre, which is above the target RDM value range of 400 to 800 lb/acre in the Grazing Management Plan (Table 3). SKR prefers loamy grassland soils with high forb cover and low overall aboveground biomass (ESA 2019). Grazing can reduce aboveground biomass and shift species composition to higher forb cover to provide better habitat for SKR.

Cattle grazing should be increased within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (400 to 800 lb/acre), which is beneficial for SKR. Grazing in 2025 is recommended to target a RDM value range of 400 to 500 lb/acre. SKR reaches their highest densities in grassland communities dominated by forbs and characterized by moderate to high amounts of bare ground (USFWS 2020).

Rare plant populations in management unit 2B should continue to be monitored by DPR. Graceful tarplant and southern tarplant were not detected during 2024 surveys but were previously detected during 2019 and 2021 surveys, respectively. Small flower bindweed (*Convolvulus simulans*) (CRPR 4.2) has also been known to occur within this management unit, though it has not been documented since 2007. The high RDM levels resulting from thatch buildup could preclude the emergence of rare plants.

Management Unit 3A

RDM levels in management unit 3A average 1,700 lb/acre, which is above the target range of RDM value range of 400 to 800 lb/acre in the Grazing Management Plan (Table 3). SKR prefers loamy grassland soils with high forb cover and low overall aboveground biomass (ESA 2019). Grazing can reduce aboveground biomass and shift species composition to higher forb cover to provide better habitat for SKR.

Cattle grazing should be increased within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (400 to 800 lb/acre), which is beneficial for SKR. Grazing in 2025 is recommended to target a RDM value range of 400 to 500 lb/acre. SKR reaches their highest densities in grassland communities dominated by forbs and characterized by moderate to high amounts of bare ground (USFWS 2020).

Rare plant populations in management unit 3A should continue to be monitored by DPR. Graceful tarplant was not detected during 2024 surveys but was detected in low numbers during 2019 surveys. The high RDM levels resulting from thatch buildup could preclude the emergence of rare plants.

Management Unit 3B

RDM levels in management unit 3B average 1,720 lb/acre, which is above the target range of 800 to 1,500 lb/acre in the Grazing Management Plan (Table 3). This management unit should continue to be managed for specific management goals and objectives, including species diversity, fire hazard reduction, and soil conservation. Cattle grazing should be increased within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (800 to 1,500 lb/acre), which is appropriate for flexible use.

Rare plant populations in management unit 3B should continue to be monitored by DPR. Graceful tarplant and San Diego gumplant (*Grindelia halli*) were not detected during 2024 surveys but were previously detected during 2023 and 2021 surveys, respectively. The high RDM levels resulting from thatch buildup could preclude the emergence of rare plants.

Management Unit 3C

RDM levels in management unit 3C average 2,311 lb/acre, which is above the target range of 800 to 1,500 lb/acre in the Grazing Management Plan (Table 3). Management unit 3C should continue to be managed to maintain the health and function of the vernal pool complex south of Ramona Airport. Targeted spring grazing can more effectively cause a shift in species composition toward native annual forbs, relative to other seasons, helping to reduce the abundance of invasive non-native grasses. This will reduce evapotranspiration and can help promote longer vernal pool inundation periods, increasing the likelihood of San Diego fairy shrimp (*Branchinecta sandiegonensis*) being able to complete their lifecycle within vernal pools, particularly in years with marginal rainfall (ESA 2019).

Cattle grazing should be increased within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (800 to 1,500 lb/acre), which is beneficial for vernal pools. Cattle grazing frequency and rotations should be carefully monitored to restrict access to vernal pool and playa habitat during the wet season[1] (typically November through March for Southern California), as well as when clay soils are still moist and malleable.

Rare plant populations in management unit 3C should continue to be monitored by DPR. Graceful tarplant was last observed in low numbers in the northern section of this management unit during the 2017 surveys, but has not been detected during recent monitoring efforts from 2019 through 2024. The high RDM levels resulting from thatch buildup could preclude the emergence of rare plants.

Management Unit 3D

RDM levels in management unit 3D average 5,244 lb/acre, which is above the target range of 800 to 1,500 lb/acre in the Grazing Management Plan (Table 3). Management unit 3D should continue to be managed to maintain the health and function of vernal pools. Targeted spring grazing can more effectively cause a shift in species composition toward native annual forbs, relative to other seasons, helping to reduce the abundance of invasive non-native grasses. This will reduce evapotranspiration and can help promote longer vernal pool inundation periods, increasing the likelihood of San Diego fairy shrimp being able to complete their lifecycles within vernal pools, particularly in years with marginal rainfall (ESA 2019).

Cattle grazing should be increased within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (800 to 1,500 lb/acre), which is beneficial for vernal pools. Cattle grazing

[1] The vernal pool wet season can generally be defined as the period between winter and early spring, typically November through March for Southern California. The start of the vernal pool wet season begins each year once a substantial precipitation event occurs (providing at least 0.5 inches) to wet the soil enough to start germination of vernal pool indicator species.

frequency and rotations should be carefully monitored to restrict access to vernal pool and playa habitat during the wet season[2] (typically November through March for Southern California), as well as when clay soils are still moist and malleable.

Rare plant populations in management unit 3D should continue to be monitored by DPR. Graceful tarplant was last observed in the central section of this management unit during the 2017 surveys and was not detected during the 2024 surveys. The high RDM levels resulting from thatch buildup could preclude the emergence of rare plants.

Management Unit 3E

RDM levels in management unit 3E average 3,300 lb/acre, which is above the target range of 800 to 1,500 lb/acre in the Grazing Management Plan (Table 3). This management unit was previously overgrazed by cattle between 2005 and 2010, causing invasive non-native plant species to grow after the cattle were removed by DPR (ICF 2012). This management unit was observed to contain a high density of summer annuals, including invasive non-native plant species such as Russian thistle (*Salsola* sp.) and saltbush.

