

**NESTING OF THE CALIFORNIA LEAST TERN AND
WESTERN SNOWY PLOVER AT
OCEANO DUNES STATE VEHICULAR RECREATION AREA,
SAN LUIS OBISPO COUNTY, CALIFORNIA
2025 SEASON**



**Prepared for
California Department of Fish and Wildlife
United States Fish and Wildlife Service**

**Published by
California Department of Parks and Recreation
Oceano Dunes District**

**Prepared by
Joanna Iwanicha, Amber Clark, Ryan Slack, Sarah Robinson, Mattie Reddell,
and Paul Phelps
of Oceano Dunes District
and
Douglas George of Point Blue Conservation Science**

November 2025

This space intentionally
left blank

Cover photograph of three snowy plover chicks on the ODSVRA 8 exclosure shoreline, taken 6 June 2025 by Mattie Reddell, Oceano Dunes District Environmental Scientist. The 25-day and 26-day old chicks were banded gg:lb from the SP41 nest and all three fledged.

TABLE OF CONTENTS

SUMMARY	1
INTRODUCTION	3
SITE DESCRIPTION	4
MONITORING AND MANAGEMENT ACTIONS	10
MONITORING	10
MANAGEMENT ACTIONS	17
RESULTS AND DISCUSSION.....	22
CALIFORNIA LEAST TERN.....	22
WESTERN SNOWY PLOVER.....	32
FACTORS INFLUENCING LEAST TERN AND SNOWY PLOVER REPRODUCTIVE SUCCESS	49
RECOMMENDATIONS	59
ACKNOWLEDGEMENTS	66
LITERATURE CITED	67
APPENDICES.....	71
APPENDIX A. CALIFORNIA LEAST TERN NESTS AT ODSVRA IN 2025.	71
APPENDIX B. SNOWY PLOVER NESTS AT ODSVRA IN 2025.	74
APPENDIX C. MAPS OF ALL CALIFORNIA LEAST TERN AND SNOWY PLOVER NEST LOCATIONS AT ODSVRA IN 2025.	96
APPENDIX D. BANDED CALIFORNIA LEAST TERNS AND SNOWY PLOVERS.....	111
APPENDIX E. CALIFORNIA LEAST TERN REPRODUCTIVE SUCCESS REPORTED FOR CURRENT, RECENT, OR INFREQUENT BREEDING SITES IN SAN LUIS OBISPO AND SANTA BARBARA COUNTIES FROM 2004-2025.	142
APPENDIX F. ADDENDUMS TO SNOWY PLOVER NESTING SUCCESS.	144
APPENDIX G. PREDATOR SUMMARY TABLES AND FIGURES.	153
APPENDIX H. SIGHTINGS OF INJURIES AND DOCUMENTED MORTALITY OF CALIFORNIA LEAST TERN AND SNOWY PLOVER ADULTS, JUVENILES, AND CHICKS AT ODSVRA.	161

List of Tables

Table 1. Nesting success of California least terns at ODSVRA from 1991-2025.	23
Table 2. Causes of California least tern nest loss at ODSVRA from 2002-2025.	25
Table 3. Number of days that color-banded California least tern juveniles hatched at ODSVRA continued to be seen on-site after reaching fledge age (21 days old) during the 20-year period 2006-2025.	27
Table 4. Number of reported breeding least tern pairs and juveniles produced at ODSVRA and the combined sites of Rancho Guadalupe Dunes Preserve (RGDP), Vandenberg Space Force Base (VSFB), and Coal Oil Point Reserve (COPR) from 2004-2025.	31
Table 5. Number of snowy plover breeding adults, breeding males, fledglings, and chicks fledging per breeding male for the 24-year period 2002-2025.	33
Table 6. Number of adult snowy plovers counted on USFWS breeding season window surveys versus calculated minimum number of breeding adults at ODSVRA from 2004-2025.....	35
Table 7. Snowy plover nest distribution and success at ODSVRA in 2025.	36
Table 8. Nesting success of snowy plovers at ODSVRA from 2001-2025.	38
Table 9. Attributed causes of snowy plover nest loss at specific locations at ODSVRA in 2025.	39
Table 10. Coyote occurrence in the Southern Enclosure and North Oso Flaco at ODSVRA from 2009-2025.	52

Table 11. Sightings of peregrine in the Southern Exclosure and Oso Flaco and the number trapped at ODSVRA from 2008-2025.	54
Table 12. Sightings of kestrel, large owl spp., red-tailed hawk, harrier, and peregrine in specific areas of the Southern Exclosure and Oso Flaco at ODSVRA in 2025.	55
Table D.1. Banded California least terns recorded at ODSVRA in 2025.	111
Table D.2. California least terns banded at other sites and seen at ODSVRA from 2008 to 2025.	113
Table D.3. California least terns banded as chicks at ODSVRA seen at other sites from 1 March to 30 September 2025.	114
Table D.4. Banded snowy plovers recorded at ODSVRA 1 October 2024 to 28 February 2025.	116
Table D.5. Banded snowy plovers with known origins recorded at ODSVRA 1 March to 30 September 2025.	121
Table D.6. Snowy plovers banded as chicks at ODSVRA seen at other sites from 1 October 2024 to 28 February 2025.	129
Table D.7. Snowy plovers banded as chicks at ODSVRA seen at other sites from 1 March to 30 September 2025.	132
Table F.1. Nesting success of snowy plovers in identifiable areas at ODSVRA, 2001-2025.	144
Table F.2. Attributed causes of snowy plover nest loss in Southern Exclosure and Oso Flaco at ODSVRA from 2002-2025.	147
Table F.3. Nest protection used in the Southern Exclosure and Oso Flaco at ODSVRA in 2025.	149
Table F.4. Nest protection used in the Foredune closure, closed buffer area, and Pismo Creek lagoon at ODSVRA in 2025.	150
Table F.5. Selective transfer of abandoned chicks and potentially viable eggs to Santa Barbara Zoo, Santa Barbara County, in 2025.	152
Table G.1. Summary of predators detected in the Southern Exclosure and Oso Flaco at ODSVRA in 2025.	153
Table G.2. Documented predation of California least tern and western snowy plover, other than eggs, in Southern Exclosure and Oso Flaco at ODSVRA from 2002-2025.	155
Table G.3. Mammalian and avian predators removed or trapped and relocated under predator management actions for least terns and snowy plovers at ODSVRA in 2025.	156
Table H.1. Sightings of injured least terns in 2025.	161
Table H.2. Sightings of injured snowy plovers from December 2024 to November 2025.	161
Table H.3. Documented predation of California least terns in 2025.	163
Table H.4. Mortality, other than documented predation, of least terns in 2025.	163
Table H.5. Documented predation of snowy plovers from 1 March to 30 September 2025.	164
Table H.6. Mortality, other than documented predation, of snowy plovers in 2025.	166

List of Figures

Figure 1. ODSVRA site map.	8
Figure 2. ODSVRA Southern Exclosure and Oso Flaco protected areas for breeding California least terns and western snowy plovers in 2025.	9
Figure 3. Number of California least tern nests, pairs, and fledglings at ODSVRA from 1991-2025.	24
Figure 4. Distribution of known location California least tern nests as a percentage of total nests at ODSVRA from 2006-2025.	24
Figure 5. Number of days individually color-banded California least tern juveniles that hatched at ODSVRA in 2025 continued to be seen on-site after reaching fledge age (21 days old).	28

Figure 6. Number of snowy plover breeding males, nests, nests hatched, chicks, and chicks fledged at ODSVRA from 2001-2025.	34
Figure 7. Number of snowy plover nesting attempts at ODSVRA from 1994-2025.....	36
Figure 8. Distribution of snowy plover nests as a percent of total nests in the Southern Exclosure, Oso Flaco, and Foredune closure from 2006-2025.....	37
Figure 9. Fledging rate of snowy plover chicks hatching in early season (prior to 20 June) and late season (20 June or later) at ODSVRA from 2003-2025.....	41
Figure 10. Number of snowy plover chicks hatching per 10-day period and number of these chicks subsequently fledging at ODSVRA in 2025.	41
Figure 11. Snowy plover chick survival and fledge rate from 21 April to 14 September at ODSVRA in 2025.....	42
Figure 12. Loss of snowy plover chicks by age at ODSVRA in 2025.....	43
Figure 13. Percentages over the total calculated snowy plover breeding population at ODSVRA of all known origin banded adults and the sum of males and females originally banded at ODSVRA breeding from 2005-2025.....	45
Figure 14. Nonbreeding season snowy plover counts by location from 2 October 2024 to 27 February 2025.....	46
Figure 15. Monthly average number of snowy plovers observed at beach sections of ODSVRA during nonbreeding season surveys from October 2024 to February 2025.	47
Figure 16. Number of snowy plovers counted at ODSVRA on USFWS winter window surveys 2003-2025 and the maximum number of snowy plovers counted in the month of January from 2008-2025.	48
Figure 17. Number of days opossum, skunk, and raccoon were detected in the Southern Exclosure and Oso Flaco at ODSVRA from 2007-2025.	51
Figure 18. Number of days large owl spp., harrier, peregrine, and red-tailed hawk were detected in the Southern Exclosure and Oso Flaco at ODSVRA in 2007-2025.....	56
Figure 19. Minimum number of individual ravens observed in the Southern Exclosure and Oso Flaco and number of ravens removed at ODSVRA from 2003-2025.....	57
Figure C.1. California least tern and snowy plover nest locations at ODSVRA in 2025.	96
Figure C.2. California least tern nest locations at ODSVRA 6 exclosure in 2025.	97
Figure C.3. California least tern nest locations at ODSVRA 7 exclosure in 2025.	98
Figure C.4. California least tern nest locations at ODSVRA Boneyard exclosure in 2025.	99
Figure C.5. Snowy plover nest location at ODSVRA Pismo Creek lagoon in 2025.	100
Figure C.6. Snowy plover nest locations at ODSVRA Foredune closure in 2025.	101
Figure C.7. Snowy plover nest locations at ODSVRA 6 exclosure in 2025.....	102
Figure C.8. Snowy plover nest locations at ODSVRA 7 exclosure in 2025.....	103
Figure C.9. Snowy plover nest locations at ODSVRA 8 exclosure in 2025.....	104
Figure C.10. Snowy plover nest locations at ODSVRA Boneyard exclosure in 2025.	105
Figure C.11. Snowy plover nest locations at ODSVRA North Oso Flaco in 2025.	106
Figure C.12. Snowy plover nest locations at ODSVRA South Oso Flaco in 2025.	107
Figure C.13. California least tern and snowy plover nest locations in relation to topography at ODSVRA 6 and 7 exclosures and comparing 5-year periods from 2016-20 and 2021-25.....	108
Figure C.14. California least tern and snowy plover nest locations in relation to topography at ODSVRA 8 exclosure and comparing 5-year periods from 2016-20 and 2021-25.	109
Figure C.15. Trends of California least tern and snowy plover nest locations at ODSVRA 6, 7, and 8 exclosures, and outside these areas 2006-2025.	110
Figure F.1. Daily wind speed data (daily afternoon average and daily maximum wind gust) and active snowy plover nests at ODSVRA from 19 March to 23 August 2025.	151

Figure G.1. Coyote occurrences documented in the Southern Exclosure and North Oso Flaco at ODSVRA in 2025.	157
Figure G.2. Avian predator sightings documented in the Southern Exclosure and Oso Flaco at ODSVRA in 2025.	158

Attachments

California Wildlife Services Program, San Luis District. Oceano Dunes State Vehicular Recreation Area 2025 Predator Management Report

Wildlife Innovations. Raptor and Owl Management for the Protection of California Least Terns and Western Snowy Plovers Nesting at Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California. Annual Report - 2025

Snowy plover necropsy report: three adults, one juvenile

Snowy plover medical record examination reports: one chick

Egg processing guidelines: Overview of development stages and landmarks

SUMMARY

Staff of Oceano Dunes State Vehicular Recreation Area (Oceano Dunes SVRA, ODSVRA) and Point Blue Conservation Science (Point Blue) monitored breeding California least terns (*Sternula antillarum browni*) (least tern, tern) and western snowy plovers (*Anarhynchus nivosus nivosus*) (snowy plover, plover) at ODSVRA, San Luis Obispo County, California, in 2025. This is the 24th consecutive year of both intensive banding of snowy plover chicks and predator management that includes options for selective relocation or removal of predators. Banding of least tern chicks began in 2003.

Least tern

There were an estimated 40-41 least tern breeding pairs in 2025, similar to the 40 breeding pairs in 2024, and the average of 40-43 pairs (range=23-60) in the 20-year period 2005-2024. During the 2025 season a minimum of 15 banded birds with known origins were documented breeding at the park, with 13 banded as chicks and fledged from ODSVRA, and two banded as chicks and fledged from Vandenberg Space Force Base, Santa Barbara County, California (VSFB).

There were 42 known nesting attempts. Of the 40 nests with known location and fate, 28 hatched. Twelve nests failed attributed to the following causes: abandoned unknown if pre- or post-term (2); wind (1); raven (1); event, raven (1); coyote (4); and event, coyote (3). The hatching rate for known location and fate nests was 70.0% (28/40), compared to the average of 86.0% (737/857) during the previous 20-year period 2005-2024. In 2025, 22.5% (9/40) of tern nests were lost to predation, a notable increase compared to the long-term average of 2.1% (21/1021) from 2002-2024. Prior to 2025, no tern nests were documented lost to raven and the previous documented nest lost to coyote was in 2013.

Forty-five chicks hatched and of these 42 were color-banded to individual, and 31 chicks are known to have fledged (seen when 21 days old or older). The 2025 chick fledging rate of 68.9% (31/45) is similar to the 70.5% average for the 19-year period 2006-2024 (banding chicks to individual began in 2006). However, the estimated 0.76-0.78 chicks fledged per pair in 2025 is lower than the 1.07-1.14 average for the 2006-2024 period, due in part to a reduced hatch rate caused by nest predation.

Snowy plover

There was a minimum of 266 breeding snowy plovers (159 males and 107 females) in 2025, a decrease of 5.3% from the previous year and compares to an average of 167 adults (range=32-281) for the 23-year period 2002-2024. One hundred and twenty-four banded birds with known origins were documented as breeding with 92.7% (115/124) banded as chicks and fledged from ODSVRA.

There were 333 known nesting attempts, including 27 identified only by detection of brood (unknown nest location). Of the 306 nests from known locations, 177 (57.8%) were in the Southern Enclosure, 45 (14.7%) in Oso Flaco, 81 (26.5%) in the Foredune closure, two in the closed buffer area, and one near the Pismo Creek lagoon. Of the 298 nests with known location and fate, 219 hatched for a nest hatching rate of 73.5%. This is similar to the average of 72.9% for the previous 23-year period 2002-2024. Seventy-nine nests failed, attributed to the following causes: abandoned pre-term (10); abandoned post-term (3), abandoned, unknown pre- or post-term (6); failed, nonviable eggs removed by staff (11); event, tide (1); cause unknown (6); unidentified predator (4); raven (24); event, raven (3); gull (1); coyote (6); and event, coyote (4). Of note this season, seven circular exclosures were removed from nests in South Oso Flaco prior to hatch in response to an increased threat of breeding adult mortality after two plover carcasses were found at two nests in circulars. Of these nests, three hatched, one was depredated by raven, and three were abandoned pre-term (potentially reflecting additional undetected adult mortality).

Of the 610 hatching chicks, 378 were color-banded to brood with 46.8% (177/378) fledging, and the fate of the 232 unbanded chicks is believed known with 38.4% (89/232) fledging. A total of 266 chicks fledged

(seen when 28 days old or older) for a fledging rate of 43.6% and is above the average fledge rate of 39.1% (range=7.4-66.0%) for the 23-year period 2002-2024. One chick fledged per breeding male is the estimated number needed to prevent the population of snowy plovers from declining and productivity of 1.2 chicks fledged per male should provide for moderate population growth (assuming approximately 75% annual adult survival and 50% juvenile survival) (U.S. Fish and Wildlife Service 2007). In 2025, an estimated 1.67 chicks fledged per breeding male at ODSVRA. For the previous 23-year period, average productivity was 1.47 chicks fledged per breeding male.

INTRODUCTION

Oceano Dunes SVRA, located in southern coastal San Luis Obispo County, California, is a popular park with high attendance, visited for a variety of recreational opportunities, including driving vehicles and camping on the beach. ODSVRA allowed 1,500 street-legal vehicles and 1,500 off-highway vehicles per day during the first half of the 2025 nesting season, and both were increased to 1,725 beginning 20 June 2025. In 2024, approximately 1,763,800 people visited ODSVRA with an estimated daily average of 345 off-highway vehicles and a year-total of approximately 203,281 street-legal vehicles driven on the beach and dunes in the designated riding areas of the park. During the 2025 nesting season (1 March to 30 September), beach camping was limited to 300 units per night from 1 March to 19 June, and was increased to 350 units on 20 June. There was an approximate daily average of 163 camping units for the 2025 nesting season. Since October 2024, camping increased to 500 units allowed, but only for the winter months (1 October to 28 February).¹

Within ODSVRA there is extensive breeding habitat for two special-status ground-nesting birds, the state and federally endangered California least tern and the federally threatened Pacific coast population of the western snowy plover. Monitoring of the least tern and snowy plover at ODSVRA during the breeding season began in 1991 and 1992, respectively. Least terns are present at ODSVRA only during the breeding season, migrating to wintering areas well south of California. The snowy plover population at the park is comprised partly of birds present year-round and partly of migrant birds present only during the breeding or wintering season.

This report summarizes the results of the 2025 nesting season for least terns and snowy plovers at ODSVRA. A limited amount of data from previous years' reports has been updated in this report to reflect information that is more accurate and conforms to current analysis practices. Maps in figures and appendices use aerial imagery from Esri World Imagery (2024) or the National Agriculture Imagery Program (2022), unless otherwise noted.

State Park staff conducts monitoring activities at ODSVRA under U.S. Fish and Wildlife Service (USFWS) permit 10(a)(1)(A) ES-815214-10 and California Department of Fish and Wildlife (CDFW) Wildlife Branch Entity Scientific Collecting Permit (S-190250002-19028-001-01). Predator removal activities are conducted under USFWS Special Purpose Agency Species Protection Permit MBPER16224538-0. Point Blue conducts monitoring and banding activities under USFWS permit 10(a)(1)(A) ES-807078-20, Federal U.S. Geological Survey Bird Banding Laboratory Banding Permit 09316, CDFW Scientific Collecting Permit SC-9591, and a CDFW Memorandum of Understanding. In addition, one park staff monitor is listed on Point Blue permits to band plover chicks.

¹ ODSVRA 2023 and 2024 attendance figures (source ODSVRA)

SITE DESCRIPTION

The Oceano Dunes District, California Department of Parks and Recreation (CDPR), manages approximately 4,900 acres with 9.1 miles of ocean shoreline on the western edge, and is part of the larger Guadalupe-Nipomo Dunes complex that extends south to Point Sal. On the northern border of the park is the city of Pismo Beach. Located to the east of the park are Phillips 66 Refinery, the cities of Grover Beach and Oceano, and private lands that consist of dunes, coastal scrub, and agricultural fields. The southern border of the park abuts the Guadalupe-Nipomo Dunes National Wildlife Refuge (Guadalupe-Nipomo Dunes NWR). Inside the park, dunes open to vehicles extend inland approximately 0.6 to 1.3 miles. Eight numbered marker posts, located approximately 0.5 miles apart along the coastal strand, orient park visitors and staff. Street-legal vehicles are allowed throughout the riding area. Off-highway vehicles, as well as overnight camping and vehicles driving after dark, are allowed along the beach and dunes south of marker post 2 (approximately one mile south of Pier Avenue). In the southern portion of ODSVRA is the Oso Flaco Lake area, which is closed to the public on the northern end (approximately 0.5 miles of shoreline) and open to pedestrians on the southern end (approximately 1.2 miles of shoreline), but is closed to camping, equestrian, dog, and vehicle use. The beach at Oso Flaco west of the foredunes is narrower than in the riding area.

The following are descriptions of sites and terms as used in this report (Figures 1 and 2, Appendix C).

ODSVRA: All areas that are administered by the Oceano Dunes District, including the Oceano Dunes SVRA, Pismo State Beach, Pismo Dunes Natural Preserve (Dunes Preserve), Oso Flaco Lake area, and Pismo Lake. The Pismo Lake property is closed to the public.

Riding area: The area within ODSVRA open to street-legal and off-highway vehicles during the nonbreeding season from 1 October to 29 February (approximately 900 acres on 4.2 miles of beach). The northern boundary for street-legal vehicles is the Grand Avenue park entrance and is marker post 2 (approximately one mile south of the Pier Avenue park entrance) for off-highway vehicles. The shoreline is open south to marker post 6, with a large area of back dunes also open to vehicles.

Open riding area: The area within ODSVRA open to vehicle use during the nesting season (approximately 874 acres at the beginning of the nesting season). The installation of buffer fencing decreases the open riding area acreage (see Closed buffer area description below). Fencing designates the eastern perimeter of the open riding area, however this fence is not maintained as predator fencing and coyotes (*Canis latrans*) and other mammals can easily move through this fencing. The majority of the open riding area is not optimal plover nesting habitat, with mostly bare sand, limited areas of artificial debris patches, little to no vegetation, and regions with steep topography.

Foredune closure: Vegetation restoration area formerly within the open riding area and closed in January 2020 to improve air quality conditions. Fencing was installed approximately 0.25 miles south of marker post 4 to north of marker post 6 (0.8 miles of shoreline). The closure, totaling 48 acres, is broken into three plots: Foredune North, Foredune Central, and Foredune South. The plots were given different experimental treatments using straw, native seed, and native plants. One control section was not treated. During the nesting season the treated plots had low to medium hummocks with moderate to dense amounts of plant cover and areas of scattered straw and, although the plots were not intended as a snowy plover nesting area, the location currently provides suitable nesting habitat. The fence surrounding each plot is intended to keep vehicles out of the restoration area, but the fence is not maintained as predator fencing and coyotes and other mammals can easily move through the area. The adjoining shoreline west of the area and the western portions of the three alleyways between the plots and marker post 6 are closed to public use during the breeding season (1 March to 30 September). Nests found along the shoreline and within the western section of these alleyways are included within the Foredune closure. The total acreage of these plots, shoreline

component, and alleyways closed during the nesting season is approximately 77 acres. The eastern portions of the three alleyways between the plots and post 6 were initially open for public access to restrooms and nests found here in these circumstances are considered located in the open riding area. On 30 April and 28 May 2025, the eastern portions of the two alleyways south of Foredune North and Foredune Central were closed to create buffer areas for plover nests, and nests found in these closures are considered located in a closed buffer area (see description below). The eastern portion of the two alleyways were reopened to the public 9 September, when nests were no longer active and chicks were no longer present.

Closed buffer area: Portions of the open riding area are closed to the public to provide a buffer for tern and plover breeding activity. As staff find tern nests within closed areas, management closes areas of the open riding area to the public to provide larger buffers for these nests. Additional areas of the open riding area are closed as staff find nests, chicks, or the tern night roost outside of protected areas, to provide this buffer (see section titled Nonpredator fencing on page 18 for details on buffer sizes). The closed buffer area varies in size during the nesting season, as well as from year to year, depending on locations of nests/chicks and the night roost. On 22 May 2025, after the first tern nests were found, a large closed buffer area (69 acres) was installed east of the Southern Exclosure and Foredune closure. This closed buffer area was expanded over time to close more areas as the tern night roost and additional tern nests were established, as well as for plover chick protection (maximum of 85 acres on 17 June, see maps in Appendix C). The fencing east of the Southern Exclosure and Foredune closure was removed on 27 August, when nests were no longer present in the area. Because the closed buffer area can be large in size, it is often adjacent and connected to the Foredune closure, revegetation areas, or the Southern Exclosure fence using wire fencing to keep people and vehicles out of the area, but the fence is not maintained as predator fencing and coyotes and other mammals can easily move through the area. Staff assigns the “closed buffer area” location to nests initiated and found within already existing enclosed buffer areas. Nests found outside the closed buffer area and other protected areas are assigned to the “open riding area” location.

Southern Exclosure: A single contiguous area within the southern portion of the riding area that is fenced and closed to public entry to protect nesting terns and plovers. The adjoining shoreline is also part of the Southern Exclosure. From 2001-04, the amount of seasonally protected nesting habitat in the riding area periodically increased in size. Subsequent to 2004, there has been no increase in size of this protected area. Although the basic configuration of the Southern Exclosure has remained consistent since 2004, changes in dune topography and public safety issues affect the placement of the east fence, resulting in small variations in acreage from year to year. From 2001-2021, the Southern exclosure and adjacent shoreline were seasonally closed to public entry during the nesting season from 1 March to 30 September, and were closed to public entry year-round beginning 9 October 2021. From 2024-25, the area of the Southern Exclosure (including the area above the high tide line on the closed shoreline) remained unchanged, and was approximately 298 acres. This compares to an average of 294 acres (range=271-307 acres) for the 20-year period 2004-2023. Individually identified areas within the Southern Exclosure include the following:

6 exclosure: The area from marker post 6 to marker post 7, (approximately 0.5 miles of shoreline and approximately 62 acres), first incorporated into the Southern Exclosure for a full season in 2004. Habitat includes areas of bare sand, small to medium sized hummocks, limited areas of organic surface debris (shells, driftwood, dried algal wrack), and while the area was once sparsely vegetated it is more heavily vegetated in recent years.

7 exclosure: The area from marker post 7 to the south side of 7.5 revegetation area (approximately 0.4 miles of shoreline and approximately 62 acres). Habitat includes areas of bare sand, extensive areas of small to medium sized hummocks, limited areas of organic surface debris (shells, driftwood, dried algal wrack), areas of sparse to heavily vegetated dunes, and dense vegetation in the 7.5 revegetation area (4.8 acres, included in the 62 total acres) located within the 7 exclosure.

The vegetation cover has increased in the area over time and in recent years larger dunes have developed in the area.

8 enclosure: The area from the south side of the 7.5 revegetation area to the North Oso Flaco fencing south of marker post 8 (approximately 0.5 miles of shoreline and approximately 81 acres). Habitat includes areas of tall dunes with bare sand in the eastern portion, areas of moderate to tall foredune hummocks with mostly dense vegetation in the western portion, and limited areas of organic surface debris (shells, driftwood, and dried algal wrack). The vegetation cover has substantially increased in the area over time and in recent years taller foredune hummocks have developed in the area.

Boneyard enclosure: The area east of the North Oso Flaco dunes. Habitat is primarily bare sand, includes tall sand dunes, especially on the eastern portion, with areas of densely vegetated moderate dunes in the western portion. This inland area does not have a shoreline component and is approximately 92 acres. A portion of the west side (approximately 16 acres) has been closed year-round since 2005 and the entire area was closed year-round beginning in 2021 (with the rest of the Southern Enclosure). The eastern boundary of the Boneyard enclosure is not maintained with predator fencing due to the rapidly shifting open sand dunes in the area. Instead, beginning in 2003, a two-inch by four-inch mesh interior fence (six-foot-tall predator fencing) has bisected Boneyard enclosure during the nesting season. In 2024-25, the interior fence was not moved and there is 44 acres in the western portion (contiguous with 6, 7, and 8 enclosures and North Oso Flaco) and 48 acres in the eastern portion.

Oso Flaco: The shoreline and dunes in ODSVRA located approximately 0.4 miles south of marker post 8. The approximately 1.7 miles of shoreline is narrow in width, and the dunes are typically heavily vegetated, relative to the riding area. The area is part of the Oso Flaco Lake area, with some areas partially open to pedestrian use but closed to vehicles. For purposes of discussion in this report, Oso Flaco is divided into North Oso Flaco and South Oso Flaco.

North Oso Flaco: The area extending south of 8 enclosure to the Oso Flaco boardwalk, (approximately 0.5 miles of shoreline and approximately 68 acres). Beginning in 2002, the upper beach and dunes were closed to pedestrians during the nesting season with symbolic fencing. Since 2005, the North Oso Flaco area east of the shoreline is part of the Enclosure predator fence (see description in Management Actions section on page 17) and managed in a similar manner with predator fencing. Additionally, the shoreline has been closed to the public during the nesting season since 2005 and was closed year-round beginning October 2021.

South Oso Flaco: Extends from the Oso Flaco boardwalk to the ODSVRA southern boundary (approximately 1.2 miles of shoreline). Oso Flaco Lake drains through Oso Flaco Creek and the mouth of this creek is within the northern portion of South Oso Flaco. The shoreline is open to the public and symbolic fencing and signage have been used since 2002 to designate the seasonally closed upper beach and dune habitat. Snowy plover nests found in this area often receive single nest enclosures with wire fencing. No areas are closed year-round in South Oso Flaco.

Dunes Preserve: Located south of Arroyo Grande Creek and 0.4 miles north of the Foredune closure (1.3 miles in length). The area includes tall sand dunes with densely vegetated foredunes in the western portion and primarily bare sand dunes in the eastern portion. The area was established as a preserve in 1974, vehicles and dogs are not allowed, and fencing designates the boundary adjacent to the open riding area, however there are openings in the fence for pedestrian and equestrian access. Management of the Dunes Preserve was transferred to the Oceano Dunes District in December 2004. ODSVRA provided tern and plover monitoring for the Dunes Preserve prior to 2004 and continues to do so.

Pipeline revegetation area: Located adjacent to the east side of 8 enclosure. The area is heavily vegetated. Fencing designates the perimeter of the revegetation area adjacent to the open riding area, however this fence is not maintained as predator fencing. A pathway was created in 2023 for park monitors or emergency vehicles to pass between the pipeline revegetation area and 8 enclosure, but the area is closed to the public year-round (see Figure C.8 in Appendix C).

Other revegetation areas mentioned in this report: Several named revegetation areas are in the open riding area near nesting areas. Pavilion Hill is 180 feet northeast of the Foredune closure between marker posts 4 and 5. BBQ Flats and Bigfoot are 250 and 220 feet east of the Foredune closure, respectively. Revegetation islands adjacent to the Southern Enclosure include Eucalyptus North (320 feet east of 6 enclosure) and Eucalyptus Tree (330 feet east of 6 and 7 enclosures). Maidenform revegetation area is located adjacent to the east side of Boneyard enclosure and the open riding area. The areas are mostly heavily vegetated, but some small portions of the areas more recently expanded for restoration are lightly scattered with dry straw and widely scattered small plants. Fencing designates the perimeter of revegetation areas in the open riding area; however, this fence is not maintained as predator fencing.

Arroyo Grande Creek: Seasonally flows into the Pacific Ocean approximately one mile south of Pier Avenue and 1.5 miles north of the Foredune closure. The associated lagoon is variably located east of the area near marker post 1 and north of marker post 2. The upper creek area and lagoon are closed to vehicle use year-round to protect sensitive aquatic habitat. Pedestrian and equestrian entry is prohibited during the nesting season and permitted during the nonbreeding season. Posts and signs delineate the closed area during the nonbreeding season; symbolic rope fence is added during the nesting season.

Carpenter Creek: Seasonally flows into the Pacific Ocean approximately 0.4 miles north of Grand Avenue and 3.5 miles north of the Foredune closure. No public vehicles are allowed in the area and the area receives a high level of pedestrian use.

Pismo Creek lagoon: Seasonally flows into the Pacific Ocean approximately 0.6 miles north of Grand Avenue and 3.7 miles north of the Foredune closure. Standing water persists all year, with low vegetated hummocks west of the lagoon; tall vegetated dunes and developed RV campground to the east (see Figure C.5 in Appendix C). No public vehicles are allowed in the area and the area receives a high level of pedestrian use. Only a small portion of the lagoon is part of State Park property.

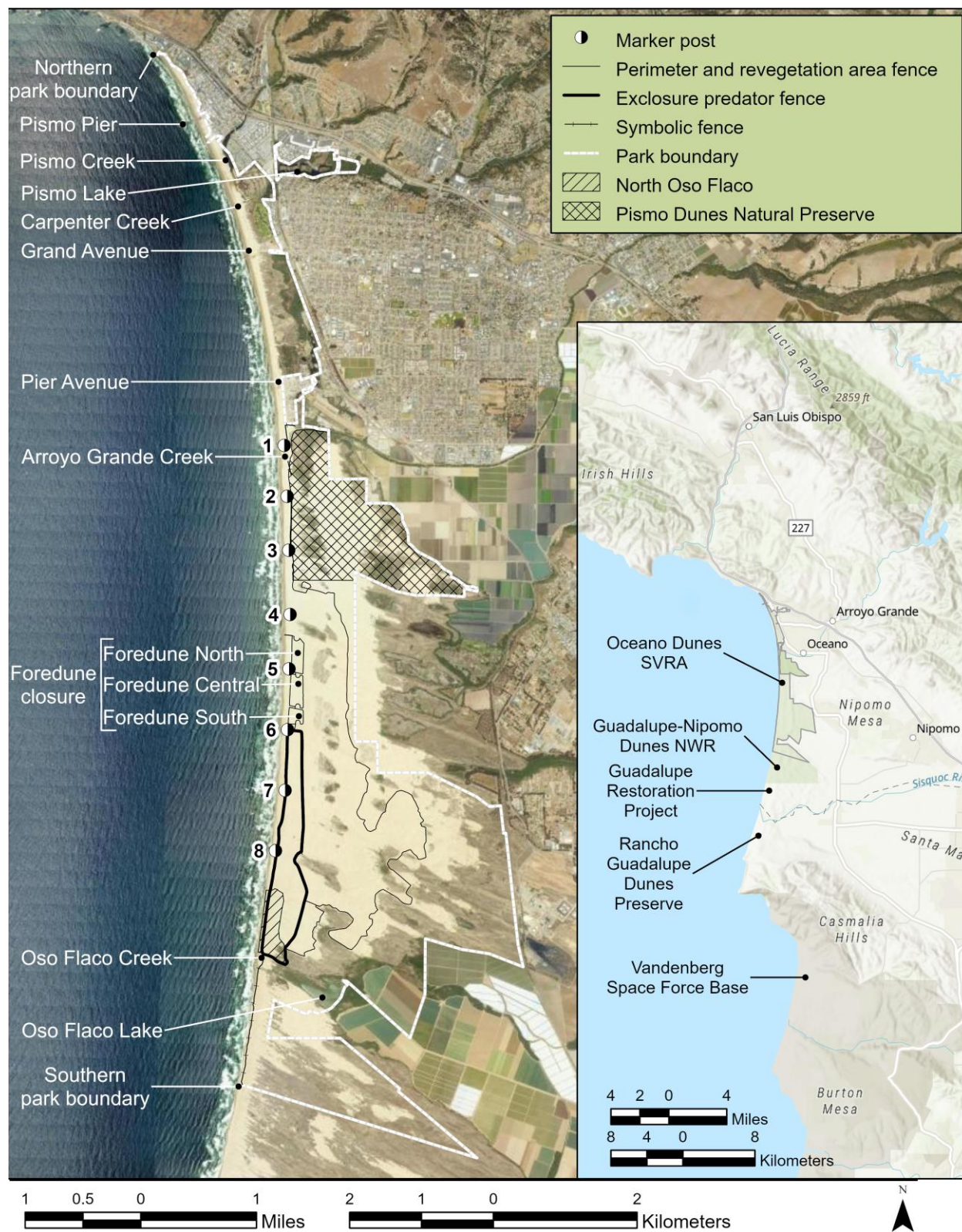


Figure 1. ODSVRA site map.

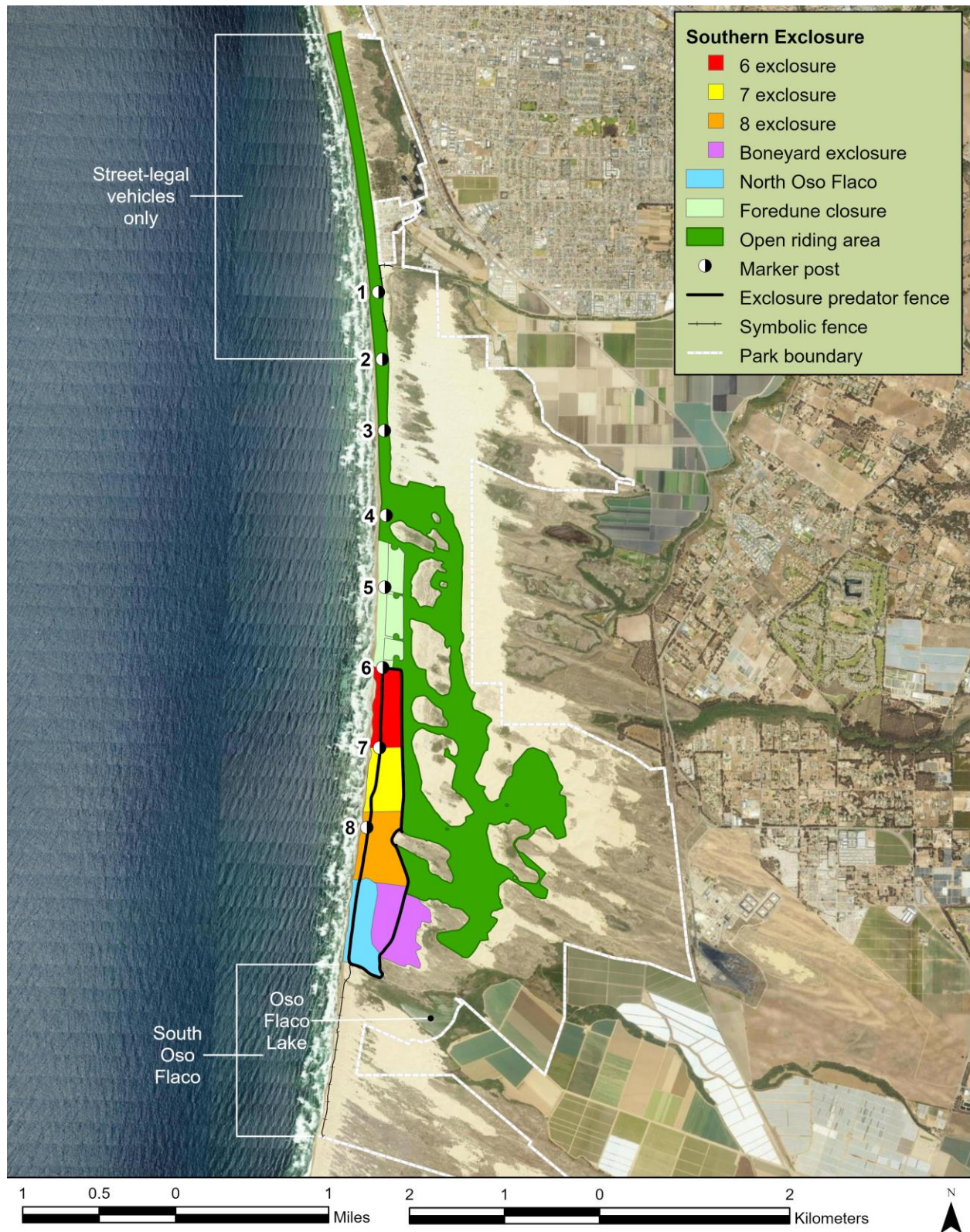


Figure 2. ODSVRA Southern Exclosure and Oso Flaco protected areas for breeding California least terns and western snowy plovers in 2025.

MONITORING AND MANAGEMENT ACTIONS

MONITORING

Daily monitoring occurs from 1 March to 30 September. ODSVRA maintains four to eight or more monitors during morning and early afternoon hours. As the season progresses, monitoring increases to include the late afternoon and early evening hours, typically with two staff members. Monitoring involves walking to assess or find new nests as well as scanning for nests and broods from parked vehicles (a proven and effective blind). Monitoring occurs in a manner to minimize disturbance or adverse effects to adult birds, nests, and chicks.

Monitors collect and record data such as: nest status; brood location and count of chicks; fledgling identification; band combinations of chicks, juveniles, and adults; tern night roost location and number of birds; injuries or mortalities; predator sightings or tracks; and visitor infractions. Nest cameras placed at a small number of tern and plover nests may provide additional monitoring information such as adult bands, adult behavior, nest attendance, predators, nest fates, nest fate dates, and chick numbers, especially in areas otherwise difficult to access. Monitors enter data into a comprehensive Microsoft Access database and Esri ArcMap from field notes, nest cameras, and Esri ArcGIS Online Survey123 and Field Maps.

Open riding area

Monitoring of the open riding area by vehicle occurs daily along defined transects, as any nests or chicks located in this area require immediate protection from recreational activities and may require additional monitoring. These daily transects include portions of the revegetation areas closest to the open riding area. Staff looks for nesting bird sign, predator presence or sign, and nonpermitted visitor activity (such as off-leash dogs or kites near the enclosure). Staff also rescues sick or injured wildlife and collects deceased wildlife. Areas along transects with tern or plover activity indicating potential nesting interest (scraping or copulating) receive more thorough checks on foot and with increased frequency using binoculars or spotting scopes. Monitors pay particular attention to the boundaries of the Southern Enclosure, Fore dune closure, and revegetation areas, looking for indications of nesting close to the open riding area and for tracks or other signs of tern or plover movement into the open riding area. Close brood monitoring occurs daily, including any time staff walks within the enclosure, and is prioritized for any brood movement toward or into the open riding area (see more detail in section titled Broods in the open riding area in the Management Actions section on page 20).

Breeding least terns and snowy plovers

Finding and monitoring nests: The least tern and snowy plover management program documents size of breeding populations and attempts to find, monitor, and determine all tern and plover nest and chick fates. Staff checks most nests daily and conducts regular nest searches using binoculars and spotting scopes from parked vehicles outside of the Southern Enclosure and Fore dune closure, and from vehicles on the adjoining shoreline, to minimize disturbance to nesting birds and broods. Additional nest searches conducted on foot confirm egg number and document activity at the nest bowl. Staff maps nest locations using a Global Positioning System (GPS) receiver connected by Bluetooth to a phone.

Estimating nest initiation date: Staff estimate nest initiation dates using standardized methods and available behavioral or developmental information. Observed egg-laying sequence is first used, when possible, as this provides the most accurate determination of initiation. If the hatch date is known (e.g., hatched chicks observed at the nest), the initiation date is back-dated using the species-specific incubation period (21 days for terns and 32 days for plovers) (hatch dates may be adjusted for tern chicks based on weights). When hatch date not known, staff will determine the estimated hatch date by floating eggs (plover nests only) or by estimated chick age at first observation, and the initiation date is back-dated accordingly. If none of these methods are applicable, the first date of observed incubation is used, or the earliest date eggs could

have been laid if egg number known, whichever is earlier, and the estimated initiation date is considered to be on or prior to the date the nest was first found active. When none of this information is available, such as for nests first found as abandoned, staff cannot estimate nest initiation dates.

Nest fates

The following are categories of nest fates used in this report. Monitoring of nests includes looking for evidence of hatch or cause of nest failure. Estimated hatch date for active nests is based on timing of egg-laying sequence or floating eggs at plover nests. Date of failure is the first day nest is checked and observed failed. Staff examines contents of nonhatching eggs postseason to look for presence or absence of stage/progression of chick growth within the egg using an embryonic developmental guide (see attached Overview of developmental stages and landmarks) (Jensen et al. 2019).

Hatch: Nest hatched at least one egg by evidence of either: 1) chick(s) observed at the nest bowl on hatch day, 2) chick(s) observed with one or both adults confirmed associated with the nest (based on banding information), 3) chick(s) observed near nest location on or near hatch day or, 4) chick(s) observed near nest location repeatedly, no other nests in the area hatched during the same time period, and no counterevidence found. Monitors look for pip fragments and brooding scrapes as evidence of hatch. The hatch date is estimated based on observations such as the presence of chicks at nests or the estimated chick age when found away from the nest.

Nesting attempts known only by detection of brood constitute “unknown location nests” (see paragraph titled Assignment of broods to nests within this Monitoring section for more detail). When all chicks in a plover brood are known to hatch over more than one day, this is referred to as a “split” hatch. It is common for two- or three-egg tern nests to hatch over more than one day and the term split hatch is not applied.

Abandoned pre-term: Nest abandoned prior to the estimated hatch date; causes may include, but are not limited to, disturbance or adult mortality.

Abandoned post-term: Nest abandoned after the estimated hatch date; includes nests with nonviable eggs.

Abandoned, unknown if pre- or post-term: Nest abandoned, but unknown if pre- or post-term.

Abandoned, partial loss of clutch: Nest abandoned after partial loss of clutch due to unknown cause.

Depredated: Nest lost to a predator. Includes partial nest lost to a predator if remaining eggs are abandoned as a result of the depredation event. If possible, staff identifies the predator to species or group (mammalian, avian), or describes the nest as lost to an unidentified predator.

Event, coyote²: Eggs missing with lack of evidence of cause, prior to estimated hatch date, and nest considered depredated because loss occurred during period (within three days) of multiple nearby nests confirmed depredated by coyote.

Event, raven: Eggs missing with lack of evidence of cause, prior to estimated hatch date, and nest considered depredated because loss occurred during period (within three days) of multiple nearby nests confirmed depredated by common raven (*Corvus corax*) (raven).

² New fate category beginning 2025 season.

Event, tide²: Eggs missing and nest area overwashed by tide.

Failed, nonviable egg(s) removed by staff: Nonviable egg or eggs from nest removed by permitted staff after incubated well past estimated hatch date.

Overwashed by tide, Flooded by creek: Eggs from nest found overwashed by tide, or flooded by a shifting creek or expanding lagoon.

Wind: Nest buried during periods of high winds, with eggs typically found almost or completely buried. Includes direct observation of egg burial with eggs not found.

Vandalism: Eggs from nest missing or damaged from deliberate human caused vandalism.

Failed, unknown cause: Nests that disappeared before estimated hatch date with cause of failure undetermined.

Unknown: Nests where eggs disappear around the estimated hatch date, but not enough evidence exists to determine whether they hatched or failed, or nests with eggs missing and insufficient information to estimate hatch date. To decrease disturbance to chicks, monitors limit access to nests with nearby young tern and plover broods present, which may result in nests with unknown fate.

Banding chicks: In 2025, least tern chicks received a size 1B numbered aluminum federal band (covered with aqua over red vinyl tape) on the left leg and a size 1B blank aluminum band on the right leg. Colored vinyl tape placed on the right band creates color band combinations unique to each individual chick for the season. Prior to the 2024 season, slightly larger 1A bands were used for tern chicks. Weighing chicks occurs immediately prior to banding, typically at zero to three days old.

Staff inconsistently banded plover chicks prior to 2001. ODSVRA aims to band as many chicks as possible, with all chicks within one plover brood given the same color band combination since 2002. ODSVRA has a limited number of designated combinations and will reuse combinations from birds found dead or presumed dead after a period of at least three years with no sightings in the Pacific coast population's range. Due to a limited number of available band combinations for the growing plover population at ODSVRA, reuse of combinations on birds known or likely to be alive became necessary and occurred from 2010-18, resulting in indeterminate ages of some adult banded plovers. Since 2019, almost all broods have received a combination no longer believed in use on a living bird because ODSVRA obtained additional band combination options.

Chicks are not banded at ODSVRA when it will cause a disturbance to nearby young tern and plover broods. A variety of other factors will prohibit banding including, but not limited to, weather conditions (and other conditions defined in the USFWS permit) that would make banding unsafe, topography and vegetation in area of chicks making them difficult to locate, and chicks from nests with unknown locations found when too old and mobile to capture for banding. In addition, loss of a number of very young unbanded chicks occurs prior to any banding opportunity. Staff tracks the fates of unbanded chicks with intense brood monitoring; in many instances, the associated adult or sibling chicks may have color bands and chick size/estimated age and location helps distinguish unbanded broods. To date, unbanded plover chicks are successfully tracked using these methods. Unlike plover broods, tern broods do not tend to remain in one area and may leave the site very quickly after fledgling, which makes unbanded tern chicks and fledglings more difficult to track and determine fate.

Assignment of broods to nests: Point Blue and State Park staff trained by Point Blue typically band chicks at the nest. For unbanded broods found outside of the immediate nest area, staff evaluates brood location,

age of chicks, and adult bands and assigns the brood to a nest as either: 1) a preexisting known location hatched nest or 2) a new hatched nest with unknown location and known only from detection of brood. Egg number for “unknown location nests” represent minimums derived from the number of chicks observed. Prior to 2023, staff used a third category of “unassigned nest” when unsure how to assign broods to a specific nest, in circumstances where several nearby nests hatch at the same time and unbanded broods with chicks of similar age appear on the same section of shoreline. The unassigned category was not used in 2023-25 and assumptions were made to determine the most likely nest source for the broods.

Chick monitoring: Staff records chick observation data during daily monitoring activities. In addition, focused searching for broods occurs multiple times each week from vehicle surveys on the Foredune closure, Southern Exclosure, and Oso Flaco shorelines. Staff records band combinations, chick numbers, adults present, and location.

Fledging success: At ODSVRA, juvenile terns can disperse widely over a large area. Specifically monitoring terns allows estimation of number of juveniles produced as well as identifying potential threats to survival. ODSVRA considers tern chicks surviving to 21 days or older as fledged (21 days after the hatch date, which counts as day zero). Tracking of juvenile terns occurs at the Southern Exclosure and any temporary daytime roosting areas that may become established in the park or off-site. To collect additional information on banded tern juveniles dispersing off-site, staff reviews photographic records from off-site birder visits (eBird.org 2025). Staff also communicates with off-site tern managers to supplement site data and may visit nearby locations where terns fledging from ODSVRA may be present.

The fledgling least tern counting method varied among years as follows: single day high counts for 1991-97 and 2000-01; a single day high count at Oso Flaco Lake for 1998; count method for 1999 unknown; and three-week interval day counts conducted from 2002-04 (chicks banded to site 2003-04). In 2005, ODSVRA color-banded chicks to brood and since 2006 color-banded most chicks to individual, resulting in more accurate documentation of fledge rate than previous methods. Earlier estimates prior to banding to individual may represent substantial undercounts or overcounts. Staff counts unbanded fledglings and adds the single day high count to banded fledgling numbers to obtain total fledgling numbers.

ODSVRA considers plover chicks surviving to 28 days or older from the time of hatch as fledged (28 days after the hatch date, which counts as day zero). Staff identifies and records fledglings during chick monitoring as described above. Staff monitor chick(s) when adopted by an adult associated with another nest and are recorded as fledged from the nest the adopted chick originally hatched from. Prior to 2001, staff monitored Oso Flaco and Dunes Preserve intermittently, resulting in a lack of fledgling information.

Measures describing breeding success

The following categorizes measures describing breeding success used in this report:

Hatch rate: Total number of hatching known location and fate nests divided by total number of nests with known location and fate.

Percentage chicks fledging: Total number of chicks fledging divided by total number of chicks.

Number of chicks fledging per nest: Total number of chicks fledging divided by total number of nests.

Productivity: Number of least tern fledglings per breeding pair (consistent with statewide California least tern reports produced by CDFW). Number of snowy plover fledglings per breeding male (consistent with USFWS Pacific coast western snowy plover recovery plan). Beginning in 2023, the number of snowy plover fledglings produced per eggs laid, called breeding coefficient, is also reported as an alternate assessment of productivity (Lauten et al. 2017-20) (Colwell et al. 2017). Note number of eggs is a minimum derived from the number of eggs found at nests or number of chicks observed from unknown location nests.

Banded adults: Documenting banded least terns and snowy plover adults can provide detailed information on history of birds including origins, age, breeding status, and movement between sites. Staff attempts to record all band combinations of adult least terns and snowy plovers.

Number of breeding adults: For least terns, ODSVRA represents the number of breeding pairs as a range. The estimated minimum number of pairs equals the maximum number of concurrently active nests and broods. The estimated maximum number of pairs equals the minimum number of pairs plus one-half of the value of the minimum number of pairs subtracted from the total number of nests (assumes nests in addition to those accounted for by the minimum number of pairs are equally divided between renesting pairs and new pairs).

Max. no. pairs = min. no. pairs + [(total no. nests - min. no. pairs) / 2]

Banding least tern chicks to brood in 2005, and to individual since 2006, provides for increased accuracy in counting the number of active broods on a given date. From 1991 to 2001, ODSVRA did not always report the estimated number of breeding pairs or based it only on the number of concurrent nests. These reports, reviewed in 2005, looking at both nests and the limited brood information, resulted in identifying an increase in the minimum number of pairs in some years; ODSVRA provides this revised information in annual reports since 2005.

Banded snowy plover adults provide the most accurate means to identify breeding population size but currently too few individually banded adults breed at ODSVRA to rely solely on this method. A minimum number of breeding females derives from the maximum number of nests active on the same day plus any additional nests hatching one day before or initiated one day after this date. The minimum estimated number of breeding males equals the highest same day count of active nests and broods (males typically raise the chicks; not including males with broods three weeks of age or older since they could be associated with a new nest) and number of nests initiated the day after the high count. From 2009 to 2017, staff compiled numbers of color-banded adults confirmed breeding; staff added any number of this group not accounted for on the same day high count, including nests or broods with unknown adults, to the same day high count for the appropriate sex. Beginning in 2018, using a database query, staff created a more accurate method to determine high counts of unbanded males and females actively associated with a nest on any given day and a total number of uniquely banded males and females associated with a nest at any point in the season.

ODSVRA also participates in the annual U.S. Pacific coast snowy plover breeding season window survey coordinated by USFWS.

Snowy plover chicks hatching early and late season: Plover chick production is compared between two halves of the season. Early season is defined as prior to 20 June and late season as 20 June or later. Although the dates when chicks first and last hatch can vary every season, the midpoint date of 20 June was selected in 2010 by determining the midpoint between dates of the first and last chick hatching for each year during the four-year period 2007-10. The median of the four midpoints was then used to determine the 20 June date. This same separation period has been used since 2010 and is applied to all years prior when comparisons are made.

Least tern night roost: During the breeding season, terns may assemble in a night roost. Staff searches for evidence (tracks, roosting scrapes, fecal matter) in the open riding area during daily morning transects to identify night roost locations outside the Southern Enclosure. Monitors visually look for the night roost two times per week, weather permitting, within the Southern Enclosure and in the open riding area. Monitors record the location and number of individuals present as the terns arrive at dusk or later using a thermal infrared scope (Trijicon REAP-IR). ODSVRA considers counts a minimum due to the inherent limited visibility of the night roost. Light conditions after dusk can make adults and juveniles indistinguishable.

Wind speed monitoring

Since 2011, ODSVRA monitors wind speed from a tower (S1 wind tower) located approximately 360 feet east of 6 enclosure with a recording anemometer at a height of 33 feet (10 meters).

Predator activity

Monitoring predator activities: Park staff and contractors (Wildlife Innovations, U.S. Department of Agriculture [USDA] Wildlife Services, and Point Blue) collect information on predator presence at ODSVRA from March through September. From direct observation of avian and mammalian predators or their sign (e.g., tracks, scat, regurgitated pellets, prey remains, depredated nests) monitors record, when possible, species, type of sign, characteristics that may identify an individual, behavior, duration of observation, direction of travel, locations, bands found in pellet/scat contents, and any hazing or trapping details. Nest cameras placed at a small number of nests may provide additional predator observations. Wildlife Innovations also use a thermal infrared scope (Trijicon REAP-IR) to conduct overnight owl surveys and record any other nocturnal predator activity.

Measures describing predator activity

Monitors record predator presence from 1 March to 10 September (a 194-day period) under the following three categories to estimate the extent of predator activity, both temporally and spatially, in the protected areas:

Number of days detected: Total number of days different avian and mammalian predators occur in the nesting area of the Southern Enclosure and Oso Flaco during the nesting season.

Sightings: Record of avian predator activities, with most detections made by direct observation (with the notable exception of nocturnal owls). In addition, observations of an individual remaining in one area longer than one hour count as multiple sightings (one sighting per hour or portion thereof) in order to account for possible additional impacts.

Occurrences: Record of mammalian predator activities, with most detections occurring by tracks and sign. Because direct observation of mammalian predators is very limited, information typically does not include details such as number of individuals, behavior, or duration of presence.

For both sightings and occurrences, this report separates single day detections for the different areas of the Southern Enclosure (6, 7, 8, and Boneyard enclosures) and Oso Flaco (North and South). Monitors record predator activity in the Foredune closure using the same methods, however these recordings are not included in sightings and occurrences totals in this report to keep comparisons between years consistent. Note that the number of recorded sightings or occurrences for the first two weeks of March and the last few weeks of the season (end of August and beginning of September) may be biased lower, with less predator contractor presence in the field, and less staff time during these periods spent on predator surveys and more time spent on habitat enhancement and fencing projects.

Minimum number of avian predators during the season is determined, when possible, based on observations of one or more of the following: number seen simultaneously, bands, unique plumage, age characteristics, and sex characteristics.

Nonbreeding season monitoring of snowy plovers

Beginning in October 2009 and continuing through the 2024-25 winter, more consistent weekly surveys for snowy plovers occurred during the months of October through February. During these surveys, staff divides the shoreline into the following five sections, listed from north to south:

- 1) approximately 0.5 miles north of Pismo Pier to Grand Avenue;
- 2) Grand Avenue to marker post 2;
- 3) marker post 2 to marker post 6;
- 4) marker post 6 to the North Oso Flaco northern boundary; and
- 5) Oso Flaco (shoreline from North Oso Flaco to ODSVRA's southern boundary).

ODSVRA also participates in the annual U.S. Pacific coast snowy plover winter window survey coordinated by USFWS.

MANAGEMENT ACTIONS

ODSVRA manages for least terns and snowy plovers to optimize breeding success and reduce the potential for take. To reduce visitor disturbance to breeding birds, ODSVRA installs fencing and posts signage to close areas to visitors. Staff may augment existing habitat with branches, woodchips, and wrack (surf-cast kelp), but distributed less of these materials in 2022-25 because the Southern Exclosure was closed to the public year-round, which allowed for materials to stay in place without disturbance. An active predator management program during the breeding season reduces disturbance and depredation by mammalian and avian predators. Under select circumstances, and in consultation with USFWS and CDFW, ODSVRA staff may collect abandoned but potentially viable eggs or chicks for captive-rearing and may send carcasses to an approved facility for investigative necropsy. For 2025, ODSVRA selectively took plover eggs to the Santa Barbara Zoo and sent carcasses appropriate for necropsy to CDFW, Office of Spill Prevention and Response, Marine Wildlife Veterinary Care and Research Center, Santa Cruz, California (MWVCRC).

Informational signage and enforcement of regulations

Staff places interpretive panels and signs at public access points, near restroom facilities, and on A-frame placards near winter plover flocks to increase public awareness of threats to terns and plovers. Staff also uses signs to identify closed areas during the breeding season. Least tern and snowy plover information and updates are posted on ODSVRA websites and social media pages, such as Facebook. Park ranger staff enforces park regulations enacted to protect terns and plovers.

Closures and fencing

ODSVRA closes portions of the park to vehicle and/or pedestrian use with wire mesh or symbolic fencing. The wire fencing of the Exclosure predator fence (see details below), provides a higher level of protection compared to nonpredator fencing and symbolic fencing to keep visitors and coyotes from entering sensitive areas. When nesting occurs outside of the Exclosure predator fencing, staff may choose an alternative exclosure or other fence type with consideration for the species, topography, proximity to recreational activities, predator threats, and duration of disturbance to the area during exclosure construction.

ODSVRA uses the following fencing and exclosure types:

Exclosure predator fence (within Southern Exclosure and North Oso Flaco): ODSVRA enclosed with wire mesh fencing this approximately 270-acre area to limit vehicle and human trespass into protected nesting and brood-rearing habitat. Wire fencing five feet high (bottom eight inches buried) with two-inch by four-inch mesh discourages coyote entry. For the purposes of this report, this type of buried wire fence is referred to as “predator fence” or “predator fencing.” Beginning in 2006, an additional layer of fence material (with larger mesh size) attached to overlap the top of the fence increased fence height above the surface to approximately six feet as a further deterrent to coyotes. Staff attaches bird barrier spikes to the wood posts in an effort to discourage perching by avian predators. Beginning in 2016, for the purpose of making the fence more visible to flying least terns, orange plastic fencing overlays the top portion of the fence (in swaths approximately 16 inches wide) on the north and west fence of the Southern Exclosure from approximately marker post 6 to post 8. Heavy equipment operators assist regularly, usually weekly during high wind periods, in the maintenance of the predator fence. Beginning in 2023, staff installs jute netting along the base of the fence in areas prone to high sand movement to help to stabilize sand and lessen the need for heavy equipment.

Symbolic fence

Rope fencing in several areas of the park is used to seasonally or temporarily protect nesting or shoreline brood habitat but varies in configuration and length of time used depending on the location and protection needs. Nests with symbolic fencing may also receive protection from a single nest exclosure with wire fencing.