Continued active restoration can be implemented using a combination of mechanical removal by mowing, herbicide, and/or targeted grazing as recommended by the Ramona Grasslands Preserve Vegetation Management Plan (ICF 2012) to return this management unit to a grass regime. Quantitative vegetation monitoring is recommended to document before-and-after conditions and determine restoration progress and success. Relevé assessment of the management unit using the California Native Plant Society protocol (CNPS 2000) would provide detailed species composition and cover to the land manager and would capture the presence of biomass from invasive non-native summer annuals that are not included in the RDM. The information, in turn, will give DPR the ability to assess the quality of the vegetation on-site and track the progress of restoration from invasive non-native forbs to native grasses.

Rare plant populations in management unit 3E should continue to be monitored by DPR. Southern tarplant was not detected during 2024 surveys, but was previously detected within this management unit during 2021 surveys. The high RDM levels resulting from thatch buildup could preclude the emergence of rare plants.

Management Unit 4A

RDM levels in management unit 4A average 833 lb/acre, which is within the target range of 800 to 1,500 lb/acre in the Grazing Management Plan (Table 3). This management unit should continue to be managed for specific management goals and objectives, including species diversity, fire hazard reduction, and soil conservation. No invasive non-native plants or rare plants requiring monitoring or management were observed during the 2024

[2] The vernal pool wet season can generally be defined as the period between winter and early spring, typically November through March for Southern California. The start of the vernal pool wet season begins each year once a substantial precipitation event occurs (providing at least 0.5 inches) to wet the soil enough to start germination of vernal pool indicator species.

surveys. Cattle grazing should be maintained within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (800 to 1,500 lb/acre), which is appropriate for flexible use.

Management Unit 4B

RDM levels in management unit 4B average 756 lb/acre, which is below the target range of 800 to 1,500 lb/acre in the Grazing Management Plan (Table 3). This management unit should continue to be managed for specific management goals and objectives, including species diversity, fire hazard reduction, and soil conservation. No invasive non-native plants or rare plants requiring monitoring or management were observed during the 2024 surveys. Cattle grazing should be reduced within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (800 to 1,500 lb/acre), which is appropriate for flexible use.

Management Unit 4C

Management unit 4C is not proposed for active grazing management due to the on-site vegetation community; therefore, no RDM monitoring was conducted in 2024. This unit consists of southern mixed chaparral, disturbed southern mixed chaparral, and coastal sage scrub (ICF 2012). This unit should be monitored for potential invasive non-native plant invasion.

Management Unit 5

Management unit 5 is not proposed for grazing due to topography; therefore, no RDM monitoring was conducted in this unit in 2024. This unit should be monitored for potential invasive non-native plant invasion.

Summary and Recommendations

All RDM values, except for management units 1A, 4A, and 4B, were above the target RDM values. Management units 1A, 4A, were within their target RDM values, while 4B RDM values were just below the target range. In 2024, RDM values in all management units except 1A and 3D decreased from 2023 results. Management unit 3D had the most significant increase in RDM value this season.

Most of management units were above their target RDM values in 2024; however, 2024 RDM values were generally lower than in 2023. Results were likely influenced by the accumulated rainfall in 2024 and the reinstatement of grazing in January 2023. Ramona Airport reported approximately 13.5 inches of accumulated rainfall from January to September 2024 compared to approximately 21.3 inches of accumulated rainfall from January to September 2023 (NWS, NOAA 2024). The significant rainfall from atmospheric river events in February contributed to the overall water availability. Extreme fluctuations in rainfall in recent years (e.g., drought conditions in 2018, above-average rainfall in 2019, below-average to average rainfall in 2020, drought conditions in 2021 and 2022, and above-average rainfall in 2023 and 2024) drive substantial variability in vegetative cover from year to year. As seen in Table 3 in the *Results* section, the general decrease in RDM values between 2023 and 2024 is likely due to the return of cattle on the Preserve.

Based on the annual RDM monitoring results, the following measures are recommended for all management units:

- Coordinate with the new grazing lessees to provide information on the conservation goals to be fulfilled by grazing on the Preserve and discuss grazing frequency, timing, rotation, and RDM targets to better guide annual grazing practices on the Preserve.
- Continue long-term RDM monitoring in all units (except 4C and 5). This is important to make sure that RDM values do not exceed or drop below the range needed to meet the management targets and increase biodiversity.
- Invasive non-native plant mapping should be conducted throughout the Preserve annually, if feasible, per the monitoring recommendations in the *Targeted Monitoring Plan* (ESA and ICF 2022).
- Continue active restoration of management unit 3E to remove invasive non-native plant species by a combination of mowing, herbicide treatment, and/or targeted grazing. Quantitative vegetation monitoring, such as Relevé assessment, is recommended within this management unit to document pre-restoration and post-restoration conditions.
- Seed bare ground surrounding water troughs. Extensive areas of bare ground were observed surrounding the water troughs during 2018–2024 surveys. Native grass seed should be planted around water troughs and in bare ground near water troughs to improve soil quality. Seed should be from a local, credible source or collected within the Preserve by hired seed collectors or DPR rangers who have been taught by a consultant on how to collect native plant seeds. Plant species that could be distributed in areas with bare ground, such as those around the troughs, include purple needlegrass (*Stipa pulchra*), nodding needlegrass (*Stipa cernua*), wild rye (*Elymus triticoides*), and Lemmon's canary grass (*Phalaris lemmonii*). These species have been verified as native grasses found within the Preserve, according to the San Diego Natural History Museum (2011) Plant Atlas Database. Seeds should not come from outside of San Diego County.
- Conduct rare plant surveys throughout the Preserve at 10-year intervals in the spring and late summer, per the monitoring recommendations in the *Targeted Monitoring Plan* (ESA and ICF 2022). Rare plants have been incidentally observed during RDM monitoring; however, these incidental observations are not representative of comprehensive rare plant surveys. Rare plant surveys should focus on areas with rare soils and sensitive habitats, and areas where rare plants have been recorded in the past. The rare plant surveys should be used to update the sensitive plant maps from the Vegetation Management Plan (ICF 2012), identify populations of sensitive species for more intensive monitoring, and determine if any new sensitive species are present. Following the completion of rare plant surveys, monitoring plots located within sensitive plant populations should be adjusted to avoid impacts to the species.
- Cattle grazing frequency and rotations should be carefully monitored to restrict access to vernal pool and playa habitat during the wet season[3] (typically November through March for Southern California), as well as when clay soils are still moist and malleable. Quantitative and qualitative monitoring frequency should follow the recommended frequencies in the *Targeted Monitoring Plan* (ESA and ICF 2022).