Foredune closure, Southern Exclosure, and North Oso Flaco shorelines: Symbolic rope fencing, with the addition of tall posts with large signs extending into the intertidal area at the northern end of the Foredune closure and the southern end of North Oso Flaco, clearly designates a closed shoreline of the Foredune closure, Southern Exclosure, and North Oso Flaco to visitors for the nesting season from 1 March to 30 September. On 1 October, signage is installed at marker post 6 to designate the Southern Exclosure and North Oso Flaco shorelines as closed to visitors for the winter months (the Foredune closure shoreline opens to the public on 1 October).

South Oso Flaco: Symbolic rope fencing and signs close approximately 1.2 miles of nesting and brood-rearing habitat in South Oso Flaco (lower shore remains open to public). Staff moves the fencing in this area westward for nests found west of or very near the symbolic fence to provide an additional buffer between nests and pedestrians.

Arroyo Grande Creek and lagoon area: Symbolic rope fencing and signs close a small area around Arroyo Grande Creek and lagoon from 1 March to the end of September for the nesting season. ODSVRA removes the symbolic fence, opening it to pedestrian use during the nonbreeding season from 1 October through 29 February, but posts and signs remain in place to restrict vehicle use year-round.

Open riding area: Nest or chick protection consists of symbolic rope fencing and signs initially when monitors discover a nest or brood in the open riding area. The symbolic fence is replaced with temporary wire fencing (nonpredator fencing) in most cases and when necessary. Staff removes fencing once nesting activity ceases or when broods are no longer present in the temporarily fenced area.

Nonpredator fence: Wire “field” fencing is used to identify some areas as closed to the public. With its larger mesh size, a height of only four feet, and unburied installation, it does not deter coyotes. This nonpredator fencing closes the western portion of the Foredune closure alleyways for the breeding season 1 March to 30 September. Staff installs nonpredator fencing to provide a closed buffer area around any least tern or snowy plover nest found in or near the open riding area (see Site Description for details on closed buffer area and “Bumpout” description on the next page). Staff may also install the wire fencing to protect snowy plover broods in the open riding area. Tern nests receive a minimum nest buffer from the open riding area of 984 feet (300 meters). For plover nests, buffer distance was a minimum of 100 feet (30 meters). Because of the large size of the tern buffer, staff often attaches the nonpredator fencing to adjacent fenced closed areas (such as the Southern Exclosure, Foredune closure, or revegetation areas), making an irregular shape (not circular). The nonpredator fencing makes up the closed buffer area that expands or contracts in size over time, often with overlapping fencing. ODSVRA may use nonpredator fencing to create closed buffer areas of smaller sizes in cases where topography or safety conditions preclude a full-sized exclosure. Park staff vehicles are allowed in the closed buffer areas for daily monitoring tasks, fence maintenance, and response to emergency situations.

Circular exclosure and mini-exclosure: Staff selectively uses small exclosures (made of two-inch by four-inch wire predator fencing) around individual snowy plover nests inside or outside of predator fencing for protection from predators, including roosting gull flocks. Permitted monitors use different exclosures based on a variety of factors including, but not limited to, weather, topography, predator threats, and proximity of young broods. Staff closely monitors nests within smaller exclosures since there may be an increase in abandonment due to predation on adult plovers attending the nests or a higher risk that sand accumulating inside the fencing during high wind events buries eggs.

Staff builds a seven-foot-diameter circular enclosure (used since 2012) with five-foot-high sides and the bottom eight inches buried when a plover nest is located outside of the Southern Enclosure. Plastic netting, with 1/2-inch by 1/2-inch mesh, covers the top. Staff may also selectively use a three-feet by three-feet by three-feet mini-enclosure (used since 2010), with a wire mesh top, staked into the ground, and buried four to eight inches when appropriate. The mini-enclosure takes the least amount of time and staff to install but the circular enclosure is beneficial because the larger size may give more protection from predators, accommodates more nest movement, and may cause less sand deposition and egg burial at this very windy site.

Bumpout: A nest in the Southern Enclosure, Fore dune closure, or revegetation areas and located close to the boundary of the open riding area requires temporary additional fencing extending into the open riding area to allow an adequate buffer from recreational activities. Least tern nests within 984 feet (300 meters) and snowy plover nests within 100 feet (30 meters) of the open riding area receive a bumpout. Rarely, a slight reduction in bumpout size occurs, in consultation with USFWS and CDFW, to maintain a safe vehicle corridor adjacent to the fence. Staff creates these bumpouts using nonpredator wire fence (unburied) or symbolic rope, thus they are not predator proof.

Habitat enhancement

Staff evaluates the nesting habitat of the Southern Enclosure and the Fore dune closure shoreline and places materials to offer more areas of disruptive cover, provide shelter from wind and blowing sand, reduce exposure to predators, and augment potential nesting substrate for terns and plovers. The Fore dune closure shoreline is open to camping and vehicles following the nesting season for the five-month period October through February, resulting in barren sand with little to no natural debris and vegetation compared to the Southern Enclosure and Oso Flaco. Beginning in February or March, and prior to nest initiation, staff may add natural materials such as driftwood, wrack, or woodchips to the Fore dune closure shoreline or the Southern Enclosure, as deemed necessary to enhance habitat features. On the Southern Enclosure shoreline, staff may inoculate wrack with talitrids (*Megalorchestia* spp., commonly called beach hoppers) to help establish a breeding population, thus increasing the food resources available for plover chicks and juveniles during the breeding months. Amount of materials collected and dispersed, and timing of distribution, varies from year to year depending on the need for additional materials, availability of materials, and availability of staff.

Wrack and talitrids: Results from a five-year study conducted from 2007-11 by Drs. Jenny Dugan and Mark Page, researchers from the Marine Science Institute at the University of California Santa Barbara (UCSB), showed greatly depressed invertebrate populations on the Southern Enclosure shoreline when the area was seasonally open to recreational vehicle use during five months (October through February). The studies also showed that invertebrates cannot effectively recover species diversity and abundance on the Southern Enclosure shoreline in the following seven-month seasonal closure (March through September). In 2012, UCSB also conducted invertebrate sampling on the ODSVRA shoreline and from 2013-present, park staff continued the surveys using the UCSB protocols. The beginning and end of season surveys are comprised of 15 transects in defined areas along the Fore dune closure (3 transects, began surveying in 2021), Southern Enclosure (9 transects), and North Oso Flaco (3 transects as a control) and the samples are sent to Dr. Dugan for analysis. The Southern Enclosure has been closed year-round since October 2021, and invertebrate populations appear to be improving (talitrid survey results are pending). Since the Fore dune closure shoreline is open to camping and vehicles seasonally, it is likely to have depressed numbers of invertebrate populations on the shoreline compared to the Southern Enclosure and Oso Flaco.

ODSVRA may collect wrack in the open riding area and disperses it on the Fore dune closure and Southern Enclosure shorelines to improve habitat conditions. Collection and distribution occur by hand and relocation by truck and trailer. Staff may collect talitrids from outside the vehicle use area north of Grand Avenue and from South Oso Flaco, taking care not to deplete talitrid numbers from collection sites, and

inoculates talitrids into the dispersed wrack on the Southern Exclosure shoreline. In 2025, a limited amount of wrack was distributed in March and early April and talitrids were not inoculated because there were less bare areas present on the closed shorelines and staff time was limited.

Wood pieces and woodchips: Staff distributes wood pieces (cut branches and driftwood) in patches from the mid-portion of 6 and 7 exclosures toward the west fence, the upper portion of the Southern Exclosure shoreline west of the fence, and the Foredune closure shoreline. Since the year-round closure of the Southern Exclosure in October 2021, wood pieces have been left in place within 6 and 7 exclosures east of the west fence, therefore staff focus on distributing available wood pieces on the exclosure and foredune closure shorelines. Staff collects the wood pieces at the end of each season from shoreline areas where they may be washed out and stores them for use the following season.

From 2008-22, staff added woodchips to the Southern Exclosure to supplement the limited existing assorted debris that least terns and snowy plovers often choose as nesting substrate. Crews spread woodchips in patches, usually less than a quarter-acre in size, in the Southern Exclosure in areas of barren sand and over thinning woodchip patches remaining from previous years. ODSVRA heavy equipment assists in loading woodchips to be distributed. Since 2023, woodchips were not distributed because less bare areas were present. Woodchips remained in place from previous years and the year-round closure of the Southern Exclosure protected the substrate. Moving sand dunes in other bare areas of the Southern Exclosure would cover any materials, making placement of wood pieces and woodchips impractical.

Predator management

In addition to preventative measures such as fencing, single nest wire exclosures, and cover provided by habitat enhancement, park staff removes dead seabirds and marine mammals (which attract scavengers) in or adjacent to nesting and brood-rearing habitat and may haze predators to flush them from sensitive areas. Hazing techniques used include approaching an avian predator on foot or by vehicle, waving arms and making noise, or firing a bird whistler. A handheld launcher, the bird whistler fires a projectile up to 300 feet with a loud whistling sound, hazing predatory birds without harming them. In some situations, firing the bird whistler may cause less disruption to plovers and terns compared to approaching an avian predator on foot in the breeding habitat. When ODSVRA requires additional options for managing predators, Wildlife Innovations performs selective live-trapping and relocation of raptors and USDA Wildlife Services conducts selective lethal removal of mammalian and avian predators (see section titled Predators and predator management on page 49 for additional information).

Broods in the open riding area

When staff observes tern or plover chicks within a closed protected area, but close to the boundary of the riding area, staff continues monitoring closely until the broods move a safe distance away. If broods move slightly out of the boundary without an immediate threat detected, monitors watch them closely until they return. If the brood fails to return quickly or continues to move further away from the boundary into the open riding area, monitors divert vehicle traffic and pedestrian foot traffic out of the area using fencing and/or signage if necessary. If determined necessary, monitors carefully direct the brood to a protected non-vehicle use area such as the Southern Exclosure or the Foredune closure. Fencing may stay in place until broods are no longer using the area as a travel corridor. For nests expected to hatch outside a protected area, monitors oversee the installation of temporary fencing prior to the nest hatching to provide a safe passage to a protected area. Corridors may vary in distance, shape, and type of materials used depending on location and other factors but are typically 100 to 200 feet in width. Additional potential protection measures allow broods to move safely, including flushing potential predators such as gulls within the travel corridor and obtaining assistance as necessary from ODSVRA patrol staff. ODSVRA consults with CDFW and USFWS before known nests located in the open riding area hatch or once a brood is found greater than 200 feet away from a protected area prior to guiding brood movement.

Selective collection and transfer of abandoned snowy plover chicks and potentially viable eggs³

Under select circumstances, ODSVRA staff may collect abandoned but potentially viable snowy plover eggs or chicks. Monitors consider whether disturbance factors from visitors or park management efforts contributed to abandonment. Some examples include: abandoned eggs or chicks from a nest in the open riding area; abandoned eggs or chicks from a nest within a single nest enclosure such as a circular enclosure, with suspected adult mortality; or abandoned eggs or chicks from a nest near the park's two-inch by four-inch enclosure fencing which can increase windblown sand deposition on the nest. For eggs, monitors first assess if any nests with active incubation and nonviable eggs (well past estimated hatch date) are available to receive the collected eggs. Without an available nonviable active nest, staff transports the eggs to Santa Barbara Zoo, an approved facility for captive-rearing. There may be very limited circumstances where staff collects an abandoned chick, such as when a chick is observed on the closed shoreline with limited mobility and unattended by an adult for an extended period of time, as the chick would otherwise succumb to the elements. Staff places an abandoned chick in a portable brooder, warms the chick until mobile, and first considers the option to reunite the chick with the associated adults on the closed shoreline; if not possible, staff transports the chick to the Santa Barbara Zoo for captive-rearing. Staff uses a portable brooder during transport to maintain an appropriate temperature for the collected eggs or chicks, as directed by the rehabilitation trained staff. When possible, chicks raised in captivity and reaching fledgling status are color-banded to individual prior to release, allowing for collection of information on movements, survival, and future reproductive success.

Investigation of least tern and snowy plover carcasses

ODSVRA, with USFWS and CDFW consultation and direction, freezes fresh carcasses of least terns and snowy plovers and sends them to MWVCRC for necropsy. Monitors may record wing length measurement of chicks or young fledglings to help determine age of individual.

³ Options for abandoned least tern chicks or viable eggs are more limited. Any actions would occur only with appropriate state and federal agency consultation and approval.

RESULTS AND DISCUSSION

CALIFORNIA LEAST TERN

Number of breeding pairs

In 2025, least terns were first seen at ODSVRA on 23 April, with three roosting in the open riding area east of 6 enclosure, and from 1 May onward terns were seen or heard daily. The last sighting was of two adults flying over Foredune North shoreline on 20 August. During the previous 23 years 2002-2024, first sightings occurred between 8 April and 15 May (median=4 May) and last sightings occurred between 10 August and 28 September (median=27 August). To determine the minimum number of breeding pairs ODSVRA uses the single day high count of concurrent nests and broods (see Monitoring and Management Actions section for additional information on determining number of breeding adults). In 2025, there was a known minimum of 40 breeding pairs and an estimated maximum of 41 pairs, with 40 nests and broods active at the same time on 14 June. This is similar to both the 40 pairs in 2024 and the average of 40-43 pairs (range=23-60) for the 20-year period 2005-2024 (Table 1, Figure 3).

Number, clutch size, and distribution of nests

There was a total of 42 known nesting attempts, with the first nest initiated approximately 17 May and the last 11 July (Appendix A). During the 23-year period 2002-2024, there was an average of 47 nests per year (range=22-79) with initiation dates for first nests ranging from 16 May–8 June (median=27 May) (Table 1). Of the 40 nests with known complete clutch size, nine had one egg and 31 had two eggs, with an average clutch size of 1.78 eggs. This compares to an average of 1.87 for 2005-2024 (range=1.56-2.05) and the most recent reported statewide average of 1.69 from 2007-2018 (range=1.37-1.84) (Marschalek 2008-12; Frost 2013-17; Sin 2021; Sin et al. 2024). Of the 42 nests, all with known location, 27 (64.3%) were in 6 enclosure, 14 (33.3%) were in 7 enclosure and 1 (2.4%) was in Boneyard enclosure. In 2024, 25 (67.6 %) and 12 (32.4%) were in 6 and 7 enclosure, respectively (Figure 4).

Clutch hatching rate

Of the 42 nests from known nesting attempts 28 hatched, 12 failed, and two had unknown fate. Predation of nine nests (seven by coyote and two by raven) was the leading cause of loss (Table 2). The clutch hatching rate for known location and fate nests was 70.0% (28/40). This is lower compared to an average hatching rate of 84.4% (range=64.7-97.8%) for known location and fate nests for the 22-year period 2003-2024 (Table 1). In 2025, the hatching rate was 74.1% (20/27) in 6 enclosure, 66.7% (8/12) in 7 enclosure, and 0.0% in Boneyard enclosure (0/1). Thirty-five chicks of known nest location hatched from a minimum of 47 eggs in 6 enclosure and 10 chicks hatched from a minimum of 22 eggs in 7 enclosure.

Table 1. Nesting success of California least terns at ODSVRA from 1991-2025.

Percent nests hatched calculated using number of nests with known location and fate. Percent chicks fledged and juveniles fledged per nest may include fledglings from unknown nest locations detected only by brood presence, but these are few. Chicks were banded to site in 2003 and 2004, banded to brood in 2005, and banded to individual from 2006-2025.

Year	Estimated no. breeding pairs	No. nests (no. known location and fate)	No. hatched nests (no. known location)	Percent known location and fate nests hatched	No. chicks	Percent chicks fledged	No. juveniles	Juveniles fledged per nest	Estimated no. juveniles fledged per pair
1991	4-5	6 (6)	2 (2)	33	4	100	4	0.67	0.80-1.00
1992	3-4	4 (4)	1 (1)	25	2	50	1	0.25	0.25-0.33
1993	0	0 (0)	0 (0)	0	0	0	0	0	0
1994	2	2 (2)	0 (0)	0	0	0	0	0	0
1995	1	1 (1)	0 (0)	0	0	0	0	0	0
1996	0	0 (0)	0 (0)	0	0	0	0	0	0
1997	16-19	21 (16)	3 (3)	19	6	0	0	0	0.00-0.00
1998	33-37	40 (32)	26 (26)	81	40	60	24	0.6	0.65-0.73
1999	28-31	34 (31)	22 (22)	71	42	40	17	0.5	0.55-0.61
2000	4-5	5 (5)	4 (4)	80	8	50	4	0.8	0.80-1.00
2001	12-15	18 (18)	13 (13)	72	22	55	12	0.67	0.80-1.00
2002	20-21	22 (19)	15 (15)	79	27	37	10	0.45	0.48-0.50
2003	53-66	79 (77)	60 (60)	78	101	37	37	0.47	0.56-0.70
2004	47-55	63 (59)	44 (43)	73	69	36	25	0.4	0.45-0.53
2005	47-53	59 (59)	39 (39)	66	66	30	20	0.34	0.38-0.43
2006	31-35	38 (38)	28 (28)	74	45	80	36	0.95	1.03-1.16
2007	54-60	66 (65)	51 (50)	77	90	78	70	1.06	1.17-1.30
2008	55-56	56 (55)	50 (49)	89	99	72	71	1.27	1.27-1.29
2009	25-26	26 (26)	23 (23)	88	43	77	33	1.27	1.27-1.32
2010	23-23	23 (23)	20 (20)	87	35	83	29	1.26	1.26-1.26
2011	33-34	35 (35)	31 (31)	89	55	91	50	1.43	1.47-1.52
2012	41-44	46 (39)	32 (32)	82	51	82	42	0.91	0.95-1.02
2013	48-53	57 (52)	45 (45)	87	85	66	56	0.98	1.06-1.17
2014	47-48	49 (46)	42 (42)	91	76	76	58	1.18	1.21-1.23
2015	44-49	54 (54)	48 (48)	89	84	82	69	1.28	1.41-1.57
2016	47-48	49 (46)	46 (45)	98	78	76	59	1.2	1.23-1.26
2017	42-47	52 (34)	22 (22)	65	39	18	7	0.13	0.15-0.17
2018	30-33	35 (34)	28 (27)	79	42	83	35	1	1.06-1.17
2019	31-33	34 (33)	31 (31)	94	52	73	38	1.12	1.15-1.23
2020	35-42	48 (46)	36 (36)	78	63	60	38	0.79	0.90-1.09
2021	50-52	53 (51)	49 (48)	94	81	59	48	0.91	0.92-0.96
2022	43-44	45 (44)	42 (42)	95	69	55	38	0.84	0.86-0.88
2023	41-42	42 (40)	37 (37)	92	66	53	35	0.83	0.83-0.85
2024	40-40	40 (37)	37 (34)	92	64	75	48	1.2	1.20-1.20
2025	40-41	42 (40)	28 (28)	70	45	69	31	0.74	0.76-0.78

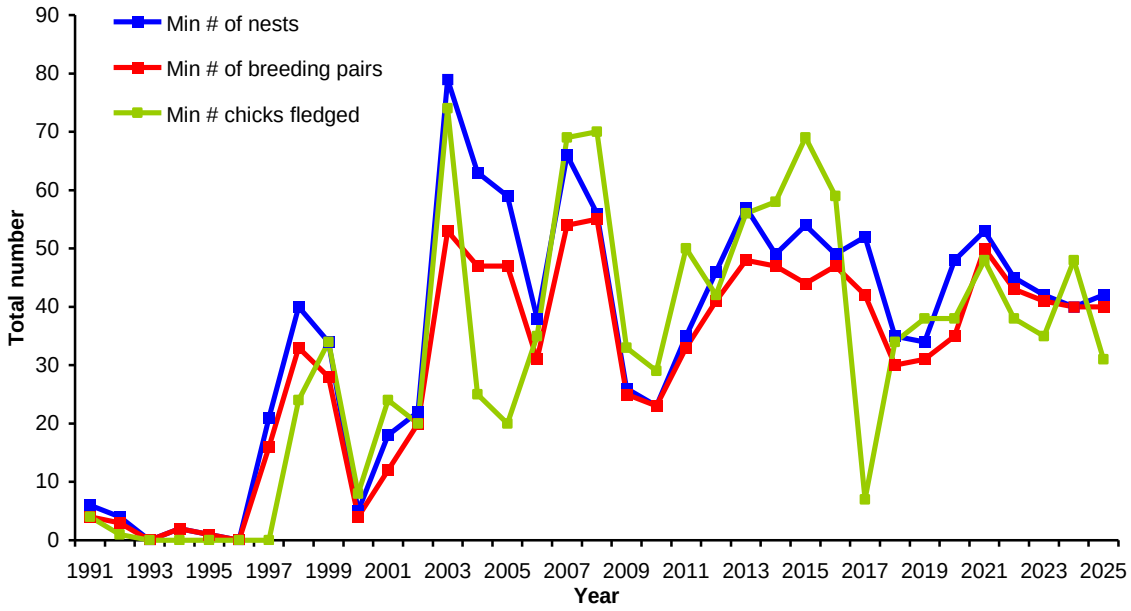


Figure 3. Number of California least tern nests, pairs, and fledglings at ODSVRA from 1991-2025.

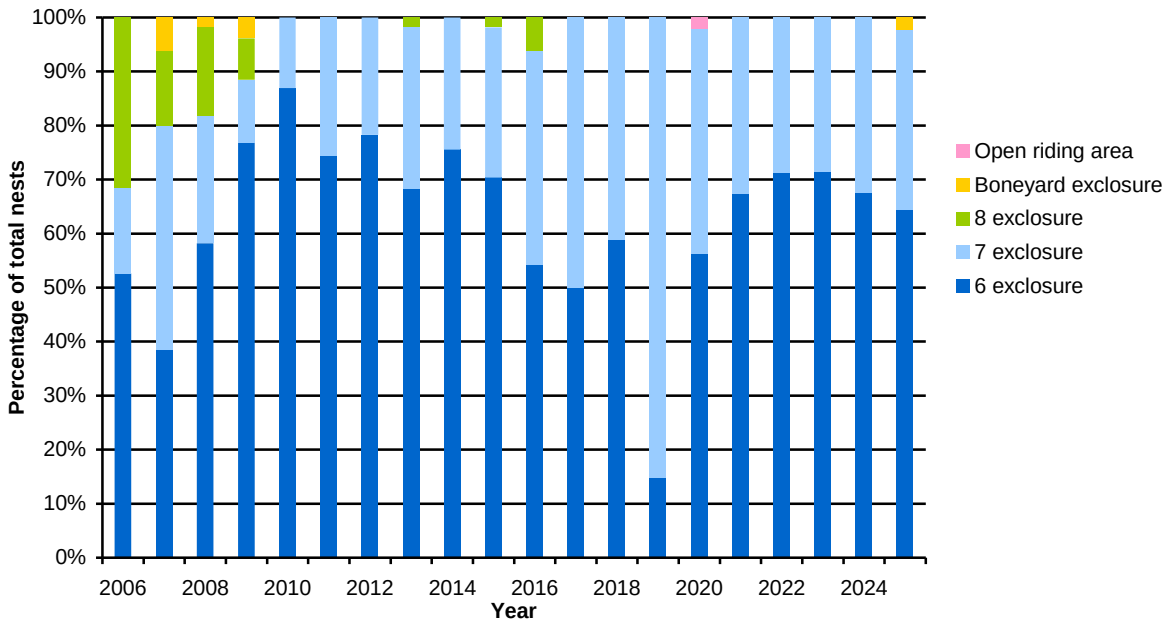


Figure 4. Distribution of known location California least tern nests as a percentage of total nests at ODSVRA from 2006-2025.

Table 2. Causes of California least tern nest loss at ODSVRA from 2002-2025.

Ab. = Abandoned, Unid. = Unidentified

Season	Ab. pre-term	Ab. post-term	Ab., unknown if pre- or post-term	Wind	Failed, unknown cause	Unid. Predator	Raven	Event, raven	Gull	Coyote	Event, coyote	Opossum	Raccoon	Skunk	Chick dies in egg at hatch	Total no. failed nests
2002	1	1								2						4
2003	6	3			5	2				1						17
2004	9	1			3	1				2						16
2005	7	3	4		4	1									1	20
2006	4	3	2			1										10
2007	2	4		4	5											15
2008	3	2							1							6
2009	1	1	1													3
2010		1			1							1				3
2011	2	2														4
2012	1	2	3		1											7
2013	2		2		1					1		1				7
2014	1	1	1		1											4
2015	1	1	1		2								1			6
2016			1													1
2017	5		1		1									5		12
2018	4	2			1											7
2019	1		1													2
2020		1	3	1	4	1										10
2021		1	2													3
2022	2															2
2023		1	2													3
2024		2	1													3
2025			2	1			1	1		4	3					12
Total	52	32	27	6	29	6	1	1	1	10	3	2	1	5	1	177
2002-25	29.4%	18.1%	15.3%	3.4%	16.4%	3.4%	0.6%	0.6%	0.6%	5.6%	1.7%	1.1%	0.6%	2.8%	0.6%	

Chick fledging rate, juveniles produced per pair, and juvenile length of stay on-site

In 2025, 42 of 45 hatching chicks were banded with an individual color combination unique for the year. Thirty-one banded chicks and no unbanded chicks were seen when 21 days old or older for a fledging rate of 68.9% (31/45). (Appendix A). The estimated number of fledglings produced per pair ranged from 0.76-0.78 in 2025, which is lower than the average of 1.07-1.14 from 2006-2024 (range=0.15-1.57) (Table 1). Estimated annual fledging rates for all of California are reported by CDFW as a range and averaged 0.25-0.38 fledglings per pair for the 15-year period 2005-2019 (highest estimate in 2014 with range=0.37-0.68), more recent California data is not available at the time of this report writing (Marschalek 2006-12; Frost 2013-17; Sin 2021; Sin et al. 2024).

From 2010-15, there were six known occurrences of a least tern chick moving east of the Southern Exclosure into the open riding area (two in 2010, by the same chick on the same day; one in 2011; two in 2013; and one in 2015). These chicks were monitored and directed back into the exclosure. For the period 2016-2025, excluding 2020 when the park was closed for the nesting season to vehicle use and camping due to Corona Virus Disease (COVID-19), there were no occurrences of chicks moving into the open riding area. In 2020, due to the decrease in recreational activities with the park being closed, up to 20 terns were seen roosting in areas outside of the Southern Exclosure daily for the period of 2-24 July. Beginning in 2021, least tern nests were provided a 984-foot (300-meter) buffer closed from any public use (closed buffer area). There were three occasions of chicks seen entering the closed buffer area from the Southern Exclosure in 2021, one occasion in 2023, no such occurrences in 2022 or 2024, and one occasion in 2025. On 15 July, a 20-day-old chick banded a/r:o/g from the LT21 nest moved from 6 exclosure into the closed buffer area and was placed back into the closed area.

Of the current or recent breeding sites in San Luis Obispo and Santa Barbara counties, banding tern chicks occurs at ODSVRA (since 2003), Rancho Guadalupe Dunes Preserve (RGDP) (beginning in 2025 with banding to site and year), and Vandenberg Space Force Base (VSFB) (beginning 2018 with banding to site and year). Banding least tern chicks at ODSVRA, especially with individual color band combinations, has increased the ability to detect juveniles at ODSVRA and provides greater accuracy in documenting fledging rate than the three-week count method.⁴ For the six-year period 2006-11, the three-week count method at ODSVRA consistently underestimated the minimum known number of juveniles produced each year, identifying an average of 49.0% (range=38.0-66.7%) of the known minimum number (see CDPR 2011 for greater details). Since 2012, ODSVRA has relied primarily on color band resighting data to derive fledging rates of tern chicks.

Color banding chicks to brood in 2005 and to individual since 2006 has also provided information on juvenile length of stay at ODSVRA. In 2025, 25.8% (8/31) of color-banded juveniles were confirmed remaining at ODSVRA for 21 days or longer post-fledging. This compares to 38.6% (17/44) during 2024, and 25.5% (195/765) during the 19-year period 2006-2024 (Table 3, Figure 5Figure 5).

⁴ High counts of juveniles that are seen on dates at intervals of three weeks are added together (Marschalek 2007). This is based on the assumption that juveniles typically depart the colony with their parents within two to three weeks of fledging (at 21 days old) and that any juveniles seen are not from other sites.

Table 3. Number of days that color-banded California least tern juveniles hatched at ODSVRA continued to be seen on-site after reaching fledge age (21 days old) during the 20-year period 2006-2025.

During this period, 796 color-banded fledglings (21 days old or older) were tracked at ODSVRA (sightings outside the park are not included). Numbers in parentheses are percentages of all color-banded fledglings observed at ODSVRA for the year. Does not include one 2024 juvenile only confirmed as fledging from an off-site sighting.

Year	0 - 6 days post-fledge	7 - 13 days post-fledge	14 - 20 days post-fledge	21 - 27 days post-fledge	28 - 34 days post-fledge	≥35 days post-fledge
2006	3 (9%)	9 (26%)	7 (20%)	12 (34%)	4 (11%)	0 (0%)
2007	9 (14%)	13 (20%)	15 (23%)	18 (28%)	9 (14%)	1 (2%)
2008	12 (18%)	29 (43%)	16 (24%)	11 (16%)	0 (0%)	0 (0%)
2009	3 (10%)	14 (48%)	8 (28%)	3 (10%)	1 (3%)	0 (0%)
2010	3 (11%)	4 (14%)	14 (50%)	7 (25%)	0 (0%)	0 (0%)
2011	2 (4%)	5 (10%)	9 (18%)	31 (63%)	2 (4%)	0 (0%)
2012	3 (9%)	7 (20%)	11 (31%)	12 (34%)	2 (6%)	0 (0%)
2013	5 (10%)	12 (23%)	25 (48%)	10 (19%)	0 (0%)	0 (0%)
2014	2 (5%)	7 (17%)	18 (43%)	14 (33%)	1 (2%)	0 (0%)
2015	12 (21%)	10 (18%)	21 (38%)	10 (18%)	1 (2%)	2 (4%)
2016	22 (39%)	9 (16%)	19 (34%)	5 (9%)	1 (2%)	0 (0%)
2017	0 (0%)	3 (60%)	1 (20%)	1 (20%)	0 (0%)	0 (0%)
2018	3 (9%)	5 (15%)	13 (39%)	4 (12%)	8 (24%)	0 (0%)
2019	3 (10%)	16 (52%)	10 (32%)	2 (6%)	0 (0%)	0 (0%)
2020	21 (60%)	12 (34%)	1 (3%)	1 (3%)	0 (0%)	0 (0%)
2021	11 (26%)	16 (38%)	14 (33%)	1 (2%)	0 (0%)	0 (0%)
2022	14 (47%)	8 (27%)	7 (23%)	1 (3%)	0 (0%)	0 (0%)
2023	6 (20%)	9 (30%)	12 (40%)	3 (10%)	0 (0%)	0 (0%)
2024	4 (9%)	12 (27%)	11 (25%)	14 (32%)	3 (7%)	0 (0%)
2025	4 (13%)	11 (35%)	8 (26%)	5 (16%)	2 (6%)	1 (3%)
Total 2006-25	142 (18%)	211 (27%)	240 (30%)	165 (21%)	34 (4%)	4 (1%)

Injuries, mortality (other than eggs), and carcasses collected or observed

In 2025, there was one tern juvenile observed with an injury. Details of the injury are provided in Table H.1 in Appendix H. There were five observed least tern mortalities (other than eggs) at ODSVRA due to predation: two juveniles and one chick/juvenile taken by peregrine falcon (*Falco peregrinus*) (peregrine) and one chick and one chick/juvenile by northern harrier (*Circus hudsonius*) (harrier). Mortality other than predation was two chicks found in 6 and 7 enclosure. Details of the mortalities are provided in Table H.3 and H.4 in Appendix H.

Least tern use of nearby small freshwater lakes

At ODSVRA nearshore ocean waters are the primary source of prey fish for the tern colony, and in 2025 foraging activity over the ocean was observed throughout the season. During the chick-rearing period small fish may also be taken from freshwater sources. Over the past 19 years, nearby small freshwater lakes observed with more than incidental tern activity in one or more years include Oso Flaco Lake (located on park property approximately 1.5 miles south of the middle of tern colony), the Dune Lakes (1.5 miles northeast), and Cypress Ridge Lake (3.2 miles northeast). Since 2019, unlike many previous years, late season daytime use of Oso Flaco Lake by ODSVRA banded adult and juvenile terns has been very low. Conditions at Oso Flaco Lake appeared poor the last seven years, with an increased amount of algae growth on the lake's surface, and the few adults seen fishing had poor success. Monitoring of sites east of the park is typically done in response to observations of terns from the colony flying toward or returning from the east or from tern sighting reports by individuals other than park staff. From 2021-2024, terns were observed at the ponds of Monarch Dunes Golf Club (Monarch Dunes) (4.3 miles southeast) by staff or reported by non-staff. In 2025, managers at the Monarch Dunes reported no terns observed and staff did not survey the area.

Banded adult least terns documented at ODSVRA

In 2025, there was a minimum of 50 banded adults with known origin documented at ODSVRA. Of these, 44 were banded at ODSVRA as chicks (banding began in 2003) and six were banded at VSFB (banding chicks to year began in 2018). Breeding was documented for a minimum 24 banded adults, of these 15 had complete bands observed with known origins. For known origin banded birds, the majority (86.7%, 13/15) represent recruitment from chicks banded and fledged from ODSVRA, while two originated from VSFB. The complete color combinations of the remaining nine breeding adults could not be confirmed and origin is unknown (Appendix A, Table D.1 in Appendix D). Between 2008 and 2025, at least 10 banded terns from other sites were observed at ODSVRA, six from VSFB, one possibly from U.S. Naval Base Coronado in San Diego County, one from San Quintin, Baja CA, Mexico, and two of unknown origins (Appendix A, Table D.1 and D.2 in Appendix D). Recording color combinations is more difficult for adult least terns than snowy plovers as the behavior of the terns provides fewer opportunities for observations.

Least terns typically first breed at three years old, with some breeding documented by two-year-old birds (Massey and Atwood 1981). A total of nine two-year-old banded terns have been documented as breeding at ODSVRA from 2012-2025 (two in 2012, three in 2013, two in 2014, one in 2016, and one in 2018, all banded as chicks at ODSVRA). In 2005, a two-year-old tern banded as a chick at ODSVRA was documented breeding at VSFB. In 2025, the oldest color-banded tern identified at ODSVRA was 17 years old (banded as chick at ODSVRA) and the oldest breeding tern identified at ODSVRA was 14 years old (banded as chick at ODSVRA).

Least terns banded at ODSVRA documented at other sites

In 2025, there were 57 least terns (43 adults and 16 juveniles) banded as chicks at ODSVRA, documented at locations other than ODSVRA. Juveniles seen at nearby sites between 21 July and 4 August had recently dispersed from ODSVRA with adults from colony. Terns were seen in Santa Barbara County at RGDP (twenty-five adults, fifteen juveniles), and VSFB (eighteen adults, one juvenile). These numbers include one adult and one juvenile seen at both RGDP and VSFB (Table D.3 in Appendix D).

Night roost

During the breeding season, adult least terns not engaged in incubation or chick care may assemble in a communal night roost and are often joined by fledglings later in the breeding season. Reduced exposure to disturbance from predators is likely an important factor in the selection of a night roost location. There can be a high degree of site fidelity, both within a breeding season and between years, with birds continuing to roost in the same location. From 2006-2019, the night roost was only detected in 6 and 7 exclosures. A night roost was first established outside of the Southern Exclosure in 2020 when the park was closed to vehicles. Beginning in 2021, the area east of 6 and 7 exclosures was closed to visitor activity during the breeding season as a closed buffer area for tern nests. A roost persisted outside of the Southern Exclosure within this closed buffer area during the 2021-24 seasons. A roost was also seen in 6 exclosure on three occasions in 2023. In 2025, surveys for a night roost were conducted on 29 days between 23 April to 23 August, and the roost was seen in three locations, two east of 6 exclosure and one east of 7 exclosure in the closed buffer area (locations also verified during early morning surveys by locating night roost tracks and signs) (see Figures C.2 and C.3 in Appendix C). Counts at the night roost are minimums, as some or all birds would often arrive after it was too dark to count individuals. In 2025, there was a high count of 62 birds at the night roost east of 7 exclosure on 11 June. This compares to an average night roost high count of 63 (range=35-95) from 2007-2024. Only adults were noted but it was typically too dark to distinguish plumage and age class (CDPR 2006-2024).

Importance of ODSVRA least tern breeding colony

The ODSVRA least tern breeding colony has benefited from the increased level of protection and management actions provided since 2002. The colony is important in meeting statewide recovery goals as loss of breeding habitat has resulted in a fragmented population distribution and a limited number of remaining breeding sites (USFWS 1985, 2020). On a regional level, there are very few active breeding sites along the central coast of California, and none remain between ODSVRA and San Francisco Bay. Within San Luis Obispo and Santa Barbara counties, there are four least tern colony sites with annual or intermittent use, and all sites have management providing protective measures and monitoring. ODSVRA is the only site in San Luis Obispo County. RGDP, VSFB, and Coal Oil Point Reserve (COPR) are in Santa Barbara County and approximately six, 22, and 85 miles south of the ODSVRA colony, respectively. For this regional population, ODSVRA has become an important source of productivity. During the 22-year period 2004-2025, ODSVRA produced a minimum of 935 juvenile terns while RGDP, VSFB, and COPR combined reported a range of 394-399 juveniles. During this time least tern breeding has been recorded annually at ODSVRA and VSFB. In contrast, breeding occurred at RGDP during 10 of those years and at COPR during 5 years, with the last recorded nesting at COPR in 2011 (Appendix E, Table 4).

Table 4. Number of reported breeding least tern pairs and juveniles produced at ODSVRA and the combined sites of Rancho Guadalupe Dunes Preserve (RGDP), Vandenberg Space Force Base (VSFB), and Coal Oil Point Reserve (COPR) from 2004-2025.

During this period, most tern chicks were banded at ODSVRA and observation of color-banded individuals was an important means to document juvenile production. Beginning in 2018, VSFB banded tern chicks to site and year. Beginning in 2025, RGDP banded tern chicks to site and year. Sources: RGDP (pers. comm. Emily Rice), VSFB (pers. comm. Emily Rice), and COPR (pers. comm. Jessica Nielson).

Year	ODSVRA		RGDP, VSFB, and COPR combined	
	Est. no. breeding pairs	No. juveniles	Est. no. breeding pairs	No. juveniles
2004	47-55	25	15	0
2005	47-53	20	48	1
2006	31-35	36	7	7
2007	54-60	70	23	17
2008	55-56	71	19	19
2009	25-26	33	32-33	40
2010	23	29	34	31
2011	33-34	50	33	4
2012	41-44	42	18	10
2013	48-53	56	15	19
2014	47-48	58	17	20
2015	44-49	69	22	29
2016	47-48	59	25	18
2017	42-47	7	27	8
2018	30-33	35	70-71	39
2019	31-33	38	59	21 ¹
2020	35-42	38	60	11-16
2021	50-52	48	27	8
2022	43-44	37	43	23
2023	41-42	35	39	17
2024	40-40	48	37	33
2025	40-41	31	44	19
Total juveniles produced		935		394-399¹

¹In 2019, RGDP had at least 17 nests hatch a minimum of 15 chicks and the number of juveniles produced is unknown.

WESTERN SNOWY PLOVER

Minimum number of breeding adults

In 2025, the minimum number of breeding adults was the second highest recorded in the 24-year period 2002-2025, with a total of 266 birds (159 males and 107 females). This is a decrease of 5.3% from 281 breeding adults in the previous year and compares to a range of 32-281 adults (average=167) for the 23-year period 2002-2024. The average number of breeding adults for the last five years is 236, increasing to 260 for the last three years (Table 5, Figure 6).

Beginning in 2005, the USFWS has coordinated a rangewide window survey count of the U.S. Pacific coast breeding population of the snowy plover between the second half of May and first week of June. In 2025, the survey at ODSVRA counted 258 adult plovers (133 males, 95 females, and 30 of unidentified sex), 97% of the minimum number documented for the entire season by known breeding activity. In 21 of the 22 years from 2004-2025, the window survey count at ODSVRA was lower than the minimum number of breeding birds (53-97% of minimum number). It was higher (107%) in 2008. For the entire 22-year period the window survey count averaged 77% of the known minimum number of breeding adults for the season (Table 6).

Table 5. Number of snowy plover breeding adults, breeding males, fledglings, and chicks fledging per breeding male for the 24-year period 2002-2025.

Year	Min. no. breeding adults	Min. no. breeding males	No. fledglings	No. fledglings per breeding male ¹
2002	32	18	35	1.94
2003	84	52	107	2.06
2004	121	67	66	0.99
2005	116	65	82	1.26
2006	107	58	17	0.29
2007	79	47	66	1.40
2008	95	54	72	1.33
2009	114	66	81	1.23
2010	137	78	107	1.37
2011	160	94	152	1.62
2012	190	105	96	0.91
2013	163	92	187	2.03
2014	226	120	196	1.63
2015	205	113	277	2.45
2016	209	110	157	1.43
2017	183	93	174	1.87
2018	201	115	200	1.74
2019	214	120	108	0.90
2020	190	110	117	1.06
2021	195	107	119	1.11
2022	206	119	179	1.50
2023	232	128	231	1.80
2024	281	152	250	1.64
2025	266	159	266	1.67
Average for 24-year period 2002-25	167	93	139	1.47
Average for 5-year period 2021-25	236	133	209	1.54
Average for 3-year period 2023-25	260	146	249	1.70

¹Number of fledglings per breeding male will be overestimated if the number of breeding males is undercounted.

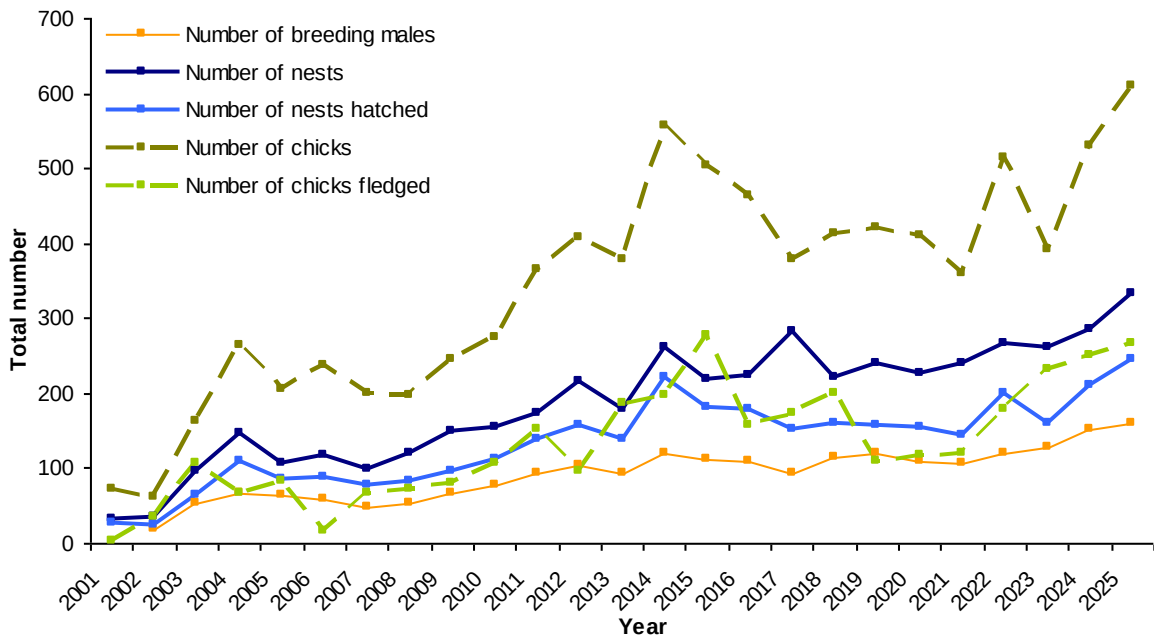


Figure 6. Number of snowy plover breeding males, nests, nests hatched, chicks, and chicks fledged at ODSVRA from 2001-2025.

Prior to 2001, monitoring in Oso Flaco and Dunes Preserve was intermittent and fledgling information was not obtained.

Table 6. Number of adult snowy plovers counted on USFWS breeding season window surveys versus calculated minimum number of breeding adults at ODSVRA from 2004-2025.

Year	Calculated minimum number of breeding adults	Summer breeding window survey numbers	Breeding window numbers/ calculated minimum numbers
2004	121	86	71%
2005	116	92	79%
2006	107	87	81%
2007	79	60	76%
2008	95	102	107%
2009	114	98	86%
2010	137	74	54%
2011	160	112	70%
2012	190	145	76%
2013	163	94	58%
2014	226	180	80%
2015	205	180	88%
2016	209	160	77%
2017	183	174	95%
2018	201	155	77%
2019	214	154	72%
2020	190	155	82%
2021	195	116	59%
2022	206	190	92%
2023	232	124	53%
2024	281	172	61%
2025	266	258	97%

Number and distribution of nests

In 2025, there were 333 known nesting attempts identified, including 27 with unknown nest location, initiated between 20 March to 16 July (Figure 7, Appendix B, see section titled Assignment of broods to nests in the Monitoring and Management Action section for description of unknown location nests). Of the 306 nests from known locations, 177 (57.8%) were in the Southern Exclosure, 12 (3.9%) in North Oso Flaco, 33 (10.7%) in South Oso Flaco, 81 (26.5%) in the Foredune closure, two in the closed buffer area, and one near the Pismo Creek lagoon. More specifically for the Southern Exclosure, there were 77 nests in 6 exclosure, 59 in 7 exclosure, 31 in 8 exclosure, and 10 in Boneyard exclosure. The Southern Exclosure and Foredune closure combined supported 84.3% of known location nests in 2025. No nests were initiated in the open riding area in 2025, which compares to one nest in 2024, eight in 2023, two in 2022, four in 2021, and during the 19-year period 2001-2019, the average was less than 1 (range=0-3) (excluding 2020 when the park was closed to public vehicle access most of the season). The maximum number of known location nests active at one time was 96 during 20-22 April, with the highest number in Foredune Closure (32 nests) (Table 7, Table 8, Figure 8, Appendix C, Table F.1 in Appendix F).

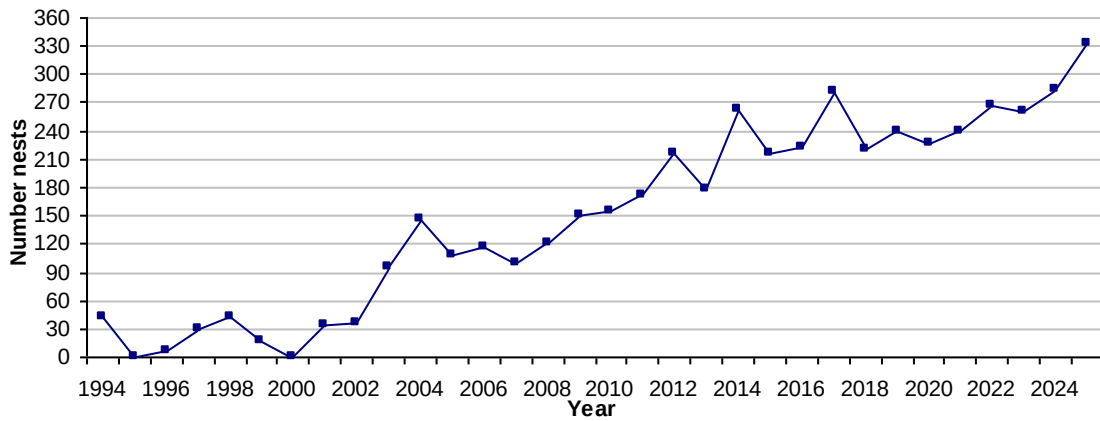


Figure 7. Number of snowy plover nesting attempts at ODSVRA from 1994-2025.
Includes nests known only from detection of broods.

Table 7. Snowy plover nest distribution and success at ODSVRA in 2025.
Excludes 27 nests known only from detection of broods.

Location	No. nests (no. known location and fate)	Min. no. eggs laid	No. known location and fate nests hatching	Percent known location and fate nests hatching
Southern Enclosure				
6 enclosure	77 (75)	213	65	86.7
7 enclosure	59 (59)	163	41	69.5
8 enclosure	31 (31)	89	23	74.2
Boneyard enclosure	10 (10)	30	6	60.0
TOTAL SOUTHERN ENCLOSURE	177 (175)	495	135	77.1
Oso Flaco				
North Oso Flaco	12 (12)	30	5	41.7
South Oso Flaco	33 (32)	91	17	53.1
TOTAL OSO FLACO	45 (44)	121	22	50.0
Other				
Foredune closure	81 (76)	220	60	78.9
Closed buffer area	2 (2)	6	1	50.0
Pismo Creek lagoon	1 (1)	2	1	100.0
TOTAL OTHER	84 (79)	228	62	78.5
GRAND TOTAL	306 (298)	844	219	73.5

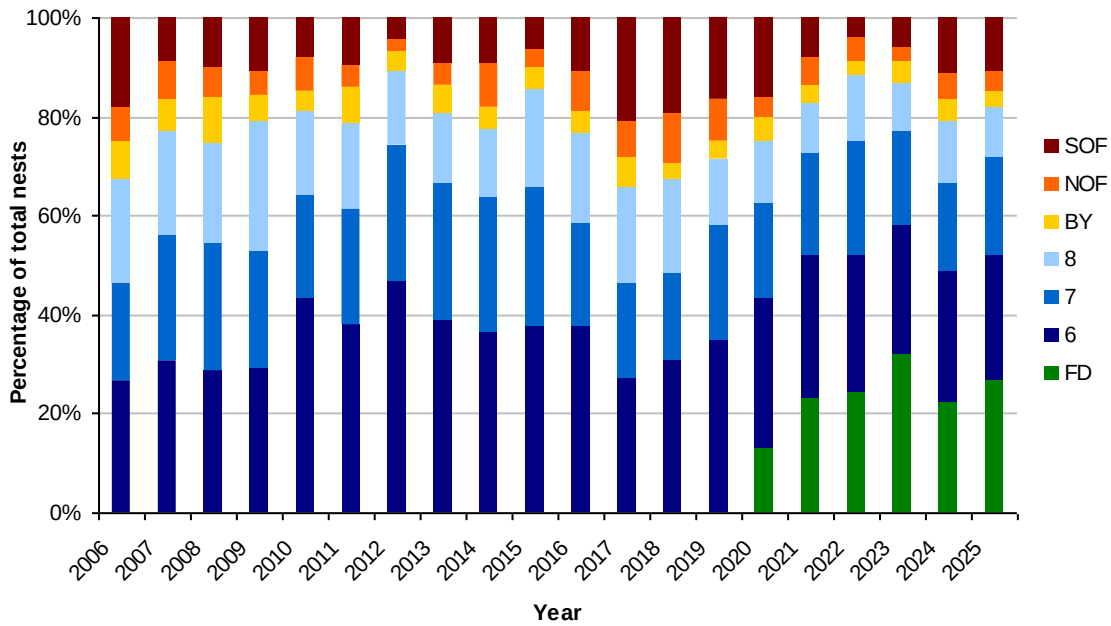


Figure 8. Distribution of snowy plover nests as a percent of total nests in the Southern Enclosure, Oso Flaco, and Foredune closure from 2006-2025.

Includes all nests with known location. Foredune closure first became available in January 2020.

6 = 6 enclosure, 7 = 7 enclosure, 8 = 8 enclosure, BY = Boneyard enclosure, FD = Foredune closure,

NOF = North Oso Flaco, SOF = South Oso Flaco

Table 8. Nesting success of snowy plovers at ODSVRA from 2001-2025.

Number of eggs from nests with unknown location is a minimum number derived from number of chicks seen. A more detailed table of nesting success for 2001-2025 is included as Table F.1 in Appendix F.

na = not available

Year	No. nests (no. known location and fate)	Min. no. eggs	Ave. clutch size (no. nests known location and complete clutch size)	No. nests hatching (no. known location)	Percent hatching	No. chicks	No. chicks fledged (percent fledged)	No. fledglings per nest	No. fledglings per egg
2001	33 (30)	na	na	27 (26)	86.7	72	3 (4.2)	0.09	na
2002	35 (35)	99	na	25 (25)	71.4	62	35 (56.5)	1.00	0.35
2003	95 (93)	255	na	63 (62)	66.7	162	107 (66.0)	1.13	0.42
2004	147 (140)	415	2.88 (138)	110 (105)	75.0	263	66 (25.1)	0.45	0.16
2005	107 (103)	290	2.86 (96)	84 (80)	77.7	204	82 (40.2)	0.77	0.28
2006	117 (114)	336	2.90 (115)	87 (87)	76.3	230	17 (7.4)	0.15	0.05
2007	99 (91)	288	2.96 (89)	78 (70)	76.9	200	66 (33.0)	0.67	0.23
2008	121 (119)	341	2.88 (113)	83 (81)	68.1	197	72 (36.5)	0.60	0.21
2009	150 (147)	418	2.88 (140)	95 (94)	63.9	244	81 (33.2)	0.54	0.19
2010	155 (150)	431	2.87 (144)	111 (109)	72.7	275	107 (38.9)	0.69	0.25
2011	172 (160)	487	2.90 (157)	138 (131)	81.9	365	152 (41.6)	0.88	0.31
2012	216 (203)	603	2.88 (199)	157 (152)	74.9	405	96 (23.7)	0.44	0.16
2013	178 (167)	502	2.94 (162)	138 (130)	77.8	377	187 (49.6)	1.05	0.37
2014	262 (239)	726	2.88 (234)	222 (206)	86.2	555	196 (35.3)	0.75	0.27
2015	217 (195)	613	2.93 (188)	182 (167)	85.6	503	277 (55.1)	1.28	0.45
2016	223 (193)	613	2.89 (188)	179 (165)	85.5	462	157 (34.0)	0.70	0.26
2017	281 (238)	738	2.88 (228)	153 (145)	60.9	378	174 (46.0)	0.62	0.24
2018	221 (200)	615	2.95 (184)	159 (144)	72.0	412	200 (48.5)	0.90	0.33
2019	239 (220)	649	2.92 (202)	158 (149)	67.7	421	108 (25.7)	0.45	0.17
2020	226 (197)	627	2.92 (194)	154 (142)	72.1	410	117 (28.5)	0.52	0.19
2021	239 (219)	660	2.89 (206)	145 (129)	58.9	359	119 (33.1)	0.50	0.18
2022	266 (225)	725	2.81 (227)	200 (169)	75.1	515	179 (34.8)	0.67	0.25
2023	260 (208)	690	2.81 (195)	161 (118)	56.7	391	231 (59.1)	0.89	0.33
2024	284 (243)	761	2.73 (243)	210 (175)	72.0	529	250 (47.3)	0.88	0.33
2025	333 (298)	904	2.86 (285)	246 (219)	73.5	610	266 (43.6)	0.80	0.29

Average clutch size, clutch loss, and nest hatching rate

There were 333 identified nesting attempts, including 27 known only by brood, and of these 246 hatched. For 285 nests with known complete clutch size (and excluding nesting attempts known only by brood) the average number of eggs per nest was 2.86. This compares to the average of 2.89 eggs per clutch (range=2.73-2.96) for the 21-year period 2004-2024. Excluding 35 nests (eight with unknown fate and 27 detected by brood only), the nest hatching rate in 2025 was 73.5% (219/298). This compares to the average of 72.9% (range=56.7-86.2%) from 2002-2024. The hatching rate in 2025 was higher in the Southern Exclosure (77.1%) than in Oso Flaco (50.0%) (Table 7, Table 8). During the 25-year period 2001-2025, the Southern Exclosure has had a higher hatch rate than Oso Flaco except for two years (2001 and 2023) (Table F.1 in Appendix F). In 2025, the nest hatching rate for known fate nests found outside the Southern Exclosure and Oso Flaco was 78.5% (62/79). Of those nests, the great majority (97.0%, 60/62) were from the Foreduene Closure (Table 7). Of the 298 nests with both known location and fate, 79 failed with 53.2% (42/79) of nest loss due to predation (Table 9).

Table 9. Attributed causes of snowy plover nest loss at specific locations at ODSVRA in 2025.

A total of 79 nests failed of 298 nests with known location and fate.

Aband. = abandoned, Unid. pred. = unidentified predator, unk. = unknown

Area	Aband. pre- term	Aband. post- term	Aband., unk. pre- or post- term	Failed, nonviable eggs removed by staff	Failed, cause unk.	Unid. pred.	Gull	Raven	Event, raven	Coyote	Event, coyote	Event, tide	Total
Southern Enclosure													
6 enclosure	5	2		1				1			1		10
7 enclosure	1	1	1	4	1			6	1	1	2		18
8 enclosure			1	1				5			1		8
Boneyard enclosure								3	1				4
TOTAL SOUTHERN ENCLOSURE	6	3	2	6	1	0	0	15	2	1	4	0	40
Oso Flaco													
North Oso Flaco	1				1			4	1				7
South Oso Flaco	3				3	2		5		1		1	15
TOTAL OSO FLACO	4	0	0	0	4	2	0	9	1	1	0	1	22
Other													
Foredune closure			4	5		2	1			4			16
Closed buffer area					1								1
TOTAL OTHER	0	0	4	5	1	2	1	0	0	4	0	0	17
TOTAL ODSVRA	10	3	6	11	6	4	1	24	3	6	4	1	79

Nests in the Pismo Creek lagoon area and closed buffer area

On 23 May, the SP154 nest was located near the Pismo Creek lagoon in a high pedestrian traffic area, with the closest known nest location approximately four miles south of this area. It was found with two eggs, one was in a well-established nest bowl attended by a female, while a broken and nonviable egg was found about 20 feet west of the nest. The nest was immediately protected with nonpredator fencing providing a buffer of approximately 72-129 feet. The female remained on the nest during the installation of the fencing, and the damaged egg was collected. The nest continued to be regularly attended and hatched on 1 June. On 28 May, symbolic fencing was added to an area next to the lagoon and west of the nest to protect the chick once hatched. The fencing location and size was adjusted 4 June in response to brood movements (see map in Figure C.5 in Appendix C). The lower shore remained open to foot traffic and leashed dogs, and barricade A-frames with signs were placed to the west to remind beach visitors to keep dogs on leash. The unbanded chick was last seen on 25 June at 24 days old.

Two nests were documented within the closed buffer area of the alleyway between Foreddune Central and Foreddune South: SP227, found on 13 June, and SP322, found on 22 June. This area was initially closed on 28 May to protect previously active nests in the area and stayed closed until 9 September. On 21 June, SP227 nest failed from an unknown cause. On 30 July, SP322 hatched two chicks and the chicks were raised on the Foreddune Central shoreline. The brood was last seen with two unbanded chicks on 3 August and with one unbanded chick on 11 August at 12 days old.

Chicks in the open riding area

Two chicks from the SP82 nest hatched 3 May and were raised on the Foreddune North shoreline near the open riding area boundary. The brood was monitored closely and barricade A-frames with signs were placed approximately 75 feet into the open riding area to provide a buffer and direct traffic away from the

brood area. The brood was observed moving into the open riding area on multiple occasions from 7-30 May. When observed in the open riding area, the chicks were usually within 10 feet of the Foredune North symbolic fencing, but occasionally were observed up to 60 feet away. The two chicks fledged 31 May and were last seen together on the Foredune North shoreline 7 June when 35 days old.

On 20 June, one 17-day-old chick from the SP112 nest was observed briefly in the open riding area approximately 50 feet away from the Foredune North shoreline boundary before returning to the Foredune closure. Two chicks hatched from SP112, both were banded, and were raised on the Foredune North shoreline. Two chicks were last seen together 21 June and one chick was last observed 23 June at 20 days old.

Chick fledging rate

Of the 610 snowy plover chicks hatched, 378 were banded and the fate of 232 unbanded chicks is believed known (Appendix B). Chick survival and fledging rates of unbanded chicks are obtained through a combination of intense monitoring of broods, banded associated adults, banded chick(s) in broods with unbanded chick(s), and banded broods present in the same area (reducing density of unbanded broods). There were 27 unbanded broods (60 chicks) observed on-site and believed to be from nests that were not found during incubation. One of the 27 broods were subsequently banded (see sections titled Banding chicks and Assignment of broods to nests in the Monitoring and Management Action section for details on banded and unbanded broods). The fledging rate for banded chicks was 46.8% (177/378) and 38.4% (89/232) for unbanded chicks. The fledging rate for all chicks combined in 2025 was 43.6% (266/610) and is higher than the average fledging rate of 39.1% (range=7.4-66.0%) for the 23-year period 2002-2024 (Table 8, Table F.1 in Appendix F) (CDPR 2007-2024).

In 2025, chicks hatched in the early season had a higher fledging rate (50.4%) compared to the lower rate (33.1%) of the latter season. In 16 of 23 years from 2003-2025, the fledging rate of chicks hatching in the early season (prior to 20 June) has been higher than chicks hatching in the late season (20 June or later) (see paragraph titled Snowy plover chicks hatching early and late season in the Monitoring section on page 15 for more detail). For all years in the 23-year period 2003-2025, the average early season chick fledging rate (45.4%) was 13.1 percentage points higher than the average late season chick fledging rate (32.3%) (Figure 9, Figure 10, Figure 11).