[3] The vernal pool wet season can generally be defined as the period between winter and early spring, typically November through March for southern California. The start of the vernal pool wet season begins each year once a substantial precipitation event occurs (providing at least 0.5 inches) to wet the soil enough to start germination of vernal pool indicator species.

- Conduct SKR surveys, per the *Targeted Monitoring Plan* (ESA and ICF 2022). SKR burrow count/sign surveys, quantitative habitat assessments, and SKR live trapping should be conducted to determine whether grazing is meeting management goals for this species, or if other management actions are needed.

If you have questions, please feel free to contact me at (714) 657-8690 or kalcaraz@esassoc.com.

Sincerely,



Karla Alcaraz
Biologist

Attachments:
Figure 1 – Preserve Location
Figure 2 – Monitoring Plot Locations
Figure 3 – RDM Plot Results
Attachment A – Results of 2011–2024 RDM Monitoring at the Preserve

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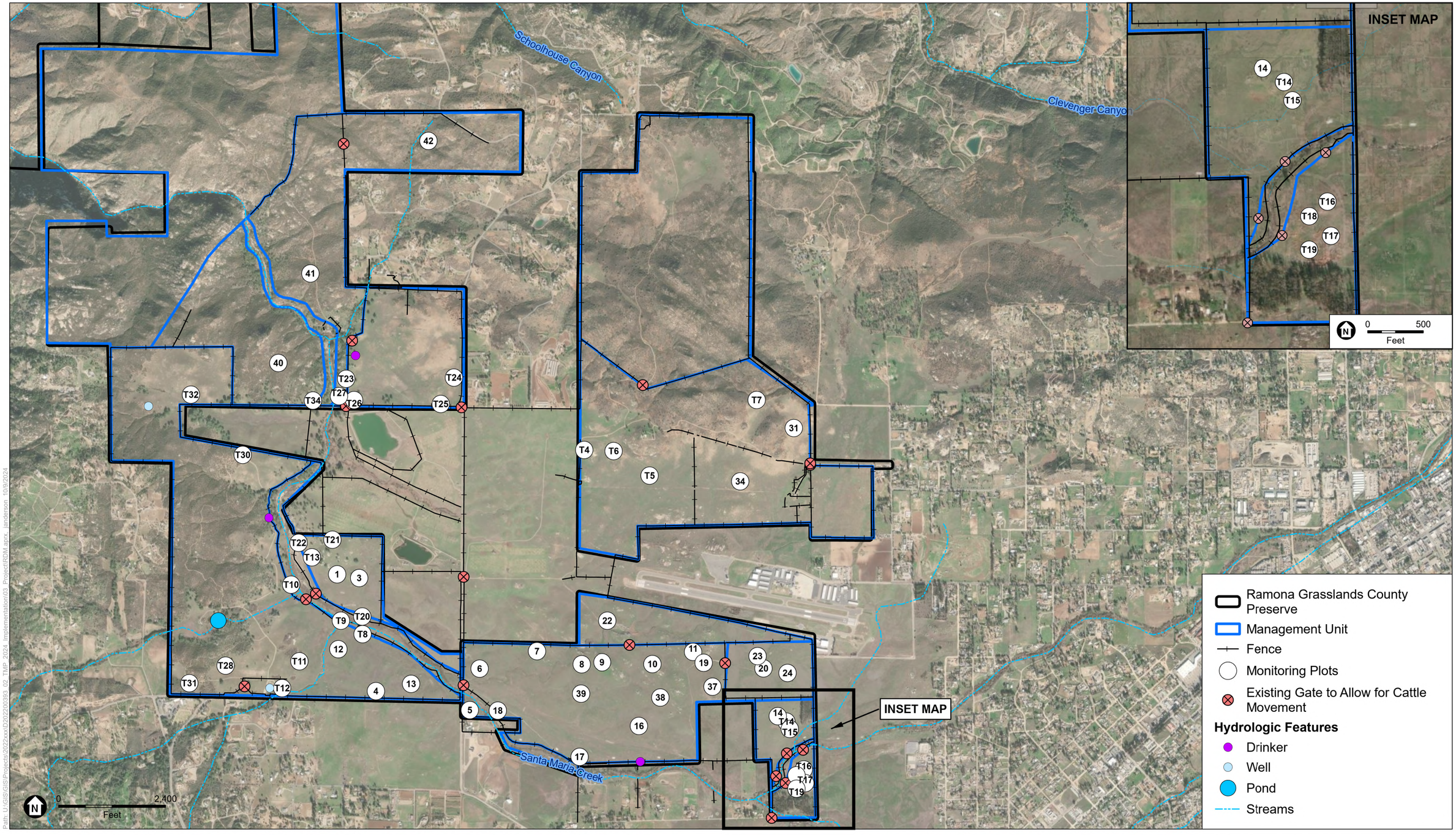


SOURCE: ESRI

COSD DPR 569744 TO 04 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management
Ramona Grasslands County Preserve Fall 2024 Residual Dry Matter Monitoring Report

Figure 1
Preserve Location

ESA



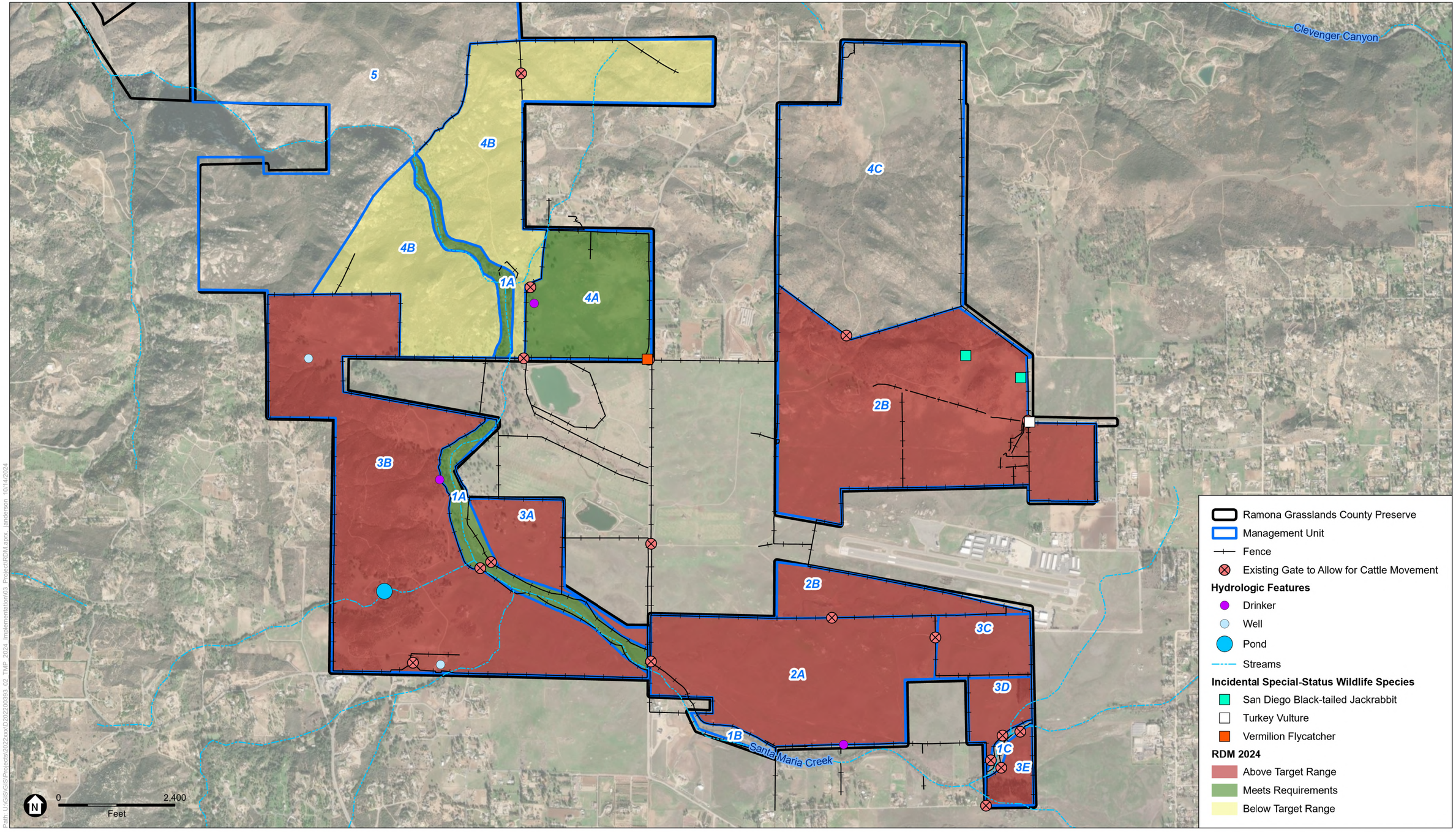
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SOURCE: ESRI, AECOM 2017; ESA 2024

COSD DPR 569744 TO 04 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management
Ramona Grasslands County Preserve Fall 2024 Residual Dry Matter Monitoring Report

Figure 2
Monitoring Plot Locations

ESA



SOURCE: ESRI, AECOM 2017; ESA 2024

COSD DPR 569744 TO 04 – Implementation of Targeted Monitoring Plan – 2024 Resource-Specific Monitoring and Management
Ramona Grasslands County Preserve Fall 2024 Residual Dry Matter Monitoring Report