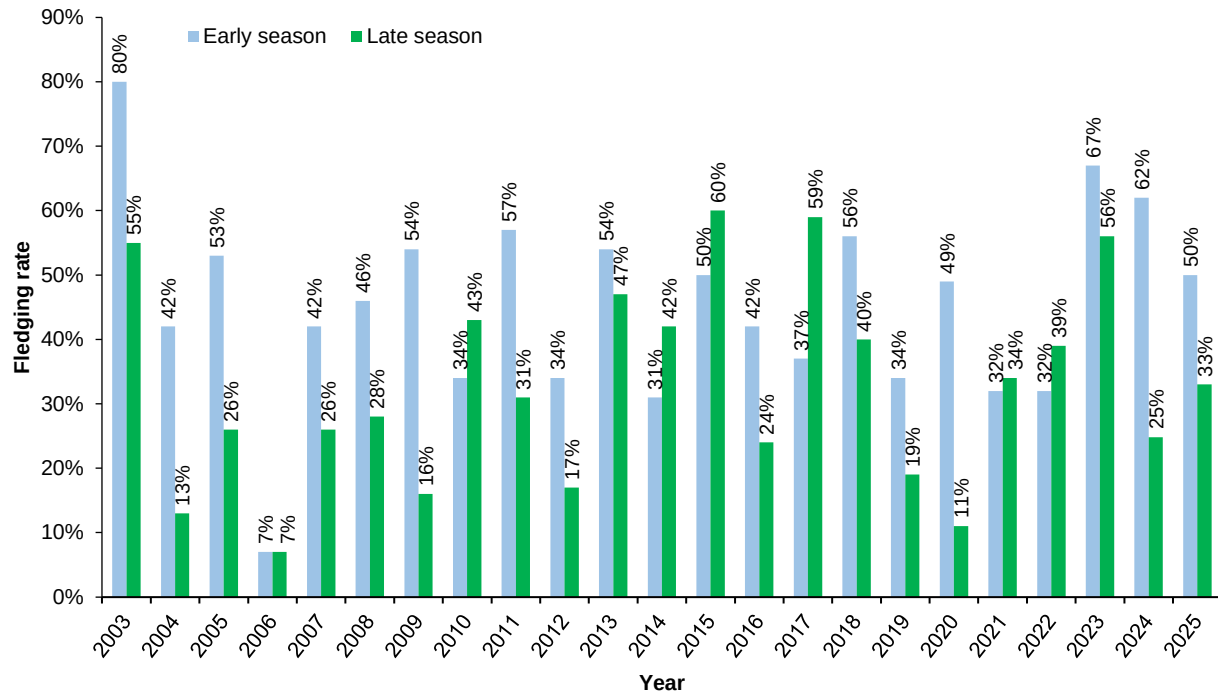


Figure 9. Fledging rate of snowy plover chicks hatching in early season (prior to 20 June) and late season (20 June or later) at ODSVRA from 2003-2025.

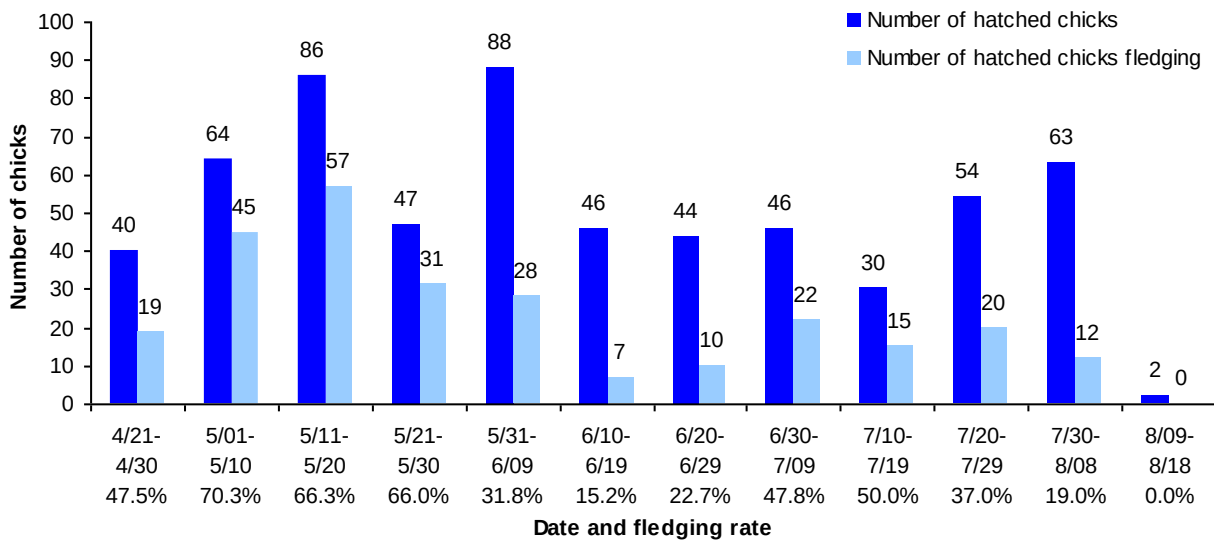


Figure 10. Number of snowy plover chicks hatching per 10-day period and number of these chicks subsequently fledging at ODSVRA in 2025.

All chicks (610) had known fate and are represented in figure. For broods that originated from unknown location (60 chicks from 27 broods) a hatch date was estimated within a 10-day period based on chick size.

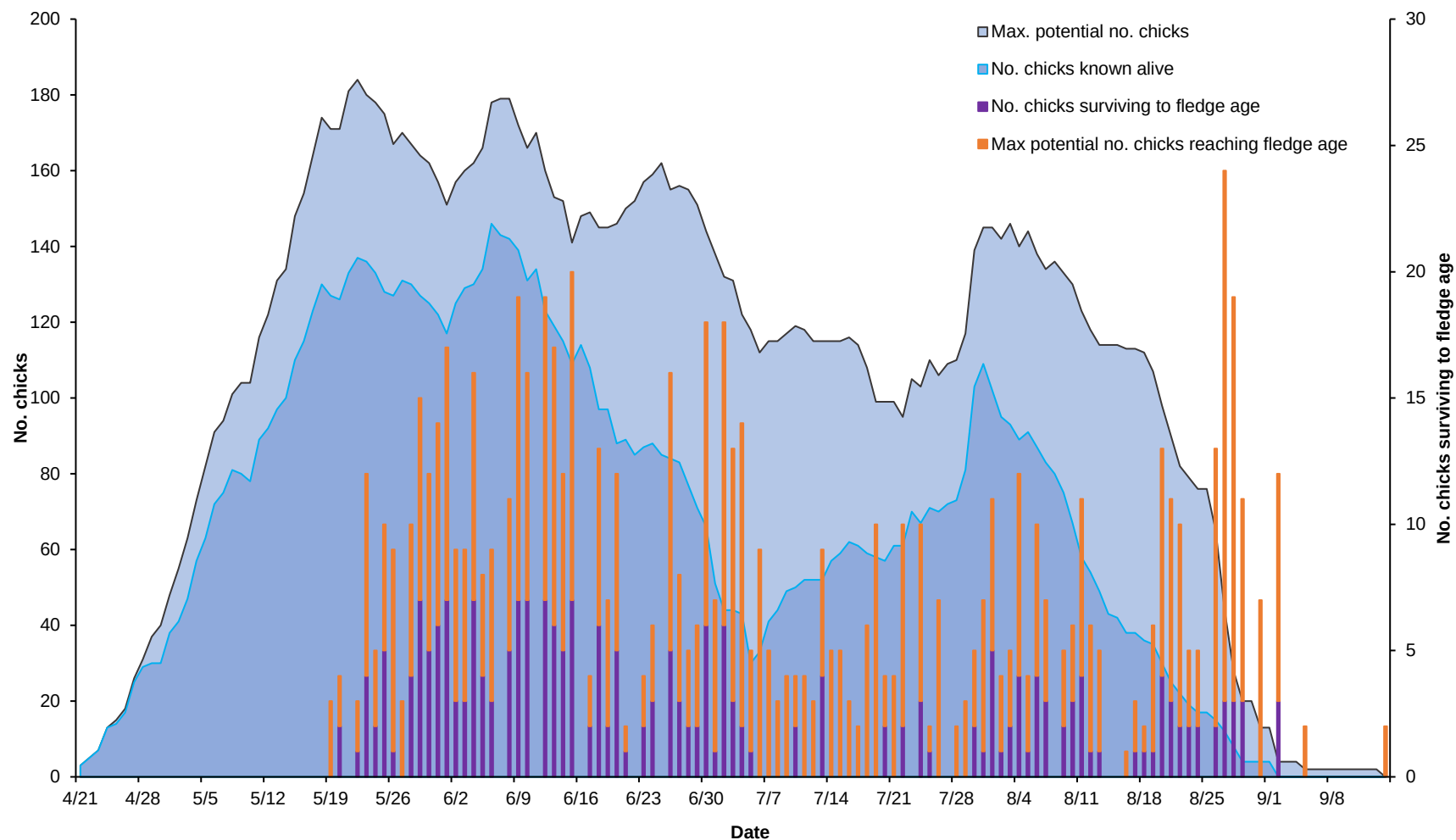


Figure 11. Snowy plover chick survival and fledge rate from 21 April to 14 September at ODSVRA in 2025.

Of the total of 610 chicks hatching, 560 chicks (excludes 50 chicks that were found when approximately three days old or older) are represented in this figure. Number chicks known alive calculated using date of last sighting during regular surveys of all chicks.

Age of chick loss

Of 400 closely tracked chicks (375 banded and 25 unbanded chicks with banded siblings) from known location nests, 218 were believed lost. As has consistently been the case in previous years, chick loss measured in 5-day increments in 2025 was highest for very young chicks (0-4 days of age), accounting for 38% of total loss and at the lower end of the range 34%-64% (average=46%) from 2009-2024 (Figure 12) (CDPR 2009-2024). For 237 chicks reaching 16 days of age in 2025, the fledge rate was 77% (182/237). This compares to the average of 79% (range=70-93%) for the previous 16-year period 2009-2024 and is lower than the results from a six-year (1977-1982) study at Monterey Bay in Monterey County, California, that found at least 93% of the 124 chicks reaching 16 days of age fledged (Warriner et al. 1986) (CDPR 2009-2023).

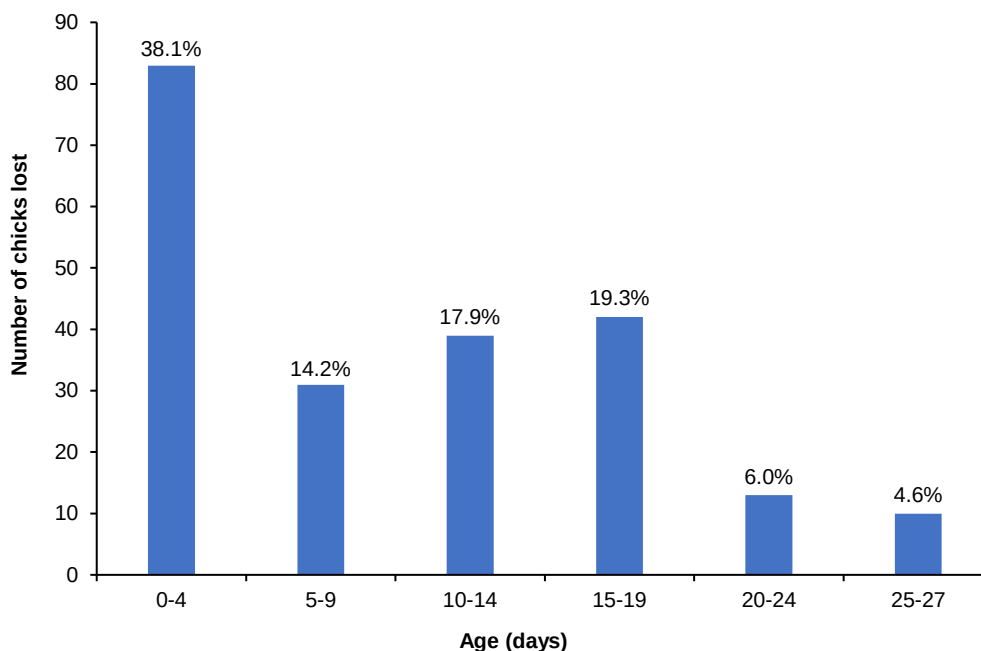


Figure 12. Loss of snow plover chicks by age at ODSVRA in 2025.

Number and percentage of total chicks lost shown for each age group. There were 400 chicks included in the analysis (375 banded and 25 unbanded with banded siblings); 218 of these were lost. Data excludes broods that could not clearly be identified and tracked individually and broods with an estimated hatch date. If individual chick age could not be determined due to a split hatch, the earliest hatch date was used.

Productivity measured by number of fledglings produced per adult male

Based on a population viability analysis in the 2007 USFWS Pacific coast western snow plover recovery plan, a rate of 1.0 fledglings produced per male is believed necessary to prevent population decline with 1.2 fledglings per male allowing for moderate population growth (assuming approximately 75% annual adult survival and 50% juvenile survival) (USFWS 2007). In 2025, the number of chicks fledging per male was 1.67, and compares to 1.64 in 2024. The number of fledglings per male has exceeded 1.2 in 18 of 24 years 2002-2025 and averaged 1.47 during this period (Table 5). (Note that if the number of breeding males is underestimated, the number of chicks fledged per male is an overestimate).

Productivity measured by breeding coefficient

Breeding coefficient calculated from the number of fledglings produced per eggs laid provides a possible method to assess breeding effort (Lauten et al. 2017) (Colwell et al. 2017). A breeding coefficient below 0.15 fledglings per egg suggests productivity is low while a breeding coefficient above 0.20 indicates

productivity is high for effort expended (Lauten et al. 2017-20). In 2025, the breeding coefficient was 0.29 and compares to 0.33 in 2024. For the 24-year period 2002-2025, the average breeding coefficient was 0.26 fledglings per egg and the number of fledglings produced per egg has exceeded 0.20 in 17 of the 24 years (Table 8).

Injuries, mortalities (other than eggs), and carcasses collected or observed

In 2025, there were six adults, 12 juveniles, and six chicks observed with injuries, details of the injuries are provided in Table H.2 in Appendix H. There was a minimum of 42 documented snowy plover mortalities (other than eggs) at ODSVRA in 2025. Of the 42 plover mortalities, 25 adults, juveniles, and chicks were documented depredated by peregrine (11), raven (4), harrier (2), western gull (*Larus occidentalis*) (2), California gull (*Larus californicus*) (3), sharp-shinned hawk (*Accipiter striatus*) (1), and unknown avian (2) (see details in Table H.5 in Appendix H). Documented mortality other than predation were eight adults, three juveniles, and six chicks. Five adults were found in the riding area or open riding area, and all others were found in the Southern Exclosure, Foredune closure, Eucalyptus North revegetation area, and Oso Flaco where vehicular activity is not allowed. No clear evidence of predation was observed at any of these carcasses (see details in Table H.6 in Appendix H).

Protection of known location and fate nests

Of 298 snowy plover nests with both known location and fate, the great majority (96.0%, 286/298) were initiated in closed areas with some form of protective fence and signage to reduce coyote and/or public disturbance. This included the area inside the Southern Exclosure and North Oso Flaco protected by Exclosure predator fencing (139 nests); nonpredator fencing around the Foredune closure (48 nests) and closed buffer area (two nests); and symbolic fencing at the north and south end of the Foredune closure, Southern Exclosure, and North Oso Flaco shoreline (76 nests). The lower shoreline of South Oso Flaco remained open to pedestrians during the nesting season with the length of the upper beach protected by symbolic fence (21 nests).

There were 12 nests initiated in areas open to pedestrian use this season: one nest near Pismo Creek lagoon and 11 nests west of the symbolically fenced area of South Oso Flaco. The lagoon nest received a nonpredator fence buffer on the date found, and the nests in South Oso Flaco were protected by extending the existing symbolic fence westward as the nests were discovered. Additional details for the one lagoon nest is described in section titled Nests in the Pismo Creek lagoon area and closed buffer area on page 39.

All nests may be assessed if individual nest protection, such as a circular exclosure or mini-exclosure (providing avian and mammalian predator protection), is appropriate and possible. In 2025, of the 298 nests with both known location and fate, 43 (14.4%) of the nests received either a circular exclosure or mini-exclosure and had an 83.7% hatch rate (36/43). This compares to a 71.7% hatch rate (183/255) for those nests not receiving individual nest protection. Nests may not receive individual nest protection due to a variety of concerns: adults abandoning incomplete clutches, windblown sand potentially burying eggs, topography making the eggs prone to rolling, disturbance to nearby broods, nest lost prior to chance to install circular or mini, or adult vulnerability to predators (see section Closures and fencing in Management Actions on page 17 for additional details on types of protective fencing for nests) (see Table F.3 and Table F.4 in Appendix F for a further breakdown of nest protections and fates by location). In South Oso Flaco two nests, each with a circular exclosure, were found with a plover adult carcass inside (SP26 and SP68, on 26 and 29 April, respectively), and the circulars were immediately removed. The SP26 nest was later depredated by raven, and the SP68 nest was abandoned pre-term. On 29 April, circulars were removed from an additional five nests in South Oso Flaco as a precaution. Of these five nests, three hatched, and two were abandoned pre-term (potentially reflecting additional undetected adult mortality).

Banded snowy plovers breeding at ODSVRA in 2025

Banding of snowy plovers occurs at multiple breeding sites along the Pacific coast. The closest sites to ODSVRA where banding occurs are Monterey Bay in Monterey County to the north, and RGDP and VSFB in Santa Barbara County to the south (RGDP banded chicks for the first time in 2024). The minimum number of breeding adults at ODSVRA was 266 birds in 2025, 124 (46.6%) of which were confirmed banded and with known origins (Figure 13). For known origin banded birds, the great majority (92.7%, 115/124) represent recruitment from chicks banded and fledged from ODSVRA. Nine breeding birds originated from sites in California (all banded as chicks) other than ODSVRA including one from Point Reyes National Seashore in Marin County, seven from VSFB in Santa Barbara County, and one from Naval Base Coronado in San Diego County (Table D.5 in Appendix D).

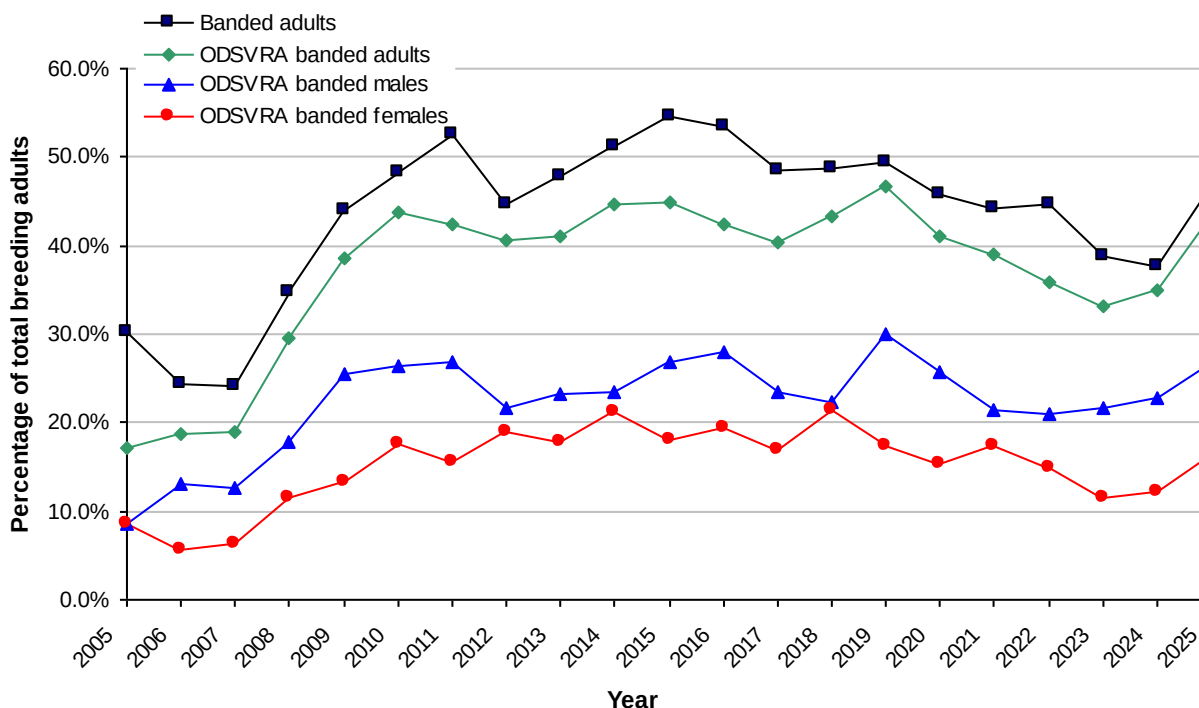


Figure 13. Percentages over the total calculated snowy plover breeding population at ODSVRA of all known origin banded adults and the sum of males and females originally banded at ODSVRA breeding from 2005-2025.

All ODSVRA banded adults were banded on-site when chicks.

Snowy plovers banded as chicks at ODSVRA confirmed breeding elsewhere in 2025

Twenty-five plovers banded at ODSVRA and breeding away from the park were confirmed in three counties of California: San Luis Obispo County (one at Villa Creek, five at Morro Bay Spit, and five at Guadalupe Restoration Project), Santa Barbara County (three at RGDP, eight at VSFB, and two at COPR), and Ventura County (one at McGrath State Beach). There was a minimum of 56 additional adult plovers banded at ODSVRA observed at other sites in California, ranging from Point Reyes National Seashore in Marin County to Ocean Beach in San Diego County during the months of April through June. A portion of these likely represent breeding adults, but breeding was not confirmed (Table D.7 in Appendix D).

Snowy plover surveys at ODSVRA during the nonbreeding season

Surveys for wintering plovers (Pacific coast breeding birds joined by interior breeding birds) were conducted four to five times a month during the five-month period October through February (see paragraph titled Nonbreeding season monitoring of snowy plovers in the Monitoring section on page 16 for survey details). Between 2 October 2024 and 27 February 2025, single day wintering plover counts at ODSVRA ranged from 92-259 birds (single day high count on 30 October 2024) (Figure 14). The shore was divided into five beach sections and the monthly average number of plovers was obtained for each section. An average number of plovers for each beach section for the five-month winter period was obtained by averaging each month's average count. Of the five sections, the beach north of Grand Avenue had an average of three plovers (range=0-7) during the winter period; Grand Avenue to marker post 2 had an average of 61 (range=48-83); marker post 2 to marker post 6 had an average of 28 (range=17-42); marker post 6 to the northern boundary of Oso Flaco had an average of 66 (range=48-90); and Oso Flaco had an average of 26 (range=10-44) (Figure 15) (see Site Description section for details of allowed public use and access in these beach sections).

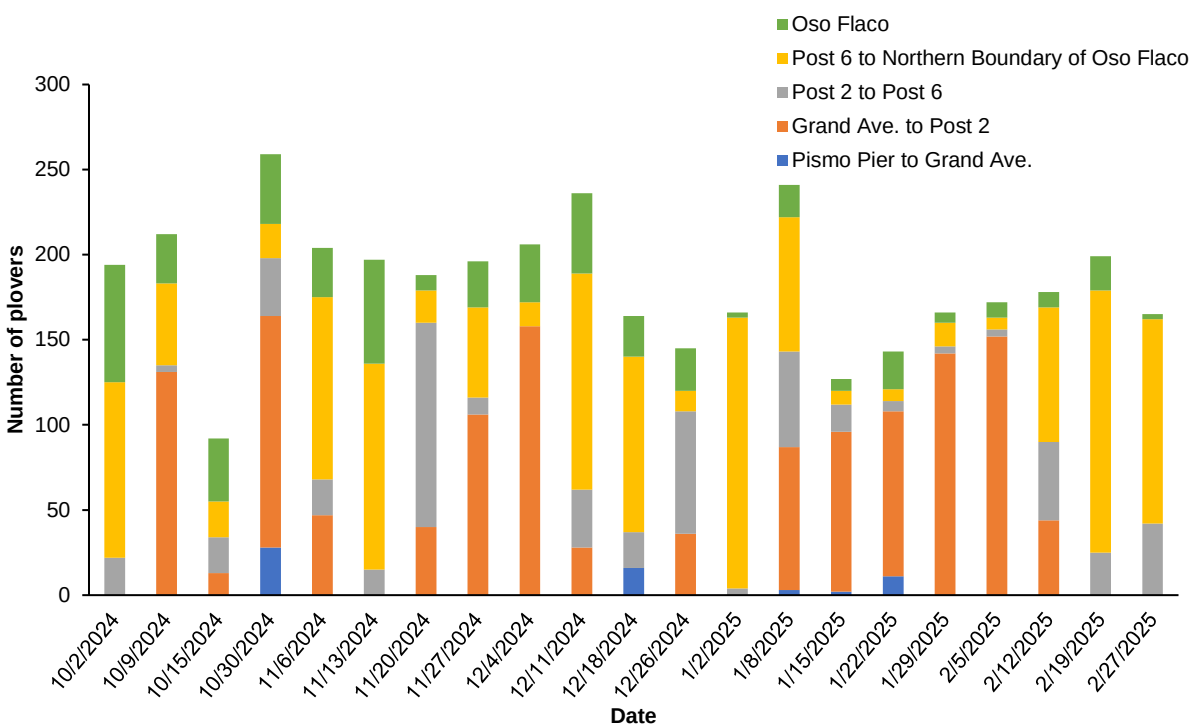


Figure 14. Nonbreeding season snowy plover counts by location from 2 October 2024 to 27 February 2025.

Winter window survey was conducted on 22 January 2025.

Post = marker post.

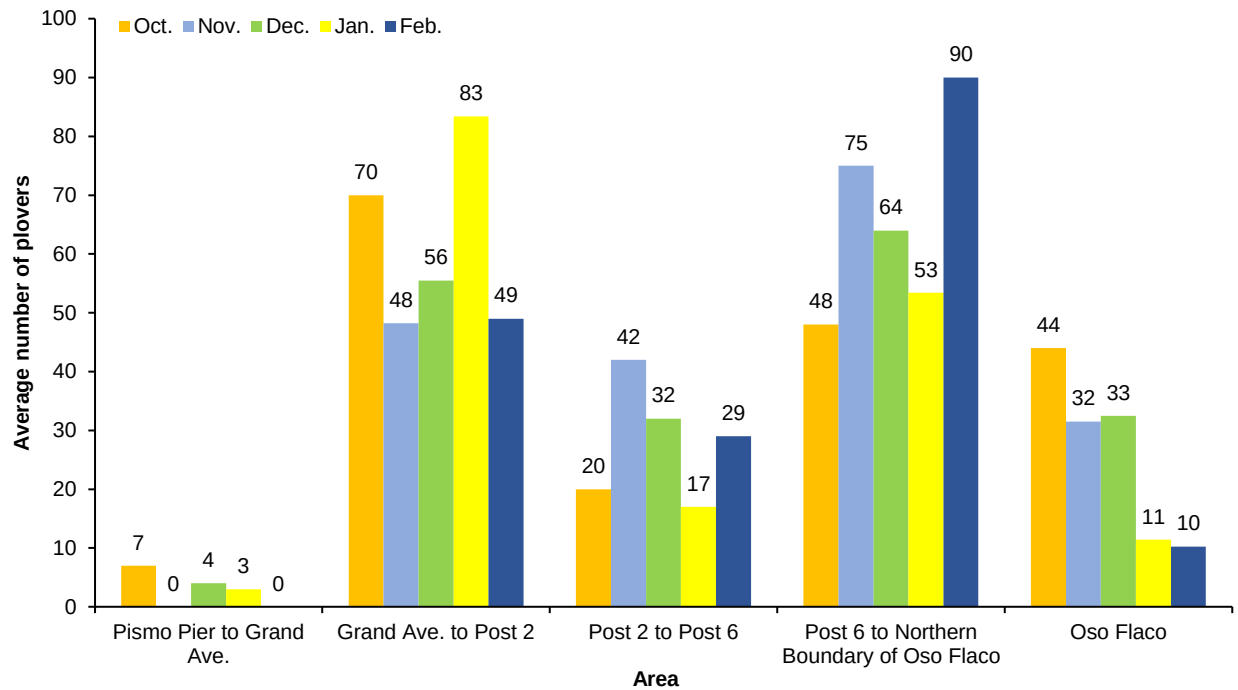


Figure 15. Monthly average number of snowy plovers observed at beach sections of ODSVRA during nonbreeding season surveys from October 2024 to February 2025.

Surveys conducted four to five times a month in 2024-25 winter.

Post = marker post.

Beginning in 2004, ODSVRA has participated in a snowy plover winter season window survey organized by USFWS and conducted in January throughout the U.S. Pacific coast. Plovers present during this time include birds from both the Pacific coast breeding population and interior breeding birds wintering on the coast. In 2025, the survey at ODSVRA counted 143 adult plovers and compares to an average of 156 (range=134-172) during the previous 3-year period 2022-2024. During the 23-year period 2003-2025, the winter window survey has averaged 153 plovers (range=62-260). Beginning in 2009, ODSVRA increased the number of full park surveys for wintering plovers from one USFWS survey in January to one to five surveys per month October to February. Over the 17-year-period 2009-2025, January high counts for 11 years were on dates other than the USFWS winter window survey (Figure 16).

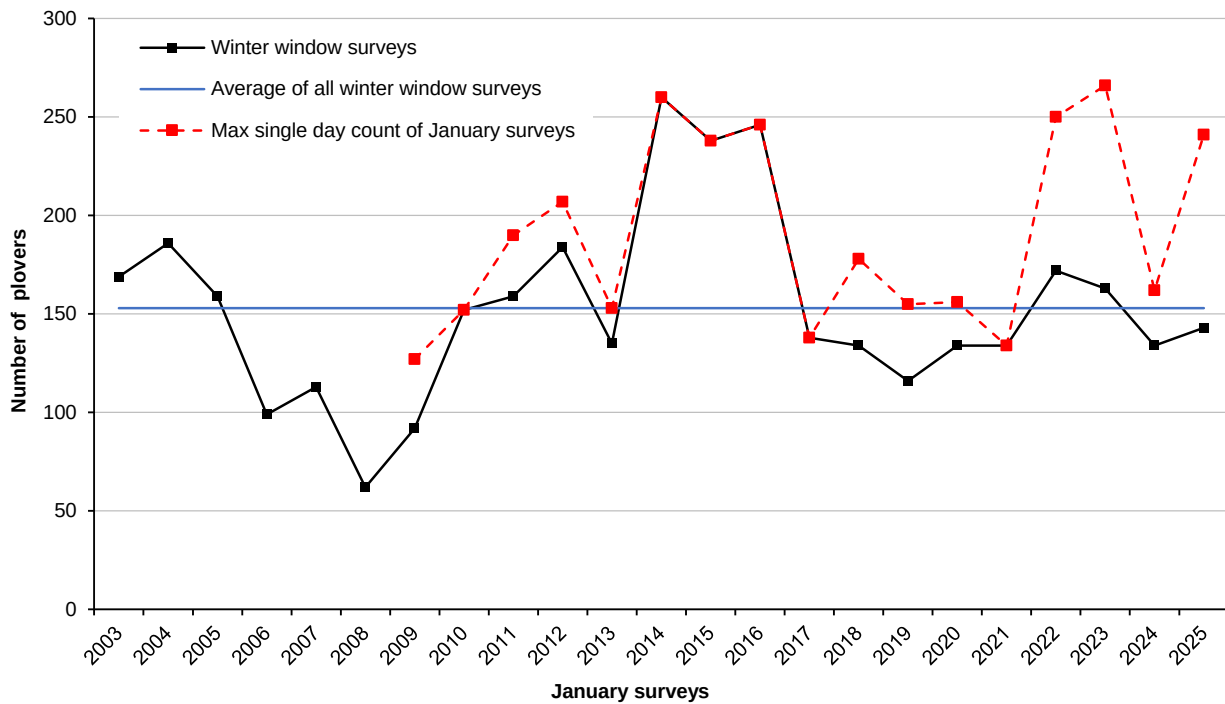


Figure 16. Number of snowy plovers counted at ODSVRA on USFWS winter window surveys 2003-2025 and the maximum number of snowy plovers counted in the month of January from 2008-2025. In 2010 and 2017, there was only one January plover count on the date of the winter window survey.

Color band combinations of 107 banded snowy plovers were recorded during surveys from 1 October 2024 to 28 February 2025 at ODSVRA. All, except one from unknown location, were banded as chicks in California at the following locations listed north to south: Eden Landing, Alameda County (2); ODSVRA (92); VSFB, Santa Barbara County (11); and Naval Base Coronado, San Diego County (1) (Table D.4 in Appendix D).

FACTORS INFLUENCING LEAST TERN AND SNOWY PLOVER REPRODUCTIVE SUCCESS

The following is a discussion of some of the factors that influence reproductive success of terns and plovers at ODSVRA. The adequacy of any single factor alone is not sufficient to achieve and sustain recovery goals.

Size of protected habitat

Maintaining an adequate size of protected habitat at ODSVRA has been important in providing sufficient area for terns and plovers to roost, nest, and raise young. Protected breeding habitat of sufficient size allows nests and chicks to be dispersed which can reduce exposure and vulnerability to predators, as well as reduce adverse disturbance from human recreational activities. For plovers, it also improves opportunities for chicks to have access to adequate invertebrate food resources.

Quality of protected habitat and food resources

Habitat within the Southern Enclosure and North Oso Flaco is protected and has been closed to public entry year-round since October 2021. Some areas within the Southern Enclosure have minimal amounts of scattered natural debris, such as on the shoreline, and other areas are dominated by tall and densely vegetated hummocks, such as in 8 enclosure (see more details of the Southern Enclosure in Site Description section and Figure C.13 to C.14 in Appendix C). Areas of patchy cover can benefit terns and plovers during the nesting and chick-rearing periods. Available materials, including wrack, branches, and driftwood, may be placed in bare areas of the Southern Enclosure and on the Foredune closure shoreline to make more areas of patchy cover available (see section titled Habitat Enhancement in the Management Actions section). On the shoreline of 6, 7, and 8 enclosures, talitrids may be added to help restore populations of this important invertebrate prey for snowy plover chicks, juveniles, and adults. Nearshore ocean waters provide the primary source of prey fish for the tern colony and nearby small freshwater lakes may provide additional sources of appropriately-sized fish to feed chicks.

Predators and predator management

Predators and predation can be an important factor limiting least tern and snowy plover reproductive success (Page et al. 2023; Thompson et al. 1997). Predators may impact terns and plovers directly by depredating eggs, chicks, juveniles, or adults. Indirect predator impacts, such as disturbance, can increase time spent by adults in vigilance or avoidance behavior, and may disrupt incubating and brooding behavior. Presence of predators may result in eggs left unattended and subject to being overheated, chilled, or buried by windblown sand or a brood becoming scattered and the loss of any chick failing to reunite with the adult. Depredation of an adult tern or plover may result in egg abandonment or loss of dependent chicks.

Documented predator activity and management response in 2025

Species known to be predators of terns and plovers were documented by both number of days detected, as well as number of sightings (avian) and occurrences (mammalian) in the Southern Enclosure and Oso Flaco (see Monitoring and Management Actions section for more detail). Predator activity in the Foredune closure was recorded using the same methods for the Southern Enclosure and Oso Flaco but is not included in the totals for sightings or occurrences to keep comparisons between years consistent. (Predators of concern in the Foredune closure were similar to those impacting the Southern Enclosure and Oso Flaco).

Predation can occur quickly, leaving little or no evidence, and it is likely that only a small percentage of events are documented during a season. There are many hours each day (including almost all night hours) when monitoring staff and/or predator management specialists are not present to observe predation. Even when monitors are present, there are limitations in the ability to detect predators, such as diurnal avian predators, that can travel quickly over large distances, or inclement weather, such as heavy fog, that affects

visibility. Despite limited documentation of predation events and detection bias, predators of particular concern identified during the 2025 season included peregrine, raven, harrier, great horned owl (*Bubo virginianus*), gull species, loggerhead shrike (*Lanius ludovicianus*) (shrike), American kestrel (*Falco sparverius*) (kestrel), and coyote. Four coyotes, one American crow (*Corvus brachyrhynchos*) (crow), three ravens, one western gull, and two California gulls were lethally removed. One peregrine and two great horned owls were live-trapped and relocated (Table G.3 in Appendix G). Avian predators perched in sensitive areas were hazed when determined appropriate.

In 2025, 22.5% (9/40) of all tern nests with known location and fate were identified as depredated and lost to: coyote (4), event, coyote (3), raven (1), and event, raven (1). This is notably higher than the 2.1% (21/1021) average for all tern nests with known location and fate documented lost to predators from 2002-2024 (14 mammalian, one avian, and six unidentified predator). No tern nests were documented lost to raven prior to 2025, and the previous documented nest lost to coyote was in 2013 (Appendix A, Table 2) (Table F.2 in Appendix F). Additionally, there were five terns (chicks or juveniles, no adults) observed lost predators in 2025, all to peregrine (2) and harrier (3). The five documented tern losses to predation other than eggs in 2025 compares to an average documented loss of two terns (range=0-10) during the 21-year period 2004-2024 (Table 1, Table G.2 in Appendix G, Table H.3 in Appendix H, and CDPR 2004-2025).

In 2025, 14.1% (42/298) of all plover nests with known location and fate were identified as depredated and lost to: coyote (6), event, coyote (4), gull (1), raven (24), event, raven (3), and unidentified predator (4). This is moderately higher than the 11.9% (464/3897) average for all plover nests with known location and fate documented lost to predators from 2002-2024 (58 mammalian, 314 avian, and 92 unidentified predator). In addition to documented loss, a number of failed plover nests are likely a result of predation (Appendix B, Table F.2 in Appendix F). Additionally, there were 25 plovers (chicks, juveniles, and adults) observed lost to the following predators: sharp-shinned hawk (1), harrier (2), peregrine (11), raven (4), California gull (3), western gull (2), and unknown avian (2). The 25 documented plover losses to predation other than eggs in 2025 was higher than the average of 10 plovers (range=1-21) for the 21-year period 2004-2024 (Table G.2 in Appendix G).

Mammalian predators

Opossum

Opossum (*Didelphis virginiana*) tracks were documented on only two days in the Southern Exclosure in 2025, and averaged 11 days per season (range=3-25) from 2007-2024 (Figure 17).

In 2025, no nests were documented lost to opossum. From 2002-2024, known tern and plover loss to opossum was limited to two tern nests, occurring in 2010 and 2013 and four plover nests, occurring in 2021 and 2024 (Table 2, Table 9, Table F.2 in Appendix F).

Skunk

Striped skunk (*Mephitis mephitis*) (skunk) was not documented in 2025 compared to an average of 26 days per season (range=1-87) from 2007-2024 (Figure 17).

There was also no documented tern or plover nest loss to skunk in 2025, compared to an average of 1.3 nest lost per year from 2002-2024, with the greatest loss occurring in 2017 (five tern and 18 plover nests). From 2002-2024, tern and plover loss to skunk, other than eggs, was limited to two plovers in 2005, although additional tern and plover loss was suspected in 2017 (Table 2, Table F.2 in Appendix F, and Table G.2 in Appendix G).

Raccoon

Raccoon (*Procyon lotor*) tracks were documented on 15 days in the Southern Enclosure and Oso Flaco in 2025 compared to an average of 63 days (range=2-145) for the 18-year period 2007-2024 (Figure 17). Raccoon presence has substantially decreased in recent years, averaging seven days (range=0-17) during the seven-year period 2019-2025 compared to 91 days (range=39-145) during the previous 12-year period 2007-2018.

No tern or plover loss to raccoon was documented in 2025. From 2002-2024, loss to raccoons was limited to one tern nest in 6 enclosure (2015) and two plover nests in Oso Flaco (one in 2010 and one in 2011) (Table 2, Table F.2 in Appendix F).

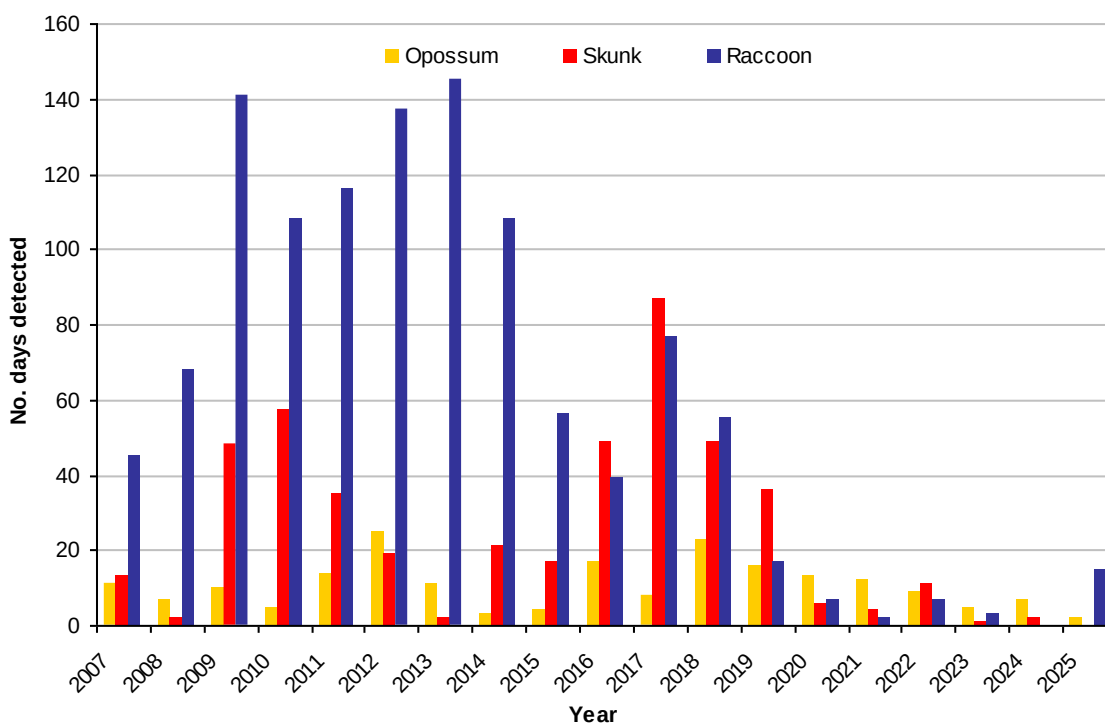


Figure 17. Number of days opossum, skunk, and raccoon were detected in the Southern Enclosure and Oso Flaco at ODSVRA from 2007-2025.

Coyote

Live sightings of coyotes within the Enclosure predator fencing or along the shoreline during daytime hours are infrequent. The lack of diurnal sightings, as well as timing of observed fresh tracks relative to windblown sand and tides, indicate that coyote activity is primarily nocturnal in these areas. Nighttime observations using thermal scopes is infrequent and only opportunistically documented coyote activity during occasional overnight owl surveys. It should be noted that coyote tracks are also documented opportunistically, and counts represent a minimum level of activity. In addition, shoreline accessibility for monitoring may vary between years, making direct comparison difficult.

In 2025, there were 49 occurrences inside the Enclosure predator fencing. This is higher than the average of 33 occurrences (range=5-92) for the 16-year period from 2009-2024. Documented coyote activity for the Southern Enclosure shoreline and North Oso Flaco shoreline was above average with 162 occurrences in 2025 compared to an average of 102 for 2009-2024 (range=5-193) (Table 10) (East Boneyard and South Oso Flaco not included because coyote tracks are a near daily presence).

Documented nest loss in 2025 to coyote and event, coyote was seven tern nests and 10 plover nests. This is higher than the average from 2002-2024, with less than one tern nest per year (range=0-2) and 1.2 plover nests per year (range=0-4) documented lost to coyote (Table 2, Table F.2 in Appendix F). In 2025, four coyotes were removed in a targeted effort to reduce the threat of predation and disturbance within sensitive nesting and chick-rearing habitat. This is below the average of six removed per year from 2007-2024 (range=1-12) (Table G.3 in Appendix G) (CDPR 2007-2024).

All nest loss to coyote and event, coyote in 2025 within the Exclosure predator fence (seven tern, five plover) occurred during a 12-day period from 16-27 June when winds were high, creating long sections of gaps under the Exclosure predator fencing allowing coyotes to access areas inside the fence of the Southern Exclosure and North Oso Flaco. Coyote occurrences inside the Exclosure predator fencing was reduced after four coyotes were removed from 30 June–28 July (Table G.3 and Figure G.1 in Appendix G). Plover chick loss to coyote was suspected but not documented in 2025. From 2002-2025, coyote scat was found containing a total of 38 plastic or aluminum bands, representing a minimum of one tern and 17 plovers (Table G.2 in Appendix G) (CDPR 2007-2023).

Table 10. Coyote occurrence in the Southern Exclosure and North Oso Flaco at ODSVRA from 2009-2025.

Date range is from 1 March to 10 September (a 194-day period). Exclosure predator fencing includes all areas inside the Southern Exclosure and North Oso Flaco exclosed with predator fencing. East Boneyard and South Oso Flaco not included because the areas are not exclosed with predator fencing and coyote tracks are a near daily presence.

Year	Inside Exclosure predator fencing	Southern Exclosure and North Oso Flaco shoreline	Total no. occurrences
2009	19	193	212
2010	5	47	52
2011	10	37	47
2012	92	147	239
2013	49	93	142
2014	28	153	181
2015	48	136	184
2016	36	110	146
2017	25	5	30
2018	22	107	129
2019	17	93	110
2020	27	114	141
2021	26	98	124
2022	30	123	153
2023	61	124	185
2024	28	48	76
2025	49	162	211

Avian predators

Sharp-shinned hawk

Sharp-shinned hawks are rarely observed in the Southern Exclosure and Oso Flaco. There was one sighting in 2025 of an adult female catching a plover adult on 6 exclosure shoreline on 3 April (Table H.5 in Appendix H). Sharp-shinned hawks typically migrate out of the area prior to the tern and plover breeding season. This is the only known predation of terns or plovers during their breeding season at ODSVRA by a sharp-shinned hawk.

Red-tailed hawk

Red-tailed hawks (*Buteo jamaicensis*) were observed on 14 days (19 sightings) in 2025, lower than the average of 38 days (range=7-74) of activity from 2007-2024 (Table 12, Figure 18). The majority of sightings in 2025 occurred during March to May. There were no sightings in June or July, two sightings on the same day in August, and no sightings in September. There was a minimum of two individuals observed in the nesting area (one adult, and one subadult).

In 2017, a juvenile red-tailed hawk was observed eating a plover chick. This is the only known predation by a red-tailed hawk at ODSVRA, but they have been a documented predator of terns and plovers at other sites (CDPR 2017).

Northern harrier

Northern harrier is a documented predator of tern and/or plover juveniles, chicks, and nests at ODSVRA. In 2025, there were 230 harrier sightings on 72 days, higher than the average number of days for the 18-year period from 2007-2024 (range=24-92, average of 47 days) (Table 12, Figure 18). Based on age and sex characteristics, unique plumage characteristics, and number seen simultaneously, there was a minimum of five individuals observed this season (two juveniles, one adult male with pale plumage, one adult male with dark mottled plumage, and one adult female).

From mid-May to mid-June, an adult male harrier with pale plumage was frequently seen hunting areas of the Southern Exclosure, catching and eating a plover chick or juvenile on 6 June, and catching and carrying other prey (rodents and small brown birds) east out of the park on multiple occasions. Trapping attempts made for this individual were unsuccessful and sightings of this individual became less common into late June and remained uncommon. From late June to late July, an adult male harrier with darker mottled plumage was frequently seen hunting areas of the Southern Exclosure, catching and eating a tern chick on 3 July, catching and eating an unbanded plover chick on 4 July, and catching and carrying a tern chick east out of the park on 10 July. Trapping attempts for this individual were unsuccessful and sightings of this individual became less common late July to September. From mid-July through September, harrier sightings continued flying over areas of the Southern Exclosure and Oso Flaco with no documented loss for terns and plovers during this time.

In 2025, documented loss to harrier involved the two tern individuals and two plover individuals noted above. From 2002-2024, total documented loss to harrier included eight tern individuals, 34 plover nests, and 11 plover individuals (Table F.2 in Appendix F, and Table G.2 in Appendix G).

American kestrel

There were 95 documented sightings on 38 days of American kestrels in specific areas of the Southern Exclosure and Oso Flaco in 2025 (Table 12). This compares to an average of 23 days per season (range=6-52) for the 18-year period 2007-2024 (CDPR 2007-2024). Kestrels were primarily observed June to September perch-hunting and flying over 6, 7, and 8 exclosures and were hazed away from the Southern Exclosure on seven occasions. In 2025, there was a minimum of four individual kestrels observed in the nesting area based on age, sex, and number seen simultaneously on 21 July.

No tern or plover loss to kestrel was documented in 2025. From 2002-2024, loss to kestrel was one tern in 2007, four plovers in 2021, seven plovers in 2022, and seven plovers in 2023 (Table G.2 in Appendix G).

Peregrine falcon

Peregrine falcons were observed all season actively hunting, perching, and consuming prey in the Southern Exclosure and Oso Flaco. In 2025, there were 185 sightings on 55 days of peregrines in the Southern Exclosure and Oso Flaco, compared to an average of 179 sightings (range=38-362) on 63 days (range=22-

103) from 2008-2024 (Table 11). A minimum of four individual peregrines were identified this season: one adult, two subadults with distinct plumage (one of which trapped and banded 94AB), and one juvenile.

From 29 June–17 July, a subadult male peregrine was observed hunting all shoreline areas of the Southern Enclosure and Oso Flaco and documented loss to this peregrine during this time included one tern and four plovers before it was trapped on 17 July. This peregrine was banded with a black VID band 94AB on the right leg and relocated 458 miles north and two miles south of the Oregon border on 18 July. It soon returned to ODSVRA with the first resighting 26 July, eight days after being relocated. Additional confirmed loss to this now banded peregrine included a minimum of two terns and seven plovers from 26 July to 4 September. Re-trapping attempts through 7 September and lethal removal efforts from 8-30 September for this peregrine were unsuccessful and it was last observed on site on 14 September. Total loss to this peregrine includes a minimum of three terns and 11 plovers, the highest documented loss to peregrine for any year in the 23-year period 2002-2024 (average=3, range=0-9) (Table H.3 and Table H.5 in Appendix H).

From 2002-2024, peregrines were observed depredating 15 tern and 71 plover chicks, juveniles, and adults (Table G.2 in Appendix G). Additionally, a subadult peregrine was observed eating an active plover nest in 6 enclosure in 2012, the only known nest predation by a peregrine at ODSVRA (CDPR 2002-2024).

Table 11. Sightings of peregrine in the Southern Enclosure and Oso Flaco and the number trapped at ODSVRA from 2008-2025.

Date range is from 1 March to 10 September (a 194-day period).

Year	Total no. sightings (Total no. days detected)	No. peregrines trapped
2008	38 (22)	0
2009	74 (36)	1
2010	144 (68)	3
2011	205 (77)	0
2012	156 (52)	1
2013	100 (41)	0
2014	362 (81)	1
2015	163 (64)	1
2016	254 (103)	0
2017	192 (67)	1
2018	295 (88)	2
2019	189 (71)	2
2020	178 (70)	1
2021	162 (54)	2
2022	240 (80)	0
2023	114 (41)	1
2024	170 (55)	1
2025	185 (55)	1

Owl

Many owl “sightings” are from detection of tracks. The level of owl activity, as evidenced by tracks, is difficult to estimate during daytime monitoring as there is limited entry into the nesting and chick-rearing areas to look for tracks. The tracks may extend only a short distance and can be covered quickly by windblown sand. In addition, accessibility to areas where tracks have often been noted previously (e.g., North Oso Flaco, 8 enclosure, 7.5 revegetation area) may vary between years, making direct comparison difficult. Most owl tracks documented at ODSVRA are likely from great horned owls; American barn owls

(*Tyto furcata*) (barn owl) have also been documented but to a lesser extent. Burrowing owls (*Athene cunicularia*) have been seen at ODSVRA but tracks would not be confused with other species, and they have typically migrated out of the area before the tern and plover breeding season. Occasional overnight owl surveillance using a thermal scope assisted in documenting owl species and behavior in the nesting area.

In 2025, owl tracks and live observations were irregularly documented in sensitive nesting and chick-rearing habitat, with owl presence detected on 28 days with 38 separate sightings in the Southern Exclosure and Oso Flaco (Table 12, Figure 18). For these same areas from 2007-2024, owl activity was documented on an average of 28 days (range=5-53). Most detections of owls in 2025 were of tracks or live great horned owls hunting and perching in the Southern Exclosure and North Oso Flaco. From 3-7 May, a live great horned owl was seen hunting South Oso Flaco, Boneyard, East Boneyard and North Oso Flaco before an adult male great horned owl was trapped on 7 May. From 20 June to 12 August, sightings included a great horned owl inside 8 exclosure (two nights) and North Oso Flaco (one night), a great horned owl pursuing a likely plover on the ground in 6 exclosure (one night), and large owl tracks inside 8 exclosure (2 days). On 12 August, a juvenile great horned owl was trapped in 8 exclosure. From 24 August–4 September, a juvenile great horned owl was regularly perching during daylight hours in the North Oso Flaco foredunes and once in 8 exclosure. In total, two great horned owls were trapped and relocated in 2025.

No tern or plover loss to owl was documented in 2025 although loss was suspected. From 2002-2024, documented loss to owl included one tern in 2004, three terns and one plover in 2021, and two plovers in 2022. An additional two terns in 2006 and one plover of unknown age in 2011 were depredated by an unknown avian predator, suspected to be owl (Table G.2 in Appendix G).

Table 12. Sightings of kestrel, large owl spp., red-tailed hawk, harrier, and peregrine in specific areas of the Southern Exclosure and Oso Flaco at ODSVRA in 2025.

Date range is from 1 March to 10 September (194-day period). Note many owl observations based on tracks.

Location	Red-tailed hawk	Harrier	Kestrel	Peregrine	Large owl spp.	Total
6 exclosure	4	66	31	53	3	154
7 exclosure	2	61	34	37	1	134
8 exclosure	4	45	15	32	11	96
Boneyard exclosure	0	17	5	7	9	29
North Oso Flaco	3	20	6	27	10	56
South Oso Flaco	6	21	4	29	4	60
TOTAL	19	230	95	185	38	529
Foredune closure	6	53	18	43	5	120

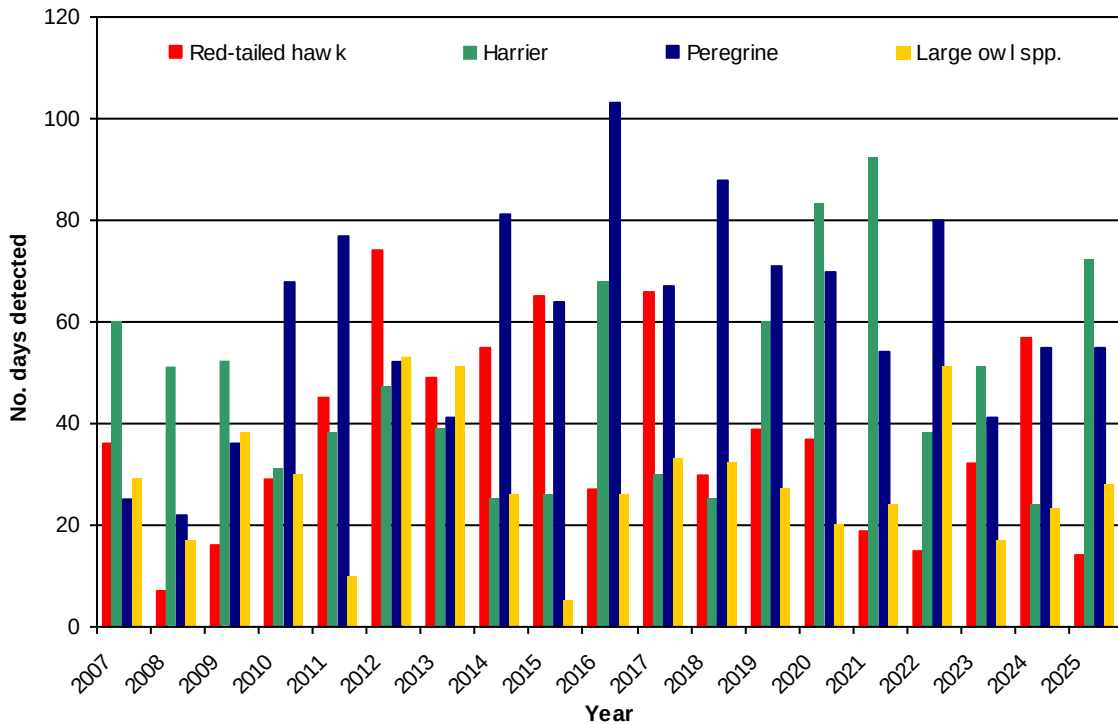


Figure 18. Number of days large owl spp., harrier, peregrine, and red-tailed hawk were detected in the Southern Enclosure and Oso Flaco at ODSVRA in 2007-2025.

Date range is from 1 March to 10 September (194-day period).

Loggerhead shrike

There were 46 documented sightings on 26 days of loggerhead shrikes in specific areas of the Southern Enclosure and Oso Flaco in 2025 (Table G.1 in Appendix G). This is higher than the average of six days per season (range=0-26) for the 18-year period 2007-2024 (CDPR 2007-2024). There were two sightings of a shrike perching in the North Oso Flaco foredunes and Boneyard on 13 and 17 June 2025. All other shrike sightings were from July to September, primarily in the Southern Enclosure and North Oso Flaco. Shrikes were seen perch-hunting and were hazed away from the Southern Enclosure on 11 occasions. In 2025, there was a minimum of two individual shrikes observed in the nesting area based on number seen simultaneously on 23 August.

No tern or plover loss to shrike was documented in 2025. From 2002-2024, loss to shrike included three plovers in 2003, one tern and two plovers in 2005, and three plovers in 2016 (Table G.2 in Appendix G).

American crow

In 2025, crows were primarily observed perching in and flying over all areas of the Southern Enclosure and Oso Flaco from March to mid-April and over 6, 7, and 8 enclosure in early July. No loss was documented to crows but they were observed flying over and perching in the tern and plover nesting areas for extended periods of time in July. Attempts to haze one juvenile crow out of 6 enclosure and the 6 enclosure shoreline on 29 July were unsuccessful and the crow was lethally removed.

From 2002-2025, documented plover nest loss to crow was limited to one nest in Pismo Creek lagoon in 2009 and two plover nests north of marker post 4 in 2023. During this period, a total of three crows were lethally removed (two in 2019, one in 2023, and one in 2025).

Common raven

During the 14-year period 2007-2020, ravens averaged 14 sightings on 7 days in the Southern Exclosure and Oso Flaco. This compares to the much higher average of 116 sightings on 28 days during the five-year period 2021-2025 (CDPR 2008-2024). In 2025, there were 158 sightings on 30 days, with a majority of sightings observed from March to early May and brief spikes in activity observed in mid-May and late June. Three ravens were lethally removed 28 March to 28 April and compares to seven in 2024, eight in 2023, seven in 2022, and an average of 2.4 from 2013-2021 (range=0-5) (Figure 19, Table F.2 in Appendix F, CDPR 2002-2024). In 2025, there was a minimum of nine individuals observed during the nesting season based on three removed in March and April and six seen simultaneously on 23 June.

In 2025, documented loss to raven included one tern nest, 24 plover nests, and four plover chicks. In addition, one tern nest and three plover nests were documented as “event, raven” losses (nests considered depredated based on occurrence of multiple nests confirmed depredated by raven on-site during same period of time). Since more intensive monitoring began in 2002, ravens were first seen in 2003, and during the past nine-year period (2017-2025) plover nest loss to raven has occurred annually with an average annual loss of 13.2 plover nests for this period (n=119, range=2-36). This is higher than the average annual loss to raven during the 14-year period from 2003-2016 of 0.93 plover nests (n=13, range=0-5).