Figure 3
RDM Plot Results

ESA

Attachment A

Results of 2011–2024
RDM Monitoring at the Preserve

TABLE A-1
RESULTS OF 2011–2024 RDM MONITORING AT THE PRESERVE

Management Unit	Plot #	Date Collected	Monitoring Plot Average (grams) 2011	Pounds per Acre 2011	Date Collected	Monitoring Plot Average (grams) 2012	Pounds per Acre 2012	Date Collected	Monitoring Plot Average (grams) 2013	Pounds per Acre 2013	Date Collected	Monitoring Plot Average (grams) 2014	Pounds per Acre 2014	Date Collected	Monitoring Plot Average (grams) 2015	Pounds per Acre 2015	Date Collected	Monitoring Plot Average (grams) 2016	Pounds per Acre 2016	Date Collected	Monitoring Plot Average (grams) 2017	Pounds per Acre 2017	Date Collected	Monitoring Plot Average (grams) 2018	Pounds per Acre 2018	Date Collected	Monitoring Plot Average (grams) 2019	Pounds per Acre 2019	Date Collected	Monitoring Plot Average (grams) 2020	Pounds per Acre 2020	Date Collected	Monitoring Plot Average (grams) 2021	Pounds per Acre 2021	Date Collected	Monitoring Plot Average (grams) 2022	Pounds per Acre 2022	Date Collected	Monitoring Plot Average (grams) 2023	Pounds per Acre 2023	Date Collected	Monitoring Plot Average (grams) 2024	Pounds per Acre 2024
1A	T9	10/4/2011	51.3	5133	10/10/2012	23.2	2320	10/9/2013	2	200	10/24/2014	2.4	240	10/21/2015	4.8	480	10/25/2016	16.3	1630	10/24/2017	4.2	420	12/27/2018	5	500	10/14/2019	27.7	2766.7	10/27/2020	40.33	4033	10/11/2021	33.67	3367	9/13/2022	25.33	2533	9/11/2023	20.3	2033	9/11/2024	20.3	2033
1A	T10	10/5/2011	25	2500	10/10/2012	18.8	1880	10/8/2013	12.6	1260	10/24/2014	4.9	490	10/21/2015	4.3	430	10/25/2016	3.3	330	10/24/2017	7.8	780	12/27/2018	0	0	10/14/2019	17.3	1733.3	10/27/2020	25.33	2533	10/11/2021	21.33	2133	9/13/2022	22.67	2267	9/11/2023	19.7	1967	9/11/2024	10.0	1000
1A	T20	10/5/2011	70.7	7067	10/10/2012	22.1	2210	10/9/2013	3	300	10/24/2014	6.3	630	10/21/2015	1.4	140	10/25/2016	5.7	570	10/24/2017	8.37	837	12/27/2018	2	200	10/14/2019	30.7	3066.7	10/27/2020	59.67	5967	10/11/2021	0.00	0	9/13/2022	26.33	2633	9/11/2023	0.0	0	9/11/2024	25.7	2567
2A	5	10/3/2011	93.7	9367	10/9/2012	37.5	3750	10/7/2013	26.6	2660	10/27/2014	26.1	2610	10/21/2015	5.6	560	10/27/2016	36	3600	10/26/2017	10.2	1020	12/28/2018	6.33	633	10/14/2019	57	5700	10/28/2020	33.67	3367	10/11/2021	36.00	3600	9/13/2022	16.67	1667	9/11/2023	21.7	2167	9/11/2024	25.0	2500
2A	6	10/3/2011	83.3	8333	10/9/2012	25.4	2540	10/7/2013	15	1500	10/27/2014	0.5	50	10/21/2015	5.9	590	10/27/2016	8	800	10/26/2017	2.5	250	12/27/2018	0	0	10/14/2019	32	3200	10/28/2020	29.67	2967	10/11/2021	20.00	2000	9/13/2022	15.67	1567	9/11/2023	37.3	3733	9/11/2024	47.3	4733
2A	7	10/3/2011	31	3100	10/9/2012	35.2	3520	10/10/2013	11	1100	10/27/2014	2.6	260	10/21/2015	12.7	1270	10/27/2016	1.3	130	10/26/2017	3.6	360	12/28/2018	0.67	67	10/14/2019	28	2800	10/28/2020	37.33	3733	10/11/2021	22.00	2200	9/13/2022	17.33	1733	9/11/2023	38.7	3867	9/11/2024	39.7	3967
2A	8	10/3/2011	66.7	6667	10/9/2012	35.2	2790	10/10/2013	22	2200	10/23/2014	5.4	540	10/22/2015	17.5	1750	10/27/2016	10	1000	10/26/2017	18.1	1810	12/28/2018	0.67	67	10/14/2019	39.3	3933.3	10/28/2020	46.67	4667	10/11/2021	27.00	2700	9/13/2022	20.00	2000	9/11/2023	29.7	2967	9/11/2024	46.7	4667
2A	9	10/3/2011	60.3	6033	10/9/2012	42.9	4290	10/10/2013	33	3300	10/23/2014	5.4	540	10/22/2015	17.8	1780	10/27/2016	3	300	10/26/2017	3.67	367	12/28/2018	1	100	10/14/2019	47.7	4766.7	10/28/2020	44.33	4433	10/11/2021	26.67	2667	9/13/2022	28.00	2800	9/11/2023	67.7	6767	9/11/2024	35.7	3567
2A	10	10/3/2011	44.7	4467	10/9/2012	31.9	3190	10/7/2013	17	1700	10/22/2014	3.7	370	10/22/2015	4.5	450	10/27/2016	9	900	10/26/2017	10.03	1003	12/28/2018	0.33	33	10/14/2019	34.3	3433.3	10/28/2020	35.33	3533	10/11/2021	21.67	2167	9/13/2022	22.00	2200	9/11/2023	25.7	2567	9/11/2024	30.7	3067
2A	11	10/4/2011	56	5600	10/9/2012	27.9	2790	10/8/2013	7.3	730	10/22/2014	3.4	340	10/22/2015	5.2	520	10/27/2016	21	2100	10/26/2017	11.9	1190	12/28/2018	1.33	133	10/14/2019	26	2600	10/28/2020	26.00	2600	10/11/2021	24.33	2433	9/13/2022	25.67	2567	9/11/2023	25.7	2567	9/11/2024	28.7	2867
2A	16	10/4/2011	60.7	6067	10/9/2012	31.2	3120	10/8/2013	19.3	1930	10/23/2014	2.3	230	10/22/2015	5.6	560	10/27/2016	30	3000	10/26/2017	10.8	1080	12/28/2018	1.33	133	10/14/2019	5	500	10/28/2020	17.67	1767	10/11/2021	20.33	2033	9/13/2022	17.00	1700	9/11/2023	18.7	1867	9/11/2024	31.3	3133
2A	17	10/4/2011	83.7	8367	10/3/2012	37.9	3790	10/7/2013	24.6	2460	10/27/2014	4.2	420	10/22/2015	6.2	620	10/27/2016	36	3600	10/26/2017	22.5	2250	12/28/2018	0.33	33	10/14/2019	39.3	3933.3	10/28/2020	37.33	3733	10/11/2021	25.67	2567	9/13/2022	40.00	4000	9/11/2023	66.7	6667	9/11/2024	47.3	4733
2A	18	10/3/2011	73	7300	10/3/2012	27.7	2770	10/7/2013	14.7	1470	10/27/2014	2.9	290	10/21/2015	13.2	1320	10/27/2016	6	600	10/26/2017	20.6	2060	12/28/2018	33.33	3333	10/14/2019	80	8000	10/28/2020	61.67	6167	10/11/2021	39.00	3900	9/13/2022	48.33	4833	9/11/2023	85.3	8533	9/11/2024	24.0	2400
2A	19	10/4/2011	40	4000	10/9/2012	35.7	3570	10/8/2013	9.3	930	10/22/2014	0.4	40	10/22/2015	31.9	3190	10/27/2016	8.6	860	10/26/2017	6.57	657	12/28/2018	1.33	133	10/14/2019	15.7	1566.7	10/28/2020	48.33	4833	10/11/2021	15.00	1500	9/13/2022	14.00	1400	9/11/2023	21.7	2167	9/11/2024	13.0	1300
2A	37	10/4/2011	56	5600	10/9/2012	44.5	4450	10/8/2013	7.6	760	10/22/2014	11.1	1110	10/22/2015	10.3	1030	10/27/2016	8.6	860	10/26/2017	9.83	983	12/28/2018	0.67	67	10/14/2019	8.7	866.7	10/28/2020	14.33	1433	10/11/2021	16.67	1667	9/13/2022	12.00	1200	9/11/2023	27.7	2767	9/11/2024	9.0	900
2A	38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10/14/2019	3.3	333.3	10/28/2020	21.33	2133	10/11/2021	12.00	1200	9/13/2022	16.67	1667	9/11/2023	34.0	3400	9/11/2024	15.3	1533
2A	39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10/14/2019	13.7	1366.7	10/28/2020	15.67	1567	10/11/2021	22.33	2233	9/13/2022	12.67	1267	9/11/2023	43.7	4367	9/11/2024	8.3	833
2B	22	10/3/2011	60	6000	10/9/2012	14.7	1470	10/7/2013	15	1500	10/23/2014	3.1	310	10/20/2015	34.1	3410	10/27/2016	8.6	860	10/26/2017	4.9	490	12/28/2018	21.67	2167	10/14/2019	61	6100	10/28/2020	56.33	5633	10/11/2021	19.33	1933	9/13/2022	6.33	633	9/12/2023	56.3	5633	9/11/2024	58.0	5800
2B	31	10/4/2011	26.3	2633	10/3/2012	19.7	1970	10/9/2013	3.6	360	10/22/2014	4.6	460	10/20/2015	7.7	770	10/26/2016	11.3	1130	10/25/2017	5.5	550	12/28/2018	0.67	67	10/15/2019	17.3	1733.3	10/29/2020	26.00	2600	10/12/2021	12.67	1267	9/13/2022	3.33	333	9/12/2023	22.0	2200	9/12/2024	15.3	1533
2B	34	10/4/2011	48.3	4833	10/3/2012	14.8	1480	10/7/2013	2	200	10/22/2014	2	200	10/20/2015	3.6	360	10/26/2016	16	1600	10/25/2017	7.2	720	12/28/2018	0.33	33	10/15/2019	22.3	2333.3	10/29/2020	34.00	3400	10/12/2021	37.33	3733	9/13/2022	18.67	1867	9/12/2023	31.3	3133	9/12/2024	1.7	167
2B	T4	10/4/2011	37.3	3733	10/3/2012	28.8	2880	10/7/2013	9	900	10/22/2014	4.4	440	10/20/2015	6.1	610	10/26/2016	0	0	10/25/2017	6.67	667	12/28/2018	0.33	33	10/15/2019	29.7	2966.7	10/29/2020	26.67	2667	10/12/2021	32.33	3233	9/13/2022	7.33	733	9/12/2023	15.3	1533	9/12/2024	6.7	667
2B	T5	10/4/2011	39.7	3967	10/3/2012	17.5	1750	10/7/2013	10	1000	10/22/2014	0.7	70	10/20/2015	21.9	2190	10/26/2016	1.7	170	10/25/2017	14.53	1453	12/28/2018	0.33	33	10/15/2019	37.3	3733.3	10/29/2020	35.00	3500	10/12/2021	51.67	5167	9/13/2022	36.33	3633	9/12/2023	32.0	3200	9/12/2024	46.7	4667
2B	T6	10/4/2011	24	2400	10/3/2012	11.2	1120	10/7/2013	19	1900	10/22/2014	3.9	390	10/20/2015	2.1	210	10/26/2016	3.7	370	10/25/2017	6.37	637	12/28/2018	0.33	33	10/15/2019	13.3	1333.3	10/29/2020	26.67	2667	10/12/2021	19.33	1933	9/13/2022	15.67	1567	9/12/2023	18.3	1833	9/12/2024	13.7	1367
2B	T7	10/4/2011	41.3	4133	10/3/2012	22.4	2240	10/7/2013	6.7	670	10/22/2014	2.4	240	10/20/2015	3.2	320	10/26/2016	11	1100	10/25/2017	10.73	1073	12/28/2018	0	0	10/15/2019	40.7	4066.7	10/29/2020	60.33	6033	10/12/2021	34.67	3467	9/13/2022	10.33	1033	9/12/2023	26.3	2633	9/12/2024	4.0	400
3A	1	10/4/2011	36	3600	10/10/2012	31.5	3150	10/8/2013	4.6	460	10/24/2014	1.1	110	10/21/2015	3.3	330	10/25/2016	2	200	10/24/2017	18.83	1883	12/27/2018	0	0	10/14/2019	17	1700	10/27/2020	41.00	4100	10/11/2021	30.33	3033	9/13/2022	27.00	2700	9/12/2023	24.7	2467	9/11/2024	29.0	2900