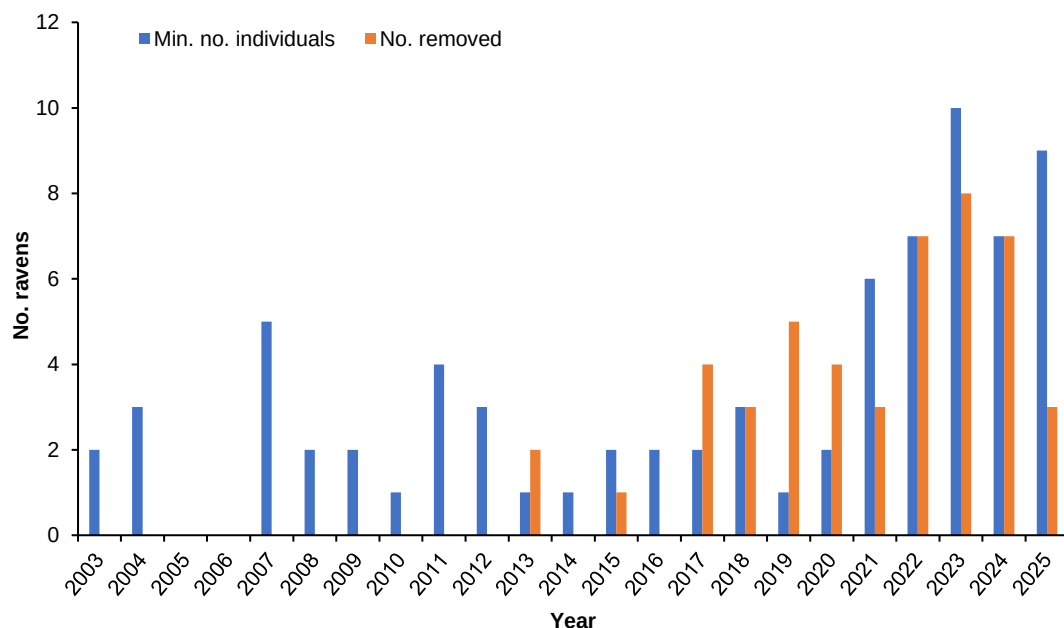


Figure 19. Minimum number of individual ravens observed in the Southern Exclosure and Oso Flaco and number of ravens removed at ODSVRA from 2003-2025.

Number of individuals is less than number removed in some years because ravens were removed from inside and outside the Southern Exclosure and Oso Flaco.

Gulls

In 2025, a minimum of five plover individuals (one juvenile, three chicks, and one unknown age) were documented lost to gulls and additional loss is suspected (see details in Table H.5 Appendix H). Two California gulls and one western gull were lethally removed (Table G.3 in Appendix G). Gulls can pose a substantial threat to snowy plover breeding success at ODSVRA, especially individual gulls that key in on adults with broods. Such gulls can become “specialists” searching for and preying on chicks over a wide area, and depredation events can happen quickly and easily go undetected. On 7 June, a juvenile western gull was observed grabbing a juvenile plover with a badly broken wing, flying to the waterline to peck at it, then leaving it dead at the waterline. On 24 June, a subadult California gull was removed after observing

it eat two unbanded plover chicks and its gut contents contained the remains and bands of at least one additional plover of unknown age. On 2 August, a juvenile California gull was lethally removed after it caught and dropped a plover chick that ran off and appeared unharmed (no plover remains were found in the gull's gut contents). On 14 August, a subadult western gull was observed with a small unbanded plover chick in its mouth, believed to have eaten the chick, flew to a flock of gulls, and was lethally removed and no plover remains were found in its gut (Table H.5 in Appendix H).

From 2002-2025, documented loss to gulls included one tern nest, 33 plover nests, and 75 plover individuals (Table 2, Table 9, Table F.2 in Appendix F, and Table G.2 in Appendix G).

Unknown Avian

In 2025, two plover adults were found depredated within two circular exclosures for nests in South Oso Flaco and the circulars were removed the same day to prevent further risks. Both carcasses were intact, appeared fresh, and with bloody wounds considered due to an avian predator (Table H.5 in Appendix H). On 26 April, an unbanded female plover was found dead next to the SP26 nest and the circular's net top was slightly damaged with trace amounts of blood and plover feathers attached. This nest was observed incubated by a male plover the same day after the circular was removed and was later depredated by raven. On 29 April, an adult male plover banded ga:pw was found dead near the SP68 nest with large unidentifiable avian tracks just outside the circular exclosure, no incubation was seen subsequently, and the nest was later abandoned. In response, circulars were also removed from five other plover nests active in South Oso Flaco on 29 April due to the increased threat of adult mortality for birds attending nests inside circulars. Two of these five nests were determined abandoned pre-term on 3 May and could represent additional adult plover mortality that was not documented. The other three nests hatched from 5-15 May. The avian predator(s) responsible for these depredations could not be determined and subsequent surveys did not provide additional evidence. From 18 June–23 July, due to continued high nest loss to predators, circular exclosures were again used and carefully monitored on 10 plover nests in South Oso Flaco. All hatched by 5 August with no additional documented adult mortality.

RECOMMENDATIONS

Continue monitoring

Monitoring is critical for effective protection of nesting terns and plovers. As problems and threats arise for adult birds, nests, chicks, and juveniles, timely information from monitoring can help guide appropriate management actions and evaluate the effectiveness of those actions. Monitoring efforts at ODSVRA should have adequate funding, resources, and flexibility to address anticipated problems (e.g., nesting failure, causes of chick loss, predator pressure) as well as unanticipated problems.

Continue banding least tern and snowy plover chicks

Continue banding least tern and snowy plover chicks to better understand chick behavior and factors promoting or threatening survival of chicks (e.g., feeding rates for tern chicks, foraging activity and movements of plover chicks, age and location of disappearance of different cohorts of chicks). Banding also provides a means to document fledging success. Banding a large portion of the tern and plover chicks hatching from ODSVRA is necessary to determine the seasonal productivity and for assessing the management effectiveness. Additionally, bands provide an opportunity to gain insight into predator impacts, natal site fidelity of terns and plovers fledged at ODSVRA, as well as migration to other sites.

Every year, ODSVRA bands as many tern and plover chicks as possible, but there are situations when park staff will determine the banding effort is not suitable or could be detrimental to the birds. Chicks are not banded at ODSVRA when it will cause a disturbance to nearby young tern and plover broods. A variety of other factors will prohibit banding including, but not limited to, the loss of very young unbanded chicks prior to any banding opportunity, weather conditions (and other conditions defined in the USFWS permit) that would make banding unsafe, topography and dense vegetation making chicks difficult to locate, and chicks from nests with unknown locations found when too old and mobile to capture for banding.

In 2025, a total of 93% (42/45) tern chicks and 62% (378/610) plover chicks were banded, which is similar to 2024 (94% tern chicks and 63% plover chicks). There was a lower percentage of chicks banded in 2023 (58% tern chicks and 43% plover chicks banded), likely a result of the high number of nests hatching simultaneously, resulting in increased densities of young chicks in many areas, and banding was not possible in these dense brood situations as it would cause a high level of detrimental disturbance to the broods. In 2024-25, the increase in banding was likely due to a less compressed hatching period, which resulted in lower brood densities near young unbanded broods and created more opportunities for banding. In addition, there was an increase in banding for least terns due to the use of slightly smaller metal bands, which are less prone to slipping off the legs and allows them to be applied to younger chicks. Point Blue typically has just one bander for the season, but beginning in 2024 an additional bander was available to assist during the busier part of the season.

Point Blue will continue banding efforts at ODSVRA and has been training ODSVRA staff to band plover chicks since 2022. One staff member is currently permitted to independently band plover chicks, and it is recommended to continue to train park staff in 2026 with the goal to apply for additional permits to band. Although an additional banding contractor was made available and was on-site for the busier part of the 2025 season, only one additional tern chick was banded since all other banding opportunities were addressed by the one assigned contractor or by permitted park staff. During the 2026 season, it is recommended to evaluate banding needs and continue to coordinate with Point Blue to provide an additional banding contractor during the busier part of the season, if determined necessary by park staff.

Continue banding least tern chicks to individual

Beginning in 2006, least tern chicks were banded to allow individual chicks to be identified. This was done, in part, by placing one or two different colors of tape on the federal band, creating a unique combination

for each chick. Banding to individual provides the opportunity to gain additional information that otherwise may not be obtainable, including:

- 1) providing the most accurate means to count the number of juveniles produced;
- 2) identifying if different areas within the colony are having different fledging success during a season;
- 3) identifying if broods hatching more than one chick are fledging more than one chick;
- 4) tracking individual chick and juvenile movement within the ODSVRA colony;
- 5) providing information on the length of stay of individual juveniles at the ODSVRA colony after fledging;
- 6) tracking recruitment of juveniles into ODSVRA's breeding population; and
- 7) tracking movement of individuals to other colonies in California.

Banding to individual provides valuable information to assist in developing and assessing site management actions directed toward the recovery of the least tern.

Continue option to band adult snowy plovers

The occurrence of abandoned plover nests can raise concern about possible mortality of adult plovers. If elevated adult mortality rates occur or are suspected, it could prove beneficial to band certain adults. This would allow monitors to verify if mortality was taking place and possibly identify the causes.

Continue to provide bumpouts and buffer fencing to protect least tern and snowy plover nests and chicks in or close to the open riding area

Least tern and snowy plover nests inside fenced areas of the Southern Enclosure, Foredune closure, and revegetation areas, may receive temporary additional fencing if a buffer is needed to increase the nest distance from recreational activities in the open riding area. These bumpouts connect to the fence adjacent to nests and extend into the open riding area. Buffer fencing for nests and the tern night roost, when found in the open riding area, is connected to the closest adjacent closure fencing, if appropriate. The bumpout and buffer sizes, determined in consultation with USFWS and CDFW, differs for plover and tern.

It is recommended for 2026 to provide the buffer distances listed below to comply with the January 2021 Biodiversity Management Plan (BMP) using a bumpout or nonpredator fencing (CDFW 2021):

Least tern nests: Provide a tern nest buffer distance of 984 feet (300 meters).

Least tern night roost in the open riding area: Install a bumpout or nonpredator fencing to maintain a minimum of 330 feet (100 meters) from the tern night roost location.

Snowy plover nests in the Southern Enclosure and Foredune closure: Continue to install bumpouts to provide a minimum 100-foot buffer distance between the plover nest and the open riding area for nests found inside the Southern Enclosure or Foredune closure, and located close to the fence that borders the open riding area.

Snowy plover nests outside the Southern Enclosure and Foredune closure: Continue to experiment with various plover nest buffer sizes for nests found outside the Southern Enclosure and Foredune closure (such as the open riding area or revegetation areas), in consultation with CDFW, with buffer distances no smaller than 100 feet and no greater than 492 feet (150 meters). Hatch rates for the various buffer sizes will be compared over time. Chicks hatching from these plover nests are monitored closely as they move from nest to determine the daily location of brood for the week after hatch, survival of chicks, and ultimate fledge rates.

Nest bumpouts and buffers may be smaller in size for cases where topography will not allow the minimum size or as necessary to maintain a safe vehicle corridor adjacent to any bumpout or buffer fence.

Additionally, to immediately protect the nest when it is first found, a smaller size buffer consisting of symbolic rope fencing with signs or a smaller single nest wire enclosure may be installed until a larger buffer installation can be scheduled when staff time, material availability, and weather conditions permit. The bumpout and buffer material consists of nonpredator fencing. Access to enter bumpouts or closed buffer areas will not be allowed by the public, but ODSVRA staff vehicles and equipment are allowed within these areas for tasks related to daily tern and plover monitoring, periodic vegetation monitoring, and regular fence maintenance. Other vehicles and personnel will also be allowed to access these areas as necessary to respond to public emergency situations. The bumpout or buffer fencing is removed once nesting activity ceases and there are no broods inside the fenced area.

Nests will continue to be monitored closely to assess the adequacy of protective fencing in reducing disturbance. If necessary, bumpouts or buffers may increase in size if disturbance to incubating birds is observed as a result of recreational activity. The buffer size may also be adjusted if tern chicks or nocturnal roosting terns are observed to remain close to the closed buffer area fence.

For plover nests in the open riding area or any area outside of the Southern Exclosure and Fore dune closure, a fence corridor that can be closed to the public may be provided as appropriate once nest is close to hatch. This may be done by extending fencing westerly to the surf line to provide a secure chick travel corridor to a protected area of shoreline for foraging habitat.

Continue to protect snowy plover broods in the open riding area

The shoreline is important as foraging habitat and for raising snowy plover chicks. After a nest hatches, broods typically move toward the closest shoreline and establish a territory. Portions of the open riding area are temporarily closed, using symbolic fence or nonpredator fencing and signs, to provide a safe passage corridor for broods moving through the open riding area between nests and foraging areas (see section titled Chicks in the open riding area on page 39).

In 2026, it is recommended to provide protection to plover broods in the open riding area in consultation with USFWS and CDFW, including methods to allow staff to guide broods to a protected area when necessary (see section titled Broods in the open riding area on page 20). For broods found in the open riding area that are in critical danger from recreational activities, and when it is not practical for a protected closure or travel corridor to be installed, it is recommended that chicks be captured and relocated to an approved rehabilitation facility. Examples of circumstances where chick capture would be needed include: broods that are found far away from any closed shoreline and surrounded by campers where a chick corridor or closed area is not feasible; chicks become separated or appear weak while moving on their own within the riding area to a closed area; or no adult is present and chicks are unattended in the open riding area for an extended period. If possible, USFWS and CDFW will be consulted prior to any capture of chicks, however immediate action may be taken as necessary to avoid loss of chicks due to recreational activities.

Continue to use predator proof fencing and allow staff and heavy equipment access throughout the season to maintain the effectiveness of the exclosure perimeter fence protecting terns and plovers breeding in the Southern Exclosure and North Oso Flaco

The contiguous area enclosed by predator fencing within the Southern Exclosure and North Oso Flaco is important in discouraging coyotes during the nesting season from entering nesting and chick-rearing habitat, as well as to limit vehicle and human trespass. The Exclosure predator fencing was installed seasonally 2006-21 and the area has been closed to the public year-round since October 2021.

The Exclosure predator fence during the nesting season is composed of two layers of wire fencing six feet above the surface, with the bottom layer of two-inch by four-inch mesh buried a minimum of eight inches to discourage coyote entry. High winds at ODSVRA can cause gaps or blowouts at the bottom of the fence, and the fence is prone to falling if not repaired in a timely manner. Other areas may become buried by sand

which creates low sections in the fence. Coyotes can take advantage of the gaps and low spots to enter the enclosure, making nests and chicks vulnerable to predation. Additionally, gaps and downed fence can cause trespass issues. In 2025, and in past years, heavy equipment was used to repair and maintain the fence for the nesting season by pushing or pulling sand away from the fence, usually once per week (or more as needed) on the eastern fence line that borders the open riding area to maintain the fence for predator control. Staff also access closed buffer areas to repair fencing by hand and add fence material to close gaps and keep the fence at an optimal height.

During the winter months (October to February), it is recommended to continue to repair damaged fence to prevent public trespass, but it will not be necessary to maintain the fence to the same level as during the breeding season since it will not be intended for predator protection. The western fence may be removed for the winter to avoid damage by winter storms and high surf events. Although the predator fencing is essential for the nesting season, it requires almost daily maintenance, multiple hours of staff time, and is not intended to be used as a permanent fence. Beginning in 2023, incorporating taller and sturdier posts in the Southern Enclosure eastern fencing and has proved to be more durable. For 2026, the Southern Enclosure east fence will continue to be evaluated, with the goal of maintaining the integrity of the predator enclosure fencing. Incorporating new fence materials into the management program at ODSVRA, determined in consultation with USFWS and CDFW, will depend on closure plans for the nonbreeding season, available materials, and staff time.

Prior to the 2026 nesting season, it is recommended to replace the western enclosure predator fencing and repair the remaining fence using heavy equipment and hand crews, to remove any gaps or low spots that may develop over the winter. Throughout the 2026 nesting season, it is recommended to maintain the predator fence and continue to allow staff and heavy equipment to access the fence for repairs within closed buffer areas if necessary. The heavy equipment is necessary to cover gaps or pull sand away from heavily buried areas, usually on a weekly basis to maintain the fence. Prior to equipment use, staff would scan the area within and outside the enclosure fence line to determine if there is nesting activity near the fence and any sensitive areas would be avoided by the equipment operator.

Continue to assess habitat in the Southern Enclosure and, as necessary, distribute natural materials and increase efficiency in distributing woodchips with the help of maintenance staff and heavy equipment

Natural materials such as driftwood, woodchips, and wrack (surf-cast kelp) have been distributed since 2002 within the Southern Enclosure (including the shoreline) to enhance habitat features to benefit nests and chicks. Tern shelters have not been used since 2014 because the natural habitat enhancement material, such as driftwood and the naturally occurring vegetation, are preferred as a source of cover for chicks. Driftwood and wrack collected from the riding area was redistributed in bare areas of the Southern Enclosure shoreline and Foredune closure shoreline, at the beginning of the nesting season. Driftwood and wrack is gathered into trucks or trailers and unloaded onto the Southern Enclosure by hand. Driftwood was collected from the Southern Enclosure and Foredune closure shoreline at the end of the 2025 season and placed in protective storage. From 2008 to 2022, woodchips were loaded into dump trucks, truck beds, or trailers using ODSVRA heavy equipment operators and distributed by hand into the Southern Enclosure but have not been distributed in recent years because the enclosure had sufficient substrate materials.

In 2026, it is recommended to return the stored driftwood to the Southern Enclosure and Foredune closure shoreline. In addition, it is recommended to assess the habitat and substrate present in the Southern Enclosure and Foredune closure shoreline prior to the nesting season and, if determined necessary, distribute wrack and woodchips to bare areas. It is also recommended to continue using available heavy equipment and dump trucks for any woodchip dispersal. The equipment increases staff efficiency, allows larger amounts of woodchips to be dispersed, and a broader distribution of material to provide shelter from

wind and cover from predators. The use of heavy equipment needs to be balanced with other operational needs in the park.

Continue to check wrack levels on the Southern Exclosure shoreline and, if necessary, implement distribution of wrack and inoculate with wrack-associated invertebrates (these invertebrates are an important part of the prey base for snowy plover chicks, juveniles, and adults)

A five-year study (2007-11) by Drs. Jenifer Dugan and Mark Page, researchers from the Marine Science Institute at the University of California Santa Barbara (UCSB), examined the responses of invertebrate numbers and diversity in areas where wrack was added to the Southern Exclosure shoreline throughout the breeding season. The unpublished results indicated that when the exclosure was seasonally closed only for the breeding season (March to September), there was not a sufficient period of time for invertebrates to effectively and naturally recover species diversity and abundance on the Southern Exclosure shoreline following five months of recreational use. In 2012-22, park staff inoculated wrack added to the Southern Exclosure shoreline with invertebrates, but this was not done in 2023 or 2025 and only small amounts were distributed in 2024 because the year-round closure (since 2021) allowed for sufficient natural wrack to accumulate and talitrid populations to persist. Staff has continued the UCSB method of shoreline invertebrate surveys used since 2012 (see paragraph titled Wrack and talitrids in the Management Actions section on page 19 for more detail) and recommend continuing these surveys in 2026. The surveys would help to document trends over time and determine if the invertebrate population is recovering on the Fore dune closure and Southern Exclosure shorelines to assist management decisions for the future. Wrack addition and inoculation using UCSB methods may occur on the shoreline in 2026 if abundance of talitrids or wrack amounts appears low, depending on available materials, accessibility of beach areas, equipment, and staff time.

Experiment with vegetation and topography management in the Southern Exclosure to improve nesting habitat

Areas within 6, 7, and 8 exclosures have developed dense vegetation over the years, and to a greater degree since 2021, when the areas have been closed year-round. This has resulted in increasingly tall vegetated hummocks and severely sloped dune topography and is especially evident in 8 exclosure. Concurrently, nesting by terns and plovers in these areas shows a marked decrease. Although nests in dense vegetation are more difficult to locate, the lower nest numbers are likely due to the combination of substrate and viewshed not being appropriate for nesting and the large dune hummocks attracting avian predators as perch locations.

Least terns and snowy plovers typically select open habitats with low dunes and limited vegetation cover (less than 10%), to allow the birds to have a larger viewshed for earlier detection of predators (Swaigood et al. 2018) (Muir and Colwell 2010) (Page et al. 2023). Approximately 25% of the acreage in 6, 7, and 8 exclosures (roughly 40 acres mostly on the west side) has become less productive for tern and plover, with nest numbers in this area having 11.9% of the total nests during the five-year period from 2016-20 compared to only 6.6% since the year-round closure for the five-year period from 2021-25. There were a total of 51 tern and plover nests in an approximate 20-acre area on the west side of 8 exclosure where topography is highest from 2016-20, and only 23 nests from 2021-25 in the same area (see Figures C.13 and C.14 in Appendix C). Some areas of 6 and 7 exclosure had an increase of nesting closer to the east fence in recent years, possibly in response to increased vegetation and topography on the west side of the Southern Exclosure, placing more nests closer to recreational activities and requiring additional buffer fencing to protect these nests (see Figures C.15 in Appendix C).

The fore dune plants that have persisted in the exclosure include mainly sea rocket (*Cakile maritima*), beach bur (*Ambrosia chamissonis*), and Coastal sand verbena (*Abronia latifolia*). Habitat manipulation is included in the draft Habitat Conservation Plan (currently unpublished and publicly unavailable) and it is recommended for 2026 to continue to work with the agencies on an acceptable plan, especially if the

Southern Enclosure remains closed to vehicles year-round. The goal of the plan would be to improve nesting habitat in the Southern Enclosure by focusing on the removal of nonnative sea rocket and larger dune hummocks during the nonbreeding season in heavily vegetated areas where nesting has been reduced. The intent of the vegetation removal would be to mimic the natural action of creek and river mouths, which can clear out acres of vegetation in one storm event to create “blow-out” areas within the foredune habitat, extremes for which foredune habitats are adapted. Vegetation at the very western edge of the enclosure would be avoided since these hummocks are beneficial to plover broods as a place to take cover from predators and shelter from wind. Only large hummocks would be targeted, small hummocks left in place, with a goal of creating a mosaic of plants and open sand areas attractive to snowy plovers for nesting. Prior to any habitat manipulation, trained park staff would verify sensitive listed plant species and small mammal burrows are absent. A trained monitor would also be present during mechanical removal to ensure all wildlife remains safe and any sensitive plants are avoided. Changes in tern and plover nesting numbers and nest fates in the experimental vegetation removal areas would be documented and evaluated as part of the plan.

Continue to evaluate physical features of the nesting and chick-rearing habitat in the Southern Enclosure using drone/Uncrewed Aircraft Systems (UAS) equipment during the nonbreeding season
Beginning in 2018, and each year afterward, drone equipment was used to photograph the Southern Enclosure habitat using protocols created in consultation with USFWS or CDFW. Flights were performed prior to any nests being established or after nests hatched and chicks fledged from the flight area. From 2018-2025, all areas with drone flights were continuously monitored and snowy plovers showed no signs of disturbance. The information collected during flights recorded placement of enhancement materials distributed by staff and can be used to assess nesting habitat. It is recommended for 2026 to continue scheduling drone flights in February, prior to the initiation of nests, and flights at the end of September or early October, after all plover chicks have fledged and are flight-capable.

Continue to use the trash dumpster design at marker post 2 that has been used since the fall 2020
The predator management strategy at ODSVRA includes methods to discourage attracting predators to the site, including the trash dumpsters at marker post 2. In the past, experiments with trash dumpster covers of different configurations presented logistical and operational challenges and were discontinued. ODSVRA worked with the local trash company and they provided a new trash cover design that was installed on the beach near marker post 2 beginning in the fall of 2020. Prior to this, four to six large trash dumpsters (22 feet long, eight feet wide, and four feet high with 20 cubic yards capacity and open on top) were used and attracted a large number of gulls landing on and foraging in the dumpsters. The newer dumpster design has the same dimensions, but with a closed top and a side door that is left open. It is recommended for 2026 to continue using the newer design of covered trash dumpsters in the marker post 2 area, as it appears to be effective in lowering the number of gulls attracted to the area. Gull surveys are no longer performed, as there is ample data previously collected, but it is recommended to recommence surveys using previous methods if there are changes in the dumpster design used at marker post 2.

Ongoing management actions that will continue in 2026

The following are part of our ongoing management actions and monitoring procedures for which a specific recommendation is no longer necessary (see Monitoring and Management Actions section for more detail). Background information and justifications for these management actions have been discussed in detail in previous annual reports.

- Oso Flaco area protection will continue at the same monitoring and management level as set in 2005 (Site Description).
- The Arroyo Grande Creek protected area will be clearly delineated as a closed area around the Arroyo Grande Creek and lagoon by using posts, symbolic rope, and signs, as practiced since 2006 (Site Description).
- A thermal scope (Trijicon REAP-IR) acquired in 2019, will continue to be used for monitoring the least tern night roost and additional equipment options will continue to be explored.
- Continue monitoring least tern juveniles and the tern night roost. Continue monitoring least tern foraging activity if determined to be present at nearby freshwater rivers or lakes if time allows.
- Continue use of motion detection cameras for nest monitoring and train and permit additional monitoring staff as needed.
- Continue to use an anemometer with data logger from a wind monitoring tower to record daily wind speeds and direction.
- Predator monitoring and management actions that have been in place since 2002 will continue.
- During the breeding season, the Foredune closure, Southern Exclosure, and North Oso Flaco shoreline will continue to be protected and closed to the public; this includes maintaining the posts and rope at marker post 4.5 and Oso Flaco boardwalk intertidal zones to minimize trespass.
- Continue use of circular exclosures with net tops and mini-exclosures as needed to protect nests from mammalian and avian predators. These small exclosures are not without risks to incubating adults and will continue to be closely monitored and evaluated for their use.
- Surveys for plovers will continue during the nonbreeding season. These weekly surveys have been conducted since the winter of 2009-10.
- Continue to maintain option to salvage and rescue eggs, chicks, juveniles, and adults under very limited circumstances.
- Continue to document impacts and, when possible, reduce disturbance caused by low-flying aircraft over the Southern Exclosure and Oso Flaco.
- Continue to work to address water quality issues at Oso Flaco Lake.
- Continue to work on outreach methods and informational signage at ODSVRA to increase public awareness of threats to nesting and roosting terns and plovers.
- Efforts to hire and retain skilled monitors throughout the year will continue at ODSVRA.

ACKNOWLEDGEMENTS

We would like to thank all the dedicated California State Parks Resource seasonal staff for monitoring, collecting and proofing data, and assisting with management efforts during the 2025 least tern and snowy plover breeding season: Camille Hidalgo, Madyson Slaven, Campbell Carabajal, Karina Curiel, Alexandra Frias, Mia Lindahl, Anna Stellakis, Ella VanHamersveld, Sarah Lopez, Soledad Arguello, Chris DiMaggio, Samantha Gautreaux, Jordan Langley, Isabella Lombrozo, Claire Savage, and Lily Silverstein. We also want to thank Ronnie Glick with California State Parks for his guidance and supervision; Tamar Carmona with California State Parks for managing our database and GIS, Esri applications, and other technical expertise; Doug George from Point Blue Conservation Science for monitoring, banding hundreds of tern and plover chicks, and providing expert advice and guidance; Jamie Miller from Point Blue Conservation Science for assisting with banding tern and plover chicks; Thadeus Sternberg and Daniel Biteman from Wildlife Innovations for their expertise providing selective avian predator control; Charlie Richards, Don Simms, and Barry Lowry from USDA Wildlife Services for their expertise providing targeted avian and mammalian predator control; ODSVRA Maintenance staff for installing and maintaining the protective fencing; ODSVRA State Park Peace Officers for assisting with trespass contacts, enforcing park rules and regulations, and assisting with selective predator control; Santa Barbara Zoo for providing captive-rearing services for plover eggs and chicks; Pacific Wildlife Care for providing medical treatment and care for injured snowy plovers; Corinne M. Gible, Ph.D., CDFW Office of Spill Prevention and Response, MWVCRC for receiving and performing necropsies; USFWS and CDFW staff for consultation and direction on permitted activities; and everyone else who contributed to our efforts managing breeding terns and plovers at ODSVRA. We truly appreciate the support, assistance, and input which makes this program successful.

LITERATURE CITED

- CDFW. 2021. Oceano Dunes Biodiversity Management Plan. California Department of Fish and Wildlife, in cooperation with California State Parks. January 13, 2021.
- CDPR. 2024. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2024 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2023. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2023 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2022. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2022 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2021. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2021 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2020. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2020 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2019. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2019 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2018. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2018 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2017. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2017 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2016. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2016 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2015. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2015 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2014. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2014 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2013. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2013 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2012. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2012 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.

- CDPR. 2011. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2011 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2010. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2010 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2009. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2009 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2008. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2008 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2007. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2007 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- CDPR. 2006. Nesting of the California least tern and western snowy plover at the Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California 2006 Season. Unpublished Report, CDPR, Off-Highway Motor Vehicular Recreation Division.
- Colwell, M. A., E. J. Feucht, S. E. McAllister, and A. N. Transou. 2017. Lessons learned from the oldest Snowy Plover. *Wader Study* 124:157-159.
- eBird. 2025. eBird: An online database of bird distribution and abundance (web application). eBird, Cornell Lab of Ornithology, Ithaca, New York. Available: <http://www.ebird.org>. (Accessed: October 2023).
- Frost, N. 2017. California least tern breeding survey, 2016 season. California Department of Fish and Wildlife, Wildlife Branch, Nongame Wildlife Program Report, 2017-03. Sacramento, CA.
- Frost, N. 2016. California least tern breeding survey, 2015 season. California Department of Fish and Wildlife, Wildlife Branch, Nongame Wildlife Program Report, 2016-01. Sacramento, CA.
- Frost, N. 2015. California least tern breeding survey, 2014 season. California Department of Fish and Wildlife, Wildlife Branch, Nongame Wildlife Program Report, 2015-01. Sacramento, CA.
- Frost, N. 2014. California least tern breeding survey, 2013 season. California Department of Fish and Wildlife, Wildlife Branch, Nongame Wildlife Program Report, 2014-06. Sacramento, CA.
- Frost, N. 2013. California least tern breeding survey, 2012 season. California Department of Fish and Wildlife, Wildlife Branch, Nongame Wildlife Program Report, 2013-01. Sacramento, CA.
- Jensen, T., P. Witman, N. LaGreco, and J. Theule. 2019. A Practical Guide to Avian Embryonic Development: Developmental Stages of the Avian Embryo. San Diego Zoo Wildlife Alliance, San Diego, CA.
- Lauten, D.J., K.A. Castelein, J.D. Farrar, A.A. Kotaich, J.N. Harrison, and E.P. Gaines. 2020. The Distribution and Reproductive Success of the Western Snowy Plover along the Oregon Coast – 2019. Unpublished report for the Oregon Department of Fish and Wildlife – Nongame Program, Portland, the Coos Bay District Bureau of Land Management, Coos Bay, and the Dunes Recreational Area, Reedsport.
- Lauten, D.J., K.A. Castelein, J.D. Farrar, E. Krygsman, S. Michishita, and E.P. Gaines. 2019. The Distribution and Reproductive Success of the Western Snowy Plover along the Oregon Coast – 2019. Unpublished report for the Oregon Department of Fish and Wildlife – Nongame Program,

- Portland, the Coos Bay District Bureau of Land Management, Coos Bay, and the Dunes Recreational Area, Reedsport.
- Lauten, D.J., K.A. Castelein, J.D. Farrar, A.A. Kotaich, E. Krygsman, and E.P. Gaines. 2018. The Distribution and Reproductive Success of the Western Snowy Plover along the Oregon Coast – 2018. Unpublished report for the Oregon Department of Fish and Wildlife – Nongame Program, Portland, the Coos Bay District Bureau of Land Management, Coos Bay, and the Dunes Recreational Area, Reedsport.
- Lauten, D.J., K.A. Castelein, J.D. Farrar, A.A. Kotaich, E. Krygsman, and E.P. Gaines. 2017. The Distribution and Reproductive Success of the Western Snowy Plover along the Oregon Coast – 2017. Unpublished report for the Oregon Department of Fish and Wildlife – Nongame Program, Portland, the Coos Bay District Bureau of Land Management, Coos Bay, and the Dunes Recreational Area, Reedsport.
- Marschalek, D.A. 2012. California least tern breeding survey, 2011 season. California Department of Fish and Game. Sacramento, CA.
- Marschalek, D.A. 2011. California least tern breeding survey, 2010 season. California Department of Fish and Game. Sacramento, CA.
- Marschalek, D.A. 2010. California least tern breeding survey, 2009 season. California Department of Fish and Game. Sacramento, CA.
- Marschalek, D.A. 2009. California least tern breeding survey, 2008 season. California Department of Fish and Game. Sacramento, CA.
- Marschalek, D.A. 2008. California least tern breeding survey, 2007 season. California Department of Fish and Game. Sacramento, CA.
- Marschalek, D.A. 2007. California least tern breeding survey, 2006 season. California Department of Fish and Game. Sacramento, CA.
- Marschalek, D.A. 2006. California least tern breeding survey, 2005 season. California Department of Fish and Game. Sacramento, CA.
- Muir, J.J and M.A. Colwell. 2010. Snowy plovers select open habitats for courtship scrapes and nests. The Condor, Vol. 112 (3): 507–510.
- Massey, B.W. and J.L. Atwood. 1981. Second-wave nesting of the California least tern: age composition and reproductive success. Auk 98:595-605.
- Page, G.W., L.E. Stenzel, J.S. Warriner, J.C. Warriner, and P.W. Paton. 2023. Snowy Plover (*Anarhynchus nivosus*), version 1.1. In Birds of the World (A.F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bow.snoplo5.01.1>.
- Sin, H. 2021. California least tern breeding survey, 2017 season. California Department of Fish and Wildlife, Wildlife Branch, Nongame Wildlife Program. San Diego, CA.
- Sin, H., C. Clatterbuck, and K. Rice. 2024. California least tern breeding survey, 2018-19 season. California Department of Fish and Wildlife, Wildlife Branch. San Diego, CA.
- Swaigood, R.R., Nordstrom, L.A., Schuetz, J.G., Boylan, J.T., Fournier, J.J. and Shemai, B. 2018. A management experiment evaluating nest-site selection by beach-nesting birds. Jour. Wild. Mgmt., 82: 192-201.
- Thompson, B.C., J.A. Jackson, J. Burger, L.A. Hill, E.M. Kiroch, and J.L. Atwood. 1997. Least Tern (*Sterna antillarum*). In The Birds of North America, No. 290, (A. Poole and F. Gill, eds.). The

Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

USFWS. 2020. California least tern (*Sterna antillarum browni*) Five-Year Review: Summary and Evaluation. USFWS, Carlsbad, CA. July 7, 2020.

USFWS. 2007. Recovery Plan for the Pacific Coast Population of the western Snowy Plover (*Charadrius alexandrinus nivosus*). In two volumes. Sacramento, CA. xiv+751pp.

USFWS. 1985. Recovery Plan for the California Least Tern (*Sterna antillarum browni*). USFWS, Portland, OR. 112 pp.

Warriner, J.S., J.C. Warriner, G.W. Page and L.E. Stenzel. 1986. Mating system and reproductive success of a small population of polygamous snowy plovers. *Wilson Bulletin* 98(1):15-37.

APPENDICES

APPENDIX A. CALIFORNIA LEAST TERN NESTS AT ODSVRA IN 2025.

Least tern chicks were banded with aqua over red vinyl tape on a size 1B numbered aluminum federal band on the left leg and a size 1B blank aluminum band on the right. Color tape was placed on the right band to create combinations unique to individual. Chicks were weighed immediately prior to banding, typically at zero to three days old. Three chicks from two hatching nests were not banded and none are known to fledge. Information on adult pair is provided where known. Sex of adults is typically not known. One nest (LT36) on the 7 enclosure shoreline was protected with symbolic and bumpout fencing. All other nests were protected within the Southern Enclosure with Enclosure predator fencing and bumpout fencing (see Management Actions for descriptions of fencing and see maps in Appendix C).

In reading the codes of color-banded birds the left leg is shown first and separated by a colon from the right leg. If two or three colors are on a single band, the colors are separated by a slash. Colors for letter codes:

a = aqua (light blue), b = dark blue, g = dark green, l = lime (light green), k = black, n = brown, o = orange, p = pink, r = red,

s = silver (bare metal federal band or blank metal band with tape loss), v = violet, w = white, y = yellow.

Location: 6 = 6 enclosure, 7 = 7 enclosure.

≤ = initiation date estimated to be on or prior the date nest first found active, ≥ = minimum number known eggs in nest and unable to confirm total egg number.

na = estimated date not available due to insufficient information, U = unbanded, unk = unknown, ? = unconfirmed band combinations or colors.

Nest	Location	Adult pair	Est. initiation date	Nest fate	Fate date	No. eggs	No. chicks (no. fledged)	Chick band combination and weight (grams)	Confirmed fledged	Notes
1	7	U o:-w-	17 May	Hatch	11 Jun	2	1 (1)	a/r:g (7.7)	a/r:g	One egg without cracks abandoned post-term. Contents of egg examined postseason had no signs of development.
2	7	U unk	20 May	Hatch	12 Jun	2	1 (0)	a/r:y (5.6)		One egg with large hole abandoned post-term. Contents of egg examined postseason and had a mid-stage embryo. Chick banded a/r:y last seen on 15 June at 3 days old.
3	6	g/w:y/g g/y:y	20 May	Hatch	12 Jun	2	2 (2)	a/r:b (4.3) a/r:w (6.6)	a/r:b a/r:w	
4	6	U unk	21 May	Hatch	12 Jun	2	2 (2)	a/r:r (6.3) a/r:v (5.7)	a/r:r a/r:v	
5	6	U U	21 May	Hatch	12 Jun	2	2 (2)	a/r:a (6.1) a/r:o (5.7)	a/r:a a/r:o	
6	7	U b:w/b	22 May	Hatch	12 Jun	2	2 (2)	a/r:l (7.3) a/r:p (4.5)	a/r:l a/r:p	
7	7	U b/r:w	23 May	Hatch	13 Jun	2	2 (1)	a/r:w/g (5.2) a/r:g/w (5.6)	a/r:w/g	Chick banded a/r:g/w last seen on 15 June at 2 days old.
8	7	U r/w:w/b	23 May	Hatch	15 Jun	1	1 (1)	a/r:w/a (5.4)	a/r:w/a	
9	6	unk unk	24 May	Hatch	14 Jun	2	2 (0)	a/r:w/y (6.1) a/r:y/w (6.7)		Chick banded a/r:y/w last seen on 15 June at 1 day old and a/r:w/y chick last seen on 16 June at 2 days old.
10	6	o/g:b/w b/w:b/y	26 May	Hatch	16 Jun	2	2 (2)	a/r:r/b (5.4) a/r:b/r (5.5)	a/r:r/b a/r:b/r	

Appendix A. California least tern nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Est. initiation date	Nest fate	Fate date	No. eggs	No. chicks (no. fledged)	Chick band combination and weight (grams)	Confirmed fledged	Notes
11	6	U s:b	27 May	Depredated, coyote	18 Jun	2	0 (0)			
12	6	U banded	29 May	Hatch	21 Jun	1	1 (1)	a/r:o/r (6.3)	a/r:o/r	
13	6	U unk	29 May	Hatch	20 Jun	2	2 (2)	a/r:y/r (7.5) a/r:r/y (7.0)	a/r:y/r a/r:r/y	
14	6	w/o:(r or o)/y unk	31 May	Hatch	21 Jun	2	2 (1)	a/r:k (8.2) a/r:n (7.6)	a/r:k	Chick banded a/r:n last seen on 23 June at 1 day old.
15	6	s:y unk	31 May	Hatch	22 Jun	2	1 (1)	a/r:b/o (8.0)	a/r:b/o	On 21 June, 1 egg with unknown fate showed cracks.
16	6	unk unk	≤31 May	Wind	22 Jun	1	0 (0)			
17	6	o/w:o unk	1 Jun	Hatch	22 Jun	2	2 (2)	a/r:a/y (6.6) a/r:y/a (5.8)	a/r:a/y a/r:y/a	
18	6	unk unk	31 May	Hatch	21 Jun	2	2 (0)	U U		Both unbanded chicks last seen on 21 June on date of hatch.
19	7	U U	1 Jun	Hatch	22 Jun	1	1 (1)	a/r:o/b (5.6)	a/r:o/b	
20	6	b/a:g/y ?:w	25 May	Hatch	15 Jun	1	1 (0)	a/r:a/w (5.0)		Chick banded a/r:a/w last seen on 15 June on date of hatch.
21	6	U y/g:y/a	3 Jun	Hatch	25 Jun	2	2 (2)	a/r:g/o (5.3) a/r:o/g (5.3)	a/r:g/o a/r:o/g	
22	7	banded unk	5 Jun	Hatch	26 Jun	2	1 (0)	a/r:a/b (5.6) (found dead)		One egg (without cracks) abandoned post-term. On 17 July, carcass of a/r:a/b chick was collected from 7 enclosure. Chick was last seen alive on 13 July at 17 days old (see Table H.3 in Appendix H).
23	7	banded unk	30 May	Hatch	20 Jun	2	1 (0)	U		Nest known incubated for a 16-day period from 5-20 June. On 19 June, 2 eggs with cracks at nest. One egg unknown fate. Unbanded chick last seen on 20 June on date of hatch.
24	6	unk unk	7 Jun	Event, coyote	22 Jun	2	0 (0)			
25	7	unk unk	7 Jun	Event, coyote	16 Jun	2	0 (0)			
26	6	U unk	6 Jun	Hatch	27 Jun	2	1 (1)	a/r:o/a (6.9)	a/r:o/a	On 29-30 June, egg with unknown fate showed cracks.
27	6	U unk	8 Jun	Hatch	3 Jul	2	2 (2)	a/r:y/b (5.8) a/r:b/y (6.2)	a/r:y/b a/r:b/y	
28	7	unk unk	≤9 Jun	Unknown	4 Jul	2	0 (0)			Nest incubated for at least 25 days from 9 June–3 July. On 3 July, one egg (without cracks) at nest and no second egg. One egg abandoned post-term. Contents examined postseason had no signs of development.

Appendix A. California least tern nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Est. initiation date	Nest fate	Fate date	No. eggs	No. chicks (no. fledged)	Chick band combination and weight (grams)	Confirmed fledged	Notes
29	6	U	24 May	Hatch	14 Jun	2	2 (0)	a/r:w/r (7.4) (found dead) a/r:r/w (5.9)		On 25 June, carcass of a/r:w/r chick collected from 6 enclosure. Chick last seen alive on 17 June at three days old (see table H.3 in Appendix H). Chick banded a/r:r/w last seen on 16 June at 2 days old.
30	6	unk unk	≤9 Jun	Depredated, coyote	18 Jun	1	0 (0)			
31	6	U banded	9 Jun	Hatch	30 Jun	2	2 (2)	a/r:g/r (6.7) a/r:r/g (5.9)	a/r:g/r a/r:r/g	
32	BY	U unk	13 Jun	Depredated, raven	24 Jun	2	0 (0)			
33	6	U unk	13 Jun	Hatch	4 Jul	2	2 (1)	a/r:o/y (5.6) a/r:y/o (5.3)	a/r:o/y	Chick banded a/r:y/o last seen on 6 July at 2 days old.
34	6	unk unk	≤13 Jun	Depredated, coyote	18 Jun	2	0 (0)			
35	7	unk unk	≤14 Jun	Abandoned, unknown if pre- or post-term	19 Jun	2	0 (0)			Nest incubated for at least 5 days from 14-18 June. On 24 June, 2 eggs found separated with no nest bowl and reset in created nest bowl. Nest not seen incubated subsequently. Nest fate occurred during a period of high winds. Contents of eggs examined postseason and had no signs of development.
36	7	unk unk	≤14 Jun	Unknown	(30 Jun)	≥1	0 (0)			Nest incubated for at least 16 days from 14-29 June. To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown. No eggs found when walked to 27 August.
37	6	unk unk	≤14 Jun	Event, coyote	18 Jun	1	0 (0)			
38	7	unk unk	≤18 Jun	Depredated, coyote	19 Jun	≥1	0 (0)			
39	7	unk unk	≤18 Jun	Event, raven	23 Jun	2	0 (0)			
40	6	U banded	25 Jun	Hatch	16 Jul	1	1 (1)	a/r:a/o (5.7)	a/r:a/o	On 12 August, 27-day-old fledgling banded a/r:a/o observed with injury to upper bill on 6 enclosure shore (see table H.1 in Appendix H).
41	6	banded banded?	15 Jun	Hatch	6 Jul	2	2 (1)	a/r:b/a (6.1) a/r:r/o (5.7)	a/r:b/a	Chick banded a/r:r/o last seen on 9 July at 2 days old.
42	6	b:o/w a/g:o/w	≤11 Jul	Abandoned, unknown if pre- or post-term	28 Jul	1	0 (0)			Nest incubated for at least 17 days from 11-27 July. Contents of egg examined postseason and had no signs of development.

APPENDIX B. SNOWY PLOVER NESTS AT ODSVRA IN 2025.

Split hatch noted for nests when hatching of all chicks in the brood may have occurred over more than one day. Plover chicks were banded to brood. The majority of unbanded chicks were not banded to avoid disturbing nearby young snowy plover broods. New fate category for 2025: “event, coyote” are nests with eggs missing prior to possible hatch and considered depredated because loss occurred during period when multiple nearby nests confirmed depredated by coyote. Chick(s) adopted by an adult associated with another nest are recorded as fledged from the nest the adopted chick originally hatched from. Estimated initiation dates in parentheses are for unknown location nests, known only by detection of brood, and date is chosen based on approximate age of chicks when found. See Management Actions section for description of nest protection types (Exclosure predator fencing, circular, mini-exclosure, nonpredator fencing, symbolic fence, and bumpout). Egg contents examined postseason uses embryonic developmental guide (see attached Overview of developmental stages and landmarks). See Appendix A for description of reading bands and color letter codes. Location: CBA = closed buffer area, Fore dune = Fore dune closure, 6 = 6 exclosure, 7 = 7 exclosure, 8 = 8 exclosure, BY = Boneyard exclosure, NOF = North Oso Flaco, SOF = South Oso Flaco.

Exclosure = Exclosure predator fencing.

Adult pair: M = male, F = female, U = unbanded, ? = unconfirmed band combinations or colors.

≤ = initiation date estimated to be on or prior the date nest first found active, ≥ = minimum number known eggs in nest and unable to confirm total egg number,

na = estimated date not available due to insufficient information.

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
1	6	F=bb:vw M=U	22 Mar	Hatch (Split)	24 Apr	3	3 (0)	3 bb:wa	Exclosure	
2	SOF	F=ga:ya M=pg:by	23 Mar	Event, tide	29 Mar	2	0 (0)		Symbolic fence	On 23 March, nest found at 1 egg and symbolic fence moved west to decrease possible pedestrian disturbance.
3	Fore dune	F=rr:lw M=ga:bg	25 Mar	Hatch	26 Apr	3	3 (2)	3 bb:gy	Nonpredator fence	
4	Fore dune	F= M=U	25 Mar	Failed, nonviable eggs removed by staff	27 May	3	0 (0)		Nonpredator fence	Nest was incubated for 56 days from 30 March to 24 May. Contents of all eggs examined postseason had no signs of development.
5	Fore dune	F=gg:oo M=U	24 Mar	Hatch	25 Apr	3	2 (1)	2 unbanded	Nonpredator fence	One egg (without cracks) abandoned post-term. On 26 April, camera confirms carcass of 1 chick just outside the nest removed by adult (see Table H.6 in Appendix H).
6	Fore dune	F=U M=vv:ra	25 Mar	Hatch	28 Apr	3	2 (0)	2 bb:yw	Nonpredator fence	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development. On 3 May, a 5-day-old chick observed on the Fore dune Central shoreline with a right leg injury. On 31 July, carcass of a small bb:yw chick found on Fore dune Central shoreline (see Table H.2 and H.6 in Appendix H).
7	Fore dune	F=vg:yr M=ga:ba	22 Mar	Hatch (Split)	23 Apr	3	2 (1)	2 gg:rv	Bumpout, Nonpredator fence	One egg (without cracks) abandoned post-term.
8	Fore dune	F=U M=pv:ab	27 Mar	Hatch	1 May	3	3 (3)	3 ga:gw	Nonpredator fence	
9	7	F=U M=ga:yo	21 Mar	Hatch	22 Apr	3	2 (2)	2 vg:gv	Exclosure	One egg (without cracks) abandoned post-term.
10	7	F= M=	28 Mar	Abandoned pre-term	8 Apr	3	0 (0)		Exclosure	On 11 April, 3 eggs determined abandoned pre-term taken to Santa Barbara Zoo (see Table F.5 in Appendix F).

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
11	6	F=U M=bb:pg	28 Mar	Hatch	2 May	3	2 (2)	2 gg:bb	Exclosure	One egg (without cracks) abandoned post-term. Associated male adopted a 6-day-old unbanded chick from SP58 brood from 12-15 May and it is not believed to fledge. From 6-11 June, 1 gg:bb fledgling observed on 6 exclosure shoreline with a right leg injury (see Table H.2 in Appendix H).
12	7	F=U M=	29 Mar	Depredated, raven	25 Apr	3	0 (0)		Exclosure	
13	8	F=rv:wg M=U	29 Mar	Depredated, raven	27 Apr	3	0 (0)		Exclosure	
14	BY	F=U M=U	29 Mar	Hatch	2 May	3	3 (3)	3 ga:ab	Exclosure	
15	NOF	F=U M=U	28 Mar	Depredated, raven	23 Apr	3	0 (0)		Exclosure	
16	6	F=U M=U	26 Mar	Hatch (Split)	27 Apr	3	3 (0)	1 ga:rv 2 unbanded	Exclosure	
17	Foredune	F=U M=U	31 Mar	Hatch	2 May	3	2 (0)	2 ga:va	Nonpredator fence	One egg (with cracks) unknown fate. One 15-day-old chick from the SP17 nest adopted by SP54 male beginning 17 May and not seen to fledge.
18	7	F=U M=a:g/o/g	31 Mar	Depredated, raven	27 Apr	3	0 (0)		Exclosure	
19	Foredune	F=U M=ga:wb	31 Mar	Hatch	3 May	3	3 (3)	2 ga:yb 1 unbanded	Bumpout, Nonpredator fence	
20	7	F=U M=U	27 Mar	Hatch	28 Apr	3	3 (1)	3 ga:gb	Exclosure	
21	6	F=U M=pv:pb	30 Mar	Hatch	1 May	3	3 (3)	3 gg:ww	Exclosure	
22	8	F=U M=U	1 Apr	Depredated, raven	26 Apr	3	0 (0)		Exclosure	
23	6	F=U M=	3 Apr	Hatch	5 May	3	3 (1)	3 bb:al	Exclosure	
24	6	F=U M=pg:ba	23 Mar	Hatch (Split)	24 Apr	3	3 (3)	3 bb:yb	Circular, Symbolic fence	On 7 June, 1 fledgling observed on 6 exclosure shoreline with left leg injury (see Table H.2 in Appendix H).
25	SOF	F=gg:ag M=U	2 Apr	Abandoned pre-term	3 May	3	0 (0)		Circular, Symbolic fence	On 29 April, circular exclosure removed following adult predation at a nearby nest with a circular. From 29 April–3 May, incubation at SP25 was inconsistent, and on 6 May, 3 eggs determined abandoned pre-term taken to Santa Barbara Zoo (see Table F.5 in Appendix F). Adult mortality suspected cause of abandonment.
26	SOF	F=U M=	4 Apr	Depredated, raven	28 Apr	3	0 (0)		Circular, Symbolic fence	On 26 April, carcass of unbanded adult female found inside circular exclosure and circular removed same day (see Table H.5 in Appendix H).

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
27	SOF	F=bb:ww M=	4 Apr	Depredated, raven	25 Apr	2	0 (0)		Symbolic fence	
28	Foredune	F=U M=bb:wy	30 Mar	Hatch	1 May	3	2 (1)	2 unbanded	Nonpredator fence	One egg unknown fate.
29	SOF	F=ga:ya M=pg:by	3 Apr	Hatch (Split)	5 May	3	3 (2)	3 gg:va	Circular, Symbolic fence	On 29 April, circular enclosure removed following adult predation at a nearby nest with a circular. On 9 and 11 May, 1 banded chick observed with left leg injury (see Table H.2 in Appendix H).
30	NOF	F=ga:av M=U?	1 Apr	Event, raven	26 Apr	2	0 (0)		Exclosure	
31	8	F=U M=ga:yg	4 Apr	Hatch	8 May	3	3 (3)	3 bb:ly	Exclosure	
32	6	F=U M=U	26 Mar	Hatch	27 Apr	3	2 (2)	2 bb:pb	Exclosure	One egg (with cracks) abandoned post-term. On 17 June, banded fledgling observed with right leg injury (see Table H.2 in Appendix H).
33	6	F=U M=rr:ga	20 Mar	Hatch	21 Apr	3	3 (0)	3 bb:gg	Exclosure	
34	6	F=U M=U	26 Mar	Hatch	27 Apr	3	3 (3)	3 bb:oa	Exclosure	
35	8	F=pg:gw M=U	25 Mar	Depredated, raven	26 Apr	3	0 (0)		Exclosure	
36	8	F=U M=	5 Apr	Depredated, raven	27 Apr	3	0 (0)		Exclosure	
37	7	F=U M=U	6 Apr	Hatch (Split)	8 May	3	3 (3)	2 bb:wl 1 unbanded	Exclosure	
38	7	F=(gg:bb)? M=	5 Apr	Depredated, raven	27 Apr	3	0 (0)		Exclosure	
39	Foredune	F=U M=U	28 Mar	Hatch (Split)	29 Apr	3	3 (3)	3 pg:bl	Nonpredator fence	
40	6	F=U M=U	2 Apr	Hatch	4 May	3	3 (2)	3 bb:bl	Exclosure	From 12-19 June, 1 banded fledgling observed with injured left leg on 6 exclosure shoreline (see Table H.2 in Appendix H). On 8 July, 1 fledgling found dead on 6 exclosure shoreline and assumed to be same individual (see Table H.6 in Appendix H).
41	7	F=U M=U	9 Apr	Hatch (Split)	11 May	3	3 (3)	3 gg:lb	Exclosure	
42	7	F=U M=pg:ba	9 Apr	Hatch	11 May	3	3 (2)	3 unbanded	Exclosure	
43	6	F=bb:rg M=U	7 Apr	Hatch	9 May	3	3 (0)	3 bb:rl	Exclosure	
44	Foredune	F=U M=U	4 Apr	Hatch (Split)	6 May	3	3 (2)	3 ga:lg	Nonpredator fence	
45	Foredune	F=ga:wy M=	≤10 Apr	Failed, nonviable eggs removed by staff	27 May	3	0 (0)		Nonpredator fence	Nest was incubated for at least 48 days from 10 April–27 May. Contents of all eggs examined postseason had no signs of development.

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
46	Foredune	F=vv:ay M=U	2 Apr	Hatch	4 May	3	3 (3)	3 bb:ll	Nonpredator fence	On 7 June, a banded fledgling with a broken wing observed on the Fore dune North shoreline, was alive when later grabbed by a western gull, and subsequently confirmed dead (see Tables H.2 and H.5 in Appendix H).
47	Foredune	F= M=ga:vv	1 Apr	Hatch	3 May	3	3 (1)	3 ga:ww	Nonpredator fence	
48	Foredune	F=U M=gg:gg	6 Apr	Hatch	8 May	3	1 (1)	1 bb:pl	Nonpredator fence	Two eggs (without cracks) abandoned post-term. Contents of both eggs examined postseason had no signs of development.
49	7	F=U? M=U	2 Apr	Hatch	4 May	3	3 (2)	3 unbanded	Exclosure	
50	6	F=U M=U	4 Apr	Hatch (Split)	6 May	3	3 (2)	3 unbanded	Exclosure	
51	6	F=U M=gg:vw	11 Apr	Hatch	13 May	3	3 (2)	3 gg:lg	Exclosure	Associated male adopted a 3-day-old bb:pa chick from SP72 brood beginning 14 May and not seen to fledge.
52	SOF	F=U M=U?	12 Apr	Abandoned pre-term	3 May	3	0 (0)		Circular, Symbolic fence	On 29 April, circular exclosure removed following adult predation at a nearby nest with a circular. From 29 April–2 May, incubation at SP52 was inconsistent, and on 4 May, 3 eggs determined abandoned pre-term taken to Santa Barbara Zoo (see Table F.5 in Appendix F). Adult mortality suspected cause of abandonment.
53	6	F= M=	4 Apr	Depredated, raven	27 Apr	3	0 (0)		Exclosure	
54	Foredune	F=gg:yy M=U	29 Mar	Hatch	30 Apr	3	3 (1)	3 bb:lw	Nonpredator fence	Associated male adopted a 15-day-old ga:va chick from SP17 brood beginning 17 May and not seen to fledge.
55	Foredune	F= M=U	5 Apr	Hatch	7 May	3	3 (3)	3 vg:lb	Nonpredator fence	
56	Foredune	F=U M=U	10 Apr	Hatch	12 May	3	3 (2)	3 bb:ry	Nonpredator fence	
57	Foredune	F= M=	28 Mar	Hatch	29 Apr	3	3 (0)	3 vv:wg	Nonpredator fence	
58	6	F=U? M=U	4 Apr	Hatch	6 May	3	3 (1)	3 unbanded	Exclosure	One 6-day-old unbanded chick from the SP58 nest adopted by SP11 male from 12-15 May and it is not believed to fledge.
59	Foredune	F=vg:vb M=vv:ww	15 Apr	Hatch	17 May	3	1 (1)	1 unbanded	Nonpredator fence	Two eggs unknown fate. Associated male adopted a 6-day-old pg:lg chick from SP70 brood beginning 23 May and it fledged.
60	7	F= M=	15 Apr	Event, raven	27 Apr	3	0 (0)		Exclosure	
61	6	F=U M=U	11 Apr	Hatch	13 May	3	3 (3)	3 gg:al	Exclosure	
62	6	F=gn:op M=pg:a-	15 Apr	Hatch	18 May	3	3 (0)	3 gg:lr	Exclosure	

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
63	SOF	F=U M=vg:va	13 Apr	Hatch (Split)	15 May	3	3 (2)	2 bb:lo 1 unbanded	Circular, Symbolic fence	On 15 April, nest found at 2 eggs and symbolic fence moved west to decrease possible pedestrian disturbance. On 29 April, circular enclosure removed following adult predation at a nearby nest with a circular. One banded and 1 unbanded chick fledged.
64	6	F= M=ga:wo	15 Apr	Hatch	19 May	3	3 (3)	3 pg:lo	Exclosure	From 1-3 July, 1 banded fledgling observed on 6 exclosure shoreline with left leg injuries (see Table H.2 in Appendix H).
65	6	F=U? M=U	13 Apr	Abandoned pre-term	1 May	2	0 (0)		Exclosure	SP104 nest (est. initiation date 26 April) established 6 feet from SP65 nest location. Male seen on camera periodically attending both nests starting 26 April overnight, continued incubating solely at SP104 after 30 April. Unknown if same female associated with both nests. (SP104 hatched.)
66	6	F=U M=U	15 Apr	Hatch (Split)	21 May	3	3 (2)	3 unbanded	Exclosure	
67	Foredune	F=U? M=U	13 Apr	Hatch	15 May	3	3 (2)	3 pg:lb	Nonpredator fence	
68	SOF	F=U M=ga:pw	2 Apr	Abandoned pre-term	2 May	3	0 (0)		Circular, Symbolic fence	On 29 April, carcass of ga:pw adult male found inside nest's circular enclosure (see Table H.5 in Appendix H). On 2 May, 3 eggs determined abandoned pre-term taken to Santa Barbara Zoo (see Table F.5 in Appendix F).
69	SOF	F= M=	≤16 Apr	Depredated, raven	23 Apr	1	0 (0)		Symbolic fence	On 16 April, symbolic fence moved west to decrease possible pedestrian disturbance.
70	6	F=ga:vw M=U	15 Apr	Hatch	17 May	3	3 (1)	3 pg:lg	Exclosure	One 6-day-old chick from the SP70 nest adopted by SP59 male beginning 23 May and it fledged.
71	6	F=(gg:go)? M=vg:bb	16 Apr	Hatch	18 May	3	1 (0)	1 ga:ar	Exclosure	Two eggs unknown fate. On 3 June, 1 ga:ar chick observed on 6 exclosure shoreline with right foot injury (see Table H.2 in Appendix H).
72	6	F=gg:ya M=ga:br	9 Apr	Hatch (Split)	11 May	3	3 (0)	3 bb:pa	Exclosure	One 3-day-old chick from the SP72 nest adopted by SP51 male beginning 14 May and not seen to fledge.
73	8	F=U M=gg:rw	12 Apr	Hatch (Split)	14 May	3	3 (1)	3 gg:wl	Mini-exclosure, Exclosure	
74	7	F= M=U	14 Apr	Hatch	16 May	3	3 (2)	3 gg:bl	Exclosure	
75	7	F=U M=U	13 Apr	Hatch (Split)	15 May	2	2 (0)	2 vg:ll	Mini-exclosure, Exclosure	
76	6	F=U M=vv:vb	11 Apr	Hatch	13 May	3	3 (2)	3 gg:ly	Exclosure	
77	BY	F=U? M=U	13 Apr	Hatch	15 May	3	3 (2)	3 gg:wy	Exclosure	
78	BY	F= M=	10 Apr	Event, raven	28 Apr	3	0 (0)		Exclosure	

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
79	8	F=U M=bb:ga	18 Apr	Hatch	21 May	3	2 (2)	2 unbanded	Exclosure	One egg unknown fate.
80	7	F= M=	7 Apr	Depredated, raven	27 Apr	3	0 (0)		Exclosure	
81	7	F=banded M=U	19 Apr	Hatch	21 May	3	2 (2)	2 unbanded	Exclosure	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
82	Foredune	F=U M=U	1 Apr	Hatch	3 May	3	2 (2)	2 ga:og	Nonpredator fence	One egg (without cracks) unknown fate. Brood raised on Foreddune North shoreline near the open riding area. From 7-30 May, the brood was observed to enter the open riding area on multiple occasions.
83	7	F=rr:pw M=pg:by	3 Apr	Hatch	5 May	3	3 (2)	3 bb:gl	Mini-exclosure, Exclosure	
84	6	F= M=-:y-w	14 Apr	Hatch	16 May	3	3 (2)	3 pg:ww	Exclosure	
85	Foreddune	F=U M=g:o/v	16 Apr	Hatch	18 May	3	3 (3)	3 unbanded	Symbolic fence	
86	BY	F=U M=U	20 Apr	Hatch	23 May	3	2 (2)	2 vg:lg	Exclosure	One egg (with cracks) unknown fate.
87	BY	F= M=	1 Apr	Depredated, raven	27 Apr	3	0 (0)		Exclosure	
88	8	F=gg:ab M=U	16 Apr	Hatch	18 May	3	3 (3)	3 gg:oy	Mini-exclosure, Exclosure	
89	SOF	F= M=pv:bb	≤21 Apr	Depredated, raven	24 Apr	2	0 (0)		Symbolic fence	On 23 April, symbolic fence moved west to decrease possible pedestrian disturbance.
90	SOF	F=U M=U	10 Apr	Hatch	12 May	3	3 (2)	3 bb:yl	Circular, Symbolic fence	On 29 April, circular exclosure removed following adult predation at a nearby nest with a circular.
91	Foreddune	F=U M=U	22 Apr	Hatch (Split)	25 May	2	2 (2)	2 gg:lv	Bumpout, Symbolic fence	
92	Foreddune	F=rr:lw M=U	20 Apr	Hatch	22 May	3	2 (0)	1 pg:ll	Nonpredator fence	One egg (without cracks) abandoned post-term. On 18 June, 1 pg:ll chick observed on the Foreddune North shoreline with right leg injury (see Table H.2 in Appendix H).
93	8	F=U M=	≤26 Apr	Failed, nonviable eggs removed by staff	11 Jun	3	0 (0)		Exclosure	Nest was incubated for at least 47 days from 26 April–11 June. Contents of all eggs examined postseason had no signs of development.
94	7	F= M=U	19 Apr	Hatch	21 May	3	3 (2)	3 ga:lo	Exclosure	One 2-day-old chick from the SP94 nest adopted by SP169 male beginning 23 May and not seen to fledge.
95	7	F=gg:br M=U	26 Apr	Hatch	30 May	3	3 (2)	3 vg:vg	Exclosure	One 2-day-old chick from the SP95 nest adopted by adults incubating at SP118 nest beginning 1 June and not seen to fledge.
96	Foreddune	F=pv:pv M=gg:yb	13 Apr	Hatch	15 May	3	3 (2)	1 ga:ow 2 unbanded	Nonpredator fence	One banded and 1 unbanded chick fledged.
97	7	F=U M=U	25 Apr	Hatch (Split)	27 May	3	3 (2)	2 pg:la 1 unbanded	Exclosure	Both banded chicks fledged.