3A	3	10/4/2011	22.3	2233	10/10/2012	15.4	1540	10/8/2013	1	100	10/24/2014	0.1	10	10/21/2015	0.9	90	10/25/2016	1	100	10/24/2017	13.4	1340	12/27/2018	0.33	33	10/14/2019	30.3	3033.3	10/27/2020	41.33	4133	10/11/2021	17.67	1767	9/13/2022	26.67	2667	9/12/2023	37.7	3767	9/11/2024	28.0	2800
3A	T13	10/5/2011	50.3	5033	10/10/2012	50	5000	10/9/2013	4	400	10/24/2014	2.8	280	10/21/2015	1.3	130	10/25/2016	1.3	130	10/24/2017	14.3	1430	12/27/2018	0.67	67	10/14/2019	4.7	466.7	10/27/2020	6.67	667	10/11/2021	23.00	2300	9/13/2022	12.67	1267	9/12/2023	11.0	1100	9/11/2024	1.3	133
3A	T21	10/5/2011	17.7	1767	10/10/2012	34.8	3480	10/9/2013	5	500	10/24/2014	2.3	230	10/21/2015	3.7	370	10/25/2016	9.7	970	10/24/2017	12.43	1243	12/27/2018	0	0	10/14/2019	18.7	1866.7	10/27/2020	29.00	2900	10/11/2021	32.00	3200	9/13/2022	5.00	500	9/12/2023	21.3	2133	9/11/2024	10.7	1067
3A	T22	10/5/2011	24.3	2433	10/10/2012	8.1	810	10/9/2013	4.6	460	10/24/2014	0.5	50	10/21/2015	2.7	270	10/25/2016	0.1	10	10/24/2017	17.1	1710	12/27/2018	0	0	10/14/2019	17.7	1766.7	10/27/2020	12.00	1200	10/11/2021	24.00	2400	9/13/2022	10.00	1000	9/11/2023	27.7	2767	9/11/2024	16.0	1600
3B	4	10/3/2011	10	1000	10/9/2012	25	2500	10/7/2013	11	1100	10/23/2014	2.2	220	10/21/2015	0.5	50	10/25/2016	5.6	560	10/24/2017	5.73	573	12/27/2018	0.33	33	10/14/2019	18	1800	10/27/2020	16.67	1667	10/12/2021	36.00	3600	9/13/2022	17.33	1733	9/11/2023	28.0	2800	9/11/2024	18.0	1800
3B	12	10/4/2011	25.7	2567	10/10/2012	21.4	2140	10/9/2013	5.6	560	10/24/2014	8.9	890	10/21/2015	5.9	590	10/25/2016	12.7	1270	10/24/2017	10.4	1040	12/27/2018	1.33	133	10/14/2019	8	800	10/27/2020	6.00	600	10/12/2021	32.00	3200	9/13/2022	37.33	3733	9/11/2023	22.0	2200	9/11/2024	24.0	2400
3B	13	10/3/2011	36.7	3667	10/9/2012	32.9	3290	10/7/2013	25	2500	10/23/2014	11.5	1150	10/21/2015	4.9	490	10/25/2016	18	1800	10/24/2017	8.47	847	12/27/2018	0.67	67	10/14/2019	0.7	66.7	10/27/2020	13.67	1367	10/12/2021	25.00	2500	9/13/2022	14.67	1467	9/11/2023	9.7	967	9/11/2024	14.0	1400
3B	T8	10/4/2011	33.3	3,333	10/10/2012	15.2	1520	10/9/2013	1.6	160	10/24/2014	5.8	580	10/21/2015	2.7	270	10/25/2016	9.3	930	10/24/2017	9.33	933	12/27/2018	0.33	33	10/14/2019	12	1200	10/27/2020	26.00	2600	10/12/2021	23.67	2367	9/13/2022	17.00	1700	9/11/2023	20.7	2067	9/11/2024	34.7	3467
3B	T11	10/5/2011	29	2900	10/9/2012	30.6	3060	10/9/2013	0	0	10/27/2014	0.6	60	10/21/2015	4.1	410	10/25/2016	6.7	670	10/24/2017	6.47	647	12/27/2018	0	0	10/14/2019	37.7	3766.7	10/27/2020	57.33	5733	10/12/2021	24.33	2433	9/13/2022	40.67	4067	9/11/2023	27.7	2767	9/11/2024	14.7	1467
3B	T12	10/5/2011	12.3	1233	10/9/20212	45.1	4510	10/7/2013	10	1000	10/27/2014	0.8	80	10/21/2015	2.6	260	10/25/2016	12	1200	10/24/2017	5.33	533	12/27/2018	0	0	10/14/2019	27	2700	10/28/2020	20.00	2000	10/12/2021	19.00	1900	9/13/2022	15.67	1567	9/11/2023	18.3	1833	9/11/2024	6.3	633
3B	T28	10/21/2011	28	2800	10/9/2012	19.5	1950	10/9/2013	4.6	460	10/27/2014	2.1	210	10/21/2015	2.9	290	10/25/2016	0	0	10/24/2017	4.53	453	12/27/2018	0	0	10/14/2019	62.3	6233.3	10/28/2020	52.00	5200	10/12/2021	15.67	1567	9/13/2022	29.33	2933	9/11/2023	39.7	3967	9/11/2024	17.3	1733
3B	T30	10/21/2011	31.5	3150	10/3/2012	16.8	1680	10/9/2013	1.6	160	10/24/2014	2.4	240	10/27/2015	5.6	560	10/26/2016	0	0	10/24/2017	11.67	1167	12/27/2018	0	0	10/15/2019	35.3	35833.3	10/27/2020	8.33	833	10/12/2021	22.33	2233	9/13/2022	3.00	300	9/11/2023	9.3	933	9/11/2024	1.0	100
3B	T31	10/21/2011	15	1500	10/10/2012	20.3	2030	10/9/2013	2.1	210	10/27/2014	2.6	260	10/21/2015	6.1	610	10/25/2016	7	700	10/24/2017	9.03	903	12/27/2018	0	0	10/14/2019	0.3	33.3	10/28/2020	12.33	1233	10/12/2021	7.33	733	9/13/2022	6.67	667	9/11/2023	4.7	467	9/11/2024	7.7	767
3B	T32	10/21/2011	30	3000	10/3/2012	13.7	1370	10/10/2013	2	200	10/24/2014	3.3	330	10/27/2015	3.2	320	10/26/2016	16.7	1670	10/24/2017	7.07	707	12/27/2018	0	0	10/15/2019	40.7	4066.7	10/27/2020	46.33	4633	10/12/2021	36.00	3600	9/13/2022	11.67	1167	9/11/2023	39.3	3933	9/11/2024	34.3	3433
3C	20	10/3/2011	58	5800	10/9/2012	35.7	3570	10/8/2013	16	1600	10/22/2014	7.7	770	10/22/2015	6.7	670	10/27/2016	20	2000	10/26/2017	7.6	760	12/28/2018	0.33	33	10/14/2019	25.3	2533.3	10/28/2020	21.33	2,133	10/11/2021	36.33	3633	9/13/2022	29.33	2933	9/11/2023	32.7	3267	9/11/2024	14.7	1467
3C	23	10/4/2011	41	4100	10/9/2012	19.7	1970	10/8/2013	7.7	770	10/22/2014	7.9	790	10/22/2015	5.4	540	10/27/2016	13	1300	10/26/2017	7.63	763	12/28/2018	5	500	10/14/2019	45.7	4566.7	10/28/2020	15.67	1567	10/11/2021	29.00	2900	9/13/2022	11.00	1100	9/11/2023	28.7	2867	9/11/2024	30.0	3000
3C	24	10/3/2011	22.7	2267	10/9/2012	31.3	3130	10/8/2013	6.7	670	10/22/2014	8.7	870	10/22/2015	0	0	10/27/2016	13.3	1330	10/26/2017	12.33	1233	12/28/2018	1.67	167	10/14/2019	7.7	766.7	10/28/2020	26.00	2600	10/11/2021	46.00	4600	9/13/2022	33.33	3333	9/11/2023	46.7	4667	9/11/2024	24.7	2467
3D	14	10/4/2011	93	9300	10/9/2012	23.3	2330	10/9/2013	17.6	1760	10/23/2014	14.4	1440	10/20/2015	0.1	10	10/27/2016	18	1800	10/25/2017	7.73	773	12/28/2018	1	100	10/14/2019	4.7	466.7	10/28/2020	22.33	2233	10/11/2021	27.00	2700	9/13/2022	23.67	2367	9/11/2023	38.0	3800	9/11/2024	41.3	4133
3D	T14	10/5/2011	46.3	4633	10/9/2012	45.6	4560	10/9/2013	12	1,200	10/23/2014	10.9	1090	10/22/2015	0.4	40	10/27/2016	7	700	10/25/2017	7.57	757	12/28/2018	1	100	10/14/2019	1.3	133.3	10/28/2020	14.33	1433	10/11/2021	27.67	2767	9/13/2022	26.00	2600	9/11/2023	14.0	1400	9/11/2024	50.7	5067
3D	T15	10/5/2011	66.3	6633	10/9/2012	43.3	4330	10/9/2013	12.6	1260	10/23/2014	18.2	1820	10/22/2015	10.6	1060	10/27/2016	10.7	1070	10/25/2017	5.97	597	12/28/2018	3	300	10/14/2019	8.7	866.7	10/28/2020	17.33	1733	10/11/2021	24.00	2400	9/13/2022	26.00	2600	9/11/2023	28.0	2800	9/11/2024	65.3	6533
3E	T16	10/5/2011	0	0	10/10/2012	330	330	10/7/2013	25	2500	10/23/2014	6.7	670	10/22/2015	5.3	530	*	*	*	10/25/2017	92.7	9270	12/28/2018	89	8900	10/14/2019	1.7	166.7	10/28/2020	0.00	0	10/11/2021	27.00	2700	9/13/2022	66.00	6600	9/11/2023	136.7	13667	9/12/2024	51.7	5167
3E	T17	10/5/2011	0	0	10/10/2012	0	0	10/7/2013	22	2200	10/23/2014	8.5	850	10/22/2015	27.4	2740	*	*	*	10/25/2017	44.87	4487	12/28/2018	0.33	33	10/14/2019	0	0	10/28/2020	0.00	0	10/11/2021	0.00	0	9/13/2022	28.00	2800	9/11/2023	0.0	0	9/12/2024	0.0	0
3E	T18	10/5/2011	0	0	10/10/2012	160	160	10/7/2013	26	2600	10/23/2014	34.5	3450	10/22/2015	13.6	1,360	*	*	*	10/25/2017	59.37	5937	12/28/2018	75.67	7567	10/14/2019	10	1000	10/28/2020	4.00	400	10/11/2021	37.00	3700	9/13/2022	80.67	8067	9/11/2023	84.3	8433	9/12/2024	80.3	8033
3E	T19	10/5/2011	0	0	10/10/2012	0	0	10/7/2013	28.6	2860	10/23/2014	12.2	1220	10/22/2015	6.9	690	*	*	*	10/25/2017	0	0	12/28/2018	71.33	7133	10/14/2019	25.3	2533.3	10/28/2020	37.00	3700	10/11/2021	43.00	4300	9/13/2022	49.67	4967	9/11/2023	53.3	5333	9/12/2024	0.0	0
4A	T24	10/5/2011	35.3	3533	10/3/2012	24	2400	10/10/2013	22	2200	10/24/2014	0	0	10/21/2015	5.5	550	10/25/2016	0.7	70	10/25/2017	5.17	517	12/27/2018	1.33	133	10/15/2019	34.3	3433.3	10/27/2020	23.00	2300	10/12/2021	15.00	1500	9/13/2022	6.33	633	9/12/2023	20.3	2033	9/12/2024	5.0	500
4A	T25	10/5/2011	42.7	4267	10/3/2012	17.3	1730	10/9/2013	11.6	1160	10/24/2014	1.2	120	10/21/2015	1.6	160	10/25/2016	7	700	10/25/2017	7.93	793	12/27/2018	0.33	33	10/15/2019	29.7	2966.7	10/27/2020	26.33	2633	10/12/2021	13.00	1300	9/13/2022	12.67	1267	9/12/2023	17.3	1733	9/12/2024	7.0	700
4A	T26	10/5/2011	45.7	4567	10/3/2012	30.9	3090	10/8/2013	29	2900	10/24/2014	1.8	180	10/20/2015	8.3	830	10/26/2016	19	1900	10/25/2017	13.17	1317	12/27/2018	0.67	67	10/15/2019	11.7	1166.7	10/27/2020	7.33	733	10/12/2021	10.00	1000	9/13/2022	8.33	833	9/12/2023	16.3	1633	9/12/2024	13.0	1300
4B	T23	10/5/2011	30.3	3033	10/3/2012	10.5	1050	10/10/2013	22.3	2230	10/24/2014	4.5	450	10/20/2015	0.2	20	10/25/2016	0	0	10/25/2017	1.73	173	12/27/2018	3.67	367	10/15/2019	5	500	10/27/2020	13.67	1367	10/12/2021	44.67	4467	9/13/2022	29.33	2933	9/12/2023	10.3	1033	9/12/2024	6.3	633
4B	T27	10/5/2011	27.3	2733	10/3/2012	10.7	1070	10/8/2013	12.3	1230	10/27/2014	3.2	320	10/20/2015	30.9	3,090	10/26/2016	16.3	1630	10/25/2017	7.23	723	12/27/2018	0.33	33	10/15/2019	22.3	2233.3	10/27/2020	19.00	1900	10/12/2021	19.00	1900	9/13/2022	6.67	667	9/12/2023	10.7	1067	9/12/2024	27.3	2733
4B	T34	10/21/2011	23	2300	10/3/2012	13	1300	10/10/2013	1.7	170	10/27/2014	4.3	430	10/20/2015	0.5	50	10/26/2016	2.7	270	10/25/2017	8.23	823	12/27/2018	3.33	333	10/15/2019	9.3	933.3	10/27/2020	16.00	1600	10/12/