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
98	Foredune	F=rr:oy M=vg:gr	21 Apr	Hatch	23 May	3	2 (2)	2 unbanded	Symbolic fence	One egg unknown fate.
99	Foredune	F=U M=gg:wa	20 Apr	Hatch (Split)	22 May	3	3 (1)	3 ga:ly	Bumpout, Nonpredator fence	On 23 May, two 0-day to 1-day-old chicks were taken to the Santa Barbara Zoo for captive-rearing (see Table F.5 in Appendix F).
100	Foredune	F=U M=U	22 Apr	Hatch	24 May	3	1 (1)	1 unbanded	Symbolic fence	Two eggs abandoned post-term.
101	Foredune	F=U M=gg:pw	18 Apr	Hatch	20 May	≥2	2 (2)	2 unbanded	Symbolic fence	
102	6	F=U M=U	2 Apr	Hatch	4 May	3	1 (0)	1 unbanded	Symbolic fence	Two eggs abandoned post-term. Contents examined postseason and both had mid-stage embryos (stage 28-30).
103	Foredune	F=U M=pv:gb	15 Apr	Hatch	17 May	3	3 (3)	3 gg:go	Bumpout, Nonpredator fence	
104	6	F=U M=U	26 Apr	Hatch (Split)	28 May	3	3 (1)	1 ga:vl 2 unbanded	Exclosure	Nest initiated 6 feet from SP65 nest location. Male seen on camera periodically attending both nests starting 26 April overnight, continued incubating solely at SP104 after 30 April, unknown if same female associated with both nests (SP65 abandoned pre-term 1 May). One unbanded chick fledged.
105	6	F=U M=U	27 Apr	Hatch	29 May	3	3 (1)	3 unbanded	Symbolic fence	
106	Foredune	F=U M=U	29 Apr	Hatch	31 May	3	3 (2)	3 unbanded	Symbolic fence	
107	Foredune	F=bb:go M=U?	9 Apr	Hatch	11 May	3	3 (3)	3 gg:la	Nonpredator fence	
108	6	F=nr:wp M=U	1 May	Hatch	2 Jun	3	3 (1)	3 ga:oy	Exclosure	
109	6	F=ga:pa M=U	1 May	Hatch	2 Jun	3	3 (1)	3 pg:wo	Exclosure	
110	SOF	F=U M=U	29 Apr	Failed, unknown cause	18 May	3	0 (0)		Symbolic fence	On 5 May, nest found at 3 eggs and symbolic fence moved west to decrease possible pedestrian disturbance. On 18 May, SP110 and 3 other nests in North and South Oso Flaco were lost with no evidence indicating the cause of failure, suggesting possible avian predator.
111	6	F=pg:oo M=U	15 Apr	Hatch (Split)	17 May	3	3 (1)	3 ga:lb	Exclosure	On 16 June, ga:lb fledgling observed dying and carcass collected on 6 exclosure shoreline (see Table H.6 in Appendix H).

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
112	Foredune	F=U M=nk:rl	2 May	Hatch	3 Jun	3	2 (0)	2 pg:bo	Bumpout, Nonpredator fence	One egg (without cracks) abandoned post-term. Contents examined postseason had mid-stage embryo (stage 28). Brood raised on Fore dune North shoreline near the open riding area. On 20 June, brood seen chased into the open riding area by adult plover attending SP141 brood. Chick quickly returned to closed shoreline.
113	Foredune	F=b-:lr M=U	27 Apr	Hatch	29 May	3	2 (1)	2 ga:la	Nonpredator fence	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
114	8	F= M=U	3 May	Hatch	4 Jun	3	3 (1)	3 unbanded	Exclosure	
115	8	F=U M=U	4 May	Hatch	5 Jun	3	2 (0)	2 vv:lb	Exclosure	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
116	7	F=gg:wg M=bb:ya	5 May	Hatch	6 Jun	3	1 (0)	1 unbanded	Symbolic fence	One egg ~1/4 size of a normal plover egg not present after hatch and based on size was not viable. One normal sized egg abandoned post-term. Contents examined postseason had no signs of development.
117	6	F=ga:gg M=U	6 May	Hatch	7 Jun	≥1	1 (1)	1 unbanded	Symbolic fence	To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.
118	7	F= M=gg:gy	2 May	Hatch	3 Jun	3	3 (0)	3 ga:vr	Exclosure	Associated adults adopted a 2-day-old vg:vg chick from SP95 brood while incubating eggs at nest beginning 1 June and not seen to fledge.
119	NOF	F= M=U	4 May	Hatch	5 Jun	3	3 (3)	3 pg:ly	Exclosure	
120	NOF	F= M=	7 May	Hatch	8 Jun	2	1 (0)	1 vg:bl	Exclosure	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
121	Foredune	F=U M=vg:bb	7 May	Hatch	8 Jun	3	3 (0)	3 unbanded	Symbolic fence	One 5-day-old chick from the SP121 nest adopted by SP174 male beginning 13 June and not seen to fledge.
122	NOF	F= M=	2 May	Abandoned pre-term	15 May	3	0 (0)		Exclosure	
123	Foredune	F=U M=bb:br	9 May	Hatch	10 Jun	3	3 (0)	3 ga:bl	Nonpredator fence	
124	6	F=U M=gg:(??)	5 May	Hatch (Split)	6 Jun	3	3 (0)	2 rr:bl 1 unbanded	Exclosure	
125	8	F=vv:br M=U	3 May	Hatch (Split)	4 Jun	2	2 (0)	2 vg:la	Circular, Symbolic fence	
126	6	F=U M=U	10 May	Hatch	12 Jun	≥2	2 (2)	2 unbanded	Symbolic fence	To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
127	SOF	F=U M=pg:va	12 May	Failed, unknown cause	18 May	2	0 (0)		Symbolic fence	On 12 May, nest found at 1 egg and symbolic fence moved west to decrease possible pedestrian disturbance. On 18 May, SP127 and 3 other nests in North and South Oso Flaco were lost with no evidence indicating the cause of failure, suggesting possible avian predator.
128	6	F=U M=rr:ga	7 May	Hatch	8 Jun	≥2	2 (0)	2 unbanded	Symbolic fence	To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.
129	6	F=bb:oo M=U	5 May	Hatch	6 Jun	3	2 (1)	2 rr:lg	Exclosure	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
130	6	F=bb:gv M=pg:yw	25 Apr	Hatch	27 May	3	3 (3)	3 ga:lv	Exclosure	
131	6	F=U M=U	5 May	Hatch (Split)	6 Jun	3	3 (0)	2 rr:ll 1 unbanded	Exclosure	
132	Foredune	F=U M=U	10 May	Hatch	11 Jun	3	3 (0)	3 vv:lg	Nonpredator fence	
133	Foredune	F=U M=ga:ba	3 May	Hatch	4 Jun	3	3 (3)	3 rr:wy	Nonpredator fence	
134	7	F=U M=U	5 May	Hatch	6 Jun	3	3 (1)	3 pg:lr	Exclosure	From 21 July–27 August, 1 pg:lr fledgling observed on 7 exclosure and South Oso Flaco shoreline with left leg injury (see Table H.2 in Appendix H).
135	6	F=pg:vb M=U	30 Apr	Hatch	1 Jun	3	3 (2)	3 ga:gl	Exclosure	
136	Foredune	F= M=	≤13 May	Abandoned, unknown if pre- or post-term	19 May	3	0 (0)		Symbolic fence	Nest was incubated for 6 days from 13 to 18 May. Nest not walked to while active. Contents of all eggs examined postseason had no signs of development.
137	SOF	F=U M=	29 Apr	Failed, unknown cause	18 May	3	0 (0)		Symbolic fence	On 18 May, SP137 and 3 other nests in North and South Oso Flaco were lost with no evidence indicating the cause of failure, suggesting possible avian predator.
138	6	F= M=U	1 May	Hatch	2 Jun	3	3 (2)	3 unbanded	Exclosure	
139	NOF	F=U M=	4 May	Failed, unknown cause	18 May	3	0 (0)		Symbolic fence	On 18 May, SP139 and 3 other nests in South Oso Flaco were lost with no evidence indicating the cause of failure, suggesting possible avian predator.
140	7	F=U M=vv:va	15 May	Hatch	16 Jun	3	3 (0)	3 bb:ov	Exclosure	One 2-day-old chick from the SP140 nest adopted by SP214 male beginning 18 June and not seen to fledge.
141	Foredune	F=U M=U	12 May	Hatch	13 Jun	3	3 (0)	3 vg:lw	Nonpredator fence	
142	6	F=U M=rr:ra	3 May	Hatch	4 Jun	3	3 (1)	3 rr:lb	Exclosure	

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
143	6	F=U M=pg:bb	15 May	Hatch (Split)	16 Jun	≥2	2 (0)	2 unbanded	Symbolic fence	To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.
144	6	F=U M=U	19 May	Hatch (Split)	20 Jun	2	2 (0)	2 pv:bg	Exclosure	
145	6	F=U M=ga:wr	2 May	Hatch (Split)	3 Jun	3	3 (1)	2 pg:lw 1 unbanded	Exclosure	Unbanded chick fledged.
146	7	F=U M=gg:ar	19 May	Hatch (Split)	20 Jun	3	3 (0)	2 ga:wl 1 unbanded	Exclosure	
147	7	F=U M=banded	14 May	Hatch	15 Jun	3	2 (2)	2 vg:gl	Exclosure	One egg (with cracks) unknown fate.
148	8	F= M=	18 May	Hatch (Split)	19 Jun	3	3 (0)	2 pv:lg 1 unbanded	Exclosure	
149	8	F= M=	13 May	Hatch	14 Jun	3	3 (0)	3 bb:bv	Exclosure	
150	8	F=U M=banded	12 May	Hatch	13 Jun	2	1 (0)	1 unbanded	Exclosure	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development. The 1-day-old chick from the SP150 nest adopted by SP312 male beginning 14 June and not believed to fledge.
151	7	F=U M=U	17 May	Hatch	18 Jun	3	3 (0)	3 rr:lo	Exclosure	
152	6	F=U M=	14 May	Abandoned pre-term	30 May	3	0 (0)		Exclosure	Contents of all eggs examined postseason had no signs of development.
153	SOF	F= M=pg:by	20 May	Depredated	15 Jun	3	0 (0)		Symbolic fence	
154	Pismo Creek lagoon	F=U M=U	30 Apr	Hatch	1 Jun	2	1 (0)	1 unbanded	Nonpredator fence, Symbolic fence	On 23 May, nest found with 1 egg in the nest bowl and a second egg with a large hole and dried yolk 20 feet away (nonviable egg collected). Nonpredator fencing installed to provide a buffer of 72-129 feet. On 28 May, an additional area was closed with symbolic fence and the closure was expanded on 4 June (see map in Figure C.5 in Appendix C). Chick last seen at 24 days old on 25 June.
155	7	F=U M=pg:ba	20 May	Hatch	21 Jun	3	3 (0)	3 unbanded	Symbolic fence	
156	7	F=ga:gg M=pv:wg	21 May	Hatch	22 Jun	3	2 (2)	2 ga:al	Exclosure	On 22 June, nest contained 1 pipped egg and 1 mobile chick, with a second alive and unattended cold, immobile chick 1 foot away. The mobile chick was banded and immobile chick placed in nest. Adult subsequently seen incubating/brooding at nest. On 23 June, a second chick was banded and no egg or additional chick found in the nest vicinity. One egg unknown fate.
157	7	F=U M=pg:vb	16 May	Event, coyote	16 Jun	3	0 (0)		Exclosure	
158	7	F=U M=banded	16 May	Hatch	17 Jun	3	3 (0)	3 gg:gl	Exclosure	

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
159	Foredune	F=bb:vr M=pv:wg	≤25 May	Failed, nonviable eggs removed by staff	6 Jul	2	0 (0)		Bumpout, Nonpredator fence	On 6 July, the 2 nonviable eggs (without cracks) of SP159, incubated for at least 42 days from 25 May–6 July, collected post-term and replaced with 2 potentially viable abandoned eggs from SP209. Eggs continued to be incubated another 21 days before abandonment on 26 July. Contents of SP159 and SP209 eggs examined postseason had no signs of development.
160	6	F=U M=vg:ow	1 May	Hatch	2 Jun	3	3 (2)	3 gg:vl	Exclosure	
161	Foredune	F=vv:ay M=U	22 May	Hatch (Split)	23 Jun	3	3 (0)	3 pv:bl	Symbolic fence	
162	7	F=U M=U	25 May	Hatch	26 Jun	3	2 (1)	2 rr:al	Mini-exclosure, Exclosure	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
163	BY	F=U M=ga:ag	22 May	Hatch	23 Jun	3	3 (0)	2 vg:al 1 unbanded	Exclosure	
164	6	F= M=	27 May	Event, coyote	17 Jun	3	0 (0)		Exclosure	
165	Foredune	F=U M=vg:br	19 May	Hatch	20 Jun	3	3 (0)	3 unbanded	Nonpredator fence	
166	6	F=U M=U	27 May	Hatch	28 Jun	4	2 (0)	2 pv:aw	Exclosure	Two eggs (with slight cracks) abandoned post-term. Only 1 egg located postseason and contents had a late-stage embryo (stage 45) in proper hatching position and internally pipped.
167	7	F=U M=vg:w(?)	10 May	Hatch	11 Jun	3	1 (0)	1 pg:vl	Exclosure	Two eggs (without cracks) abandoned post-term. Only 1 egg located postseason and contents had no signs of development.
168	Unknown	F= M=U	(12 Apr)	Hatch	(14 May)	≥1	1 (1)	1 unbanded		On 24 May, found as brood of 1 unbanded chick on Fore dune North shoreline.
169	Unknown	F=banded M=pg:ow	(16 Apr)	Hatch	(18 May)	≥2	2 (0)	2 unbanded		On 21 May, found as brood of 2 unbanded chicks on 7 exclosure shoreline. Associated male adopted a 2-day-old ga:lo chick from SP94 brood beginning 23 May and not seen to fledge.
170	Unknown	F= M=U	(17 Apr)	Hatch	(19 May)	≥2	2 (1)	2 unbanded		On 22 May, found as brood of 2 unbanded chicks on 8 exclosure shoreline.
171	Unknown	F=gg:ow M=U	(19 Apr)	Hatch	(21 May)	3	3 (2)	3 unbanded		On 24 May, found as brood of 2 unbanded chicks on 6 exclosure shoreline. Three same size unbanded chicks seen in brood beginning 26 May.
172	Unknown	F=bb:ar M=U	(21 Apr)	Hatch	(23 May)	3	3 (2)	3 unbanded		On 27 May, found as brood of 3 unbanded chicks in 6 exclosure.
173	BY	F=U M=vv:ba	27 May	Depredated, raven	25 Jun	3	0 (0)		Exclosure	

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
174	Foredune	F=(gg:br)? M=U	8 May	Hatch	9 Jun	3	2 (0)	2 unbanded	Nonpredator fence	One egg unknown fate. Associated male adopted a 5-day-old unbanded chick from SP121 brood beginning 13 June and not seen to fledge.
175	Foredune	F=gg:vo M=gg:bo	26 May	Hatch (Split)	27 Jun	3	2 (0)	2 unbanded	Symbolic fence	One egg abandoned post-term. Contents examined postseason had no signs of development.
176	SOF	F= M=	22 May	Unknown	16 Jun	3	0 (0)		Symbolic fence	
177	SOF	F=U M=	21 May	Depredated	15 Jun	3	0 (0)		Symbolic fence	
178	BY	F=U? M=	29 May	Depredated, raven	25 Jun	3	0 (0)		Exclosure	
179	BY	F=U? M=U	18 May	Hatch	19 Jun	3	2 (0)	2 pv:lb	Exclosure	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
180	8	F= M=	na	Abandoned, unknown if pre- or post-term	na	3	0 (0)		Exclosure	On 31 May, nest found as 3 eggs abandoned, unknown if pre- or post-term.
181	8	F= M=	31 May	Event, coyote	18 Jun	2	0 (0)		Exclosure	
182	Foredune	F=(ga:vv)? M=gg:gg	26 May	Hatch (Split)	27 Jun	3	3 (0)	2 pg:yl 1 unbanded	Nonpredator fence	
183	6	F=ga:vv M=U	5 May	Hatch	6 Jun	3	3 (0)	3 ga:yl	Exclosure	
184	NOF	F=U M=U	30 May	Depredated, raven	25 Jun	3	0 (0)		Symbolic fence	
185	8	F=U M=U	20 May	Hatch	21 Jun	3	2 (0)	2 unbanded	Symbolic fence	One egg unknown fate.
186	6	F= M=	≤30 May	Unknown	22 Jun	≥1	0 (0)		Symbolic fence	Nest location known by multiple observations of incubating adult. To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.
187	6	F=gg:ya M=ga:br	24 May	Hatch (Split)	25 Jun	3	3 (2)	1 ga:pl 2 unbanded	Exclosure	One banded and 1 unbanded chick fledged.
188	8	F=(gg:vv)? M=U	5 May	Hatch	6 Jun	3	3 (0)	3 unbanded	Exclosure	
189	Foredune	F=U M=	≤30 May	Failed, nonviable eggs removed by staff	2 Aug	3	0 (0)		Mini-exclosure, Nonpredator fence	Nest was incubated for at least 62 days from 2 June–2 August. On 2 August, 3 eggs (without cracks) collected post-term. Contents of all eggs examined postseason had no signs of development.
190	Foredune	F=nv:ro M=U	2 Jun	Hatch (Split)	4 Jul	3	3 (1)	3 unbanded	Symbolic fence	
191	7	F= M=pg:aa	4 May	Hatch	5 Jun	3	3 (0)	3 bb:lv	Exclosure	
192	6	F=(ga):(? M=U?	3 Jun	Abandoned pre-term	7 Jun	1	0 (0)		Exclosure	

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
193	Foredune	F=U M=	≤4 Jun	Unknown	8 Jun	≥1	0 (0)		Nonpredator fence	Nest location known by multiple observations of incubating adult. To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.
194	6	F=vg:ga M=bb:pg	≤4 Jun	Abandoned post-term	31 Jul	3	0 (0)		Symbolic fence	Nest was incubated for at least 57 days from 4 June–31 July. Only 2 eggs located for examination postseason and contents of both eggs had no signs of development.
195	6	F= M=	22 May	Hatch	23 Jun	3	1 (0)	1 pg:bv	Exclosure	Two eggs (without cracks) abandoned post-term. Contents of both eggs examined postseason had no signs of development.
196	7	F= M=	4 Jun	Event, coyote	17 Jun	3	0 (0)		Exclosure	
197	6	F=U M=U	26 May	Hatch	27 Jun	≥1	1 (1)	1 unbanded	Symbolic fence	Nest location known by multiple observations of incubating adult. To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.
198	7	F=(?):ar M=U	31 May	Hatch	2 Jul	3	3 (2)	3 unbanded	Symbolic fence	
199	7	F= M=	22 May	Failed, unknown cause	13 Jun	2	0 (0)		Exclosure	
200	7	F=U M=gg:og	29 May	Hatch (Split)	30 Jun	3	3 (0)	3 pv:wa	Mini-exclosure, Exclosure	
201	Foredune	F=U M=	≤5 Jun	Depredated, gull	24 Jun	≥1	0 (0)		Symbolic fence	Nest location known by multiple observations of incubating adult. To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.
202	Foredune	F=U M=	23 May	Depredated, coyote	27 Jun	3	0 (0)		Nonpredator fence	On 9 June, 1 egg with inward hole. On 22 June, 2 eggs in nest bowl without holes and dried yolk-like material on outside of shells, and 1 egg 15 feet from nest, cracked on pointed end, with yolk spilled out and no signs of development.
203	Foredune	F=U M=U	8 Jun	Hatch	15 Jul	3	1 (0)	1 vg:ag	Symbolic fence	Two eggs (without cracks) abandoned post-term. Contents of eggs examined postseason and 1 had no signs of development and 1 had a mid-stage embryo (stage 26).
204	Foredune	F= M=bb:wy	≤6 Jun	Failed, nonviable eggs removed by staff	8 Aug	2	0 (0)		Symbolic fence	Nest was incubated for at least 64 days from 6 June–8 August. On 8 August, the 2 eggs (without cracks) collected post-term. Contents of both eggs examined postseason had no signs of development.
205	7	F= M=	≤5 Jun	Depredated, raven	22 Jun	≥1	0 (0)		Symbolic fence	
206	6	F=pg:oo M=U	7 Jun	Hatch	9 Jul	3	3 (2)	3 pg:pl	Symbolic fence	
207	Foredune	F=U M=U	23 May	Hatch	24 Jun	3	3 (0)	3 unbanded	Symbolic fence	

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
208	Foredune	F= M=	2 Jun	Depredated, coyote	22 Jun	3	0 (0)		Nonpredator fence	
209	Foredune	F= M=U	≤9 Jun	Abandoned, unknown if pre- or post-term	3 Jul	2	0 (0)		Circular, Symbolic fence	On 6 July, the 2 potentially viable abandoned eggs from SP209 replaced 2 nonviable eggs in SP159 that had been incubated for 42 days. The associated adults of SP159 incubated SP209 eggs for an additional 21 days before abandonment. Contents of both SP209 eggs examined postseason had no signs of development.
210	Foredune	F=U M=U	5 Jun	Hatch	7 Jul	3	3 (0)	3 unbanded	Symbolic fence	
211	Foredune	F=U M=U	8 Jun	Hatch	10 Jul	3	2 (2)	2 pv:rw	Circular, Symbolic fence	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
212	Foredune	F=vg:yr M=	≤9 Jun	Depredated, coyote	23 Jun	3	0 (0)		Symbolic fence	
213	SOF	F=U M=gg:yg	25 May	Hatch	26 Jun	3	2 (0)	2 pg:oy	Circular, Symbolic fence	One egg abandoned, unknown if pre- or post-term. Contents examined postseason had a late-stage embryo (stage 45).
214	7	F=U M=U	13 May	Hatch (Split)	14 Jun	3	3 (2)	3 unbanded	Exclosure	Associated male adopted a 2-day-old bb:ov chick from SP140 brood beginning 18 June and not seen to fledge.
215	SOF	F=bb:ow M=U	5 Jun	Hatch	7 Jul	3	3 (3)	3 pv:ww	Circular, Symbolic fence	
216	Foredune	F=rr:ay M=U	23 May	Hatch	24 Jun	≥2	2 (2)	2 unbanded	Symbolic fence	Nest location known by multiple observations of incubating adult. To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.
217	Foredune	F=w:s- M=pv:pb	5 Jun	Hatch	7 Jul	3	2 (1)	2 pv:la	Symbolic fence	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
218	6	F=rr:oy M=gg:ry	6 Jun	Hatch	8 Jul	3	3 (1)	3 rr:po	Symbolic fence	On 17 July, 9-day-old chick observed depredated by peregrine (see Table H.5 in Appendix H). On 8-9 August, a rr:po fledgling observed on 6 exclosure shoreline with a right foot injury (see Table H.2 in Appendix H).
219	7	F=U M=	15 May	Hatch	16 Jun	≥2	2 (0)	2 unbanded	Symbolic fence	Nest location known by multiple observations of incubating adult. To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.
220	7	F=bb:rg M=U	1 Jun	Hatch	3 Jul	3	3 (0)	3 vg:bo	Circular, Symbolic fence	
221	6	F= M=	≤9 Jun	Abandoned post-term	2 Aug	3	0 (0)		Exclosure	Nest was incubated for at least 51 days from 9 June–30 July. Contents of all eggs examined postseason had no signs of development.

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
222	Foredune	F=U M=	≤11 Jun	Depredated	23 Jun	≥1	0 (0)		Symbolic fence	Nest location known by multiple observations of incubating adult. To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.
223	NOF	F=U M=rr:yb	28 May	Depredated, raven	25 Jun	3	0 (0)		Symbolic fence	
224	6	F=bb:ar M=(?):ba	≤12 Jun	Unknown	13 Jun	≥1	0 (0)		Symbolic fence	Nest location known by multiple observations of incubating adult. To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.
225	6	F=U M=U	12 Jun	Hatch	19 Jul	3	1 (0)	1 unbanded	Symbolic fence	Two eggs (without cracks) abandoned post-term. Contents of eggs examined postseason and 1 had no signs of development and 1 had a mid-stage embryo (stage 36).
226	8	F=pg:gb M=vv:br	1 Jun	Hatch	3 Jul	3	3 (1)	3 pv:lw	Mini-exclosure, Exclosure	
227	CBA	F=U M=banded	6 Jun	Failed, unknown cause	21 Jun	3	0 (0)		Nonpredator fence	
228	Foredune	F=pg:al M=U	31 May	Hatch (Split)	2 Jul	3	3 (2)	2 rr:la 1 unbanded	Mini-exclosure, Nonpredator fence	One banded and 1 unbanded chick fledged.
229	SOF	F=U M=	4 Jun	Depredated, coyote	16 Jun	3	0 (0)		Symbolic fence	
230	7	F= M=	≤15 Jun	Depredated, raven	23 Jun	≥1	0 (0)		Symbolic fence	Nest location known by multiple observations of incubating adult. To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.
231	7	F=U M=ga:wg	14 Jun	Hatch	20 Jul	3	2 (1)	2 unbanded	Symbolic fence	One egg unknown fate.
232	Foredune	F= M=	≤13 Jun	Unknown	23 Jun	≥1	0 (0)		Symbolic fence	Nest location known by multiple observations of incubating adult. To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.
233	Foredune	F= M=	1 Jun	Depredated, coyote	26 Jun	3	0 (0)		Nonpredator fence	
234	Foredune	F=gg:yy M=U	8 Jun	Hatch	10 Jul	3	2 (1)	2 pg:yo	Circular, Nonpredator fence	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
235	Foredune	F= M=	2 Jun	Unknown	6 Jul	2	0 (0)		Nonpredator fence	On 2 July, 2 eggs at nest. On 6 July, 1 egg abandoned, unknown pre- or post-term at nest and 1 egg missing. Remaining egg contents examined postseason had no signs of development.
236	7	F= M=	≤15 Jun	Depredated, coyote	18 Jun	2	0 (0)		Exclosure	
237	NOF	F= M=	≤17 Jun	Depredated, raven	25 Jun	≥1	0 (0)		Symbolic fence	Nest location known by multiple observations of incubating adult. To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
238	6	F=banded M=U	12 Jun	Hatch	14 Jul	2	2 (2)	2 unbanded	Exclosure	
239	6	F=banded M=vg:bb	4 Jun	Hatch	6 Jul	3	3 (2)	3 rr:ow	Exclosure	
240	8	F=gg:wg M=ga:yg	14 Jun	Hatch	16 Jul	3	2 (0)	2 pv:oy	Mini-exclosure, Exclosure	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
241	8	F= M=	5 Jun	Depredated, raven	23 Jun	3	0 (0)		Exclosure	
242	Foredune	F= M=	≤14 Jun	Depredated	23 Jun	≥1	0 (0)		Symbolic fence	Nest location known by multiple observations of incubating adult. To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown.
243	Unknown	F= M=U	(12 Apr)	Hatch	(14 May)	≥1	1 (1)	1 unbanded		On 5 June, found as brood of 1 unbanded chick on Foredune South shoreline.
244	Unknown	F= M=l:y/g	(16 Apr)	Hatch	(18 May)	≥2	2 (2)	2 unbanded		On 4 June, found as brood of 2 unbanded chicks on South Oso Flaco shoreline.
245	Unknown	F= M=rr:wa	(28 Apr)	Hatch	(30 May)	≥2	2 (1)	2 unbanded		On 31 May, found as brood of 2 unbanded chicks on 7 exclosure shoreline.
246	Unknown	F= M=U	(2 May)	Hatch	(3 Jun)	3	3 (2)	3 unbanded		On 6 June, found as brood of 3 unbanded chicks on North Oso Flaco shoreline.
247	Unknown	F=U M=U	(3 May)	Hatch	(4 Jun)	3	3 (1)	3 unbanded		On 7 June, found as brood of 3 unbanded chicks on 8 exclosure shoreline. Male observed with left leg injury on 2 July (see Table H.2 in Appendix H).
248	6	F= M=U	12 Jun	Hatch	14 Jul	3	3 (1)	3 unbanded	Exclosure	On 20 July, 2 chicks were observed with an injured unbanded adult male in 6 exclosure and the injured adult was rescued but died (see Table H.6 in Appendix H). A second adult seen nearby was initially believed to be attending the chicks, but the 2 chicks were later determined to be abandoned. On 25 July, one 11-day-old chick was adopted by the SP255 brood and fledged, while the other remained unattended and was taken to the Santa Barbara Zoo for captive-rearing on 24 July (see Table F.5 in Appendix F).
249	6	F=U M=U	13 Jun	Hatch	15 Jul	3	1 (0)	1 unbanded	Symbolic fence	On 21 and 25 June, an unbanded fledgling from an unknown nest broods with female incubating at SP249 nest. Two eggs unknown fate. The 1-day-old chick from the SP249 nest adopted by SP318 male beginning 16 July and not seen to fledge.
250	SOF	F=U M=	≤21 Jun	Depredated, raven	25 Jun	2	0 (0)		Symbolic fence	
251	8	F=U M=ga:ya	7 Jun	Hatch	9 Jul	3	3 (2)	3 pv:pw	Circular, Symbolic fence	From 8-30 August, 1 pv:pw chick and then fledgling observed on 8 exclosure, North Oso Flaco, and South Oso Flaco shorelines with right leg injury (see Table H.2 in Appendix H).

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
252	7	F= M=	≤22 Jun	Abandoned post-term	4 Aug	2	0 (0)		Mini-exclosure, Exclosure	Nest was incubated for 40 days from 24 June–3 August. Contents of both eggs examined postseason had no signs of development.
253	7	F=U M=U	20 Jun	Hatch	22 Jul	3	2 (0)	1 pv:ar 1 unbanded	Mini-exclosure, Exclosure	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development. One 8-day-old pv:ar chick from the SP253 nest adopted by SP263 male beginning 30 July and not seen to fledge.
254	Unknown	F=U M=pg:br	(17 Apr)	Hatch	(19 May)	3	3 (3)	3 unbanded		On 25 May, found as brood of 3 unbanded chicks on Foredune Central shoreline.
255	6	F= M=U	13 Jun	Hatch	15 Jul	3	3 (1)	3 rr:va	Exclosure	Associated male adopted a 9-day-old unbanded chick from SP248 brood beginning 25 July and it fledged.
256	NOF	F=U M=U	25 Jun	Hatch	27 Jul	1	1 (0)	1 rr:vo	Symbolic fence	
257	6	F=U M=pg:yw	23 Jun	Hatch	25 Jul	2	2 (0)	2 vg:vw	Symbolic fence	
258	BY	F=ga:av M=U	19 Jun	Hatch (Split)	21 Jul	3	3 (1)	2 pv:vw 1 unbanded	Mini-exclosure, Exclosure	One banded chick fledged.
259	SOF	F=U M=pv:vb	21 Jun	Hatch	23 Jul	3	3 (3)	3 pv:ya	Circular, Symbolic fence	On 29 June, nest found at 3 eggs and symbolic fence moved west to decrease possible pedestrian disturbance. Associated male adopted a 6-day-old vg:bv chick from SP299 brood beginning 27 July and it fledged.
260	6	F=U M=gg:vw	9 Jun	Hatch (Split)	11 Jul	3	3 (2)	3 ga:oo	Exclosure	
261	7	F=yp:ga M=pg:a-	11 Jun	Hatch (Split)	13 Jul	3	2 (1)	2 pv:ao	Mini-exclosure, Exclosure	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
262	7	F=U M=banded	21 Jun	Hatch	23 Jul	3	1 (0)	1 unbanded	Exclosure	Two eggs abandoned post-term. Contents examined postseason and both had no signs of development.
263	7	F= M=pg:vb	21 Jun	Hatch	23 Jul	3	3 (1)	3 rr:wa	Exclosure	Associated male adopted a 8-day-old pv:ar chick from SP253 brood beginning 30 July and not seen to fledge. From 13-16 August, male observed with right leg injury (see Table H.2 in Appendix H).
264	6	F= M=pg:ba	20 Jun	Hatch (Split)	22 Jul	3	2 (0)	2 pv:bv	Exclosure	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
265	6	F=U M=	≤28 Jun	Failed, nonviable eggs removed by staff	7 Aug	2	0 (0)		Exclosure	Nest was incubated for 40 days from 30 June–7 August. On 7 August, the 2 eggs (without cracks) collected post-term. Contents of both eggs examined postseason had no signs of development.
266	7	F=U M=U	11 Jun	Hatch	13 Jul	3	3 (3)	3 pv:oa	Symbolic fence	

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
267	8	F=U M=U	24 Jun	Hatch	26 Jul	3	3 (2)	3 vv:by	Circular, Symbolic fence	
268	Foredune	F=U M=U	28 Jun	Hatch	30 Jul	2	2 (0)	2 rr:ag	Mini-exclosure, Nonpredator fence	
269	6	F=U M=U	23 Jun	Hatch	25 Jul	3	3 (0)	3 unbanded	Exclosure	
270	Foredune	F=U M=	29 Jun	Hatch	31 Jul	3	2 (0)	2 rr:vg	Bumpout, Mini-exclosure, Nonpredator fence	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
271	6	F=vg:vb M=vv:bb	14 Jun	Hatch	16 Jul	3	2 (1)	2 unbanded	Exclosure	On 9 July, 1 egg found 6 feet outside nest was marked and placed back in nest. Marked egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
272	NOF	F=U M=rr:wr	28 Jun	Hatch (Split)	30 Jul	3	3 (1)	3 rr:rv	Circular, Symbolic fence	
273	6	F=U? M=U?	(2 Jul)	Abandoned pre-term	5 Jul	3	0 (0)		Symbolic fence	Nest in visible location and not likely to have been incubated undetected a long enough period to suggest abandonment post-term. Contents of all eggs examined postseason had no signs of development.
274	8	F=U M=U?	28 Jun	Hatch	30 Jul	3	2 (0)	2 unbanded	Symbolic fence	One egg abandoned post-term. Contents examined postseason had a late-stage embryo (stage 43-45).
275	7	F=U M=	1 Jul	Failed, nonviable eggs removed by staff	14 Aug	2	0 (0)		Symbolic fence	Nest was incubated for at least 42 days from 3 July–14 August. On 5 July, an older chick or young fledgling from an unknown nest (bands not seen) broods with adult incubating at SP275 nest. On 14 August, the 2 eggs (without cracks) collected post-term. Contents of both eggs examined postseason had no signs of development.
276	Foredune	F=vg:by M=U	3 Jul	Hatch	8 Aug	2	2 (0)	2 pg:rw	Symbolic fence	
277	7	F=U M=U	26 Jun	Hatch (Split)	28 Jul	3	3 (0)	1 rr:vv 2 unbanded	Symbolic fence	
278	8	F=pg:(??) M=U	25 Jun	Hatch	27 Jul	3	2 (2)	2 rr:vr	Symbolic fence	One egg (without cracks) abandoned post-term. Contents examined postseason had a late-stage embryo (stage 40-44).
279	7	F=U M=	≤1 Jul	Abandoned, unknown if pre- or post-term	29 Jul	3	0 (0)		Symbolic fence	Contents of all eggs examined postseason and 2 had no signs of development and 1 had a late-stage embryo (stage 40).
280	NOF	F=U M=U	30 Jun	Hatch	1 Aug	3	3 (0)	3 unbanded	Symbolic fence	
281	SOF	F=U M=pg:va	27 Jun	Hatch	29 Jul	3	3 (1)	3 vv:ow	Circular, Symbolic fence	On 4 July, nest found at 3 eggs and symbolic fence moved west to decrease possible pedestrian disturbance.

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
282	6	F=U? M=	30 Jun	Abandoned pre-term	9 Jul	2	0 (0)		Symbolic fence	Contents of eggs examined postseason and both had no signs of development.
283	SOF	F=U M=pg:aa	28 Jun	Hatch	30 Jul	3	3 (0)	3 unbanded	Circular, Symbolic fence	On 4 July, nest found at 3 eggs and symbolic fence moved west to decrease possible pedestrian disturbance.
284	6	F=U M=pg:bb	2 Jul	Hatch	3 Aug	3	3 (0)	3 unbanded	Symbolic fence	
285	SOF	F=U M=U	23 Jun	Hatch	25 Jul	3	3 (2)	3 ga:lr	Circular, Symbolic fence	On 5 July, nest found at 3 eggs and symbolic fence moved west to decrease possible pedestrian disturbance.
286	SOF	F=U M=U	28 Jun	Hatch	30 Jul	3	2 (2)	2 unbanded	Circular, Symbolic fence	One egg unknown fate. On 5-8 August, the SP286 male was seen missing 1 chick, while the nearby SP326 brood had an extra, larger unbanded chick matching its size. On 7 August, the SP286 male adopted a 2-day rr:yy chick from SP305 and this chick was not seen again. By 9 August, both the SP286 and SP326 broods again had 2 unbanded chicks of appropriate size, suggesting a temporary chick exchange.
287	SOF	F=U M=banded	4 Jul	Hatch	5 Aug	3	2 (2)	2 ga:gr	Circular, Symbolic fence	On 5 July, nest found at 1 egg and symbolic fence moved west to decrease possible pedestrian disturbance. One egg unknown fate.
288	Foredune	F=U M=g:o/v	28 Jun	Hatch	30 Jul	3	3 (0)	3 rr:yy	Symbolic fence	On 5 August, carcass of rr:yy chick found on Foredune North shoreline (see Table H.6 in Appendix H).
289	7	F=U? M=U	27 Jun	Hatch (Split)	29 Jul	3	2 (0)	2 unbanded	Exclosure	One egg abandoned post-term. Contents examined postseason had no signs of development.
290	SOF	F=U M=pg:by	30 Jun	Hatch	1 Aug	3	3 (2)	3 unbanded	Symbolic fence	On 6 July, nest found at 2 eggs and symbolic fence moved west to decrease possible pedestrian disturbance.
291	8	F=U M=U	28 Jun	Hatch	30 Jul	3	1 (1)	1 pg:lv	Symbolic fence	Two eggs (without cracks) abandoned post-term.
292	Foredune	F=U M=U	28 Jun	Hatch	30 Jul	2	2 (0)	2 rr:ov	Nonpredator fence	On 7 August, carcass of rr:ov chick found on Foredune North shoreline (see Table H.6 in Appendix H).
293	Foredune	F=U M=	26 Jun	Abandoned, unknown if pre- or post-term	4 Aug	2	0 (0)		Bumpout, Nonpredator fence	Contents of eggs examined postseason and both had late-stage embryo development (stage 40).
294	SOF	F=U? M=U	28 Jun	Hatch (Split)	30 Jul	3	3 (0)	3 rr:av	Circular, Symbolic fence	On 8 July, nest found at 3 eggs and symbolic fence moved west to decrease possible pedestrian disturbance.
295	7	F=U M=ga:yo	22 Jun	Hatch	24 Jul	3	3 (1)	1 ga:rl 1 ga:lr 1 unbanded	Exclosure	The ga:rl chick fledged.

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
296	Foredune	F= M=U	3 Jul	Hatch (Split)	4 Aug	3	2 (0)	2 unbanded	Symbolic fence	One egg abandoned post-term. Contents examined postseason had no signs of development. On 14 August, 10-day-old chick observed depredated by western gull (see Table H.5 in Appendix H).
297	6	F= M=U	21 Jun	Hatch (Split)	23 Jul	3	3 (1)	3 pv:wo	Exclosure	
298	Foredune	F=(pg:oo)? M=vv:ra	29 Jun	Hatch	31 Jul	3	3 (1)	3 unbanded	Nonpredator fence	
299	SOF	F=U M=vg:va	19 Jun	Hatch	21 Jul	3	1 (1)	1 vg:bv	Circular, Symbolic fence	On 7 July, nest found at 3 eggs and symbolic fence moved west to decrease possible pedestrian disturbance. Two eggs (without cracks) abandoned post-term. One egg was dented with dried yoke and 1 intact egg was collected postseason. Contents of collected egg examined had no signs of development. The 6-day-old chick from the SP299 nest adopted by SP259 male beginning 27 July and it fledged.
300	SOF	F= M=U	4 Jul	Hatch	5 Aug	3	2 (0)	2 unbanded	Symbolic fence	One egg abandoned post-term. Contents examined postseason had late-stage development (stage 40).
301	6	F=U M=U	29 Jun	Hatch	31 Jul	3	3 (0)	3 unbanded	Symbolic fence	
302	6	F= M=U	27 Jun	Hatch	29 Jul	3	2 (0)	2 unbanded	Exclosure	One egg abandoned post-term. Contents examined postseason had no signs of development.
303	7	F=U M=	≤9 Jul	Failed, nonviable eggs removed by staff	14 Aug	2	0 (0)		Symbolic fence	Nest was incubated for at least 33 days from 11 July–13 August. On 14 August, the 2 eggs (without cracks) collected post-term. Contents of both eggs examined postseason had no signs of development.
304	7	F=bb:(yr)? M=	≤11 Jul	Failed, nonviable eggs removed by staff	9 Aug	2	0 (0)		Symbolic fence	Nest was incubated for at least 29 of days from 11 July–9 August. On 9 August, the 2 eggs (without cracks) collected post-term. Contents of both eggs examined postseason had no signs of development.
305	SOF	F=bb:gv M=pg:ow	4 Jul	Hatch	5 Aug	3	3 (1)	3 rr:yv	Circular, Symbolic fence	One 2-day-old chick from the SP305 nest adopted by SP286 male on 7 August and not seen again. From 21–27 August, 1 rr:yv chick observed on South Oso Flaco shoreline with right leg injury. On 28 August, injured chick taken to Pacific Wildlife Care, where it died during care on 5 September (see Table H.6 in Appendix H).
306	8	F=U M=ga:aa	27 Jun	Hatch	29 Jul	3	3 (1)	3 pv:or	Exclosure	

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
307	7	F=U M=gg:gy	≤13 Jul	Failed, nonviable eggs removed by staff	15 Aug	2	0 (0)		Exclosure	Nest was incubated for at least 31 days from 15 July–15 August. On 15 August, the 2 eggs (without cracks) collected post-term. Contents of both eggs examined postseason had no signs of development.
308	Unknown	F= M=a:g/o/g	(2 May)	Hatch	(3 Jun)	≥1	1 (1)	1 unbanded		On 27 June, found as brood of 1 unbanded chick on 7 exclosure shoreline.
309	Unknown	F=v:g:or M=U	(5 May)	Hatch	(6 Jun)	3	3 (2)	3 bb:ol		On 8 June, found as brood of 3 unbanded chicks on South Oso Flaco shoreline.
310	Unknown	F= M=bb:lg	(6 May)	Hatch	(7 Jun)	≥2	2 (0)	2 unbanded		On 14 June, found as brood of 2 unbanded chicks on 7 exclosure shoreline.
311	Unknown	F=pg:gw M=U	(8 May)	Hatch	(9 Jun)	3	3 (0)	3 unbanded		On 10 June, found as brood of 3 unbanded chicks on 8 exclosure shoreline.
312	Unknown	F= M=U	(9 May)	Hatch	(10 Jun)	3	3 (1)	3 unbanded		On 14 June, found as brood of 3 unbanded chicks on 8 exclosure shoreline and associated male was attending a fourth unbanded 1-day-old chick from the SP150 brood. The adopted SP150 chick not believed to fledge.
313	Unknown	F=U M=bb:(vb)?	(15 May)	Hatch	(16 Jun)	≥2	2 (0)	2 unbanded		On 19 June, found as brood of 2 unbanded chicks on Foredune North shoreline.
314	Unknown	F= M=vv:	(15 May)	Hatch	(16 Jun)	≥2	2 (0)	2 unbanded		On 23 June, found as brood of 1 unbanded chick on Foredune Central shoreline. On 24 June, 2 same size unbanded chicks seen in brood. Later the same day, the 8-day-old chicks observed depredated by subadult California gull (see Table H.5 in Appendix H).
315	Unknown	F=pv:pv M=U	(25 May)	Hatch	(26 Jun)	≥2	2 (2)	2 unbanded		On 5 July, found as brood of 2 unbanded chicks on Foredune North shoreline.
316	Unknown	F=U M=ga:wb	(29 May)	Hatch	(30 Jun)	3	3 (2)	3 unbanded		On 5 July, found as brood of 3 unbanded chicks on Foredune Central shoreline.
317	Unknown	F= M=U	(29 May)	Hatch	(30 Jun)	≥2	2 (0)	2 unbanded		On 5 July, found as brood of 2 unbanded chicks on 8 exclosure shoreline.
318	Unknown	F=U M=U	(1 Jun)	Hatch (Split)	(3 Jul)	3	3 (3)	3 unbanded		On 4 July, found as brood of 1 unbanded chick on 6 exclosure shoreline. On 5 July, 3 same size unbanded chicks seen in brood. Associated male adopted a 2-day-old unbanded chick from the SP249 brood beginning 17 July and not seen to fledge. From 6-10 August, 1 unbanded fledgling observed on 6 exclosure shoreline with left leg injury (see Table H.2 in Appendix H).
319	SOF	F= M=U	2 Jul	Hatch	3 Aug	2	2 (0)	2 unbanded	Symbolic fence	
320	7	F= M=U	28 Jun	Hatch	30 Jul	≥2	2 (0)	2 unbanded	Symbolic fence	To avoid disturbing young snowy plover broods, nest not walked to while active and total egg number unknown. On 17 August, 18-day-old chick observed depredated by peregrine (see Table H.5 in Appendix H).

Appendix B. Snowy plover nests at ODSVRA in 2025 (continued).

Nest	Location	Adult pair	Initiation date (est.)	Nest fate	Fate date (est.)	No. eggs	No. chicks (no. fledged)	No. chicks and band combination	Nest protection type	Notes
321	Foredune	F= M=pg:br	22 Jun	Hatch	24 Jul	3	2 (1)	2 unbanded	Symbolic fence	One egg (without cracks) abandoned post-term.
322	CBA	F=vg:yr M=U	28 Jun	Hatch	30 Jul	3	2 (0)	2 unbanded	Nonpredator fence	One egg (without cracks) abandoned post-term. Contents examined postseason had no signs of development.
323	8	F=U? M=U	16 Jul	Hatch	17 Aug	2	2 (0)	2 pv:va	Symbolic fence	
324	8	F= M=gg:rw	29 Jun	Hatch (Split)	31 Jul	3	2 (1)	2 unbanded	Exclosure	One egg abandoned post-term. Contents examined postseason had no signs of development.
325	8	F=gg:ya M=U	29 Jun	Hatch	31 Jul	3	2 (1)	2 unbanded	Exclosure	One egg abandoned post-term. Contents examined postseason had no signs of development.
326	Unknown	F= M=l:y/g	(2 Jul)	Hatch	(3 Aug)	≥2	2 (0)	2 unbanded		On 5 August, found as a mixed brood of 2 smaller unbanded chicks and 1 larger unbanded adopted SP286 chick on the South Oso Flaco shoreline. By 9 August, the SP326 male had 2 similar-sized chicks, and SP286 had regained the missing chick, indicating it returned to its original brood.
327	Unknown	F= M=ga:bw	(17 Jun)	Hatch	(19 Jul)	≥2	2 (1)	2 unbanded		On 26 July, found as brood of 2 unbanded chicks on North Oso Flaco shoreline.
328	Unknown	F= M=U	(9 Jun)	Hatch	(11 Jul)	≥1	1 (0)	1 unbanded		On 14 July, found as brood of 1 unbanded chick on Fore dune South shoreline.
329	Foredune	F= M=	na	Abandoned, unknown if pre- or post-term	na	3	0 (0)		Symbolic fence	On 11 August, nest found as 3 eggs abandoned, unknown if pre- or post-term. Contents of all eggs examined postseason had no signs of development.
330	Foredune	F= M=	na	Unknown	na	≥2	0 (0)		Nonpredator fence	On 12 August, nest found as 2 eggs abandoned, unknown if pre- or post-term. Contents of both eggs examined postseason had no signs of development.
331	Unknown	F= M=U	(25 Jun)	Hatch	(27 Jul)	≥2	2 (2)	2 unbanded		On 10 August, found as brood of 2 unbanded chicks on Fore dune Central shoreline.
332	Unknown	F= M=	(4 Jul)	Hatch	(5 Aug)	≥2	2 (0)	2 unbanded		On 13 August, found as 2 fresh unbanded chick carcasses lying next to each other on Fore dune North shoreline near fence line (see Table H.6 in Appendix H).
333	Foredune	F= M=	na	Unknown	na	≥2	0 (0)		Nonpredator fence	On 10 April, nest found as 2 eggs abandoned, unknown if pre- or post-term. Contents of both eggs examined postseason had no signs of development.

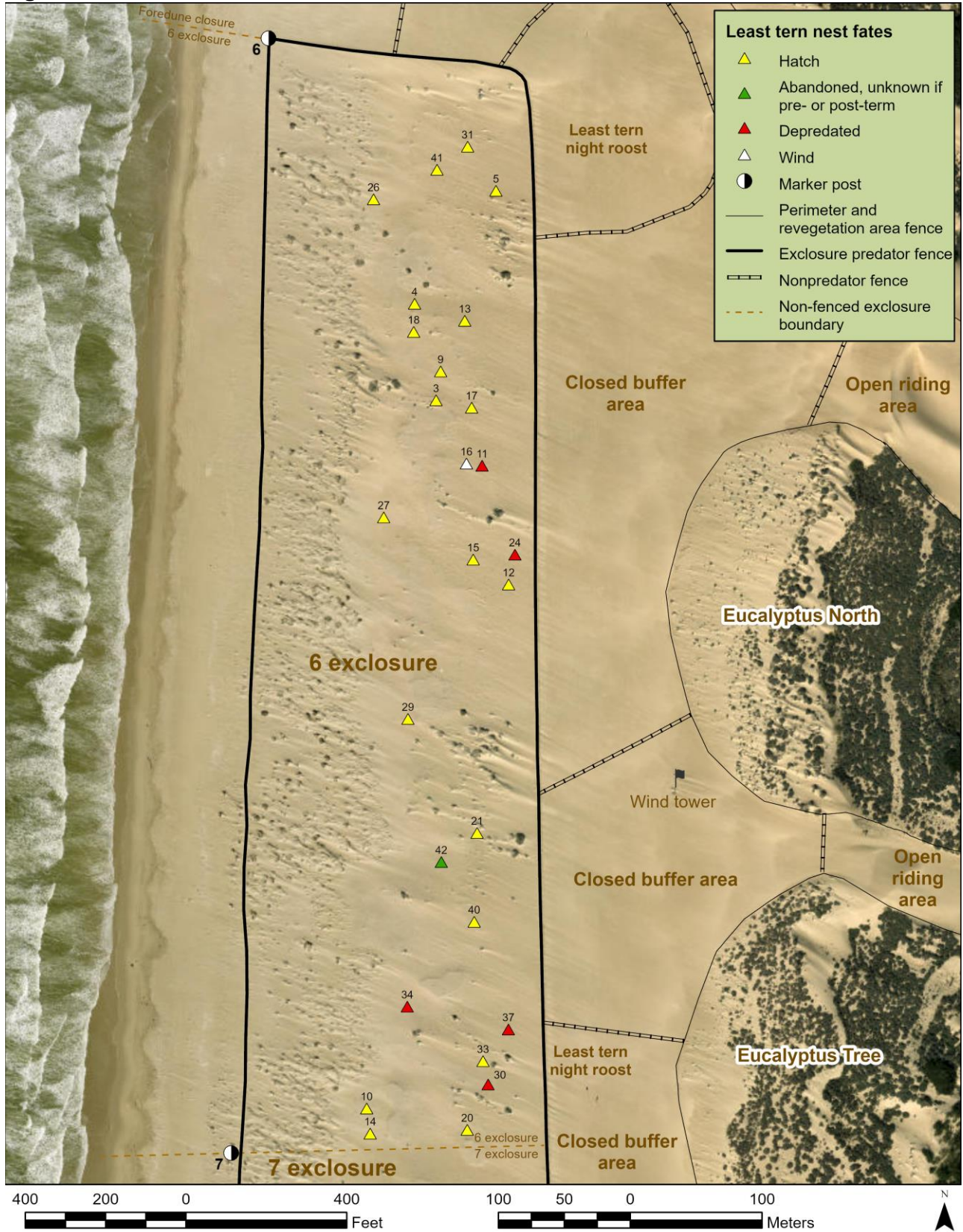
APPENDIX C. MAPS OF ALL CALIFORNIA LEAST TERN AND SNOWY PLOVER NEST LOCATIONS AT ODSVRA IN 2025.

Figure C.1. California least tern and snowy plover nest locations at ODSVRA in 2025.



Appendix C. Maps of all California least tern and snowy plover nest locations at ODSVRA in 2025 (continued).

Figure C.2. California least tern nest locations at ODSVRA 6 enclosure in 2025.



Appendix C. Maps of all California least tern and snowy plover nest locations at ODSVRA in 2025 (continued).

Figure C.3. California least tern nest locations at ODSVRA 7 enclosure in 2025.

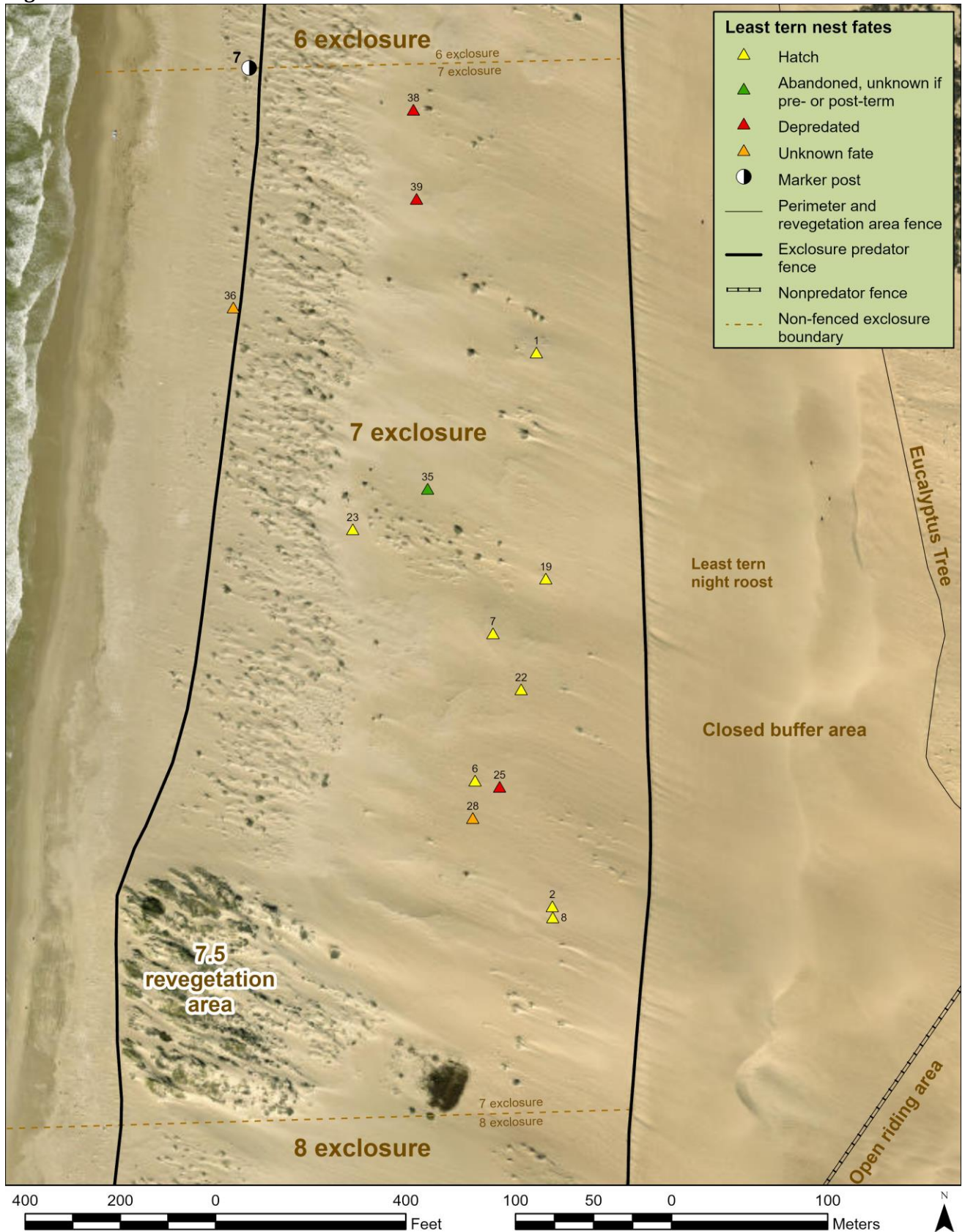
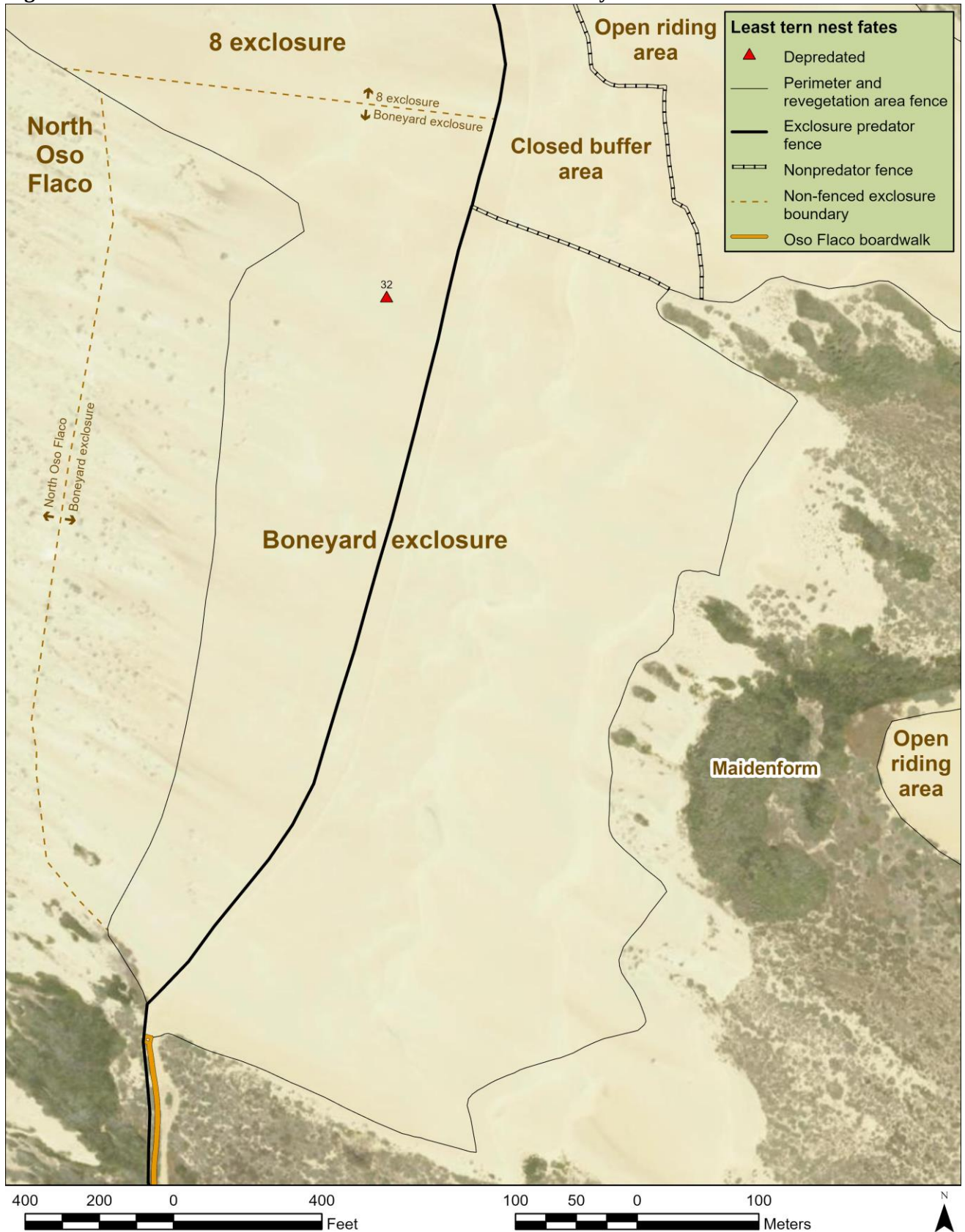
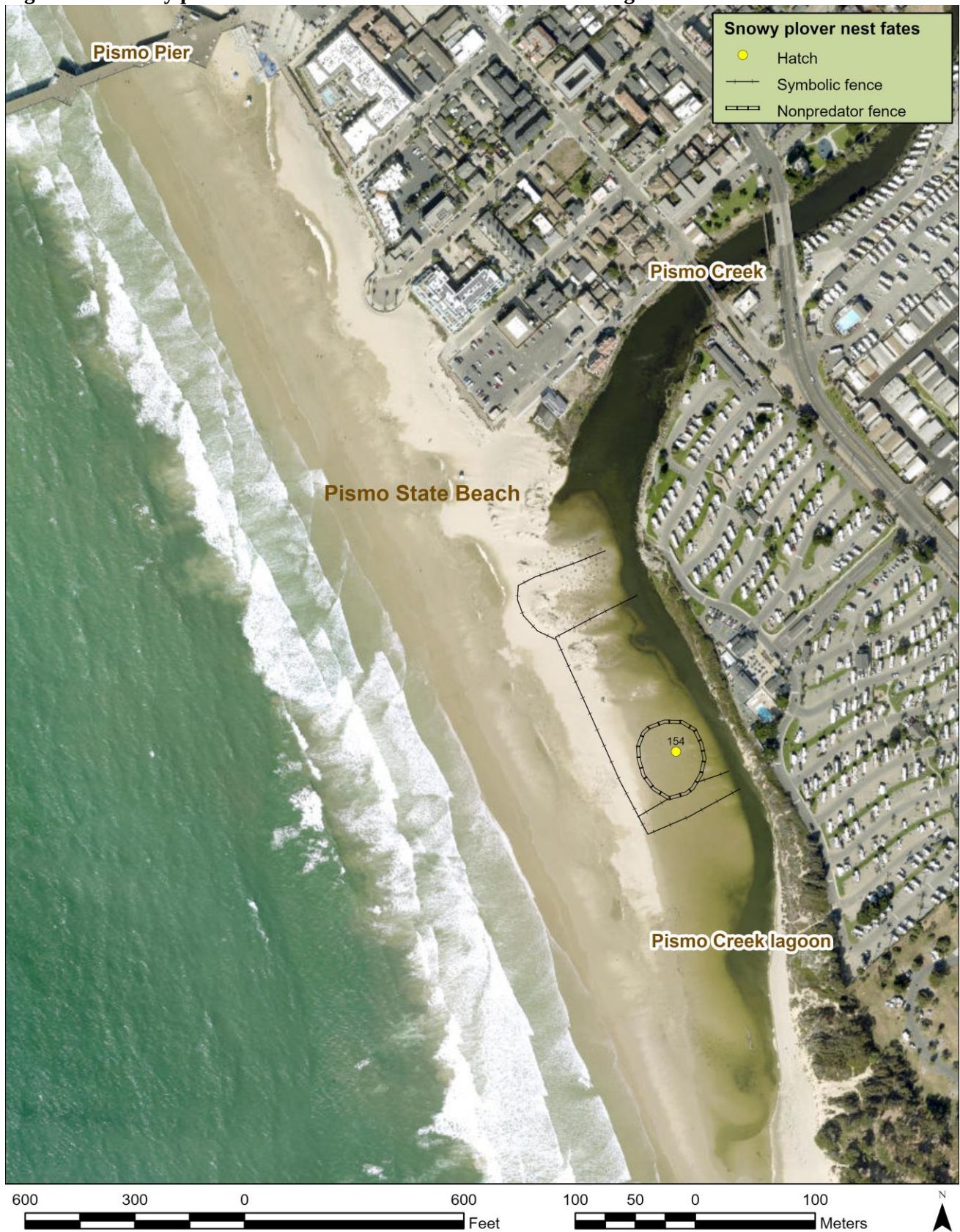


Figure C.4. California least tern nest locations at ODSVRA Boneyard enclosure in 2025.



Appendix C. Maps of all California least tern and snowy plover nest locations at ODSVRA in 2025 (continued).

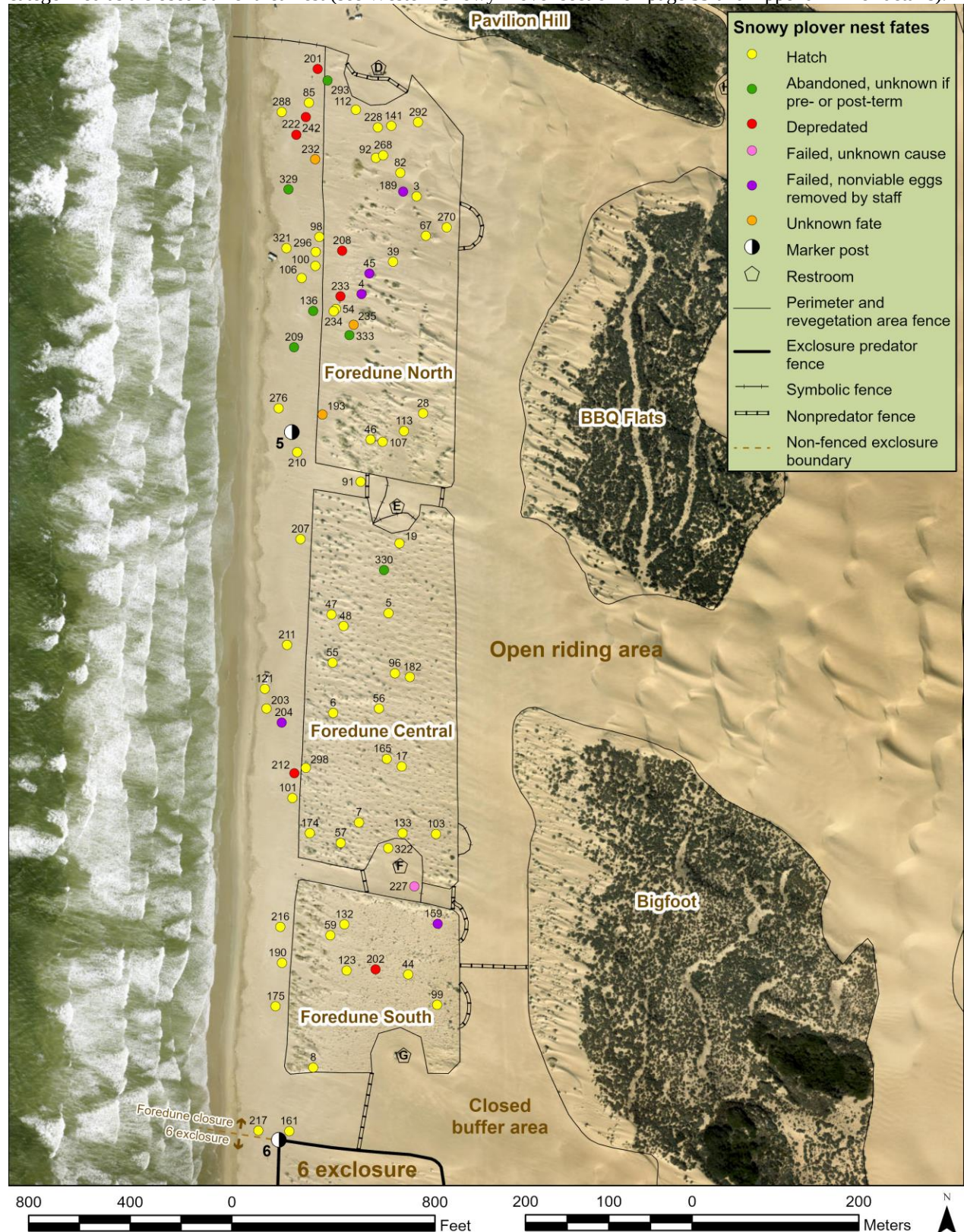
Figure C.5. Snowy plover nest location at ODSVRA Pismo Creek lagoon in 2025.



Appendix C. Maps of all California least tern and snowy plover nest locations at ODSVRA in 2025 (continued).

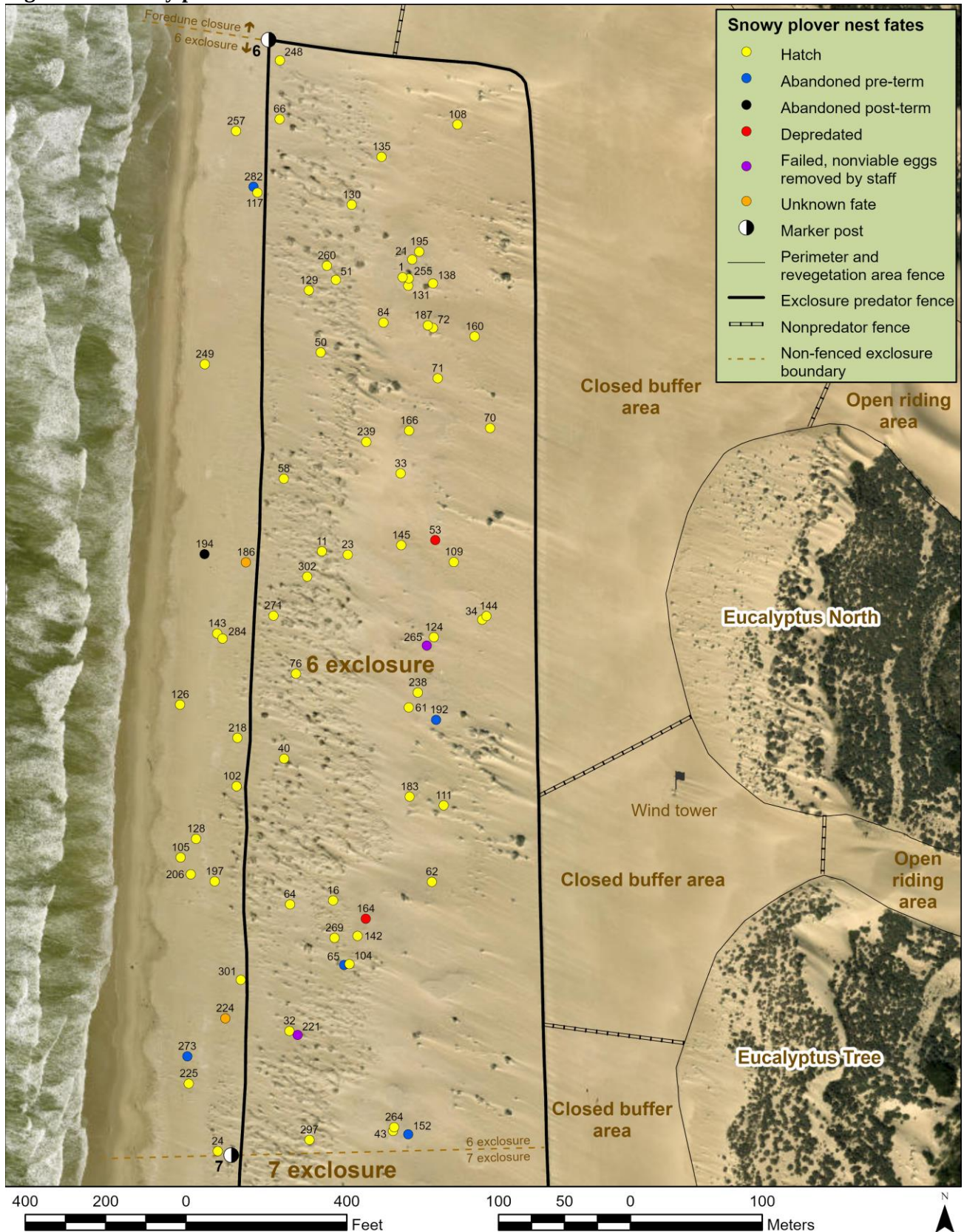
Figure C.6. Snowy plover nest locations at ODSVRA Foredune closure in 2025.

Includes SP227 and SP322 established when eastern alleyway was closed to the public later in the season and categorized as a closed buffer area nest (see Western Snowy Plover section on page 39 and Appendix B for details).



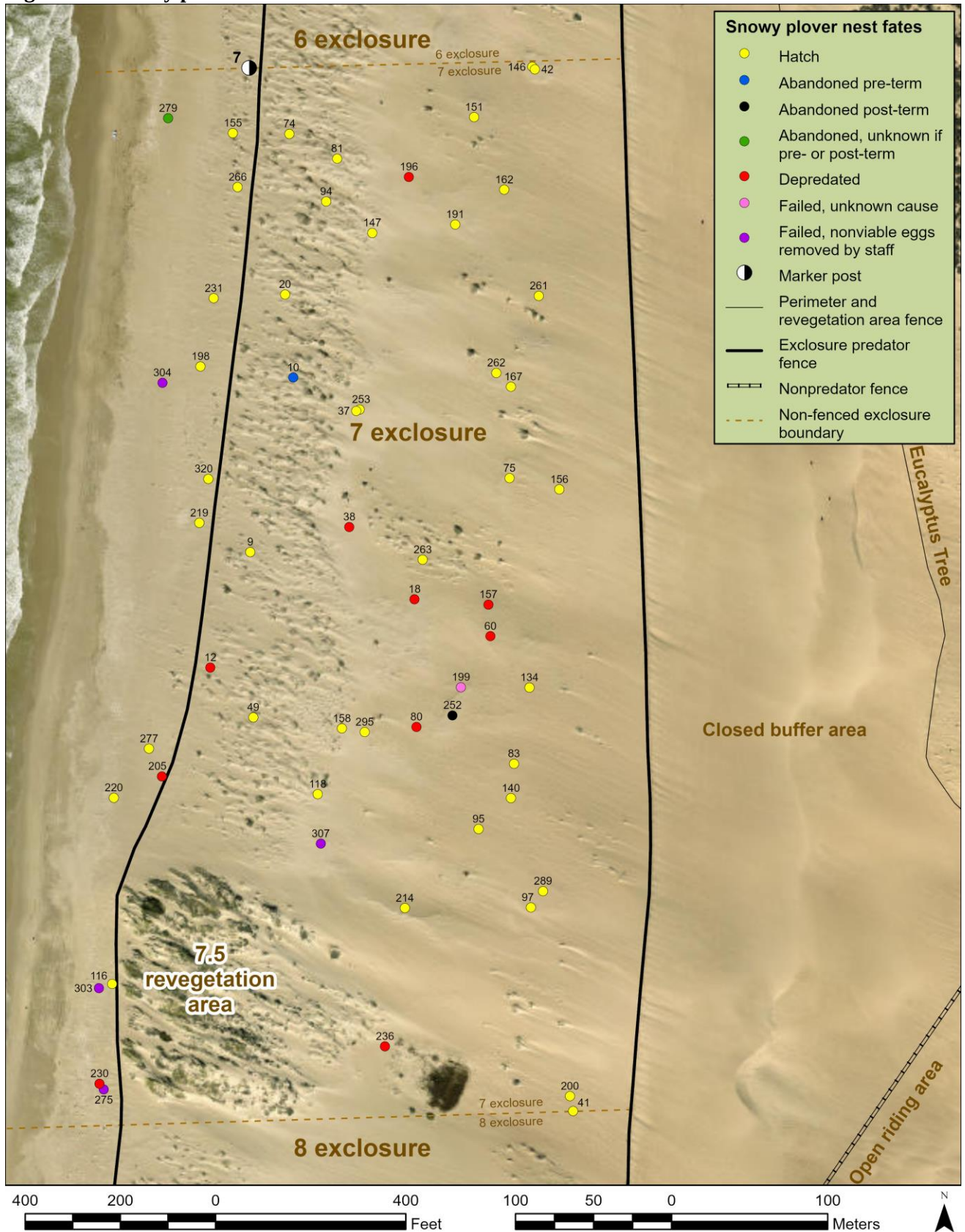
Appendix C. Maps of all California least tern and snowy plover nest locations at ODSVRA in 2025 (continued).

Figure C.7. Snowy plover nest locations at ODSVRA 6 enclosure in 2025.



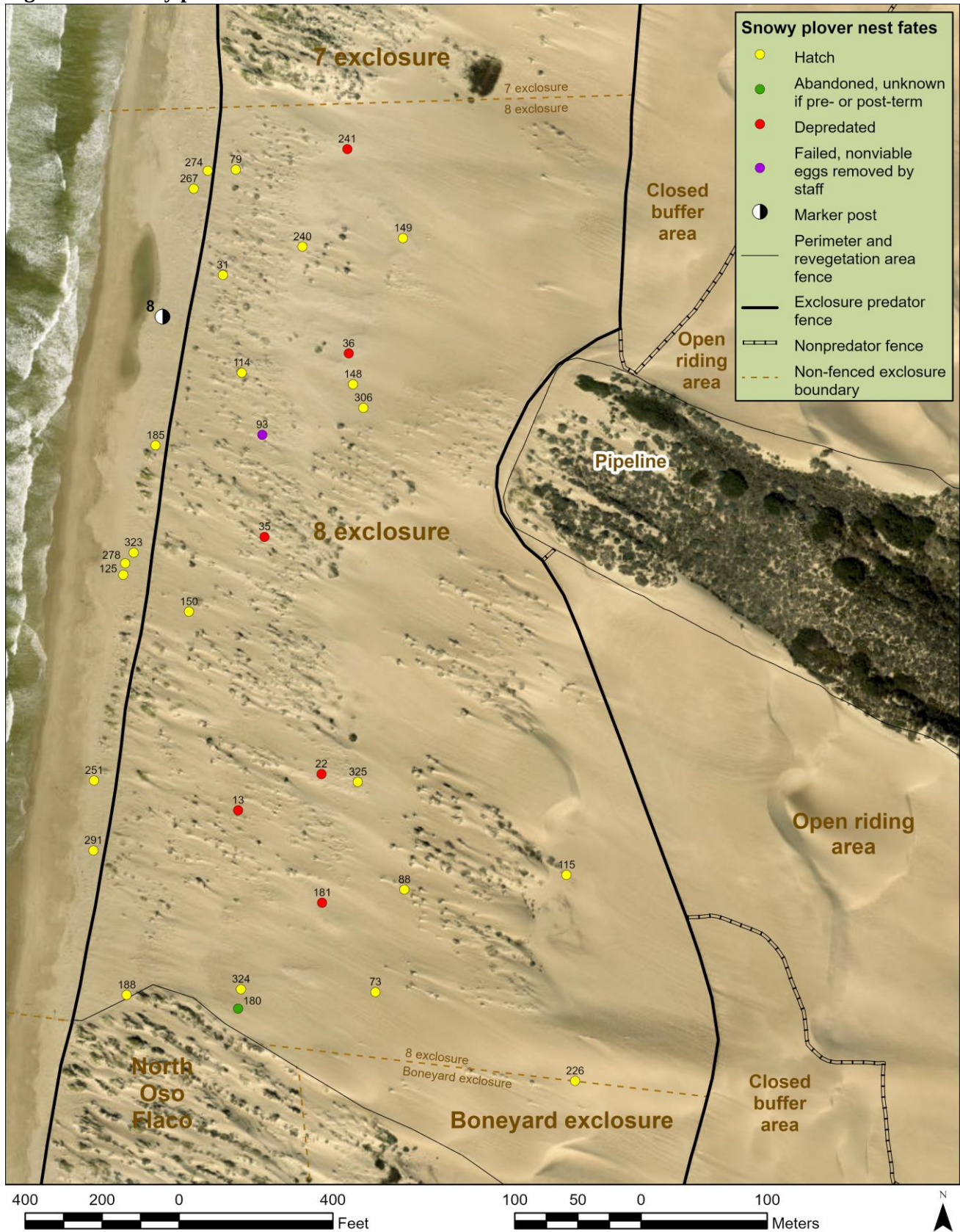
Appendix C. Maps of all California least tern and snowy plover nest locations at ODSVRA in 2025 (continued).

Figure C.8. Snowy plover nest locations at ODSVRA 7 enclosure in 2025.



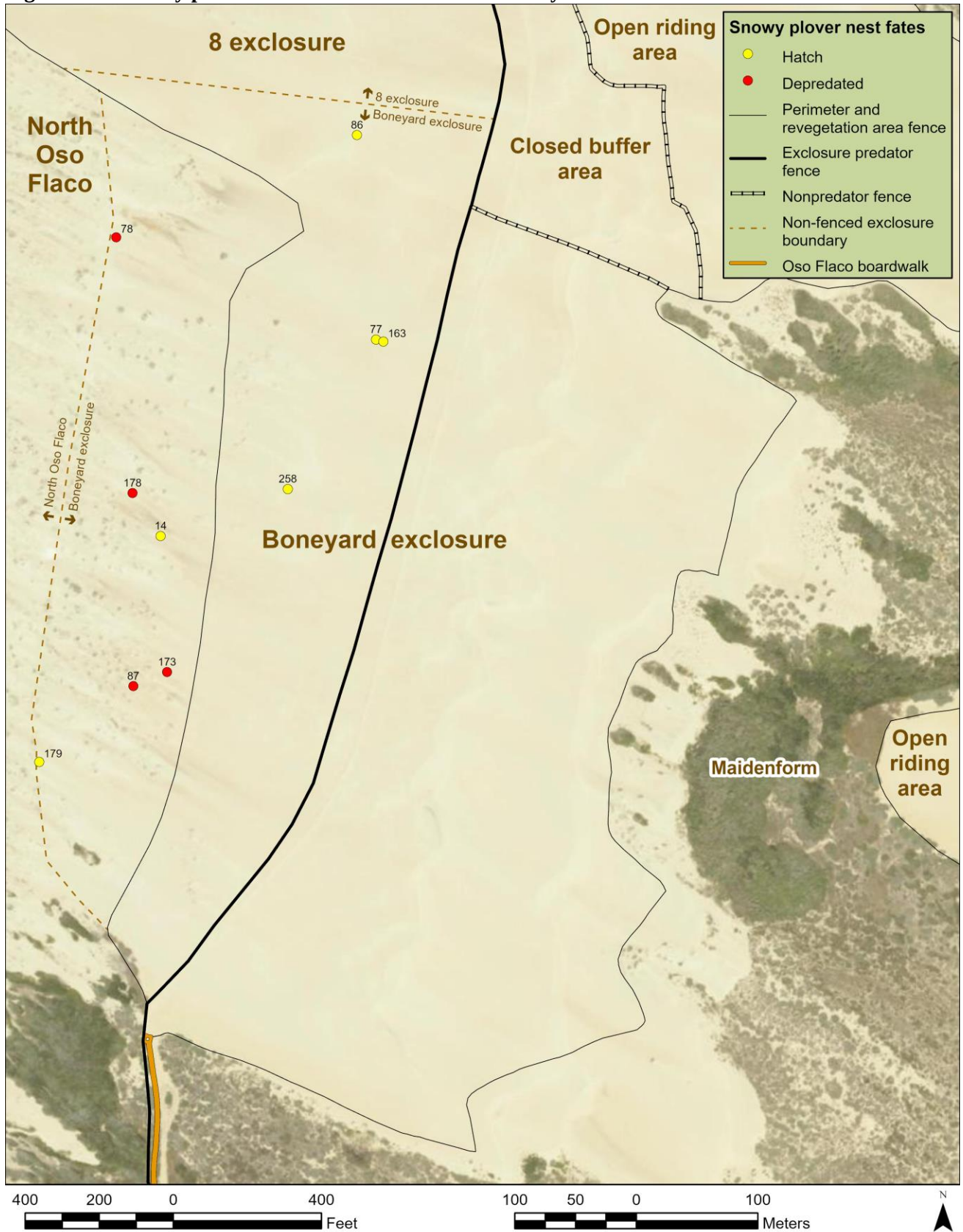
Appendix C. Maps of all California least tern and snowy plover nest locations at ODSVRA in 2025 (continued).

Figure C.9. Snowy plover nest locations at ODSVRA 8 enclosure in 2025.



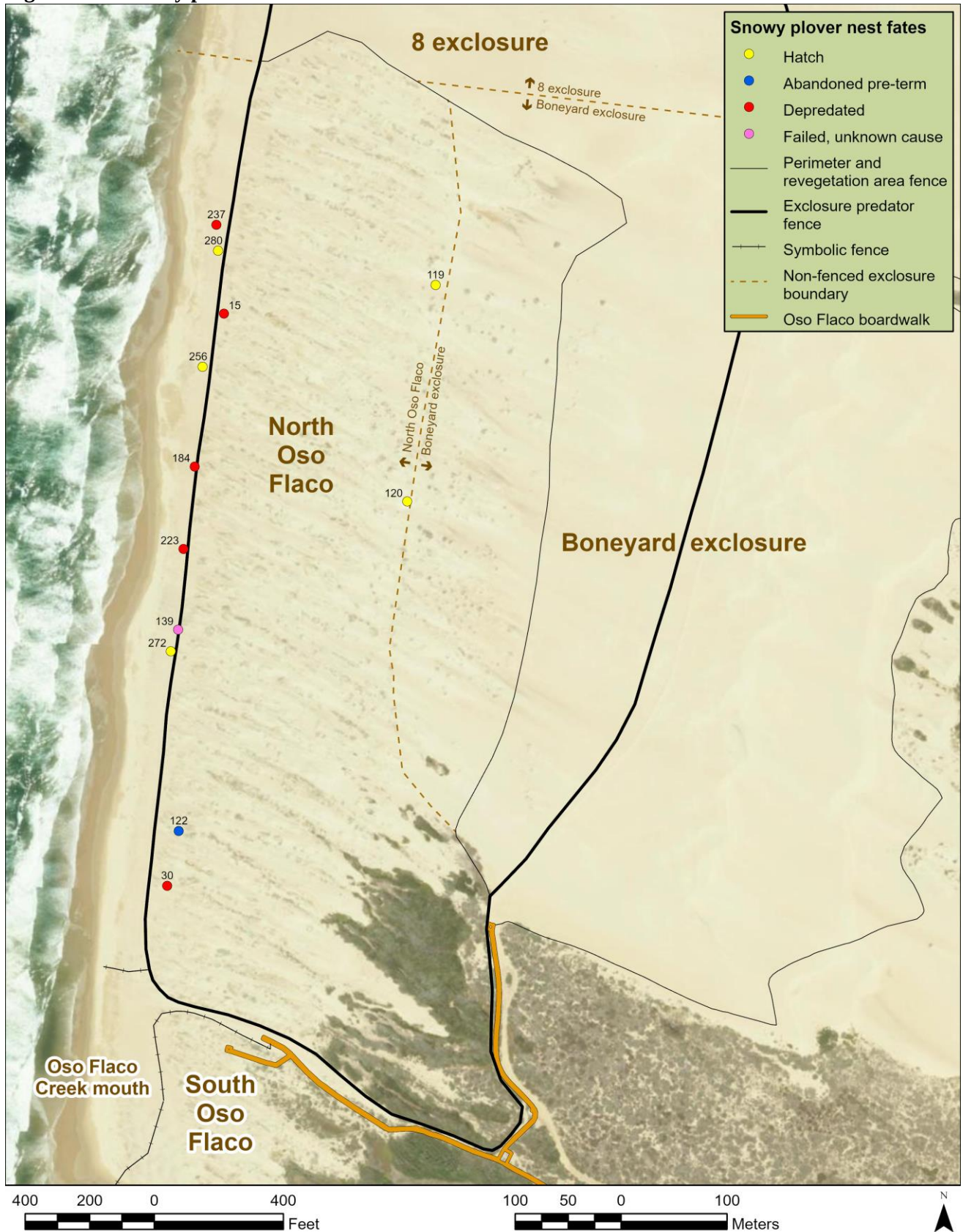
Appendix C. Maps of all California least tern and snowy plover nest locations at ODSVRA in 2025 (continued).

Figure C.10. Snowy plover nest locations at ODSVRA Boneyard enclosure in 2025.



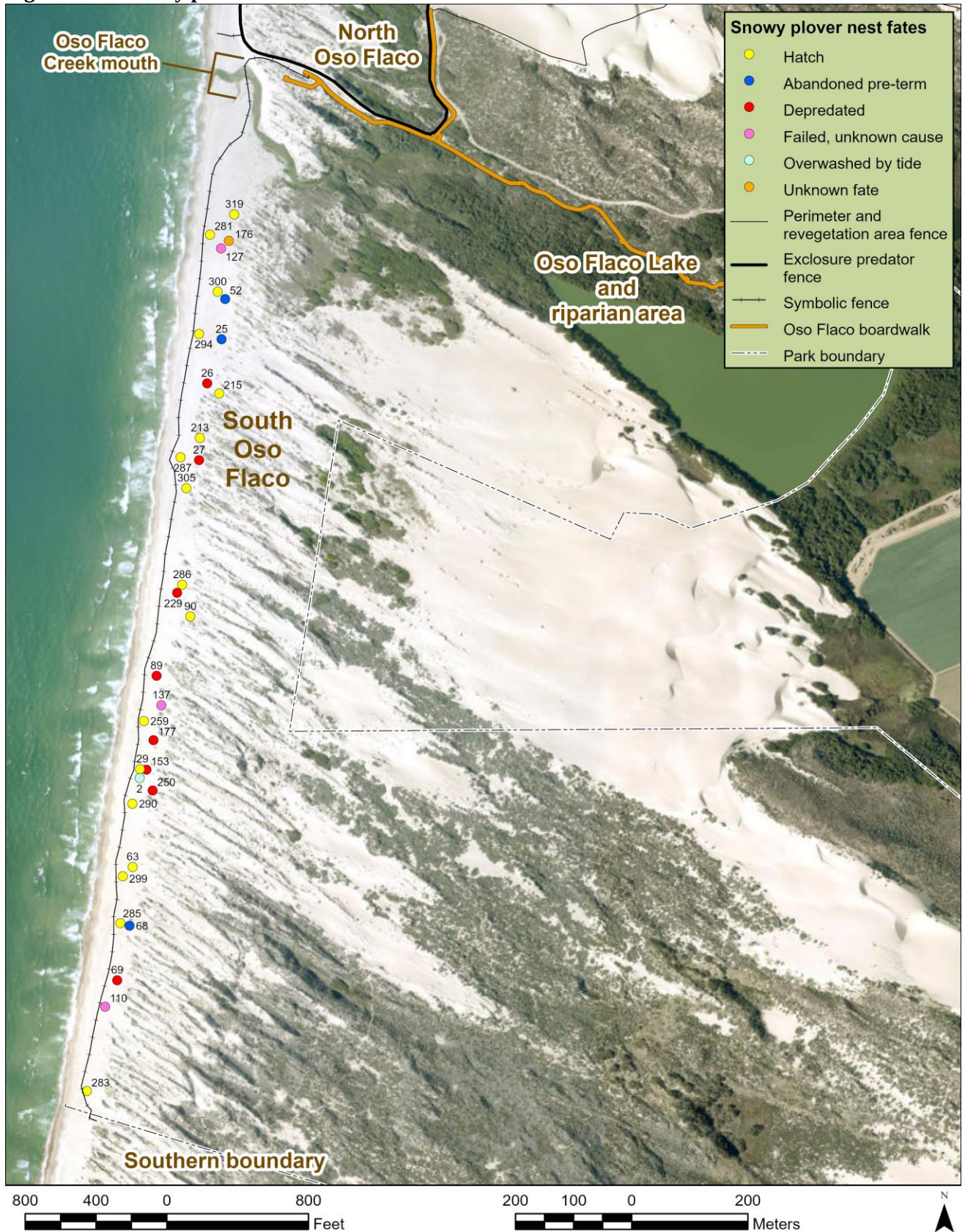
Appendix C. Maps of all California least tern and snowy plover nest locations at ODSVRA in 2025 (continued).

Figure C.11. Snowy plover nest locations at ODSVRA North Oso Flaco in 2025.



Appendix C. Maps of all California least tern and snowy plover nest locations at ODSVRA in 2025 (continued).

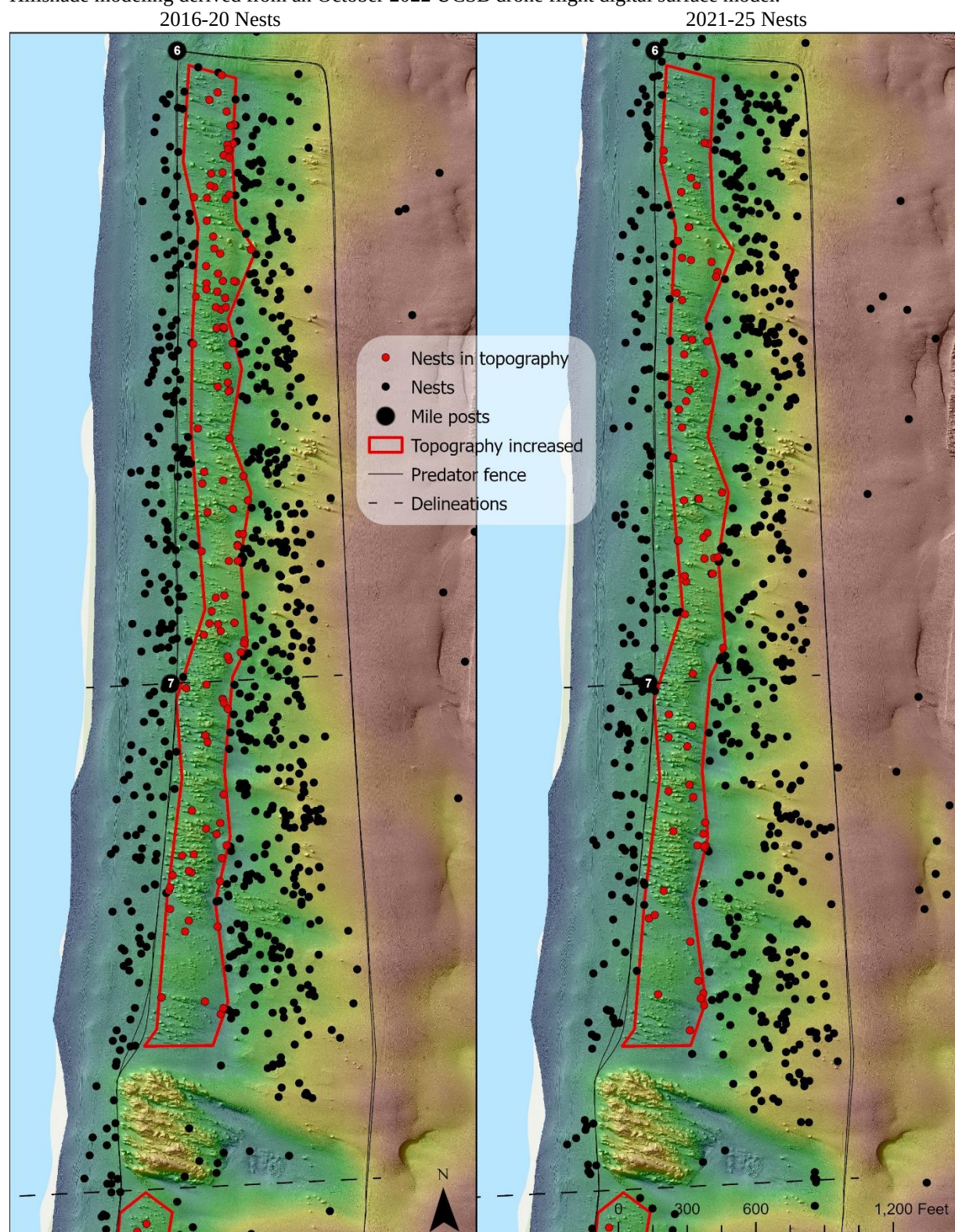
Figure C.12. Snowy plover nest locations at ODSVRA South Oso Flaco in 2025.



Appendix C. Maps of all California least tern and snowy plover nest locations at ODSVRA in 2025 (continued).

Figure C.13. California least tern and snowy plover nest locations in relation to topography at ODSVRA 6 and 7 exclosures and comparing 5-year periods from 2016-20 and 2021-25.

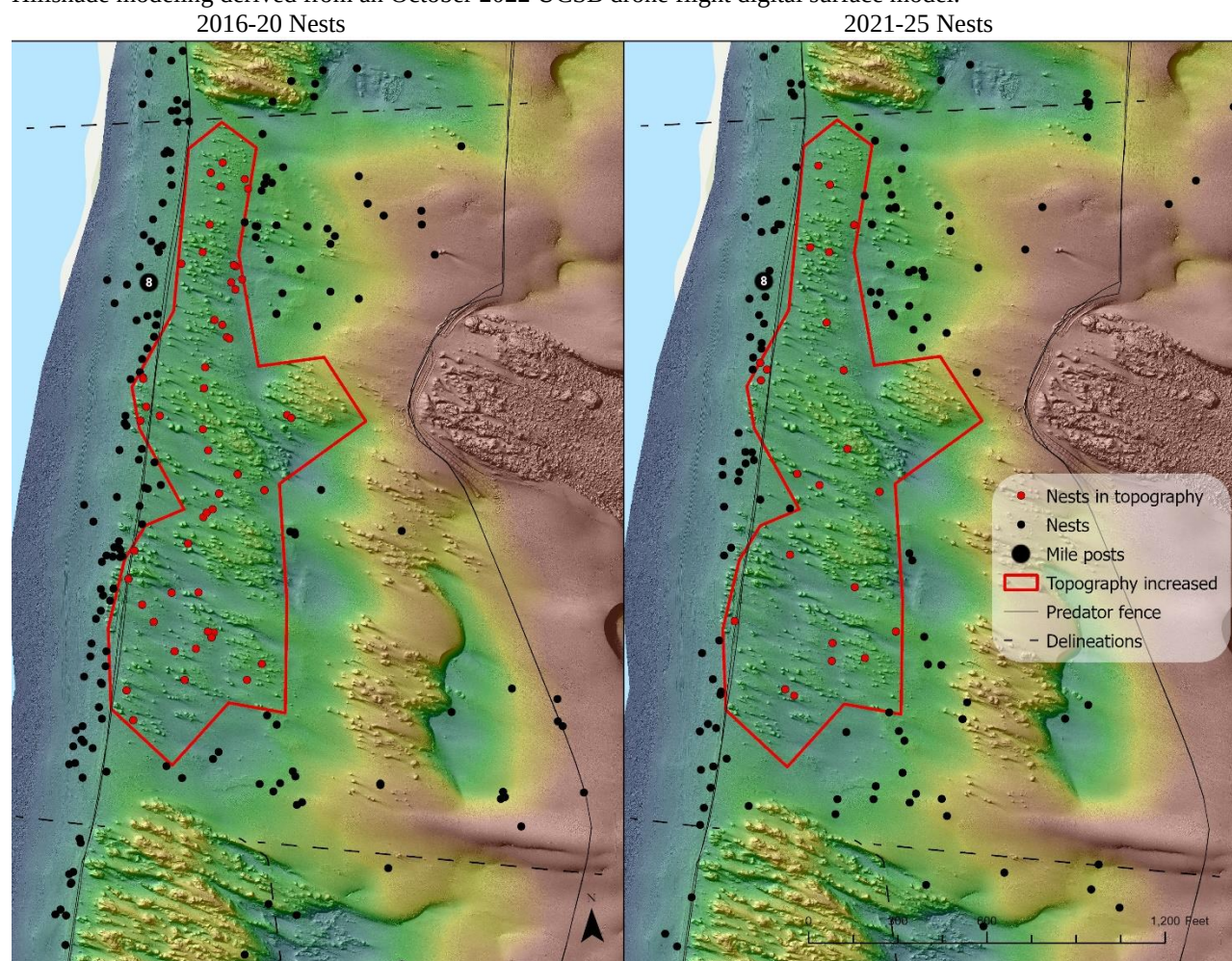
Approximately 40 acres outlined in red shows reduced nesting due to increased topography and vegetation density. Hillshade modeling derived from an October 2022 UCSB drone flight digital surface model.



Appendix C. Maps of all California least tern and snowy plover nest locations at ODSVRA in 2025 (continued).

Figure C.14. California least tern and snowy plover nest locations in relation to topography at ODSVRA 8 enclosure and comparing 5-year periods from 2016-20 and 2021-25.

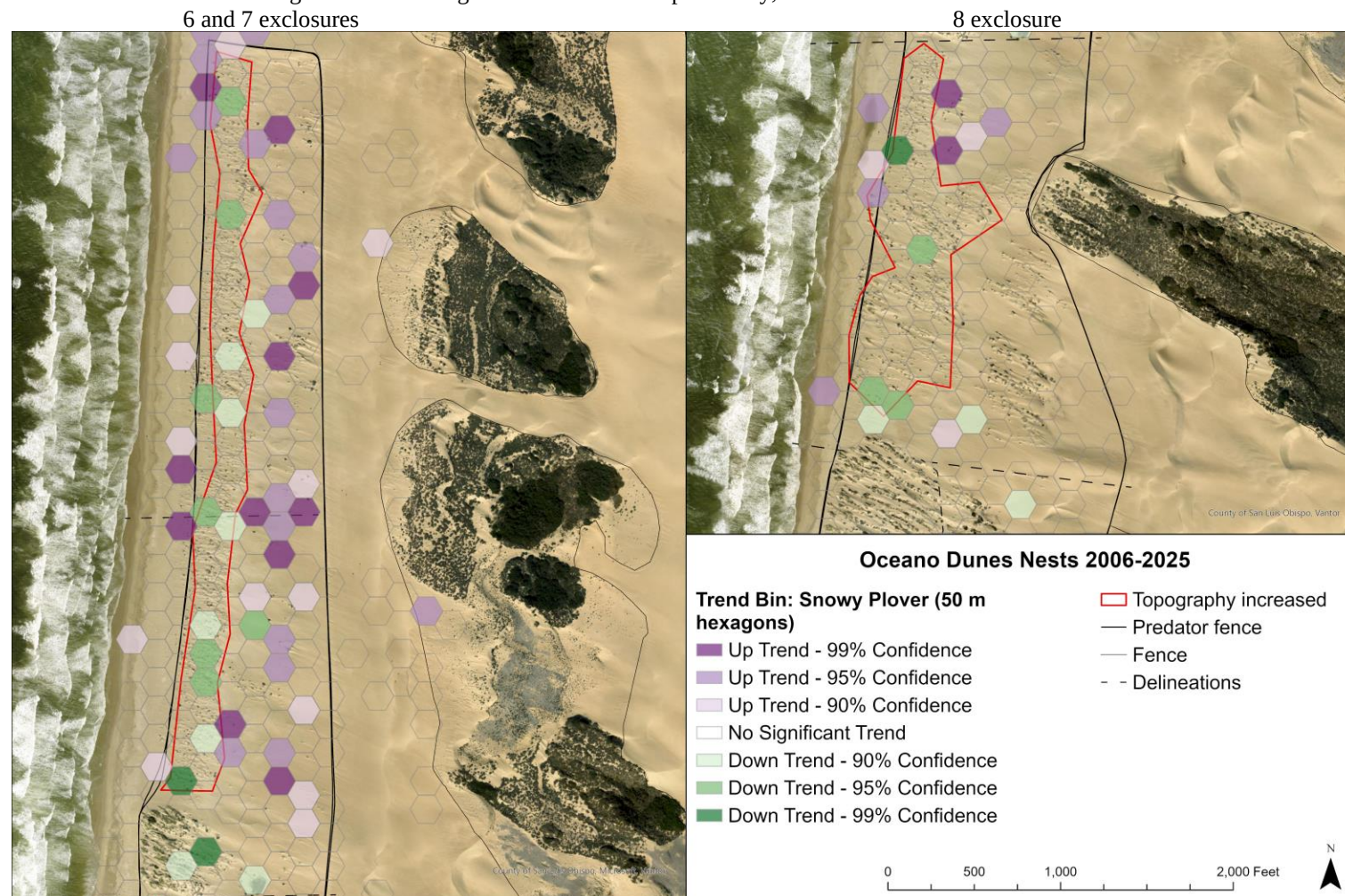
Approximately 20 acres outlined in red shows reduced nesting due to increased topography and vegetation density. Hillshade modeling derived from an October 2022 UCSB drone flight digital surface model.



Appendix C. Maps of all California least tern and snowy plover nest locations at ODSVRA in 2025 (continued).

Figure C.15. Trends of California least tern and snowy plover nest locations at ODSVRA 6, 7, and 8 exclosures, and outside these areas 2006-2025.

Space Time Pattern Mining tools in ArcGIS Pro used to aggregate nest locations each year within a 50-meter hexagon, creating year-over-year trend values using the Mann-Kendall statistic. Background aerial image from San Luis Obispo County, 2024.



APPENDIX D. BANDED CALIFORNIA LEAST TERNS AND SNOWY PLOVERS.

Table D.1. Banded California least terns recorded at ODSVRA in 2025.

Juveniles fledged from ODSVRA in 2025 are not included. All birds from ODSVRA were banded as chicks. Additional color-banded birds were recorded but combinations not confirmed. A number of birds had a band on only one leg, these birds may have been banded on only one leg or have lost a band. All possible band combinations of birds known fledging from ODSVRA are listed for incomplete band combinations or for band combinations that were used multiple years. (For a description of color band letter codes see Appendix A.)

ODSVRA = Oceano Dunes SVRA, VSFB = Vandenberg Space Force Base.

Band Combination	Origin and Year Banded	Dates Seen	Notes
-:o/y	ODSVRA unknown	8/5, 8/7, 8/12, 8/16	Multiple birds banded at ODSVRA with o/y on right leg.
a/g:o/w	ODSVRA 2022	7/12, 7/30	LT42 breeding adult.
b/a:g/y	ODSVRA 2014	6/3, 6/5, 7/3, 7/6, 7/11, 7/13, 7/16, 7/17	LT20 breeding adult.
b/r:o/w	ODSVRA 2022	5/27, 7/12	
b/r:w	ODSVRA 2012	5/31	LT7 breeding adult.
b/r:w/o	ODSVRA 2021	6/26, 6/28, 6/29	
b/r:y/g	ODSVRA 2015	5/14, 5/20, 6/28	
b/w:b/y	ODSVRA 2011	5/9, 5/29, 5/30, 7/16	LT10 breeding adult.
b/w:o/w	ODSVRA 2011	5/5, 6/25	
b:o/w	ODSVRA 2022	5/30, 6/29, 7/14, 7/25, 7/28	LT42 breeding adult.
b:w/b	ODSVRA 2009 or 2013	6/12	LT6 breeding adult.
g/r:o/w	ODSVRA 2022	5/14	
g/w:y/g	ODSVRA 2015	6/4	LT3 breeding adult.
g/y:g	ODSVRA 2008	7/4	
g/y:g/y	ODSVRA 2008, 2014, or 2017	5/14	
g/y:k	ODSVRA 2017 or 2018	5/14, 7/12, 7/13	
g/y:y	ODSVRA 2008 or 2018	6/4, 7/11, 7/22	LT3 breeding adult.
o/g:b/w	ODSVRA 2012	5/30, 6/28, 7/3, 7/16	LT10 breeding adult.
o/w:b	ODSVRA 2019	7/17	
o/w:g	ODSVRA 2019	5/30	
o/w:o	ODSVRA 2019	6/2, 7/3, 7/16, 7/17	LT17 breeding adult.
o/w:o/y	ODSVRA 2019	5/14	
o/w:r/o	ODSVRA 2019	6/26, 6/28, 7/4	
o/w:w	ODSVRA 2019	5/2	
o:o/w	ODSVRA 2022	6/26, 7/16	
o:-w-	ODSVRA unknown	5/14, 5/15, 5/31, 7/16	LT1 breeding adult. Multiple birds banded at ODSVRA with orange on left leg and white on right leg.
p:o/w	ODSVRA 2022	5/14	

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.1. Banded California least terns recorded at ODSVRA in 2025 (continued).

Band Combination	Origin and Year Banded	Dates Seen	Notes
r/a:b/y	ODSVRA 2023	8/7, 8/8	
r/a:o/b	ODSVRA 2023	6/29, 7/16	
r/a:w/o	ODSVRA 2021	7/9	
r/a:w/r	ODSVRA 2023	6/26, 7/4, 7/13	
r/w:w/b	ODSVRA 2009 or 2013	5/25, 5/30, 6/28, 7/7, 7/13	LT8 breeding adult.
r:o/w	ODSVRA 2022	6/9	
r:y/g	ODSVRA 2015	5/9, 5/27, 6/22	
s:b	VSFB 2018	5/14, 6/8	LT11 breeding adult. In 2018 VSFB banded all chicks with s:b. Observation in past years at ODSVRA of s:b suggest bird could have lost tape on either leg. Multiple birds banded at ODSVRA with blue on right leg.
s:g	VSFB 2020	5/14, 6/28, 7/4, 7/6, 7/9, 7/13, 7/16	In 2020 VSFB banded all tern chicks s:g. Multiple birds banded at ODSVRA with green on the right leg.
s:p	VSFB 2022	6/26, 6/28, 7/3, 7/4, 7/11, 7/12, 7/16, 7/17, 8/5	In 2022 VSFB banded all chicks with s:p. Multiple birds banded at ODSVRA with pink on right leg.
s:r	VSFB 2019	5/14	In 2019 VSFB banded all chicks with s:r. Multiple birds banded at ODSVRA with red on right leg.
s:w	VSFB 2023	6/26, 7/11, 7/12, 7/30, 8/7, 8/8, 8/9, 8/11	In 2023 VSFB banded all chicks with s:w. Multiple birds banded at ODSVRA with white on right leg.
s:y	VSFB 2021	5/14, 6/4, 6/8, 6/28, 7/9, 7/16, 7/25	LT15 breeding adult. In 2021 VSFB banded all chicks with s:y. Multiple birds banded at ODSVRA with yellow on right leg.
w/g:w/o	ODSVRA 2021	6/26, 6/29, 7/16	
w/o:-	ODSVRA unknown	6/27, 7/26, 8/7, 8/16, 8/17	Multiple birds banded at ODSVRA with w/o on the left leg.
w/o:g/w	ODSVRA 2020	5/27, 6/3	
w/o:r	ODSVRA 2020	5/7, 5/9, 6/29	
w/o:r/y	ODSVRA 2020	7/16	
w/o:y/b	ODSVRA 2020	7/16	
w/r/w:o/w	ODSVRA 2022	7/13, 7/16	
y/g:g/y	ODSVRA 2007 or 2016	6/29	
y/g:r/a	ODSVRA 2006 or 2016	5/9	
y/g:y/a	ODSVRA 2016	5/5, 6/26, 7/11	LT21 breeding adult.

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.2. California least terns banded at other sites and seen at ODSVRA from 2008 to 2025.

A number of birds had a band on only one leg, these birds may have been banded on only one leg or have lost a band. Years in bold represent year the band combination was documented as a breeding adult at ODSVRA. (For a description of color band letter codes see Appendix A.)

ODSVRA = Oceano Dunes SVRA, VSFB = Vandenberg Space Force Base.

Band Combination	Origin and Year Banded	Years Seen	Notes
-:s	Unknown	2009, 2011 , 2012, 2013, 2015 , 2016, 2017, 2018	Multiple sites may band with only the federal band. May be a ODSVRA fledgling from 2004 that lost the left band (all chicks banded g/y:s). May be an ODSVRA fledgling that lost the left band and tape on a metal band on right leg.
s:-	Unknown	2008, 2011 , 2013, 2014, 2015 , 2017, 2018, 2021, 2022	Multiple sites may band with only the federal band. May be a ODSVRA fledgling from 2003 that lost right band (all banded s:g/y). May be an ODSVRA fledgling that lost the right band and tape on a metal band on left leg.
s:a/o	U.S. Naval Base Coronado unknown year or ODSVRA 2006 or 2008	2011	U.S. Naval Base Coronado has banded birds with a/o on the right. Also multiple birds banded at ODSVRA with a/o on right leg and may be y/g:a/o in 2006 or g/y:a/o in 2008 that lost tape on metal band on left leg.
s:b	VSFB 2018 or ODSVRA unknown	2018, 2019, 2020, 2021, 2022 , 2023, 2024, 2025	In 2018 VSFB banded all chicks with s:b. Observation in past years at ODSVRA of s:b suggest bird could have lost tape on either leg. Multiple birds banded at ODSVRA with blue on right leg.
s:g	VSFB 2020 or ODSVRA unknown	2024, 2025	In 2020 VSFB banded all tern chicks s:g. Multiple birds banded at ODSVRA with green on the right leg.
s:p	VSFB 2022 or ODSVRA unknown	2024, 2025	In 2022 VSFB banded all chicks with s:p. Multiple birds banded at ODSVRA with pink on right leg.
s:r	VSFB 2019 or ODSVRA unknown	2021, 2022 , 2025	In 2019 VSFB banded all chicks with s:r. Multiple birds banded at ODSVRA with red on right leg.
s:r (B04)	San Quintin, Baja CA, Mexico 2019	2022	Red band is a VID band with "B04" vertically labeled in white letters.
s:w	VSFB 2023 or ODSVRA unknown	2025	In 2023 VSFB banded all chicks with s:w. Multiple birds banded at ODSVRA with white on right leg.
s:y	VSFB 2021 or ODSVRA unknown	2024, 2025	In 2021 VSFB banded all chicks with s:y. Multiple birds banded at ODSVRA with yellow on right leg.

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.3. California least terns banded as chicks at ODSVRA seen at other sites from 1 March to 30 September 2025.

This is a partial list based on information received from nearby sites (pers. comm. Emily Rice).

ODSVRA = Oceano Dunes SVRA, RGDP = Rancho Guadalupe Dunes Preserve, VSFB = Vandenberg Space Force Base.

Band Combination	Year Banded	Location Seen	County	Dates Seen	Notes
-:b/o	2011 or 2018	RGDP	Santa Barbara	8/3	Multiple birds banded at ODSVRA with b/o on right leg.
-:o/y	Unknown	RGDP	Santa Barbara	6/2	Multiple birds banded at ODSVRA with o/y on right leg.
a/g:o/w	2022	RGDP	Santa Barbara	7/29, 8/1	
a/r:a	2025	RGDP	Santa Barbara	7/24, 7/29, 8/1, 8/3	Juvenile.
a/r:b	2025	RGDP	Santa Barbara	7/23	Juvenile.
a/r:b/o	2025	RGDP	Santa Barbara	8/1, 8/3	Juvenile.
a/r:g	2025	RGDP	Santa Barbara	7/17, 7/23, 7/28, 7/29	Juvenile.
a/r:l	2025	RGDP	Santa Barbara	7/22, 7/24, 8/1, 8/3	Juvenile.
a/r:o	2025	RGDP	Santa Barbara	7/24, 8/1	Juvenile.
a/r:o/a	2025	RGDP	Santa Barbara	8/3	Juvenile.
a/r:o/b	2025	RGDP	Santa Barbara	7/28, 7/29, 8/1, 8/3	Juvenile.
a/r:o/g	2025	RGDP	Santa Barbara	8/1, 8/3	Juvenile.
a/r:r	2025	RGDP	Santa Barbara	7/23	Juvenile.
a/r:r/b	2025	RGDP	Santa Barbara	7/21, 7/29, 8/3	Juvenile.
a/r:v	2025	RGDP	Santa Barbara	7/23, 7/29, 8/1	Juvenile.
a/r:w/a	2025	RGDP	Santa Barbara	7/17, 7/24, 7/29, 8/1	Juvenile.
a/r:w/g	2025	RGDP	Santa Barbara	7/29	Juvenile.
a/r:y/r	2025	RGDP	Santa Barbara	7/21, 7/24, 8/1, 8/3	Juvenile.
b/o:-	Unknown	RGDP	Santa Barbara	7/22, 7/28, 8/1	Multiple birds banded at ODSVRA with b/o on left leg.
b/o:y/g	2015	RGDP	Santa Barbara	7/29	VSFB breeding adult.
b/w:a/y	2011	RGDP	Santa Barbara	7/24	
b/w:y/b	2011	RGDP	Santa Barbara	7/29	
g:o/w	2022	RGDP	Santa Barbara	8/3	
g/w:w/o	2021	RGDP	Santa Barbara	5/9, 6/9, 6/12, 7/7, 7/25, 8/1, 8/3	RGDP breeding adult.
o/w:r/o	2019	RGDP	Santa Barbara	7/21	
o:o/w	2022	RGDP	Santa Barbara	7/21	
r/a:b/y	2023	RGDP	Santa Barbara	6/2, 8/1	
r/a:o/b	2023	RGDP	Santa Barbara	8/1	
r/a:w	2023	RGDP	Santa Barbara	6/4	
r/a:w/r	2023	RGDP	Santa Barbara	7/29	
r/w:w/o	2021	RGDP	Santa Barbara	6/2, 6/4	

Appendix D. Banded least terns and snowy plovers (continued).

Table D.3. California least terns banded as chicks at ODSVRA seen at other sites from 1 March to 30 September 2025 (continued).

Band Combination	Year Banded	Location Seen	County	Dates Seen	Notes
r:o/w	2022	RGDP	Santa Barbara	6/2, 6/4	
s:g	2020	RGDP	Santa Barbara	6/2	
s:k/w	2025	RGDP	Santa Barbara	8/1, 8/3	Juvenile.
s:p	2022	RGDP	Santa Barbara	8/1	
s:w	2023	RGDP	Santa Barbara	8/3	
w/b:w/o	2010 or 2021	RGDP	Santa Barbara	5/9, 6/12, 7/7, 7/25, 7/28, 7/29, 8/3	RGDCP breeding adult.
w/o:r	2020	RGDP	Santa Barbara	7/28	
w/o:y/b	2020	RGDP	Santa Barbara	7/26	
w/r/w:o/w	2022	RGDP	Santa Barbara	7/8	
y/g:y/a	2016	RGDP	Santa Barbara	8/1	
a/r:y/r	2025	VSFB	Santa Barbara	8/4	Juvenile.
a:o/w	2020 or 2022	VSFB	Santa Barbara	7/3	VSFB breeding adult.
b/g:o/w	2022	VSFB	Santa Barbara	5/20	
b/w:o/w	2011	VSFB	Santa Barbara	5/20	
b/w:w/b	2009, 2011, or 2013	VSFB	Santa Barbara	5/20, 6/11, 6/25	VSFB breeding adult.
g/a:y/g	2015	VSFB	Santa Barbara	6/6	
g/y:b	2008, 2017 or 2018	VSFB	Santa Barbara	7/28	
o/w:o/r	2019	VSFB	Santa Barbara	6/27	VSFB breeding adult. Trapped and Motus tagged at VSFB in 2025.
o/w:r/o	2019	VSFB	Santa Barbara	5/23	
o/w:w/g	2019	VSFB	Santa Barbara	7/9	VSFB breeding adult.
r/g:o/w	2022	VSFB	Santa Barbara	5/20	
r/y:y/g	2015	VSFB	Santa Barbara	6/18	VSFB breeding adult.
w/g:w/o	2021	VSFB	Santa Barbara	5/20	
w/g:y/g	2015	VSFB	Santa Barbara	7/10	VSFB breeding adult.
w/o:a/y	2020	VSFB	Santa Barbara	6/25	VSFB breeding adult. Not confirmed as juvenile in 2020 but seen at VSFB in 2025. Trapped and Motus tagged at VSFB in 2025.
w/o:b/r	2020	VSFB	Santa Barbara	5/20	
w/y:g/y	2007 or 2014	VSFB	Santa Barbara	6/17	VSFB breeding adult.
y/a:y/g	2005 or 2015	VSFB	Santa Barbara	6/11	VSFB breeding adult.
y:y/g	2005	VSFB	Santa Barbara	6/18	

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.4. Banded snowy plovers recorded at ODSVRA 1 October 2024 to 28 February 2025.

All birds were banded as chicks unless otherwise noted. Chicks banded outside of San Luis Obispo County are noted in order from north to south. Some sites band to brood and can have more than one bird with the same combination. At ODSVRA, the same combination may be on birds hatched in different years. (For a description of color band letter codes see Appendix A.)

NWR=National Wildlife Refuge, ODSVRA = Oceano Dunes SVRA, SLO = San Luis Obispo, VSFB = Vandenberg Space Force Base.

Band Combination	Origin and Year Banded	County Banded	Dates Seen	Notes
gk:wp	Eden Landing 2024	Alameda, CA	10/30, 11/1, 11/25, 11/28, 11/30, 12/9, 12/10, 12/23, 12/24, 12/26, 12/28, 1/2, 1/3, 1/8	Banded as adult.
rk:ww	Eden Landing 2024	Alameda	11/28, 11/29, 12/6, 12/12, 12/13, 12/18, 12/23, 12/24, 12/25	Banded as adult.
b-:lr	ODSVRA 2024	SLO	11/7, 11/22, 11/30, 12/5, 12/10, 1/3, 1/25	
bb:ga	ODSVRA 2024	SLO	10/17, 1/21	
bb:la	ODSVRA 2024	SLO	10/17, 10/19, 10/24, 10/25, 10/30, 11/22, 11/24, 11/27, 11/30, 12/6, 12/10, 12/11, 12/27, 1/3, 1/7, 1/8, 1/13, 1/19, 1/21, 2/16	
bb:lg	ODSVRA 2024	SLO	10/24, 10/31, 11/19, 11/22, 11/25, 11/30, 12/6, 12/10, 12/11, 12/18, 12/19, 12/21, 12/27, 1/3, 1/8, 1/18, 1/25, 1/30, 1/31, 2/23	
bb:lr	ODSVRA 2024	SLO	10/2, 10/30, 10/31, 11/14, 11/21, 11/22, 11/25, 11/27, 12/5, 12/6, 12/12, 12/18, 12/19, 12/25, 12/28, 1/3, 1/8, 1/13, 1/21, 2/26	
bb:pg	ODSVRA 2022 or 2023	SLO	10/9, 10/17, 10/24, 10/25, 10/30, 11/13, 11/14, 11/19, 11/26, 12/9, 12/19, 1/2, 1/31	
bb:rg	ODSVRA 2023	SLO	10/2	
bb:vg	ODSVRA 2023	SLO	1/3, 1/8, 1/31, 2/7	
bb:wr	ODSVRA 2024	SLO	11/1	
bb:ww	ODSVRA 2020	SLO	10/11, 10/17, 10/25, 11/21, 11/22, 12/6, 12/9, 12/10, 12/11, 12/18, 12/19, 12/21, 12/27, 1/3, 1/17, 1/21, 1/25	
bb:ww	ODSVRA 2020	SLO	10/2	
bb:wy	ODSVRA 2023	SLO	10/4, 10/23, 10/30, 11/21, 12/3, 12/12, 12/13, 12/18, 12/21, 12/25, 12/27, 1/15, 1/19, 1/21, 2/7	
bb:ya	ODSVRA 2023	SLO	10/2, 10/24, 10/25, 11/12, 11/14, 11/26, 1/3, 1/8, 1/9, 1/15	
bb:yy	ODSVRA 2022	SLO	12/18	
ga:ag	ODSVRA 2024	SLO	12/6	
ga:av	ODSVRA 2020	SLO	10/30	
ga:ay	ODSVRA 2024	SLO	1/17	
ga:ba	ODSVRA 2020	SLO	10/25, 12/10, 12/11, 12/12, 12/24, 12/27, 1/3, 1/7, 1/12, 1/13	
ga:bg	ODSVRA 2020	SLO	10/31, 11/7, 11/13, 11/15, 11/18, 11/27, 11/29, 12/12, 12/13, 12/24, 12/25, 12/27, 1/3, 1/13, 1/19, 2/23	
ga:br	ODSVRA 2021	SLO	11/21	
ga:ob	ODSVRA 2021	SLO	10/24, 10/30, 11/21, 11/26, 12/10, 12/13, 12/27	
ga:pa	ODSVRA 2024	SLO	11/2	

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.4. Banded snowy plovers recorded at ODSVRA 1 October 2024 to 28 February 2025 (continued).

Band Combination	Origin and Year Banded	County Banded	Dates Seen	Notes
ga:po	ODSVRA 2023	SLO	10/2, 12/19	
ga:pr	ODSVRA 2016 or 2017	SLO	10/11	
ga:pv	ODSVRA 2020	SLO	10/25, 10/30, 11/12, 11/13, 11/14, 11/20, 12/18, 12/27, 2/16, 2/26	
ga:pw	ODSVRA 2023	SLO	10/30, 11/13, 12/4, 1/19, 1/21	
ga:py	ODSVRA 2011	SLO	10/25, 12/11	
ga:ro	ODSVRA 2024	SLO	10/24, 1/18	
ga:vo	ODSVRA 2024	SLO	10/4, 10/23, 10/24, 10/31, 11/18, 11/22, 11/28, 12/6, 12/9, 12/11, 12/12, 12/18, 12/27, 12/28, 1/2, 1/3, 1/7, 1/8, 1/18, 1/24	
ga:vv	ODSVRA 2023 or 2024	SLO	10/2, 10/8, 10/18, 10/31, 11/29, 12/6, 12/10, 12/12, 12/13, 12/17, 12/21, 12/23, 1/12, 1/25, 2/23	
ga:wa	ODSVRA 2024	SLO	10/18, 10/24, 10/30, 10/31, 11/27, 11/28, 11/29, 12/9, 12/10, 12/13, 12/19, 12/21, 12/24, 1/3, 1/7, 1/8	
ga:wo	ODSVRA 2021	SLO	10/9, 10/19, 10/24, 11/13, 11/14, 11/19, 12/18, 12/19, 1/8, 1/18	
ga:wy	ODSVRA 2018	SLO	10/11, 10/25, 11/6, 11/20, 11/22, 11/24, 11/25, 11/27, 12/10, 12/11, 12/12, 12/25, 1/2, 1/3, 1/4, 1/7, 1/14, 1/15, 1/24, 2/21	
ga:yg	ODSVRA 2023	SLO	10/2, 10/24, 10/25, 10/30, 11/13, 11/22, 12/4, 12/5, 12/13, 12/18, 12/19, 12/24, 12/27, 1/8, 1/9, 1/15, 2/7, 2/16	
ga:yo	ODSVRA 2022	SLO	10/9, 10/25, 10/30, 10/31, 11/12, 11/14, 11/22, 12/18, 12/27, 1/2, 1/9, 1/15, 1/18	
gg:ab	ODSVRA 2023	SLO	12/11	
gg:ay	ODSVRA 2024	SLO	12/20, 2/23	
gg:bo	ODSVRA 2024	SLO	11/13, 1/3, 1/24	
gg:br	ODSVRA 2023	SLO	10/2, 11/13, 12/18	
gg:by	ODSVRA 2021	SLO	12/18	
gg:gy	ODSVRA 2023	SLO	10/24, 10/25, 11/12, 11/21, 12/10, 12/12, 12/13, 12/21, 12/24, 12/26, 12/27, 1/3, 1/18	
gg:ll	ODSVRA 2024	SLO	10/2, 10/30, 11/13, 1/15	
gg:ob	ODSVRA 2019	SLO	10/9	
gg:ow	ODSVRA 2023	SLO	10/24, 10/25, 10/31, 11/1, 11/14, 11/18, 11/21, 11/22, 11/28, 12/6, 12/9, 12/10, 12/11, 12/21, 12/24, 1/2, 1/3, 1/7, 1/8, 1/10, 1/17, 1/21, 2/26	
gg:pg	ODSVRA 2024	SLO	10/2, 1/3, 2/26	
gg:rw	ODSVRA 2023	SLO	11/13, 1/3	
gg:ry	ODSVRA 2023	SLO	10/19, 10/24, 10/25, 10/30, 11/19, 11/21, 11/26, 11/27, 1/8, 2/7	
gg:vo	ODSVRA 2024	SLO	10/30, 11/19, 11/22, 11/24, 11/25, 11/29, 12/9, 12/10, 12/11, 12/12, 12/18, 12/19, 12/24, 12/27, 1/2, 1/9, 1/25, 2/23, 2/26	

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.4. Banded snowy plovers recorded at ODSVRA 1 October 2024 to 28 February 2025 (continued).

Band Combination	Origin and Year Banded	County Banded	Dates Seen	Notes
gg:wo	ODSVRA 2022	SLO	10/9, 10/29, 10/30, 11/13, 11/22	
gg:ya	ODSVRA 2023	SLO	10/2, 10/8, 10/18, 10/31, 11/2, 11/18, 11/21, 11/28, 11/29, 12/5, 12/9, 12/10, 12/11, 12/12, 12/13, 12/21, 12/23, 12/26, 12/27, 1/2, 1/3, 1/8, 2/26	
gg:yb	ODSVRA 2024	SLO	10/2, 10/7, 10/11, 10/18, 10/23, 10/24, 10/30, 11/7, 11/22, 11/25, 11/28, 12/5, 12/6, 12/9, 12/10, 12/11, 12/12, 12/14, 12/17, 12/19, 12/21, 12/23, 12/25, 12/26, 12/27, 1/3, 1/6, 1/7, 1/8, 1/12, 1/13, 1/21, 2/26	
gg:yg	ODSVRA 2023	SLO	10/9, 10/30, 11/22, 11/25, 12/11, 1/15	
gg:yo	ODSVRA 2022	SLO	10/9	
gg:yy	ODSVRA 2023	SLO	10/30, 11/1, 11/2, 11/15, 11/20, 11/28, 12/6, 12/10, 12/24, 12/25, 1/2, 1/8, 1/9, 1/18	
pg:aa	ODSVRA 2023	SLO	10/25	
pg:ay	ODSVRA 2022	SLO	12/11, 12/13, 12/25	
pg:ba	ODSVRA 2021	SLO	10/2, 10/17, 10/24, 10/25, 10/30, 11/14, 11/19, 12/5, 12/13, 12/24, 12/25, 12/26, 1/3, 2/16	
pg:br	ODSVRA 2021	SLO	10/17, 10/23, 10/25, 10/29, 11/21, 12/9, 12/13, 12/18, 12/27, 1/2, 1/3, 1/9	
pg:bw	ODSVRA 2023	SLO	10/30, 1/3	
pg:by	ODSVRA 2017 or 2018	SLO	10/30, 11/13, 1/15	
pg:gw	ODSVRA 2022	SLO	10/2, 10/24, 11/22, 11/26, 12/18, 12/19, 12/27, 1/2, 1/8	
pg:or	ODSVRA 2022	SLO	10/17	
pg:ow	ODSVRA 2015 or 2016	SLO	10/2, 12/4	
pg:ya	ODSVRA 2022	SLO	10/25, 10/31, 11/18, 11/21, 11/22, 12/5, 12/6, 12/9, 12/12, 12/18, 1/3, 1/21, 2/23, 2/26	
pg:yb	ODSVRA 2015 or 2017	SLO	10/9	
pg:yr	ODSVRA 2022	SLO	10/17, 10/23, 12/10, 12/11, 12/19, 1/12, 1/15, 1/19	
pv:ab	ODSVRA 2023	SLO	10/9, 10/25, 10/30, 11/13, 11/19, 11/22, 11/27, 12/4, 12/10, 12/17, 12/21, 1/2, 1/8, 1/10, 2/23, 2/26	
pv:ba	ODSVRA 2021	SLO	12/18, 12/19	
pv:bb	ODSVRA 2022	SLO	12/28	
pv:pb	ODSVRA 2022	SLO	10/31, 11/12, 11/21, 11/22, 12/6, 12/10, 12/11, 12/13, 12/18, 12/19, 12/23, 12/26, 12/27, 1/2, 1/9, 1/13, 1/19	
pv:pv	ODSVRA 2021	SLO	10/25, 10/30, 11/13, 12/4	
pv:yr	ODSVRA 2017 or 2018	SLO	1/10	
rr:ay	ODSVRA 2022	SLO	11/22, 11/25, 11/27, 11/29, 12/6, 12/9, 12/10, 12/11, 12/18, 12/19, 12/20, 12/25, 12/27, 1/2, 1/3, 1/19, 1/21, 1/31, 2/24, 2/26	
rr:ga	ODSVRA 2022	SLO	10/25, 10/30, 11/13, 11/14, 11/27, 12/10, 12/11, 12/18, 12/27, 1/8, 1/31, 2/26	

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.4. Banded snowy plovers recorded at ODSVRA 1 October 2024 to 28 February 2025 (continued).

Band Combination	Origin and Year Banded	County Banded	Dates Seen	Notes
rr:lw	ODSVRA 2024	SLO	10/25, 10/30, 10/31, 11/1, 11/21, 11/22, 11/29, 12/5, 12/18, 12/19, 12/21, 1/2, 1/3, 1/8, 1/13, 1/19, 1/21, 2/23, 2/26	
rr:ly	ODSVRA 2024	SLO	11/14	
rr:wr	ODSVRA 2022	SLO	10/9, 10/18, 11/26, 12/4, 12/6, 1/6, 1/8, 1/15	
rr:ya	ODSVRA 2022	SLO	11/2	
vg:ba	ODSVRA 2019	SLO	11/13	
vg:bb	ODSVRA 2024	SLO	10/25, 11/18, 11/27, 12/5, 12/6, 12/11, 12/19, 12/20, 12/21, 12/23, 12/25, 12/27, 1/2, 1/19	
vg:bg	ODSVRA 2023	SLO	10/25, 10/31, 11/7, 12/9, 12/11, 12/13, 12/18, 12/19, 12/27, 1/3, 1/6, 1/8, 1/12, 1/14, 1/19, 1/21, 1/31, 2/7	
vg:br	ODSVRA 2024	SLO	11/28, 12/5	
vg:gr	ODSVRA 2024	SLO	12/6, 12/10, 12/23, 12/25, 1/3, 1/6, 1/7, 1/8, 2/26	
vg:vb	ODSVRA 2023	SLO	10/24, 1/2	
vg:yr	ODSVRA 2022	SLO	10/11, 10/25, 10/30, 10/31, 11/19, 11/21, 11/29, 12/11, 12/12, 1/2, 1/12, 1/14, 2/24	
vv:ar	ODSVRA 2021	SLO	10/2, 10/24, 10/25, 11/12, 11/13, 11/18, 11/19, 12/5, 12/18, 12/27	
vv:ay	ODSVRA 2024	SLO	10/25, 11/2, 11/28, 11/29, 11/30, 12/10, 12/11, 12/12, 12/13, 12/14, 12/19, 12/23, 1/2, 1/3, 1/8, 1/9, 1/13, 1/17, 1/21, 2/7, 2/23, 2/26	
vv:br	ODSVRA 2024	SLO	12/27	
vv:ga	ODSVRA 2022	SLO	11/25, 1/19, 1/21	
vv:gg	ODSVRA 2023	SLO	10/8, 10/30, 10/31, 11/22, 11/27, 12/11, 12/25, 12/28	
vv:ra	ODSVRA 2020	SLO	12/23, 12/26, 12/28	
vv:ww	ODSVRA 2024	SLO	10/24, 10/30, 11/28, 12/10, 12/12, 12/17, 12/18, 12/19, 12/25, 1/3, 1/7, 1/8, 1/14, 1/17, 1/24, 2/26	
g:o/v	VSFB 2024	Santa Barbara	10/24, 11/30, 12/5, 12/10, 12/18, 12/21, 12/23, 12/24, 12/28, 1/2, 1/6, 1/13	
gn:op	VSFB 2024	Santa Barbara	10/11, 11/13, 11/19, 11/24, 11/25, 11/29, 12/4, 12/10, 12/12, 12/14, 12/18, 12/23, 12/24, 12/27, 1/3, 1/8, 1/9, 1/19, 1/24, 1/25, 1/31, 2/26	
gn:ya	VSFB 2022	Santa Barbara	10/2, 10/9, 10/30	
l:a/v	VSFB 2022	Santa Barbara	10/11, 10/30, 10/31, 11/2, 11/22, 12/4, 12/9, 12/10, 12/12, 12/13, 12/18, 12/19, 12/24, 12/27, 1/2, 1/8, 1/13	
l:o/g/o	VSFB 2024	Santa Barbara	10/18, 10/24, 10/25, 10/30, 11/1, 11/10, 12/5, 12/6, 12/10, 12/12, 12/18, 12/19, 12/21, 12/24, 12/25, 1/2, 1/3, 1/7, 1/12, 1/18	
l:y/g	VSFB 2016	Santa Barbara	10/2, 11/13, 12/14, 12/24, 1/15	
nb:bp	VSFB 2024	Santa Barbara	12/24	

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.4. Banded snowy plovers recorded at ODSVRA 1 October 2024 to 28 February 2025 (continued).

Band Combination	Origin and Year Banded	County Banded	Dates Seen	Notes
nk:rl	VSFB 2024	Santa Barbara	10/24, 10/25, 10/30, 10/31, 11/2, 11/20, 11/21, 11/28, 12/5, 12/6, 12/9, 12/10, 12/11, 12/12, 12/18, 12/19, 12/21, 12/23, 12/24, 1/2, 1/3, 1/12, 1/13, 1/21	
nr:wp	VSFB 2024	Santa Barbara	10/25, 11/27, 11/30, 12/6, 12/9, 12/12, 12/14, 12/18, 12/19, 12/20, 12/21, 12/23, 12/28, 1/2, 1/3, 1/8, 1/13, 1/14, 1/21, 2/16, 2/26	
nv:ro	VSFB 2023	Santa Barbara	10/17, 10/23, 10/25, 10/30, 11/23, 11/28, 12/10, 12/20, 12/23, 12/26, 12/27, 1/6, 1/8, 1/10	
w:y/g/y	VSFB 2023	Santa Barbara	12/12, 1/6	
yp:ga	Naval Base Coronado 2022	San Diego	10/24, 11/14, 11/20, 11/22, 11/27, 11/28, 12/6, 12/10, 12/11, 12/12, 12/24, 12/25, 1/2, 1/3, 1/12, 1/18, 1/24	
w-:s-	Unknown	Unknown	10/24, 10/25, 11/2	

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.5. Banded snowy plovers with known origins recorded at ODSVRA 1 March to 30 September 2025.

Juveniles fledged from ODSVRA in 2025 are not included. All birds were banded as chicks unless otherwise noted. Chicks banded outside of San Luis Obispo County are noted in order north to south. Some sites band to brood and can have more than one bird with the same combination. (For a description of color band letter codes see Appendix A.)

CP= County Park, NWR=National Wildlife Refuge, ODSVRA = Oceano Dunes SVRA, RGDP = Rancho Guadalupe Dunes Preserve, SB = State Beach,

SLO = San Luis Obispo, VSFB = Vandenberg Space Force Base.

F = Female, M = Male.

Band Combination	Sex (No.)	Origin and Year Banded	County Banded	Dates Seen	Notes
rv:rb		Point Reyes National Seashore 2023	Marin, CA	8/29	
rv:rb		Point Reyes National Seashore 2023	Marin	8/29	
rv:wg	F	Point Reyes National Seashore 2023	Marin	4/19, 4/20, 5/13, 5/29, 9/8	ODSVRA breeding female.
ra:av		Salinas River NWR 2025	Monterey	8/24	Juvenile.
bg:or		Fort Ord 2023	Monterey	8/29	
b-:lr	F	ODSVRA 2024	SLO	5/31, 8/4, 8/5, 8/12, 8/25, 9/1	ODSVRA breeding female.
bb:ar	F	ODSVRA 2017 or 2018	SLO	5/27, 5/28, 5/29, 5/30, 6/12	ODSVRA breeding female.
bb:br	M	ODSVRA 2024	SLO	5/31, 5/3, 5/9, 5/21, 5/22, 6/14, 6/15, 6/16, 6/29, 7/8	ODSVRA breeding male.
bb:ga	M	ODSVRA 2024	SLO	4/18, 5/21, 5/22, 5/23, 5/30, 5/31, 6/1, 6/12, 6/18, 8/10	ODSVRA breeding male.
bb:go	F	ODSVRA 2019	SLO	3/11, 3/24, 3/27, 5/13, 5/18, 5/22, 5/25, 5/26, 5/29, 5/30, 6/1, 6/7, 6/12, 6/13, 6/20, 7/1, 7/2, 7/11, 7/24, 8/23	ODSVRA breeding female.
bb:gv	F	ODSVRA 2023	SLO	5/24, 5/27, 7/12, 7/23, 7/24, 7/28, 8/1	ODSVRA breeding female.
bb:la		ODSVRA 2024	SLO	3/16, 4/6, 8/6, 8/21, 8/25, 8/27, 9/1, 9/21	
bb:lg	M	ODSVRA 2024	SLO	3/29, 4/30, 5/19, 6/14, 6/28, 8/25	ODSVRA breeding male.
bb:lr		ODSVRA 2024	SLO	8/8, 8/14	
bb:ob		ODSVRA 2024	SLO	4/14, 4/17	
bb:oo	F	ODSVRA 2023	SLO	3/24, 4/16, 4/17, 5/1, 5/3, 6/7, 6/8, 6/10, 6/12, 6/14, 6/16, 6/17, 6/18, 6/23, 6/27, 7/4, 7/18, 8/22, 8/25, 8/26	ODSVRA breeding female.
bb:ow	F	ODSVRA 2024	SLO	5/21, 7/7, 8/23, 8/26, 8/31	ODSVRA breeding female.
bb:oy		ODSVRA 2014 or 2015	SLO	8/4, 9/2	
bb:pg	M	ODSVRA 2022 or 2023	SLO	4/1, 4/6, 5/6, 5/7, 5/9, 5/12, 5/15, 5/18, 5/21, 5/27, 6/5, 6/7, 7/17, 8/1, 8/7, 8/16, 8/23, 8/25, 8/27	ODSVRA breeding male.
bb:pw		ODSVRA 2023	SLO	6/20	
bb:ra		ODSVRA 2024	SLO	6/29, 7/3	
bb:rb		ODSVRA 2024	SLO	4/20, 7/10, 8/30	
bb:rg	F	ODSVRA 2023	SLO	3/13, 5/9, 5/14, 5/21, 7/3, 8/23, 8/25, 8/29	ODSVRA breeding female.

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.5. Banded snowy plovers with known origins recorded at ODSVRA 1 March to 30 September 2025 (continued).

Band Combination	Sex (No.)	Origin and Year Banded	County Banded	Dates Seen	Notes
bb:vr	F	ODSVRA 2024	SLO	5/23, 5/21, 7/7, 7/11, 7/18, 8/4, 8/29, 9/5	ODSVRA breeding female.
bb:w-		ODSVRA unknown	SLO	8/8	
bb:wb		ODSVRA 2023	SLO	7/8	
bb:wr		ODSVRA 2024	SLO	9/2	
bb:wv	F	ODSVRA 2020	SLO	3/24, 3/27, 4/7, 4/9, 5/2, 5/7, 5/8, 6/2, 8/22, 9/10	ODSVRA breeding female.
bb:ww	F	ODSVRA 2020	SLO	3/22, 4/10, 4/14	ODSVRA breeding female.
bb:wy	M	ODSVRA 2023	SLO	3/7, 5/1, 5/6, 5/14, 5/27, 5/29, 6/4, 6/5, 6/6, 6/7, 6/11, 6/13, 6/17, 7/17, 8/6, 8/21, 8/23, 8/25, 8/26, 8/27	ODSVRA breeding male.
bb:ya	M	ODSVRA 2023	SLO	6/6, 5/8, 6/9, 7/21, 7/26, 7/31, 8/2, 8/6, 8/7	ODSVRA breeding male.
bb:yo		ODSVRA 2024	SLO	8/13, 9/8	
ga:aa	M	ODSVRA 2024	SLO	6/30, 7/8, 8/2, 8/3, 8/4, 8/6, 8/7, 8/8, 8/9, 8/10, 8/11, 8/12, 8/16, 8/17, 8/18, 8/20, 8/21, 8/22, 8/23, 8/24	ODSVRA breeding male.
ga:ag	M	ODSVRA 2024	SLO	4/16, 5/23, 5/27, 5/29, 6/27, 7/1, 7/4	ODSVRA breeding male.
ga:av	F	ODSVRA 2020	SLO	4/5, 5/13, 5/29, 6/28, 7/22, 7/28, 8/8, 8/25, 8/26	ODSVRA breeding female.
ga:ba	M	ODSVRA 2020	SLO	3/24, 4/5, 5/15, 6/13, 6/14, 6/27, 8/19, 8/25	ODSVRA breeding male.
ga:bb		ODSVRA 2017 or 2018	SLO	9/3	
ga:bg	M	ODSVRA 2020	SLO	3/11, 3/18, 3/25, 4/30, 5/1, 5/3, 5/5, 5/6, 5/17, 5/18, 5/26, 5/29, 8/6, 8/7, 8/21, 8/22, 8/23	ODSVRA breeding male.
ga:br	M	ODSVRA 2021	SLO	5/22, 5/24, 5/31, 6/2, 5/12, 6/24, 6/25, 7/1, 7/8, 7/9, 7/11, 7/15, 7/17, 7/22, 7/23, 7/24, 7/28	ODSVRA breeding male.
ga:bw	M	ODSVRA 2024	SLO	7/26, 7/27, 7/28, 7/31, 8/1, 8/2, 8/3, 8/5, 8/6, 8/7, 8/8, 8/9, 8/10, 8/12, 8/13, 8/16, 8/19, 8/20, 8/21, 8/22, 8/23, 8/24	ODSVRA breeding male.
ga:gg	F (2)	ODSVRA 2024	SLO	4/9, 4/16, 4/17, 5/12, 5/21, 5/24, 6/13, 6/19	ODSVRA breeding females (2).
ga:oa		ODSVRA 2021	SLO	6/30	
ga:or		ODSVRA 2016 or 2017	SLO	8/29	
ga:pa	F	ODSVRA 2024	SLO	6/2, 6/12, 6/15	ODSVRA breeding female.
ga:pg		ODSVRA 2024	SLO	4/19, 5/3	
ga:pv		ODSVRA 2020	SLO	7/28, 8/9, 8/25, 8/26	
ga:pw	M	ODSVRA 2023	SLO	3/15, 3/20, 3/21, 3/22, 4/10, 4/29	ODSVRA breeding male. On 29 April, carcass of ga:pw adult male found inside SP68 nest's circular enclosure (see Table H.5 in Appendix H).
ga:vg		ODSVRA 2020	SLO	4/23	
ga:vo		ODSVRA 2024	SLO	5/30, 3/27, 8/25	
ga:vv	M & F (2)	ODSVRA 2023 or 2024	SLO	4/15, 4/16, 5/3, 5/4, 5/5, 5/6, 5/12, 5/13, 5/15, 5/17, 5/18, 5/21, 5/26, 5/28, 6/1, 6/6, 6/27, 6/29, 7/1, 7/5, 7/22, 8/6, 8/8, 8/12, 8/22, 8/25, 8/30, 9/1	ODSVRA breeding male and females (2).

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.5. Banded snowy plovers with known origins recorded at ODSVRA 1 March to 30 September 2025 (continued).

Band Combination	Sex (No.)	Origin and Year Banded	County Banded	Dates Seen	Notes
ga:wa		ODSVRA 2024	SLO	6/1	
ga:wb	M	ODSVRA 2021	SLO	4/24, 5/1, 5/4, 5/9, 5/12, 5/13, 5/17, 5/18, 5/26, 5/27, 5/31, 6/1, 7/1, 7/5, 7/7, 7/9, 7/15, 7/17, 7/18, 7/19, 7/20, 7/21, 7/22, 7/24, 7/27, 7/28	ODSVRA breeding male.
ga:wg	M	ODSVRA 2023 or 2024	SLO	6/2, 5/19, 8/6, 8/8, 8/13, 8/14, 8/15, 8/16, 8/17, 8/21, 8/23, 8/24, 8/25, 8/26, 8/27, 8/28, 8/30, 9/21	ODSVRA breeding male.
ga:wo	M	ODSVRA 2021	SLO	3/4, 5/30, 5/31, 6/14, 7/11, 8/20, 8/25, 8/26	ODSVRA breeding male.
ga:wr	M	ODSVRA 2015 or 2016	SLO	6/5, 6/12, 6/14, 6/15, 6/16, 6/17, 6/19, 6/20, 6/23, 6/24, 6/25, 8/25	ODSVRA breeding male.
ga:wy	F	ODSVRA 2018	SLO	4/16, 8/28, 9/2	ODSVRA breeding female.
ga:ya	M & F	ODSVRA 2023	SLO	3/13, 3/23, 3/25, 3/26, 3/27, 3/29, 4/3, 4/4, 4/10, 4/16, 5/5, 6/2, 6/3, 6/6, 6/23, 7/7, 7/9, 7/10, 7/11, 7/12, 7/15, 7/16, 7/17, 7/18, 7/19, 7/23, 7/25, 7/26, 7/27, 7/30, 7/31, 8/6, 8/7, 8/8, 8/9, 8/28	ODSVRA breeding male and female.
ga:yg	M	ODSVRA 2023	SLO	3/4, 3/29, 4/11, 4/13, 4/16, 5/7, 5/12, 5/18, 5/21, 5/22, 5/28, 7/16, 7/19, 7/22, 7/23, 7/26, 7/28, 8/1, 8/3, 8/6, 8/8, 8/9, 8/10, 8/11, 8/16, 8/24, 8/25, 8/26	ODSVRA breeding male.
ga:yo	M	ODSVRA 2022	SLO	3/23, 4/24, 4/26, 5/16, 5/17, 5/20, 6/2, 7/25, 7/26, 7/27, 7/31, 8/2, 8/3, 8/4, 8/5, 8/6, 8/7, 8/8, 8/9, 8/10, 8/11, 8/13, 8/14, 8/15, 8/16, 8/17, 8/19, 8/20, 8/21, 8/22, 8/23, 8/24, 8/25, 8/26, 8/27, 8/28, 8/30	ODSVRA breeding male.
gg:-		ODSVRA 2024	SLO	5/14, 5/28	
gg:a-		ODSVRA unknown	SLO	7/5	
gg:aa		ODSVRA 2021	SLO	3/22, 7/1	
gg:ab	F	ODSVRA 2023	SLO	3/29, 4/25	ODSVRA breeding female.
gg:ag	F	ODSVRA 2022	SLO	3/23, 4/7, 4/10	ODSVRA breeding female.
gg:ar	M	ODSVRA 2024	SLO	5/21, 6/2, 6/6, 6/12, 6/13, 6/14, 7/2, 8/25, 9/3	ODSVRA breeding male.
gg:av		ODSVRA 2019	SLO	3/4	
gg:ay		ODSVRA 2024	SLO	3/20	
gg:ba		ODSVRA 2019	SLO	5/22	
gg:bo	M	ODSVRA 2024	SLO	5/24, 6/10, 6/28, 6/29, 6/30	ODSVRA breeding male.
gg:br	F	ODSVRA 2023	SLO	3/22, 3/25, 4/15, 5/31, 6/2, 8/23	ODSVRA breeding female.
gg:bw		ODSVRA 2024	SLO	3/27	
gg:by		ODSVRA 2021	SLO	6/30	
gg:gg	M (2)	ODSVRA 2021	SLO	3/26, 5/3, 5/9, 5/10, 5/15, 5/17, 5/18, 5/24, 6/7, 6/11, 6/20, 7/1	ODSVRA breeding males (2).
gg:gy	M	ODSVRA 2023	SLO	3/21, 6/5, 6/8	ODSVRA breeding male.
gg:og	M	ODSVRA 2024	SLO	4/1, 6/26, 6/28	ODSVRA breeding male.

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.5. Banded snowy plovers with known origins recorded at ODSVRA 1 March to 30 September 2025 (continued).

Band Combination	Sex (No.)	Origin and Year Banded	County Banded	Dates Seen	Notes
gg:ol		ODSVRA 2019	SLO	8/25, 8/26	
gg:oo	F	ODSVRA 2022	SLO	3/27	ODSVRA breeding female.
gg:ow	F	ODSVRA 2023	SLO	3/17, 3/18, 4/14, 4/15, 4/23, 5/24, 6/12, 6/18	ODSVRA breeding female.
gg:pg		ODSVRA 2024	SLO	8/22, 8/23, 8/25, 8/26	
gg:pv		ODSVRA 2021	SLO	7/24	
gg:pw	M	ODSVRA 2023	SLO	4/5, 5/26, 5/29, 5/30, 6/1, 6/4, 6/6, 6/12, 6/13, 6/14, 6/17, 7/20, 8/12, 8/23, 8/25, 8/30	ODSVRA breeding male.
gg:rw	M	ODSVRA 2023	SLO	5/14, 8/5, 8/6, 8/7, 8/8, 8/9, 8/10, 8/11, 8/12, 8/13, 8/14, 8/15, 8/16, 8/18, 8/20, 8/21, 8/23, 8/24, 8/25, 8/26, 8/28, 8/30	ODSVRA breeding male.
gg:ry	M	ODSVRA 2023	SLO	5/29, 5/30, 7/10, 7/11, 7/12, 7/17, 7/18, 8/2, 8/9	ODSVRA breeding male.
gg:vg		ODSVRA 2024	SLO	4/15, 4/24, 5/19, 6/3, 6/19, 8/11, 8/19, 8/27	
gg:vo	F	ODSVRA 2024	SLO	3/13, 3/17, 4/16, 4/23, 5/1, 5/9, 5/15, 5/16, 6/23, 6/28, 6/29, 6/30, 7/9, 8/28	ODSVRA breeding female.
gg:vv		ODSVRA 2023	SLO	3/25, 4/30	
gg:vw	M	ODSVRA 2023	SLO	4/6, 4/23, 4/28, 4/30, 5/7, 5/12, 5/14, 5/18, 5/21, 5/23, 5/25, 5/27, 5/28, 5/29, 5/30, 5/31, 6/5, 6/7, 6/14, 6/15, 7/12, 7/13, 7/14, 7/15, 7/17, 7/18, 7/19, 7/22, 7/23, 8/1, 8/11, 8/15	ODSVRA breeding male.
gg:wa	M	ODSVRA 2021	SLO	5/22, 5/23, 5/25, 5/26, 5/29, 6/4, 6/6, 5/15, 5/18, 6/7, 6/13, 6/18, 6/20, 6/21, 6/22, 8/23	ODSVRA breeding male.
gg:wg	F	ODSVRA 2023	SLO	5/8, 7/8, 7/13, 8/25, 9/5	ODSVRA breeding female.
gg:wo		ODSVRA 2022	SLO	5/31	
gg:ya	F	ODSVRA 2023	SLO	3/17, 3/22, 4/1, 4/18, 5/17, 5/22, 6/2, 6/25, 7/24, 8/1, 8/16	ODSVRA breeding female.
gg:yb	M	ODSVRA 2024	SLO	3/4, 3/6, 3/11, 3/18, 3/27, 4/5, 4/18, 4/29, 4/30, 5/18, 5/21, 5/25, 5/31, 6/3, 6/6, 6/11, 6/12, 6/13, 7/30, 8/7, 8/8, 8/19, 8/22, 8/23, 8/25, 8/27, 8/30, 9/2	ODSVRA breeding male.
gg:yg	M	ODSVRA 2023	SLO	3/19, 4/7, 4/9, 4/19, 5/7, 6/10, 6/27, 7/1, 7/4, 7/24, 8/22, 8/23, 8/25	ODSVRA breeding male.
gg:yy	F	ODSVRA 2023	SLO	4/13, 4/17, 5/22, 6/13, 7/5, 7/8, 7/11, 7/17, 7/19, 7/20, 7/22, 7/23, 7/27, 8/5, 8/6, 8/7, 8/9, 8/27, 9/1, 9/11	ODSVRA breeding female.
pg:a-	M	ODSVRA 2024	SLO	5/21, 5/30, 5/31, 7/11, 7/13, 7/14, 8/6, 8/7, 8/8, 8/9, 8/10, 8/11, 8/15, 8/23, 8/26, 8/30	ODSVRA breeding male.
pg:aa	M	ODSVRA 2023	SLO	3/15, 3/20, 3/21, 3/22, 3/25, 3/29, 4/5, 4/14, 4/25, 5/15, 5/19, 5/30, 6/6, 6/7, 6/13, 6/22, 7/4, 7/30, 8/1, 8/2, 8/6, 8/7, 8/8, 8/9, 8/10, 8/12, 8/14, 8/15, 8/16, 8/17, 8/18, 8/19, 8/20, 8/22, 8/25, 8/26, 8/27, 8/29, 8/31	ODSVRA breeding male.
pg:ab		ODSVRA 2024	SLO	5/15	

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.5. Banded snowy plovers with known origins recorded at ODSVRA 1 March to 30 September 2025 (continued).

Band Combination	Sex (No.)	Origin and Year Banded	County Banded	Dates Seen	Notes
pg:al	F	ODSVRA 2024	SLO	5/1, 7/11, 7/13, 7/14, 7/15, 7/20, 7/21, 7/23, 7/25, 7/27, 7/30, 8/2, 8/8, 8/9, 8/21, 8/25, 8/27, 9/1	ODSVRA breeding female.
pg:ba	M (2)	ODSVRA 2021	SLO	4/11, 4/25, 4/27, 5/13, 5/14, 5/15, 5/17, 5/21, 5/22, 5/23, 5/27, 5/28, 5/31, 6/1, 6/3, 6/4, 6/8, 6/14, 6/17, 6/18, 6/23, 6/24, 6/25, 6/28, 7/1, 7/23, 7/24, 7/25, 7/27, 7/28, 7/30, 8/2, 8/6, 8/24, 8/25, 8/30, 8/31, 9/1, 9/21	ODSVRA breeding males (2).
pg:bb	M	ODSVRA 2024	SLO	5/7, 5/19, 6/1, 6/19, 6/20, 6/22, 6/25, 7/13, 7/28, 7/30, 8/26	ODSVRA breeding male.
pg:br	M	ODSVRA 2021	SLO	5/25, 5/29, 5/30, 5/31, 6/1, 6/2, 6/3, 6/4, 6/6, 6/7, 6/8, 6/10, 6/11, 6/12, 6/13, 6/16, 8/10, 8/12, 8/13, 8/14, 8/16, 8/21	ODSVRA breeding male.
pg:by	M (2)	ODSVRA 2017 or 2018	SLO	3/12, 3/13, 3/21, 3/23, 3/25, 3/26, 3/27, 3/29, 4/3, 4/15, 4/16, 5/7, 5/11, 5/12, 5/13, 5/14, 5/21, 5/22, 5/23, 5/27, 6/3, 6/4, 6/6, 6/16, 7/6, 7/28, 8/3, 8/4, 8/7, 8/8, 8/9, 8/10, 8/11, 8/12, 8/13, 8/14, 8/15, 8/16, 8/20, 8/21, 8/22, 8/23, 8/24, 8/25, 8/26, 8/27, 8/29, 8/30, 8/31	ODSVRA breeding males (2).
pg:gb	F	ODSVRA 2024	SLO	4/22, 4/26, 5/2, 6/6, 6/26, 7/5, 7/17, 8/4, 8/7, 8/8, 8/23, 8/25, 8/26	ODSVRA breeding female.
pg:gw	F	ODSVRA 2022	SLO	6/10, 8/23, 8/25	ODSVRA breeding female.
pg:oo	F	ODSVRA 2023	SLO	6/5, 6/6, 6/7, 6/9, 6/10, 7/4, 7/9, 7/10, 7/11	ODSVRA breeding female.
pg:ow	M	ODSVRA 2015 or 2016	SLO	5/23, 5/24, 5/27, 5/29, 5/30, 5/31, 6/1, 6/4, 6/5, 5/21, 7/24, 7/27, 7/28, 8/5, 8/6, 8/7, 8/9, 8/11, 8/12, 8/13, 8/15, 8/16, 8/17, 8/18, 8/19, 8/20, 8/21, 8/22, 8/23, 8/24, 8/25, 8/26, 8/27, 8/28, 8/29, 8/31	ODSVRA breeding male.
pg:ro		ODSVRA 2022 or 2023	SLO	5/5	
pg:va	M	ODSVRA 2024	SLO	5/7, 5/8, 5/19, 7/7, 7/23, 7/24, 8/3, 8/6, 8/7, 8/9, 8/12, 8/13, 8/18, 8/21, 8/22, 8/23, 8/24, 8/26, 8/27, 8/28, 8/31, 9/8	ODSVRA breeding male.
pg:vb	M & F	ODSVRA 2024	SLO	4/22, 5/24, 5/27, 6/3, 6/4, 6/6, 6/7, 6/29, 6/30, 7/3, 7/8, 7/25, 7/26, 7/27, 7/30, 7/31, 8/1, 8/3, 8/4, 8/6, 8/7, 8/8, 8/9, 8/10, 8/11, 8/12, 8/13, 8/14, 8/15, 8/16, 8/18, 8/20, 8/21, 8/22, 8/24, 8/25, 8/26	ODSVRA breeding male and female. From 13-16 August, male observed with right leg injury (see Table H.2 in Appendix H).
pg:ya		ODSVRA 2022	SLO	8/22, 8/23, 8/30, 9/1, 9/3, 9/5	
pg:yw	M	ODSVRA 2022	SLO	4/24, 5/27, 5/29, 5/30, 6/5, 6/7, 6/12, 6/14, 6/15, 6/16, 6/18, 7/9, 7/26, 7/27, 7/28, 8/2, 8/10, 8/11, 8/12	ODSVRA breeding male.
pv:ab	M	ODSVRA 2023	SLO	3/20, 3/24, 3/27, 3/29, 3/31, 4/15, 5/1, 5/3, 5/10, 5/18, 5/19, 8/12, 9/2	ODSVRA breeding male.
pv:bb	M	ODSVRA 2022	SLO	4/23, 5/7	ODSVRA breeding male.
pv:ga		ODSVRA 2024	SLO	9/4	
pv:gb	M	ODSVRA 2020	SLO	5/26, 6/5, 5/9, 5/18, 6/9, 6/12	ODSVRA breeding male.

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.5. Banded snowy plovers with known origins recorded at ODSVRA 1 March to 30 September 2025 (continued).

Band Combination	Sex (No.)	Origin and Year Banded	County Banded	Dates Seen	Notes
pv:pb	M	ODSVRA 2022	SLO	3/17, 3/18, 4/16, 4/26, 5/1, 5/5, 5/9, 5/14, 5/15, 5/17, 5/18, 5/27, 5/28, 5/29, 7/7, 7/8, 7/12, 7/15, 7/18, 7/20, 7/21, 7/22, 7/24, 7/27, 8/1, 8/2, 8/4, 8/6, 8/7, 8/11, 8/12, 8/24, 8/25, 8/26, 8/27, 9/16	ODSVRA breeding male.
pv:pv	F	ODSVRA 2021	SLO	5/30, 5/5, 5/15, 7/1, 7/4, 7/24, 8/6, 8/9, 8/20, 8/27, 8/30	ODSVRA breeding female.
pv:vb	M	ODSVRA 2022	SLO	7/23, 7/24, 7/25, 7/26, 7/27, 7/28, 7/31, 8/1, 8/6, 8/7, 8/8, 8/9, 8/10, 8/11, 8/12, 8/13, 8/16, 8/18, 8/19, 8/20, 8/21, 8/22, 8/23, 8/25, 8/27	ODSVRA breeding male.
pv:vg		ODSVRA 2024	SLO	8/27	
pv:wb		ODSVRA 2024	SLO	5/27, 5/8	
pv:wg	M (2)	ODSVRA 2024	SLO	5/18, 5/21, 5/25, 6/1, 6/14, 6/22, 7/6, 7/8, 7/11, 8/7	ODSVRA breeding males (2).
pv:wy		ODSVRA 2014 or 2015	SLO	6/19	
pv:y-		ODSVRA unknown	SLO	4/10, 6/14	
rr:ar		ODSVRA 2022	SLO	5/30	
rr:ay	F	ODSVRA 2022	SLO	3/8, 3/19, 5/14, 7/1, 7/8, 8/9, 8/14, 8/20, 8/25, 8/26, 9/3	ODSVRA breeding female.
rr:ga	M	ODSVRA 2022	SLO	4/21, 4/22, 4/23, 4/24, 4/25, 4/30, 5/2, 5/28, 6/12, 6/14, 6/15, 6/16, 6/17, 6/18, 6/19, 6/23, 6/24, 6/30, 7/1, 7/3, 7/4, 8/12	ODSVRA breeding male.
rr:gb		ODSVRA 2024	SLO	8/25, 8/26	
rr:lw	F	ODSVRA 2024	SLO	3/22, 3/23, 4/5, 4/6, 4/9, 5/10, 5/22, 5/30, 6/11, 6/23, 7/1, 7/24, 7/30, 8/6, 8/11, 9/2, 9/11	ODSVRA breeding female.
rr:ly		ODSVRA 2024	SLO	8/22	
rr:oy	F	ODSVRA 2022	SLO	5/26, 7/11, 7/12, 7/13	ODSVRA breeding female.
rr:pg		ODSVRA 2023	SLO	5/7	
rr:pw	F	ODSVRA 2014	SLO	3/29, 4/21, 5/5, 5/8, 5/30, 9/3	ODSVRA breeding female.
rr:ra	M	ODSVRA 2022	SLO	4/15, 4/24, 6/30, 7/2	ODSVRA breeding male.
rr:rw		ODSVRA 2022	SLO	3/12, 7/1	
rr:wa	M	ODSVRA 2024	SLO	5/31, 6/1, 6/2, 6/4, 6/5, 5/19, 6/14, 6/27, 6/28	ODSVRA breeding male.
rr:wr	M	ODSVRA 2022	SLO	4/16, 5/7, 5/10, 5/29, 6/27, 7/2, 7/4, 7/17, 7/18, 7/23, 7/28, 7/31, 8/1, 8/2, 8/5, 8/6, 8/7, 8/9, 8/10, 8/12, 8/13, 8/14, 8/15, 8/16, 8/17, 8/18, 8/19, 8/20, 8/23, 8/24, 8/25, 8/26, 8/28, 8/30, 8/31, 9/1, 9/8	ODSVRA breeding male.
rr:yb	M	ODSVRA 2024	SLO	5/22, 6/12, 6/30	ODSVRA breeding male.
vg:aw		ODSVRA 2024	SLO	9/8	

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.5. Banded snowy plovers with known origins recorded at ODSVRA 1 March to 30 September 2025 (continued).

Band Combination	Sex (No.)	Origin and Year Banded	County Banded	Dates Seen	Notes
vg:bb	M (2)	ODSVRA 2024	SLO	3/13, 3/26, 3/27, 4/1, 4/23, 5/10, 5/13, 5/17, 5/18, 5/19, 5/20, 5/21, 5/26, 5/27, 5/29, 5/31, 6/2, 6/3, 6/8, 6/9, 6/12, 6/13, 6/19, 7/9, 7/11, 7/12, 7/13, 7/14, 7/16, 7/17, 7/18, 7/19, 7/20, 7/22, 7/27, 8/6, 8/9, 8/16, 8/20, 8/24, 8/25, 8/28, 8/30, 8/31, 9/2, 9/15	ODSVRA breeding males (2).
vg:bg		ODSVRA 2023	SLO	4/5, 8/7, 8/20, 8/30, 9/5	
vg:br	M	ODSVRA 2024	SLO	6/27, 6/30, 7/1	ODSVRA breeding male.
vg:by	F	ODSVRA 2024	SLO	7/7, 7/24, 7/30, 8/7	ODSVRA breeding female.
vg:ga	F	ODSVRA 2024	SLO	6/4, 6/6, 5/21	ODSVRA breeding female.
vg:gr	M	ODSVRA 2024	SLO	5/16, 5/21, 5/29, 5/30, 6/6, 6/13, 6/15, 6/16, 6/25, 7/3, 7/11, 8/6, 8/7	ODSVRA breeding male.
vg:ob		ODSVRA 2021	SLO	3/27	
vg:or	F	ODSVRA 2024	SLO	6/8, 6/10, 6/11, 6/14, 7/24, 8/6, 8/22, 8/24, 8/25, 8/31	ODSVRA breeding female.
vg:ow	M	ODSVRA 2024	SLO	4/19, 4/22, 4/23, 4/30, 5/10, 5/30, 6/4, 6/7, 6/12, 6/13, 6/26, 7/24	ODSVRA breeding male.
vg:va	M	ODSVRA 2023	SLO	3/21, 4/3, 4/16, 5/14, 5/15, 5/16, 5/21, 5/22, 6/13, 6/16, 7/22, 7/23, 7/24, 7/25	ODSVRA breeding male.
vg:vb	F	ODSVRA 2023	SLO	3/20, 3/21, 3/22, 3/24, 3/27, 4/5, 5/24, 5/30, 6/4, 7/16, 7/21, 8/23, 9/5	ODSVRA breeding female.
vg:wa		ODSVRA 2024	SLO	7/17, 8/14, 9/1	
vg:yr	F	ODSVRA 2022	SLO	4/27, 4/28, 4/30, 5/1, 5/3, 5/6, 5/10, 6/10, 6/25, 7/24, 7/26, 7/27, 7/28, 8/14, 8/22, 8/23, 8/25, 8/31	ODSVRA breeding female.
vv:ar		ODSVRA 2021	SLO	6/14, 6/27, 8/10, 8/21, 8/25, 8/26	
vv:ay	F	ODSVRA 2024	SLO	5/5, 5/9, 5/25, 5/26, 6/24, 6/25, 6/28, 7/1, 7/24, 8/13, 8/25	ODSVRA breeding female.
vv:ba	M	ODSVRA 2023	SLO	5/17, 5/29, 7/12, 7/24	ODSVRA breeding male.
vv:bb	M	ODSVRA 2023	SLO	4/16, 6/4, 7/16, 7/19, 8/11, 8/13, 8/14	ODSVRA breeding male.
vv:br	M & F	ODSVRA 2024	SLO	5/7, 5/11, 5/19, 5/21, 6/6, 6/27, 7/1, 7/13, 7/18, 7/20, 7/31, 8/1, 8/7, 8/8, 8/20, 8/25	ODSVRA breeding male and female.
vv:gb		ODSVRA 2023	SLO	4/19, 5/19	
vv:ra	M	ODSVRA 2020	SLO	4/10, 4/19, 4/26, 4/30, 5/3, 5/9, 6/23, 6/24, 7/31, 8/1, 8/12, 8/17, 8/18, 8/21, 8/22, 8/23, 8/24, 8/25, 8/27, 8/28, 8/29, 8/30, 9/1	ODSVRA breeding male.
vv:va	M	ODSVRA 2024	SLO	6/18, 6/22, 6/24, 7/1, 8/9	ODSVRA breeding male.
vv:vb	M	ODSVRA 2023	SLO	5/27, 5/31, 6/15, 6/22, 8/9	ODSVRA breeding male.
vv:wa		ODSVRA 2024	SLO	4/25, 5/19, 8/11, 8/23, 8/25	
vv:ww	M	ODSVRA 2024	SLO	3/17, 3/20, 3/21, 3/22, 3/24, 4/5, 4/15, 4/26, 5/24, 5/27, 5/28, 5/30, 5/31, 6/6, 6/14, 6/15, 8/13, 8/23	ODSVRA breeding male.
k-a-		RGDP 2025	Santa Barbara	8/23, 8/25, 8/27, 8/30, 9/5	Juvenile.

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.5. Banded snowy plovers with known origins recorded at ODSVRA 1 March to 30 September 2025 (continued).

Band Combination	Sex (No.)	Origin and Year Banded	County Banded	Dates Seen	Notes
k:a/b		RGDP 2025	Santa Barbara	6/29	Juvenile.
a:g/o/g	M	VSFB 2017	Santa Barbara	4/2, 6/27, 6/28	ODSVRA breeding male. On federal service band on left leg there is exposed metal above aqua tape.
g:o/v	M	VSFB 2024	Santa Barbara	3/13, 5/7, 5/14, 5/16, 5/17, 5/25, 5/29, 5/30, 5/31, 6/1, 6/2, 6/3, 6/4, 6/5, 6/8, 6/15, 7/30, 8/5, 8/21, 8/22	ODSVRA breeding male.
gn:op	F	VSFB 2024	Santa Barbara	3/4, 5/21, 5/23, 6/2	ODSVRA breeding female.
l:a/v		VSFB 2022	Santa Barbara	9/2	
l:o/g/o		VSFB 2024	Santa Barbara	4/10, 4/19	
l:y/g	M	VSFB 2016	Santa Barbara	3/15, 3/21, 3/23, 3/25, 6/4, 6/6, 6/10, 6/20, 7/28, 8/5, 8/6, 8/7, 8/8, 8/10, 8/11, 8/12, 8/16, 8/18, 8/19, 8/20, 8/21, 8/22, 8/23, 8/24, 8/25, 8/26, 8/27, 8/28, 8/29	ODSVRA breeding male.
nb:bp		VSFB 2024	Santa Barbara	8/22, 8/23	
nb:ro		VSFB 2023	Santa Barbara	8/26	
nk:bv		VSFB 2025	Santa Barbara	8/24, 8/26, 8/27, 8/30	Juvenile.
nk:rl	M	VSFB 2024	Santa Barbara	3/23, 5/15, 5/17, 5/21, 6/3, 6/5, 6/8, 6/9, 6/11, 6/14, 6/23, 7/24, 7/30, 8/6, 8/7, 8/20, 8/24, 8/30, 9/1, 9/3, 9/5	ODSVRA breeding male.
nr:gp		VSFB 2024	Santa Barbara	6/14, 6/15, 6/16	
nr:wp	F	VSFB 2024	Santa Barbara	4/22, 4/24, 4/30, 5/2, 5/21, 5/27, 6/2, 7/8	ODSVRA breeding female.
nv:ro	F	VSFB 2023	Santa Barbara	3/13, 6/11, 6/13, 6/15, 7/7, 7/8, 7/9, 7/12, 7/13, 7/24	ODSVRA breeding female.
ny:yw		VSFB 2021	Santa Barbara	8/7, 8/10	
o:y/g/y		VSFB 2023	Santa Barbara	5/27	
p:b/a/b		VSFB 2025	Santa Barbara	7/28, 8/6, 8/15, 9/1	Juvenile.
v:o/w		VSFB 2024	Santa Barbara	5/7	
v:y/a/y		VSFB 2023	Santa Barbara	3/19, 3/22, 6/25	
Po:go		Camp Pendleton 2024	San Diego	5/18	Pink band on left leg band above the joint.
yp:ga	F	Naval Base Coronado 2022	San Diego	7/10, 7/11, 7/14, 7/19, 7/20	ODSVRA breeding female.
-:y-	M	Unknown	Unknown	5/28, 5/30, 6/1, 6/5, 6/13, 6/14, 6/15, 6/16	ODSVRA breeding male.
w-:s-	F	Unknown	Unknown	3/17, 3/18, 5/7, 6/11, 7/7, 7/8, 7/11, 7/24	ODSVRA breeding female.

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.6. Snowy plovers banded as chicks at ODSVRA seen at other sites from 1 October 2024 to 28 February 2025.

This is a partial list based on information received from a coordinated effort throughout the range of monitors and managers to share band sightings. ODSVRA bands chicks to brood and some bands have been used multiple years and it is possible to have more than one bird with the same combination. (For a description of color band letter codes see Appendix A.)

COPR = Coal Oil Point Reserve, Dangermond Preserve=Jack and Laura Dangermond Preserve, SB = State Beach, SLO = San Luis Obispo, SP = State Park, VSFB = Vandenberg Space Force Base.

Band Combination	Year Banded	Location Seen	County	Dates Seen
ga:av	2020	Ano Nuevo SP	San Mateo, CA	12/8, 2/5
pg:ob	2024	Laguna Creek Beach	Santa Cruz	11/22
pg:bg	2015 or 2016	Seabright SB	Santa Cruz	12/12, 12/18
pg:va	2024	Seabright SB	Santa Cruz	11/21
vv:ob	2024	Marina Dunes	Monterey	12/9
vv:ob	2024	Carmel River SB	Monterey	11/3
pv:wr	2022	San Carpoforo	SLO	11/3, 11/5, 11/7, 11/10, 11/12
bb:ow	2024	Arroyo De La Cruz	SLO	2/10
bb:ow	2024	Arroyo Laguna	SLO	10/30, 11/5, 11/6, 11/7, 12/3, 12/5, 12/7
bb:rg	2023	Arroyo Laguna	SLO	10/30, 11/5, 11/6, 11/7, 11/20, 11/22, 11/26, 11/28, 12/2, 12/3, 12/5, 12/7, 12/11
ga:bv	2023	Arroyo Laguna	SLO	10/30, 11/5, 11/6, 11/7, 11/20, 12/2, 12/3, 12/5, 12/7, 12/11
ga:rg	2024	Arroyo Laguna	SLO	10/30, 11/5, 11/6, 11/7, 11/20, 12/5, 12/7, 1/9
ga:ya	2023	Arroyo Laguna	SLO	11/20, 11/22, 11/26, 12/2, 12/3, 12/5, 12/7, 12/11
gg:pw	2023	Arroyo Laguna	SLO	11/5, 11/6, 11/7, 12/3, 12/5, 1/9
pg:oo	2023	Arroyo Laguna	SLO	12/11, 1/9
pv:wr	2022	Arroyo Laguna	SLO	10/30, 11/6
vv:wa	2024	Arroyo Laguna	SLO	11/4
vv:ww	2024	Arroyo Laguna	SLO	10/30, 11/4, 11/5, 11/7
ga:vv	2023 or 2024	San Simeon SP	SLO	1/9
gg:pw	2023	San Simeon SP	SLO	12/11, 1/28, 2/15
vv:wa	2024	San Simeon SP	SLO	1/9, 1/28
gg:pw	2023	Santa Rosa Creek	SLO	11/1
vv:wa	2024	Santa Rosa Creek	SLO	12/31, 2/10
bb:ar	2017 or 2018	Villa Creek	SLO	11/23, 2/3, 2/19
gg:oa	2019	Villa Creek	SLO	11/23, 12/6, 12/10, 12/16
rr:bo	2022	Villa Creek	SLO	1/2, 2/3
ga:pw	2023	Morro Strand SB	SLO	11/24, 12/4, 1/3, 2/3
gg:ow	2023	Morro Strand SB	SLO	2/3

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.6. Snowy plovers banded as chicks at ODSVRA seen at other sites from 1 October 2024 to 28 February 2025 (continued).

Band Combination	Year Banded	Location Seen	County	Dates Seen
pg:a-	2024	Morro Strand SB	SLO	11/23, 11/24, 1/4
pg:aa	2023	Morro Strand SB	SLO	1/3
rr:bo	2022	Morro Strand SB	SLO	11/24, 11/27
vv:vb	2023	Morro Strand SB	SLO	11/24, 2/3
ga:po	2023	Morro Bay Spit	SLO	1/6, 2/5
ga:pw	2023	Morro Bay Spit	SLO	12/2
gg:ay	2024	Morro Bay Spit	SLO	11/4, 11/18, 1/17
rr:bo	2022	Morro Bay Spit	SLO	12/2, 12/16
vv:ra	2020	Morro Bay Spit	SLO	12/2, 1/17
vv:vb	2023	Morro Bay Spit	SLO	12/16
bb:ay	2023	VSFB	Santa Barbara	11/21, 12/9
bb:pw	2023	VSFB	Santa Barbara	11/9, 11/21, 12/13, 12/28, 1/11, 1/22, 2/15, 2/17, 2/27
bb:vy	2024	VSFB	Santa Barbara	12/9, 1/22, 2/17
bb:yo	2024	VSFB	Santa Barbara	1/22
ga:aw	2018	VSFB	Santa Barbara	12/28, 1/23
ga:gv	2020	VSFB	Santa Barbara	1/4
gg:av	2019	VSFB	Santa Barbara	11/15
gg:aw	2017 or 2018	VSFB	Santa Barbara	11/21, 12/9, 2/17
gg:bv	2023	VSFB	Santa Barbara	11/21, 12/9
gg:vg	2024	VSFB	Santa Barbara	1/22
pg:al	2024	VSFB	Santa Barbara	11/15, 1/22
rr:pg	2023	VSFB	Santa Barbara	11/21, 12/22, 1/23
rr:pv	2022	VSFB	Santa Barbara	11/21, 12/9, 12/28, 1/9, 1/22
vg:aw	2024	VSFB	Santa Barbara	1/22
vg:vb	2023	VSFB	Santa Barbara	1/8
vv:br	2024	VSFB	Santa Barbara	12/28
vv:yw	2021	VSFB	Santa Barbara	2/27
pg:wr	2024	Dangermond Preserve	Santa Barbara	12/2, 12/11
vg:vb	2023	Dangermond Preserve	Santa Barbara	12/11, 1/23, 2/15
vv:br	2024	Dangermond Preserve	Santa Barbara	12/2, 12/11, 2/20
gg:wg	2023	Hollister Ranch Shoreline Preserve	Santa Barbara	1/23, 2/3, 2/10
vv:gb	2023	Hollister Ranch Shoreline Preserve	Santa Barbara	11/27, 12/9, 12/19, 1/23, 2/10, 2/25
bb:vr	2024	COPR	Santa Barbara	1/7

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.6. Snowy plovers banded as chicks at ODSVRA seen at other sites from 1 October 2024 to 28 February 2025 (continued).

Band Combination	Year Banded	Location Seen	County	Dates Seen
gg:br	2023	COPR	Santa Barbara	12/1, 2/11
gg:og	2024	COPR	Santa Barbara	11/30, 1/7
gg:rb	2016 or 2018	COPR	Santa Barbara	12/2
gg:vw	2023	COPR	Santa Barbara	1/7
pg:aa	2023	COPR	Santa Barbara	11/20, 11/21, 11/27, 12/21, 1/7, 2/4
pg:oo	2023	COPR	Santa Barbara	12/21, 2/25
pv:ga	2024	COPR	Santa Barbara	11/5, 1/7, 2/4, 2/25
vg:or	2024	COPR	Santa Barbara	2/14
vg:wa	2024	COPR	Santa Barbara	11/5, 11/25, 1/7, 1/27
vv:ay	2024	COPR	Santa Barbara	1/14
bb:go	2019	San Buenaventura SB	Ventura	11/5
rr:yb	2024	San Buenaventura SB	Ventura	11/5
gg:vg	2024	Malibu Lagoon	Los Angeles	12/31, 1/24
vg:ow	2024	Malibu Lagoon	Los Angeles	12/29, 1/24
bb:vr	2024	Bombas De Salinas, Mulege	Baja CA Sur, Mexico	1/28, 1/30, 1/31
pg:bb	2024	Bombas De Salinas, Mulege	Baja CA Sur, Mexico	1/30

Appendix D. Banded California least terns and snowy plovers (continued).

Table D.7. Snowy plovers banded as chicks at ODSVRA seen at other sites from 1 March to 30 September 2025.

This is a partial list based on information received from a coordinated effort throughout the range of monitors and managers to share band sightings.

ODSVRA is banding chicks to brood and some combinations have been used multiple years so it is possible to have more than one bird with the same combination.

Dangermond Preserve = Jack and Laura Dangermond Preserve, Guadalupe NWR = Guadalupe-Nipomo Dunes National Wildlife Refuge,

Guadalupe RP = Guadalupe Restoration Project, RGDP = Rancho Guadalupe Dunes Preserve, SB = State Beach, SLO = San Luis Obispo,

VSFB = Vandenberg Space Force Base.

F = female, M = male.

Band Combination	Year Banded	Sex	Location Seen	County	Dates Seen	Notes
ga:pa	2024		Abbotts Lagoon	Marin, CA	8/14, 9/22	
bb:ob	2024		Point Reyes National Seashore	Marin	3/7, 4/3, 4/7, 4/10, 7/25, 7/29, 7/31, 8/22	
ga:pa	2024		Point Reyes National Seashore	Marin	3/11, 3/19, 4/4, 8/6, 8/20	
pv:ga	2024		Point Reyes National Seashore	Marin	5/12	
pv:pw	2025		Half Moon Bay	San Mateo	9/23	Juvenile.
bb:wl	2025		Arroyo De La Cruz	SLO	8/13	Juvenile.
pv:wr	2022		Arroyo De La Cruz	SLO	8/29	
ga:rg	2024		Arroyo Laguna	SLO	3/21	
pg:oo	2023		Arroyo Laguna	SLO	4/4	
pv:pw	2025		Arroyo Laguna	SLO	9/11	Juvenile.
pv:wr	2022		Arroyo Laguna	SLO	4/16	
pv:wr	2022		Piedras Blancas	SLO	9/5, 9/11, 9/26	
gg:pw	2023		Santa Rosa Creek	SLO	9/12, 9/26	
bb:ar	2017 or 2018		Villa Creek	SLO	7/30, 8/4, 8/15, 8/18, 8/25, 8/29, 9/5	
ga:vv	2023 or 2024		Villa Creek	SLO	3/3, 3/19, 3/21, 3/26, 3/28	
gg:oa	2019	F	Villa Creek	SLO	3/7, 3/10, 3/21, 3/28, 4/7, 4/16, 4/18, 4/28, 5/2, 5/12, 5/14, 5/29, 5/5, 5/7, 6/2, 6/11, 6/13, 6/19, 6/25, 7/7, 7/9, 7/15, 7/17, 7/21, 7/23, 7/25, 7/28, 7/30, 8/1, 8/13, 8/15, 8/29, 9/8, 9/12, 9/26	Villa Creek breeding female.
pv:ga	2024		Villa Creek	SLO	3/21	
rr:bo	2022		Villa Creek	SLO	4/4	
vv:vb	2023		Villa Creek	SLO	3/3	
vv:wa	2024		Villa Creek	SLO	3/3, 3/21	
bb:lw	2025		Morro Strand SB	SLO	7/21	Juvenile.
bb:vr	2024		Morro Strand SB	SLO	4/16	
pv:ga	2024		Morro Strand SB	SLO	3/26	

Appendix D. Banded least terns and snowy plovers (continued).

Table D.7. Snowy plovers banded as chicks at ODSVRA seen at other sites from 1 March to 30 September 2025 (continued).

Band Combination	Year Banded	Sex	Location Seen	County	Dates Seen	Notes
bb:aw	2023	M	Morro Bay Spit	SLO	3/3, 3/10, 3/21, 3/26, 4/7, 4/9, 5/7, 5/9, 5/12, 5/22, 5/23, 5/28, 5/30, 6/2, 6/4, 6/9, 6/11, 6/16, 6/18, 6/20, 6/23, 6/25, 7/21, 8/15, 8/22, 8/25, 8/29, 9/12, 9/8	Morro Bay Spit breeding male.
bb:bl	2025		Morro Bay Spit	SLO	7/28	Juvenile.
bb:ll	2025		Morro Bay Spit	SLO	7/2	Juvenile.
bb:ww	2020		Morro Bay Spit	SLO	4/25	
bb:yl	2025		Morro Bay Spit	SLO	7/18, 7/21, 9/8, 9/12	Juvenile.
ga:gb	2025		Morro Bay Spit	SLO	7/21	Juvenile.
ga:lg	2025		Morro Bay Spit	SLO	7/11, 8/8	Juvenile.
ga:po	2023	M	Morro Bay Spit	SLO	3/7, 3/19, 3/21, 3/24, 4/4, 4/7, 4/9, 4/14, 4/16, 4/18, 4/21, 4/30, 5/5, 5/7, 5/9, 5/12, 5/22, 5/23, 5/28, 5/30, 6/2, 6/4, 6/6, 6/9, 6/11, 6/13, 6/16, 6/18, 6/20, 6/25, 6/27, 6/30, 7/2, 7/14, 7/16, 7/21, 7/23, 8/25	Morro Bay Spit breeding male.
ga:pw	2023		Morro Bay Spit	SLO	3/3, 3/7, 3/10, 3/19, 8/15, 8/22, 8/25	
ga:vv	2023 or 2024		Morro Bay Spit	SLO	5/22, 6/30, 7/2, 7/7, 9/5	
gg:al	2025		Morro Bay Spit	SLO	8/18, 8/22, 8/25	Juvenile.
gg:ay	2024	M	Morro Bay Spit	SLO	3/7, 3/10, 3/21, 3/24, 4/4, 4/7, 4/9, 4/21, 5/7, 5/9, 5/12, 5/16, 5/19, 5/23, 5/28, 5/30, 6/4, 6/11, 6/13, 6/16, 6/2, 6/20, 6/23, 6/25, 6/27, 7/21, 7/23, 8/4, 8/6, 8/18, 8/22, 8/25, 9/5, 9/12	Morro Bay Spit breeding male.
gg:ly	2025		Morro Bay Spit	SLO	8/1, 8/25	Juvenile.
gg:og	2024		Morro Bay Spit	SLO	5/14, 5/23, 5/28, 6/2, 6/4, 6/6, 6/11, 6/25, 6/27, 7/7, 7/11, 7/14	
gg:ow	2023	F	Morro Bay Spit	SLO	3/7, 3/10, 3/21, 3/24, 3/26, 4/4, 4/7, 4/9, 4/14, 4/16, 4/18, 4/21, 4/23, 4/25, 4/28, 4/30, 5/5, 5/12, 5/2, 5/21, 5/28, 5/30, 6/4, 6/6, 6/9, 6/11, 6/13, 6/16, 6/18, 6/2, 6/20, 6/23, 6/27, 7/21, 7/25, 8/11, 8/8, 8/18, 8/29, 9/5, 9/8	Morro Bay Spit breeding female.
gg:oy	2025		Morro Bay Spit	SLO	8/11, 8/13, 8/15, 8/18	Juvenile.
gg:pg	2024	M	Morro Bay Spit	SLO	4/7, 4/9, 4/28, 5/7, 5/9, 5/12, 5/14, 5/16, 5/22, 5/28, 5/30, 6/4, 6/6, 6/11, 6/16, 6/18, 6/23, 6/25, 7/9, 7/11, 7/14, 7/16, 7/18, 7/23	Morro Bay Spit breeding male.
gg:pw	2023		Morro Bay Spit	SLO	9/8	
gg:rw	2023		Morro Bay Spit	SLO	5/19	
gg:wl	2025		Morro Bay Spit	SLO	7/14, 7/16	Juvenile.
gg:wy	2025		Morro Bay Spit	SLO	7/7, 8/6	Juvenile.
pg:a-	2024		Morro Bay Spit	SLO	9/5	

Appendix D. Banded least terns and snowy plovers (continued).

Table D.7. Snowy plovers banded as chicks at ODSVRA seen at other sites from 1 March to 30 September 2025 (continued).

Band Combination	Year Banded	Sex	Location Seen	County	Dates Seen	Notes
pg:ly	2025		Morro Bay Spit	SLO	8/18	Juvenile.
pv:lw	2025		Morro Bay Spit	SLO	9/8	Juvenile.
rr:bo	2022		Morro Bay Spit	SLO	8/4, 8/6, 8/13, 8/15, 8/18, 9/5	
rr:wy	2025		Morro Bay Spit	SLO	8/22	Juvenile.
vg:lb	2025		Morro Bay Spit	SLO	7/14, 7/7	Juvenile.
vv:ay	2024		Morro Bay Spit	SLO	5/12	
vv:vb	2023		Morro Bay Spit	SLO	8/18	
bb:al	2025		Guadalupe NWR	SLO	7/21	Juvenile.
bb:gl	2025		Guadalupe NWR	SLO	7/9, 8/5	Juvenile.
bb:oa	2025		Guadalupe NWR	SLO	7/9	Juvenile.
bb:ob	2024		Guadalupe NWR	SLO	6/25	
bb:yo	2024		Guadalupe NWR	SLO	4/3, 5/5, 6/3, 8/26	
ga:gl	2025		Guadalupe NWR	SLO	7/21	Juvenile.
ga:ya	2023		Guadalupe NWR	SLO	6/25	
gg:-	2024		Guadalupe NWR	SLO	4/3	Chick originally banded gg:wl and lost right leg bands prior to fledging in 2024.
gg:ab	2023		Guadalupe NWR	SLO	4/15, 6/3	
gg:la	2025		Guadalupe NWR	SLO	7/21	Juvenile.
gg:og	2024		Guadalupe NWR	SLO	6/25	
gg:ol	2019		Guadalupe NWR	SLO	4/15, 5/5, 5/21, 6/3, 7/9	
gg:rg	2024		Guadalupe NWR	SLO	5/21	
gg:rw	2023		Guadalupe NWR	SLO	7/21	
gg:vg	2024		Guadalupe NWR	SLO	5/21, 6/3	
gg:wy	2025		Guadalupe NWR	SLO	6/25	Juvenile.
gg:yb	2024		Guadalupe NWR	SLO	4/15, 7/21	
pg:by	2017 or 2018		Guadalupe NWR	SLO	7/9	
pg:ga	2023		Guadalupe NWR	SLO	4/3, 5/5, 7/9	
pg:lb	2025		Guadalupe NWR	SLO	8/5	Juvenile.
pg:ly	2025		Guadalupe NWR	SLO	7/21, 8/26	Juvenile.
pg:ow	2015 or 2016		Guadalupe NWR	SLO	7/21	
pg:va	2024		Guadalupe NWR	SLO	6/25	
pv:lw	2025		Guadalupe NWR	SLO	8/26	Juvenile.
rr:gb	2024		Guadalupe NWR	SLO	5/21, 8/5	

Appendix D. Banded least terns and snowy plovers (continued).

Table D.7. Snowy plovers banded as chicks at ODSVRA seen at other sites from 1 March to 30 September 2025 (continued).

Band Combination	Year Banded	Sex	Location Seen	County	Dates Seen	Notes
rr:pg	2023		Guadalupe NWR	SLO	8/5	
rr:pv	2022		Guadalupe NWR	SLO	7/9, 7/21	
rr:pw	2014		Guadalupe NWR	SLO	6/25	
rr:vr	2025		Guadalupe NWR	SLO	8/5	Juvenile.
rr:yb	2024		Guadalupe NWR	SLO	4/15, 7/21	
vv:ba	2023		Guadalupe NWR	SLO	7/21	
vv:gb	2023		Guadalupe NWR	SLO	4/15	
vv:gg	2023		Guadalupe NWR	SLO	4/15	
vv:ob	2024		Guadalupe NWR	SLO	4/3	Juvenile.
vv:va	2024		Guadalupe NWR	SLO	6/3	
bb:ly	2025		Guadalupe RP	SLO	7/8	Juvenile.
bb:pb	2025		Guadalupe RP	SLO	6/30	Juvenile.
bb:pg	2022 or 2023		Guadalupe RP	SLO	7/28	Guadalupe RP breeding adult.
bb:ra	2024		Guadalupe RP	SLO	5/14, 6/19	
bb:rv	2021		Guadalupe RP	SLO	6/2	
bb:vy	2024		Guadalupe RP	SLO	8/12	
bb:wl	2025		Guadalupe RP	SLO	7/14	Juvenile.
bb:yg	2022		Guadalupe RP	SLO	4/14, 4/18, 4/25, 5/9, 5/28, 6/13, 6/19, 6/30, 7/8, 7/28, 8/6, 8/11, 8/12	Guadalupe RP breeding adult.
ga:ga	2022		Guadalupe RP	SLO	7/2	
ga:gb	2025		Guadalupe RP	SLO	8/12	Juvenile.
ga:or	2016 or 2017		Guadalupe RP	SLO	7/23	
gg:ab	2023		Guadalupe RP	SLO	7/8	
gg:bb	2025		Guadalupe RP	SLO	4/23, 6/10	Juvenile.
gg:bl	2025		Guadalupe RP	SLO	7/14	Juvenile.
gg:ly	2025		Guadalupe RP	SLO	7/14	Juvenile.
gg:ob	2019		Guadalupe RP	SLO	3/31	
gg:oy	2025		Guadalupe RP	SLO	7/14	Juvenile.
gg:rg	2024		Guadalupe RP	SLO	7/14, 7/8	
gg:vg	2024		Guadalupe RP	SLO	3/18, 3/20, 4/25, 8/12	
gg:vl	2025		Guadalupe RP	SLO	7/25	Juvenile.
gg:wy	2025		Guadalupe RP	SLO	7/8, 8/12	Juvenile.
gg:ya	2023		Guadalupe RP	SLO	7/8	

Appendix D. Banded least terns and snowy plovers (continued).

Table D.7. Snowy plovers banded as chicks at ODSVRA seen at other sites from 1 March to 30 September 2025 (continued).

Band Combination	Year Banded	Sex	Location Seen	County	Dates Seen	Notes
pg:bb	2024		Guadalupe RP	SLO	6/24, 7/8	
pg:oo	2023		Guadalupe RP	SLO	5/28	
pg:or	2022		Guadalupe RP	SLO	6/19	
pg:yr	2022		Guadalupe RP	SLO	5/28	Guadalupe RP breeding adult.
rr:gb	2024		Guadalupe RP	SLO	3/3, 4/25, 5/1, 6/24, 7/8, 7/14	Guadalupe RP breeding adult.
rr:go	2024		Guadalupe RP	SLO	4/23, 5/21, 5/29, 6/16, 7/28	Guadalupe RP breeding adult.
rr:pv	2022		Guadalupe RP	SLO	3/20, 3/24, 4/2, 4/25, 5/14	
rr:yb	2024		Guadalupe RP	SLO	3/12	
vg:bb	2024		Guadalupe RP	SLO	7/2, 7/8	
vv:ob	2024		Guadalupe RP	SLO	4/2, 5/14, 7/8	Juvenile.
bb:al	2025		RGDP	Santa Barbara	8/20	Juvenile.
bb:gl	2025		RGDP	Santa Barbara	7/22, 7/24, 8/18	Juvenile.
bb:ly	2025		RGDP	Santa Barbara	6/24, 7/1, 7/3, 7/4, 7/15, 7/18	Juvenile.
bb:ob	2024		RGDP	Santa Barbara	7/29	
bb:ol	2025		RGDP	Santa Barbara	7/28, 8/6, 8/20, 9/18	Juvenile.
bb:pl	2025		RGDP	Santa Barbara	7/22	Juvenile.
bb:ra	2024		RGDP	Santa Barbara	7/14	
bb:yg	2022		RGDP	Santa Barbara	7/15	
bb:yo	2024		RGDP	Santa Barbara	3/3, 9/15	
ga:ab	2025		RGDP	Santa Barbara	7/1, 9/4, 9/11, 9/15	Juvenile.
ga:av	2020		RGDP	Santa Barbara	9/18	
ga:gl	2025		RGDP	Santa Barbara	7/31	Juvenile.
ga:ll	2024		RGDP	Santa Barbara	3/10, 3/27, 4/7, 4/21, 5/6, 5/7, 5/12, 5/13, 5/16, 5/21, 6/10, 6/12, 6/24, 7/1, 7/8, 7/22, 7/25, 7/28, 8/5, 8/25, 9/11	
ga:lr	2025		RGDP	Santa Barbara	9/15, 9/18	Juvenile.
ga:og	2025		RGDP	Santa Barbara	7/14	Juvenile.
ga:oo	2025		RGDP	Santa Barbara	9/4, 9/15	Juvenile.
ga:oy	2024		RGDP	Santa Barbara	8/13, 8/20, 8/25, 9/4	
ga:pl	2025		RGDP	Santa Barbara	8/22, 8/25, 8/27	Juvenile.
ga:pw	2023	F	RGDP	Santa Barbara	4/15, 4/21, 5/6, 5/9, 5/16, 5/21, 6/2, 6/3, 6/9, 6/10, 6/17, 6/24, 6/26, 7/1, 7/4, 7/22, 8/5	RGDP breeding female.
ga:wa	2024		RGDP	Santa Barbara	3/27, 7/1, 8/11, 9/4	
gg:al	2025		RGDP	Santa Barbara	7/22, 9/15	Juvenile.

Appendix D. Banded least terns and snowy plovers (continued).

Table D.7. Snowy plovers banded as chicks at ODSVRA seen at other sites from 1 March to 30 September 2025 (continued).

Band Combination	Year Banded	Sex	Location Seen	County	Dates Seen	Notes
gg:aw	2017 or 2018		RGDP	Santa Barbara	7/14	
gg:bb	2025		RGDP	Santa Barbara	8/18	Juvenile.
gg:bl	2025		RGDP	Santa Barbara	7/18	Juvenile.
gg:gy	2023		RGDP	Santa Barbara	8/20	
gg:la	2025		RGDP	Santa Barbara	7/10	Juvenile.
gg:lb	2025		RGDP	Santa Barbara	7/22, 7/31	Juvenile.
gg:lv	2025		RGDP	Santa Barbara	8/14, 8/20, 9/3	Juvenile.
gg:ly	2025		RGDP	Santa Barbara	7/24	Juvenile.
gg:og	2024		RGDP	Santa Barbara	7/18	
gg:oy	2025		RGDP	Santa Barbara	7/10, 7/14	Juvenile.
gg:rg	2024		RGDP	Santa Barbara	7/16	
gg:rw	2023		RGDP	Santa Barbara	8/12	
gg:vb	2023	F	RGDP	Santa Barbara	3/24, 3/27, 4/16, 4/2, 4/9, 4/21, 4/29, 4/30, 5/12, 5/2, 5/21, 6/6, 6/7, 6/23, 7/22, 8/3, 8/25, 9/15	RGDP breeding female.
gg:vg	2024		RGDP	Santa Barbara	3/3, 7/18, 9/11, 9/15, 9/30	
gg:wg	2023		RGDP	Santa Barbara	7/22, 8/3	
gg:wl	2025		RGDP	Santa Barbara	8/5	Juvenile.
gg:ww	2025		RGDP	Santa Barbara	7/4, 7/17	Juvenile.
gg:yb	2024		RGDP	Santa Barbara	8/27, 9/15, 9/18	
pg:ba	2021		RGDP	Santa Barbara	9/15	
pg:bb	2024	F	RGDP	Santa Barbara	3/10, 3/27, 4/2, 4/15, 4/16, 5/8, 5/16, 5/21, 5/22, 5/27, 5/29, 7/31	RGDP breeding female.
pg:bl	2025		RGDP	Santa Barbara	6/24, 7/15, 7/17	Juvenile.
pg:ga	2023		RGDP	Santa Barbara	8/20, 9/11, 9/15	
pg:la	2025		RGDP	Santa Barbara	9/15, 9/18	Juvenile.
pg:lg	2025		RGDP	Santa Barbara	7/15	Juvenile.
pg:lo	2025		RGDP	Santa Barbara	8/18, 8/25, 9/11	Juvenile.
pg:ly	2025		RGDP	Santa Barbara	7/22, 7/24, 8/7, 8/8	Juvenile.
pg:oo	2023		RGDP	Santa Barbara	7/22, 7/23, 8/3, 8/4, 8/5, 8/18, 9/11, 9/15, 9/18	
pg:ww	2025		RGDP	Santa Barbara	7/18	Juvenile.
pv:la	2025		RGDP	Santa Barbara	9/3	Juvenile.
pv:pw	2025		RGDP	Santa Barbara	9/4	Juvenile.
pv:ww	2025		RGDP	Santa Barbara	9/15	Juvenile.

Appendix D. Banded least terns and snowy plovers (continued).

Table D.7. Snowy plovers banded as chicks at ODSVRA seen at other sites from 1 March to 30 September 2025 (continued).

Band Combination	Year Banded	Sex	Location Seen	County	Dates Seen	Notes
rr:al	2025		RGDP	Santa Barbara	8/18, 8/20, 9/3, 9/4	Juvenile.
rr:bo	2022		RGDP	Santa Barbara	8/3	
rr:go	2024		RGDP	Santa Barbara	3/27, 3/3, 4/29, 7/18, 8/12, 8/25, 9/11, 9/18	
rr:lg	2025		RGDP	Santa Barbara	8/11	Juvenile.
rr:pg	2023		RGDP	Santa Barbara	4/16	
rr:pv	2022		RGDP	Santa Barbara	6/4, 8/25	
rr:rw	2022		RGDP	Santa Barbara	3/27, 5/19, 5/21, 7/8, 7/10, 7/31, 9/11	
rr:wy	2025		RGDP	Santa Barbara	8/6	Juvenile.
vg:aw	2024		RGDP	Santa Barbara	6/11, 6/9, 7/25, 8/3, 8/4, 8/18, 9/15	
vg:bb	2024		RGDP	Santa Barbara	8/20, 8/25, 9/15	
vg:bv	2025		RGDP	Santa Barbara	9/15, 9/18	Juvenile.
vg:gv	2025		RGDP	Santa Barbara	6/11	Juvenile.
vg:vg	2025		RGDP	Santa Barbara	7/22, 7/24, 7/28	Juvenile.
vv:ob	2024		RGDP	Santa Barbara	7/15, 7/17, 7/21, 7/22, 7/23, 7/25, 8/3, 8/18, 9/11	Juvenile.
vv:va	2024		RGDP	Santa Barbara	7/22, 7/25, 7/29, 8/5, 8/6, 8/12	
bb:ay	2023	M	VSFB	Santa Barbara	3/16, 3/21, 3/27, 4/10, 4/15, 6/10, 7/11, 7/26, 8/5, 8/17, 8/29	VSFB breeding male.
bb:gl	2025		VSFB	Santa Barbara	7/9, 7/11, 7/14	Juvenile.
bb:gy	2025		VSFB	Santa Barbara	6/26, 7/3, 7/15, 9/12, 9/15	Juvenile.
bb:ly	2025		VSFB	Santa Barbara	7/8	Juvenile.
bb:oa	2025		VSFB	Santa Barbara	7/24	Juvenile.
bb:pb	2025		VSFB	Santa Barbara	7/17	Juvenile.
bb:pl	2025		VSFB	Santa Barbara	7/10, 7/15	Juvenile.
bb:pw	2023	F	VSFB	Santa Barbara	3/12, 3/20, 3/22, 3/26, 3/31, 4/7, 4/9, 4/11, 4/21, 4/26, 5/7, 5/9, 5/14, 5/21, 5/26, 5/30, 6/2, 6/18, 6/27, 7/7, 7/9, 7/14, 7/28, 8/6, 8/8, 8/11	VSFB breeding female.
bb:ra	2024		VSFB	Santa Barbara	7/16	
bb:rb	2024		VSFB	Santa Barbara	4/19	
bb:ry	2025		VSFB	Santa Barbara	7/10, 7/23	Juvenile.
bb:vr	2024		VSFB	Santa Barbara	5/8	
bb:vy	2024	F	VSFB	Santa Barbara	3/6, 3/27, 4/1, 4/10, 4/29, 5/8, 5/23, 6/3, 6/5, 6/10, 6/17, 7/22, 7/24, 7/29, 8/13	VSFB breeding female.
bb:wl	2025		VSFB	Santa Barbara	7/22, 7/24, 7/25, 7/28	Juvenile.
bb:yl	2025		VSFB	Santa Barbara	8/4	Juvenile.

Appendix D. Banded least terns and snowy plovers (continued).

Table D.7. Snowy plovers banded as chicks at ODSVRA seen at other sites from 1 March to 30 September 2025 (continued).

Band Combination	Year Banded	Sex	Location Seen	County	Dates Seen	Notes
bb:yr	2021	M	VSFB	Santa Barbara	3/16, 3/18, 4/1, 4/15, 4/17, 4/24, 5/15, 5/22, 5/29, 6/3, 6/5, 6/10, 6/17, 6/19, 6/24, 6/26	VSFB breeding male.
ga:ab	2025		VSFB	Santa Barbara	7/24	Juvenile.
ga:ag	2024		VSFB	Santa Barbara	5/27, 5/29, 7/3, 7/5, 9/5	
ga:al	2025		VSFB	Santa Barbara	9/11	Juvenile.
ga:aw	2018		VSFB	Santa Barbara	3/12, 3/28, 7/9, 7/16, 7/20, 8/2, 9/15	
ga:gg	2024		VSFB	Santa Barbara	4/11	
ga:gw	2025		VSFB	Santa Barbara	6/25	Juvenile.
ga:lg	2025		VSFB	Santa Barbara	7/15	Juvenile.
ga:oo	2025		VSFB	Santa Barbara	9/15	Juvenile.
ga:ow	2025		VSFB	Santa Barbara	7/25	Juvenile.
gg:al	2025		VSFB	Santa Barbara	7/22, 8/13	Juvenile.
gg:aw	2017 or 2018	F	VSFB	Santa Barbara	3/4, 3/6, 3/20, 3/27, 4/1, 4/22, 4/24, 5/15, 5/22, 6/5, 7/3, 7/10, 7/15, 7/22, 7/24, 7/29, 8/5, 9/11	VSFB breeding female.
gg:bb	2025		VSFB	Santa Barbara	6/3	Juvenile.
gg:bv	2023		VSFB	Santa Barbara	3/4, 3/6, 3/18, 3/27, 4/10, 6/17, 6/19, 8/1, 8/5	
gg:bw	2024		VSFB	Santa Barbara	5/23	
gg:go	2025		VSFB	Santa Barbara	7/15, 7/17, 7/25, 7/31, 8/21, 8/4, 8/6, 9/5	Juvenile.
gg:la	2025		VSFB	Santa Barbara	7/15, 7/17, 7/24	Juvenile.
gg:lb	2025		VSFB	Santa Barbara	7/22, 7/23, 7/25, 7/29	Juvenile.
gg:lv	2025		VSFB	Santa Barbara	9/3	Juvenile.
gg:ly	2025		VSFB	Santa Barbara	7/16, 7/22, 7/29	Juvenile.
gg:og	2024		VSFB	Santa Barbara	8/7	
gg:rw	2023		VSFB	Santa Barbara	3/28	
gg:ww	2025		VSFB	Santa Barbara	7/9, 7/11, 7/14	Juvenile.
gg:wy	2025		VSFB	Santa Barbara	7/29	Juvenile.
pg:al	2024		VSFB	Santa Barbara	3/6, 3/20, 3/25, 4/17, 9/11	
pg:bl	2025		VSFB	Santa Barbara	7/3, 7/11	Juvenile.
pg:lg	2025		VSFB	Santa Barbara	7/25	Juvenile.
pg:lo	2025		VSFB	Santa Barbara	8/8, 8/15, 9/5	Juvenile.
pg:lv	2025		VSFB	Santa Barbara	9/12	Juvenile.
pg:ly	2025		VSFB	Santa Barbara	8/1	Juvenile.
pv:ww	2025		VSFB	Santa Barbara	9/15	Juvenile.

Appendix D. Banded least terns and snowy plovers (continued).

Table D.7. Snowy plovers banded as chicks at ODSVRA seen at other sites from 1 March to 30 September 2025 (continued).

Band Combination	Year Banded	Sex	Location Seen	County	Dates Seen	Notes
rr:bo	2022	M	VSFB	Santa Barbara	3/4, 3/27, 4/1, 4/10, 4/29, 5/29, 6/17, 6/19, 6/24, 7/1, 7/3, 7/15, 7/17, 7/22, 7/24, 7/29	VSFB breeding male.
rr:ow	2025		VSFB	Santa Barbara	9/11	Juvenile.
rr:pg	2023		VSFB	Santa Barbara	3/19, 7/11, 7/16	
vg:aw	2024		VSFB	Santa Barbara	3/6, 3/20, 3/25, 3/27, 4/1, 4/10, 4/19, 4/29, 5/8	
vg:gv	2025		VSFB	Santa Barbara	6/18, 6/27	Juvenile.
vg:lb	2025		VSFB	Santa Barbara	7/8, 7/10	Juvenile.
vg:vg	2025		VSFB	Santa Barbara	8/4, 8/15	Juvenile.
vv:bg	2022		VSFB	Santa Barbara	5/27, 6/5, 6/24	
vv:gg	2023	F	VSFB	Santa Barbara	3/31, 5/28, 5/30, 6/4, 6/16, 6/23, 6/25, 6/30, 7/4, 7/7, 7/9	VSFB breeding female.
vv:yw	2021	F	VSFB	Santa Barbara	3/12, 3/19, 3/21, 3/24, 3/31, 4/4, 4/7, 4/11, 4/21, 4/30, 5/7, 5/9, 6/9, 6/25, 6/30, 7/18, 7/25, 7/7, 8/21, 8/29, 8/4, 9/15	VSFB breeding female.
bb:yb	2025		Dangermond Preserve	Santa Barbara	7/17	Juvenile.
ga:lo	2025		Dangermond Preserve	Santa Barbara	9/19	Juvenile.
ga:yb	2025		Dangermond Preserve	Santa Barbara	7/17	Juvenile.
gg:go	2025		Dangermond Preserve	Santa Barbara	9/15	Juvenile.
pg:al	2024		Dangermond Preserve	Santa Barbara	9/22	
rr:pg	2023		Dangermond Preserve	Santa Barbara	8/6, 8/29	
vv:br	2024		Dangermond Preserve	Santa Barbara	3/19	
bb:-	Unknown		Hollister Ranch Shoreline Preserve	Santa Barbara	7/31	
bb:ly	2025		Hollister Ranch Shoreline Preserve	Santa Barbara	7/14, 7/19, 7/28, 7/31, 8/4, 8/8, 8/25	Juvenile.
ga:gl	2025		Hollister Ranch Shoreline Preserve	Santa Barbara	8/25	Juvenile.
ga:og	2025		Hollister Ranch Shoreline Preserve	Santa Barbara	7/28	Juvenile.
gg:bl	2025		Hollister Ranch Shoreline Preserve	Santa Barbara	7/24	Juvenile.
gg:la	2025		Hollister Ranch Shoreline Preserve	Santa Barbara	8/25	Juvenile.
vv:gb	2023		Hollister Ranch Shoreline Preserve	Santa Barbara	3/4, 3/21	
bb:gy	2025		COPR	Santa Barbara	7/23, 8/4	Juvenile.
bb:ry	2025		COPR	Santa Barbara	7/25, 7/30	Juvenile.
ga:ab	2025		COPR	Santa Barbara	7/14, 8/18	Juvenile.
ga:ly	2025		COPR	Santa Barbara	7/7	Juvenile.

Appendix D. Banded least terns and snowy plovers (continued).

Table D.7. Snowy plovers banded as chicks at ODSVRA seen at other sites from 1 March to 30 September 2025 (continued).

Band Combination	Year Banded	Sex	Location Seen	County	Dates Seen	Notes
ga:og	2025		COPR	Santa Barbara	7/25	Juvenile.
ga:pb	2016 or 2017		COPR	Santa Barbara	3/10, 3/19	
ga:vv	2023 or 2024		COPR	Santa Barbara	4/18, 4/21	COPR breeding adult.
gg:gw	2024		COPR	Santa Barbara	4/16	Juvenile.
gg:lg	2025		COPR	Santa Barbara	7/18	Juvenile.
gg:og	2024		COPR	Santa Barbara	3/19	
gg:yb	2024		COPR	Santa Barbara	9/3	
pg:lg	2025		COPR	Santa Barbara	7/30	Juvenile.
pg:oo	2023	F	COPR	Santa Barbara	4/30, 5/9, 5/12, 5/16, 5/30, 6/16	COPR breeding female.
pv:ga	2024		COPR	Santa Barbara	3/19, 7/28, 7/30, 8/18	
rr:al	2025		COPR	Santa Barbara	9/4	Juvenile.
vv:ay	2024		COPR	Santa Barbara	3/19, 7/14, 9/4, 9/11	
pv:ga	2024		San Buenaventura SB	Ventura	4/11, 4/14	
rr:yb	2024		San Buenaventura SB	Ventura	4/8	
ga:pb	2016 or 2017		McGrath SB	Ventura	5/28, 6/10	McGrath SB breeding adult.
ga:pb	2016 or 2017		Ormond Beach	Ventura	6/11	
vg:ow	2024		Malibu Lagoon	Los Angeles	3/16, 9/1, 9/19	
pv:ga	2024		Ocean Beach	San Diego	4/16	

APPENDIX E. CALIFORNIA LEAST TERN REPRODUCTIVE SUCCESS REPORTED FOR CURRENT, RECENT, OR INFREQUENT BREEDING SITES IN SAN LUIS OBISPO AND SANTA BARBARA COUNTIES FROM 2004-2025.

Chicks are not banded at COPR and other methods are used to estimate number of juveniles produced. In 2018, VSFB began banding chicks to site and year. In 2025, RGDP began banding chicks to site and year.

Sources: RGDP and VSFB (pers. comm. Emily Rice), COPR (pers. comm. Jessica Nielson).

unk = number not available due to insufficient information.

Year	Site	No. pairs	No. nests	No. nests hatching	No. chicks	No. juveniles	No. juveniles per total no. nest	No. juveniles per pair
2004	ODSVRA	47	63	44	69	25	0.40	0.53
	RGDP	8	8	3	7	0	0.00	0.00
	VSFB	1	1	0	0	0	0.00	0.00
	COPR	6	6	0	0	0	0.00	0.00
2005	ODSVRA	47-53	59	39	66	20	0.34	0.38-0.43
	RGDP	4	4	0	0	0	0.00	0.00
	VSFB	44	44	18	32	1	0.02	0.02
	COPR	0	0	0	0	0	0.00	0.00
2006	ODSVRA	31-35	38	28	45	36	0.95	1.03-1.16
	RGDP	0	0	0	0	0	0.00	0.00
	VSFB	2	2	0	0	0	0.00	0.00
	COPR	5	5	4	7	7	1.40	1.40
2007	ODSVRA	54-60	66	51	90	70	1.06	1.17-1.3
	RGDP	1	1	1	1	1	1.00	1.00
	VSFB	18	18	13	20	16	0.89	0.89
	COPR	4	6	2	4	0	0.00	0.00
2008	ODSVRA	55-56	56	50	99	71	1.27	1.27-1.29
	RGDP	0	0	0	0	0	0.00	0.00
	VSFB	18	18	17	32-33	19	1.06	1.06
	COPR	1	1	0	0	0	0.00	0.00
2009	ODSVRA	25-26	26	23	43	33	1.27	1.29-1.32
	RGDP	2-3	3	2	3	3	1.00	1.00-1.50
	VSFB	30	31	28	56	37	1.19	1.23
	COPR	0	0	0	0	0	0.00	0.00
2010	ODSVRA	23	23	20	35	29	1.26	1.26
	RGDP	1	1	1	2	2	2.00	2.00
	VSFB	33	34	29	57	29	0.85	0.88
	COPR	0	0	0	0	0	0.00	0.00
2011	ODSVRA	33-34	35	31	55	50	1.43	1.47-1.52
	RGDP	0	0	0	0	0	0.00	0.00
	VSFB	32	32	19	36	4	0.13	0.13
	COPR	1	1	0	0	0	0.00	0.00
2012	ODSVRA	41-44	46	33	52	42	0.91	0.97-1.02
	RGDP	0	0	0	0	0	0.00	0.00
	VSFB	18	18	12	21	10	0.56	0.56
	COPR	0	0	0	0	0	0.00	0.00
2013	ODSVRA	48-53	57	45	85	56	0.98	1.06-1.17
	RGDP	0	0	0	0	0	0.00	0.00
	VSFB	15	15	15	25	19	1.27	1.27
	COPR	0	0	0	0	0	0.00	0.00

Appendix E. California least tern reproductive success reported for current, recent, or infrequent breeding sites in San Luis Obispo and Santa Barbara counties from 2004-2025 (continued).

Year	Site	No. pairs	No. nests	No. nests hatching	No. chicks	No. juveniles	No. juveniles per total no. nest	No. juveniles per pair
2014	ODSVRA	47-48	49	42	76	58	1.18	1.21-1.23
	RGDP	0	0	0	0	0	0.00	0.00
	VSFB	17	21	15	30	20	0.95	1.18
	COPR	0	0	0	0	0	0.00	0.00
2015	ODSVRA	44-49	54	48	84	69	1.28	1.41-1.57
	RGDP	0	0	0	0	0	0.00	0.00
	VSFB	22	22	22	45	29	1.32	1.32
	COPR	0	0	0	0	0	0.00	0.00
2016	ODSVRA	47-48	49	46	78	59	1.20	1.23-1.26
	RGDP	0	0	0	0	0	0.00	0.00
	VSFB	25	27	21	38	18	0.67	0.72
	COPR	0	0	0	0	0	0.00	0.00
2017	ODSVRA	42-47	52	22	39	7	0.13	0.15-0.17
	RGDP	0	0	0	0	0	0.00	0.00
	VSFB	27	28	23	41	8	0.29	0.30
	COPR	0	0	0	0	0	0.00	0.00
2018	ODSVRA	30-33	35	28	42	35	1.00	1.06-1.17
	RGDP	10-11	11	5	10	4	0.36	0.36-0.40
	VSFB	60	83	33	57	35	0.42	0.58
	COPR	0	0	0	0	0	0.00	0.00
2019	ODSVRA	31-33	34	31	52	38	1.12	1.15-1.23
	RGDP	17	17	8	15	unk	unk	unk
	VSFB	42	47	36	63	21	0.44	0.50
	COPR	0	0	0	0	0	0.00	0.00
2020	ODSVRA	35-42	48	36	63	38	0.79	0.90-1.09
	RGDP	50	56	10	18	5-10	0.09-0.18	0.10-0.20
	VSFB	10	12	7	11	6	0.50	0.60
	COPR	0	0	0	0	0	0.00	0.00
2021	ODSVRA	50-52	53	49	81	48	0.91	0.92-0.96
	RGDP	0	0	0	0	0	0.00	0.00
	VSFB	27	34	17	29	8	0.24	0.30
	COPR	0	0	0	0	0	0.00	0.00
2022	ODSVRA	43-44	45	42	69	37	0.82	0.84-0.86
	RGDP	1	1	0	0	0	0.00	0.00
	VSFB	42	45	39	78	23	0.51	0.55
	COPR	0	0	0	0	0	0.00	0.00
2023	ODSVRA	41-42	42	37	66	35	0.83	0.83-0.85
	RGDP	0	0	0	0	0	0.00	0.00
	VSFB	39	42	37	62	17	0.40	0.44
	COPR	0	0	0	0	0	0.00	0.00
2024	ODSVRA	40-40	40	37	64	48	1.20	1.20-1.20
	RGDP	0	0	0	0	0	0.00	0.00
	VSFB	37	40	35	64	33	0.83	0.89
	COPR	0	0	0	0	0	0.00	0.00
2025	ODSVRA	40-41	42	28	45	31	0.74	0.76-0.78
	RGDP	3	3	1	2	2	0.67	0.67
	VSFB	41	46	35	67	17	0.37	0.41
	COPR	0	0	0	0	0	0.00	0.00

APPENDIX F. ADDENDUMS TO SNOWY PLOVER NESTING SUCCESS.

Table F.1. Nesting success of snowy plovers in identifiable areas at ODSVRA, 2001-2025.

Nests from unknown locations (identified only by presence of broods) are not included in table. Percent nests hatching is calculated using number of hatching nests from known location divided by number of known location and fate nests. Those chicks whose nest location could not be identified are not included in table. Beginning in 2006, an additional 0.4 miles of shoreline at the southern end of the park has been monitored by ODSVRA (a survey conducted by the Guadalupe-Nipomo Dunes NWR in 2005 determined this area was part of the ODSVRA and not the refuge, as was previously thought). Between 1998-2003, increases occurred in the size of the Southern Enclosure; size has remained consistent since 2004. Beginning in 2020 and 2021, Fore dune closure and closed buffer area, respectively, became new area designations. Area information is provided in the report Site Description section.

BY = Boneyard, Euc. = Eucalyptus, reveg. = revegetation

Year	Area	No. known location nests	No. nests with known location and known fate	No. nests with known location hatching	% nests hatching	No. chicks from known location	No. chicks from known location fledged	% chicks from known location nests fledged
2001	Southern Enclosure	25	25	22	88	57	2	4
	Oso Flaco	4	2	2	100	6	1	17
	Open riding area	1	1	0	0	0	0	0
	Arroyo Grande Enclosure ^{1, 3}	3	2	3	100	9	0	0
	Total	33	30	27	87	72	3	4
2002	Southern Enclosure	33	33	25	76	62	35	56
	Oso Flaco	2	2	0	0	0	0	0
	Total	35	35	25	71	62	35	56
2003	Southern Enclosure	74	73	53	73	136	91	67
	Oso Flaco	13	13	4	31	11	7	64
	Open riding area	1	1	1	100	3	3	100
	Dunes Preserve	1	1	1	100	3	0	0
	Pipeline reveg. area	3	3	2	67	4	2	50
	East of BY enclosure ²	2	2	1	50	3	2	67
	Total	94	93	62	67	160	105	66
2004	Southern Enclosure	113	111	87	78	208	59	28
	Oso Flaco	27	27	17	63	40	7	18
	Open riding area	1	1	0	0	0	0	0
	Pipeline reveg. area	1	1	1	100	3	0	0
	Total	142	140	105	75	251	66	26
2005	Southern Enclosure	79	79	60	76	142	57	40
	Oso Flaco	22	22	18	82	49	23	47
	East of BY enclosure ²	2	2	2	100	6	2	33
	Total	103	103	80	78	197	82	42
2006	Southern Enclosure	87	84	65	77	173	8	5
	Oso Flaco	29	29	22	76	57	9	16
	Open riding area	1	1	0	0	0	0	0
	Total	117	114	87	76	230	17	7
2007	Southern Enclosure	76	76	61	80	159	58	36
	Oso Flaco	15	15	9	60	20	4	20
	Total	91	91	70	77	179	62	35
2008	Southern Enclosure	100	100	73	73	172	64	37
	Oso Flaco	19	19	8	42	19	5	26
	Total	119	119	81	68	191	69	36
2009	Southern Enclosure	125	124	86	69	220	79	36
	Oso Flaco	23	22	8	36	22	2	9
	Pismo Creek lagoon	1	1	0	0	0	0	0
	Total	149	147	94	64	242	81	33

Table F.1. Nesting success of snowy plovers in identifiable areas at ODSVRA, 2001-2025 (continued).

Year	Area	No. known location nests	No. nests with known location and known fate	No. nests with known location hatching	% nests hatching	No. chicks from known location	No. chicks from known location fledged	% chicks from known location nests fledged
2010	Southern Exclosure	126	123	95	77	234	86	37
	Oso Flaco	22	22	13	59	33	15	45
	Open riding area	1	1	1	100	2	2	100
	Carpenter Creek	1	1	0	0	0	0	0
	Arroyo Grande Creek	3	3	0	0	0	0	0
	Total	153	150	109	73	269	103	38
2011	Southern Exclosure	140	135	113	84	300	129	43
	Oso Flaco	23	23	16	70	40	18	45
	Open riding area	2	2	2	100	5	1	20
	Total	165	160	131	82	345	148	43
2012	Southern Exclosure	194	186	143	77	353	85	24
	Oso Flaco	14	14	9	64	21	4	19
	Open riding area	3	3	0	0	0	0	0
	Total	211	203	152	75	374	89	24
2013	Southern Exclosure	147	144	115	80	286	123	43
	Oso Flaco	23	23	15	65	38	25	66
	Total	170	167	130	78	324	148	46
2014	Southern Exclosure	201	194	173	89	428	142	33
	Oso Flaco	44	44	33	75	86	35	41
	Open riding area	1	1	0	0	0	0	0
	Total	246	239	206	86	514	177	34
2015	Southern Exclosure	182	175	153	87	401	215	54
	Oso Flaco	20	20	14	70	39	24	62
	Arroyo Grande Creek ³	1	-	1	-	2	0	0
	Total	203	195	168	86	442	239	54
2016	Southern Exclosure	169	156	136	87	326	94	29
	Oso Flaco	40	37	29	78	82	36	44
	Arroyo Grande Creek ³	1	-	1	-	2	1	50
	Total	210	193	166	85	410	131	32
2017	Southern Exclosure	195	165	107	65	252	105	42
	Oso Flaco	77	72	38	53	96	55	57
	Arroyo Grande Creek	1	1	0	0	0	0	0
	Total	273	238	145	61	348	160	46
2018	Southern Exclosure	145	139	111	80	274	131	48
	Oso Flaco	61	61	33	54	84	43	51
	Total	206	200	144	72	358	174	49
2019	Southern Exclosure	172	163	118	72	299	81	27
	Oso Flaco	57	56	30	54	75	13	17
	Euc. North reveg. area	1	1	1	100	3	1	33
	Total	230	220	149	68	377	96	25
2020	Southern Exclosure	128	117	85	73	206	56	27
	Oso Flaco	39	35	21	60	55	4	7
	Foredune closure ⁴	25	23	17	74	47	14	30
	Open riding area ^{4,5}	21	21	18	86	49	21	43
	Bigfoot reveg. area	1	1	1	100	3	0	0
	Total	214	197	142	72	360	95	27

Table F.1. Nesting success of snowy plovers in identifiable areas at ODSVRA, 2001-2025 (continued).

Year	Area	No. known location nests	No. nests with known location and known fate	No. nests with known location hatching	% nests hatching	No. chicks from known location	No. chicks from known location fledged	% chicks from known location nests fledged
2021	Southern Exclosure	132	128	74	58	182	61	34
	Oso Flaco	29	29	11	38	23	9	39
	Foredune closure	48	48	36	75	90	29	32
	Closed buffer area	7	7	4	57	8	2	25
	Open riding area	4	4	2	50	6	2	33
	Dunes Preserve	1	1	1	100	1	0	0
	Bigfoot reveg. area	1	1	1	100	2	0	0
	Euc. Tree reveg. area	1	1	0	0	0	0	0
	Total	223	219	129	59	312	103	33
2022	Southern Exclosure	153	145	122	84	298	95	32
	Oso Flaco	20	20	4	20	8	2	25
	Foredune closure	55	53	38	72	86	39	45
	Closed buffer area	4	4	4	100	12	1	8
	Open riding area	2	2	0	0	0	0	0
	Euc. Tree reveg. area	1	1	1	100	3	3	100
	Total	235	225	169	75	407	140	35
2023	Southern Exclosure	118	112	65	58	161	92	57
	Oso Flaco	18	17	10	59	21	15	71
	Foredune closure	64	62	36	58	81	41	51
	Closed buffer area	2	2	2	100	5	4	80
	Open riding area	8	8	2	25	4	1	25
	Euc. North reveg. area	3	3	2	67	6	2	33
	Euc. Tree reveg. area	4	4	1	25	3	2	67
	Total	217	208	118	57	281	157	56
2024	Southern Exclosure	150	146	116	76	285	128	45
	Oso Flaco	41	41	16	39	43	14	33
	Foredune closure	55	53	41	77	108	51	47
	Closed buffer area	1	1	1	100	2	2	100
	Open riding area	1	1	0	0	0	0	0
	Euc. Tree reveg. area	1	1	1	100	3	2	67
	Total	249	243	175	72	441	197	45
2025	Southern Exclosure	177	175	135	77	344	141	41
	Oso Flaco	45	44	22	50	55	27	49
	Foredune closure	81	76	60	79	148	68	46
	Closed buffer area	2	2	1	50	2	0	0
	Pismo Creek lagoon	1	1	1	100	1	0	0
	Total	306	298	219	73	550	236	43

¹Arroyo Grande exclosure: A seasonal exclosure (with two-inch by four-inch wire mesh fencing and closed from the riding area) in use in 2001 and 2002, but not subsequently. This area had three nests in 2001 and none in 2002.

²East of BY exclosure: Area closed to vehicles year-round and open to pedestrians. There were two nests in 2003 and two nests in 2005. All nests had a single nest wire exclosure (10-foot by 10-foot exclosure).

³In 2001, 2015 and 2016, brood with approximately one- to three-day-old chicks found in Arroyo Grande Creek area, assumed to be from an unknown nest nearby, and included in this table, but excluded from the percent hatch rate.

⁴In 2020, 1 nest found on the Foredune closure shoreline was designated as an open riding area location nest in the 2020 report and was changed to the location of Foredune closure beginning in the 2021 report in order to conform with current location designations.

⁵In 2020, 21 nests located outside closed areas such as Southern Exclosure, Foredune closure, Oso Flaco, and revegetation areas included in the open riding area category even though the area was closed to public vehicle and camping access (but open to other public recreation use) for most of the 2020 season (see 2020 annual report for more details).

Appendix F. Addendums to snowy plover nesting success (continued).

Table F.2. Attributed causes of snowy plover nest loss in Southern Enclosure and Oso Flaco at ODSVRA from 2002-2025.

Flooded nests include nests with fates of flooded by creek, overwashed by tide, and event, tide. The percentage of total loss for each cause is shown for the 24-year period 2002-2025. Beginning with the 2020 report, all nests from 2002 onward likely lost to wind were placed in the fate category of “Wind,” to avoid use of earlier terminology such as “Abandoned, suspected due to wind.” Fate categories “event, raven” (beginning 2024) and “event, coyote” (beginning 2025) are used for nests considered depredated based on occurrence of multiple nests confirmed depredated on site during same period of time by raven or coyote, respectively.

So. Excl. = Southern Enclosure, Aband. = Abandoned, Corvid = crow or raven, Unid. pred. = Unidentified predator, Vand. = Vandalism.

Year	Area	Aband. pre- term	Aband. post- term	Aband., unk. pre- or post- term	Aband., partial loss of clutch	Failed, cause unk.	Failed, nonviable eggs removed by staff	Unid. pred.	Avian pred.	Gull	Corvid	Raven	Event, raven	Harrier	Peregrine	Coyote	Event, coyote	Raccoon	Skunk	Opossum	Wind	Flooded	Vand.	Total
2002	So. Excl.			3		1										1					3			8
	Oso Flaco																				2			2
2003	So. Excl.	5	2	3				3				1									8			22
	Oso Flaco	2		1		1		1				4												9
2004	So. Excl.	11		1		7		1				2				2								24
	Oso Flaco	4				2		3														1		10
2005	So. Excl.	9	3			7																		19
	Oso Flaco	2	1					1																4
2006	So. Excl.	5	4			3		1			3					4								20
	Oso Flaco			1				1		3												2		7
2007	So. Excl.	4	1			9						1												15
	Oso Flaco	2				2						1				1								6
2008	So. Excl.	10		3		3		2	5	1				2								1		27
	Oso Flaco	3		1					4					1								2		11
2009	So. Excl.	7	1			1	3	7	14	2				1							2	1		39
	Oso Flaco	3				2		2	4										1		1	1		14
2010	So. Excl.	5	2					4	6												9	2		28
	Oso Flaco	1							2									1	2		2	1		9
2011	So. Excl.	6	3	1		2		1	5		3										1			22
	Oso Flaco							2			2							1	2					7
2012	So. Excl.	11	1	3		3		3	5		3			5	1	1					6	1		43
	Oso Flaco	3	1																		1			5
2013	So. Excl.	5	5			3		1													15			29
	Oso Flaco	3	2							1											2			8
2014	So. Excl.	13	1	4		2																1		21
	Oso Flaco	6		1				1								1					1	1		11

Appendix F. Addendums to snowy plover nesting success (continued).

Table F.2. Attributed causes of snowy plover nest loss in Southern Enclosure and Oso Flaco at ODSVRA from 2002-2025 (continued).

Year	Area	Aband. pre-term	Aband. post-term	Aband., unk. pre- or post-term	Aband., partial loss of clutch	Failed, nonviable eggs removed by staff	Failed, cause unk.	Unid. pred.	Avian pred.	Gull	Corvid	Raven	Event, raven	Harrier	Peregrine	Coyote	Event, coyote	Raccoon	Skunk	Opossum	Wind	Flooded	Vand.	Total
2015	So. Excl.	11	1	4			2		2			1									1			22
	Oso Flaco	1					1	1				3												6
2016	So. Excl.	5	7	2			3												1		2			20
	Oso Flaco	4					1	1		1														7
2017	So. Excl.	5	3	3			11	9	2	2		6				1			15		1			58
	Oso Flaco	5		2			15					4				1			3		2	2		34
2018	So. Excl.	9	3	5			2		3			5										1		28
	Oso Flaco	2		2				2	10	5						4					3			28
2019	So. Excl.	3		2			3		6	10	1	12		1					1		3	3		45
	Oso Flaco	3		1			2	4	2	4		1				4						5		26
2020	So. Excl.	3	1				1	7	8			2		3		1					4	2		32
	Oso Flaco			2			3		2			1									5	1		14
2021	So. Excl.	9		2				5	16			4		11		1				2	4			54
	Oso Flaco	4		1			2	2	3			5									1			18
2022	So. Excl.	7	3	2			2	1	2			1									4	1		23
	Oso Flaco	2					2	5	3			1				1						2		16
2023	So. Excl.	4		1				5	6			24		3		2						2		47
	Oso Flaco						1	1				2									1	1	1	7
2024	So. Excl.	6		1	5	2	2	2				8	4											30
	Oso Flaco	3	1					2	2		1	8	3						2			2	1	25
2025	So. Excl.	6	3	2		6	1					15	2			1	4							40
	Oso Flaco	4					4	2				9	1			1						1		22
2002-25 Total nest loss	So. Excl.	159	44	42	5	11	68	52	80	18	7	82	6	26	1	14	4	0	17	2	63	15	0	716
	Oso Flaco	57	5	12	0	0	38	31	32	14	3	39	4	1	0	13	0	2	8	2	21	22	2	306
2002-25 Grand Total So. Excl. and Oso Flaco		216	49	54	5	11	106	83	112	32	10	121	10	27	1	27	4	2	25	4	84	37	2	1022
		21.1%	4.8%	5.3%	0.5%	1.1%	10.4%	8.1%	11.0%	3.1%	1.0%	11.8%	1.0%	2.6%	0.1%	2.6%	0.4%	0.2%	2.4%	0.4%	8.2%	3.6%	0.2%	

Appendix F. Addendums to snowy plover nesting success (continued).

Table F.3 Nest protection used in the Southern Enclosure and Oso Flaco at ODSVRA in 2025.

Included in table are 219 nests with both known location and known fate. See Closures and fencing under Management Actions in this report on page 17 for definition of fencing types. Percent in parentheses is percent nests hatched. Depredated fate codes: rav = raven; er = event, raven; coy = coyote; ey = event, coyote; un = unknown predator. Failed other causes fate codes: pre = abandoned pre-term; pos = abandoned post-term; ukp = abandoned, unknown pre- or post-term; rem = failed, nonviable eggs removed by staff; fld = flooded (overwash by tide and “event, tide”); unk = failed, cause unknown.

Area	Enclosure predator fence		Shoreline symbolic fence	
	No additional fencing	Mini	No additional fencing	Circular
Southern Enclosure				
6 enclosure	57		17	1
Nests hatched	50 (88%)		14 (82%)	1 (100%)
Nests depredated	2 (2 rav, 1 ey)			
Nests failed other causes	5 (3 pre, 1 pos, 1 rem)		3 (2 pre, 1 pos)	
7 enclosure	37	7	14	1
Nests hatched	26 (70%)	6 (86%)	8 (57%)	1 (100%)
Nests depredated	8 (4 rav, 1 er, 1 coy, 2 ey)		2 (2 rav)	
Nests failed other causes	3 (1 pre, 1 rem, 1 unk)	1 (1 pos)	4 (1 ukp, 3 rem)	
8 enclosure	19	4	5	3
Nests hatched	11 (58%)	4 (100%)	5 (100%)	3 (100%)
Nests depredated	6 (5 rav, 1 ey)			
Nests failed other causes	2 (1 ukp, 1 rem)			
Boneyard	9	1		
Nests hatched	5 (56%)	1 (100%)		
Nests depredated	4 (3 rav, 1 er)			
Nests failed other causes				
TOTALS	122	12	36	5
Nests hatched	92 (75%)	11 (92%)	27 (75%)	5 (100%)
Nests depredated	20 (13 rav, 2 er, 1 coy, 4 ey)		2 (2 rav)	
Nests failed other causes	10 (4 pre, 1 pos, 1 ukp, 3 rem, 1 unk)	1 (1 pos)	7 (2 pre, 1 pos, 1 ukp, 3 rem)	
Oso Flaco				
North Oso Flaco	5		6	1
Nests hatched	2 (40%)		2 (33%)	1 (100%)
Nests depredated	2 (1 rav, 1 er)		3 (3 rav)	
Nests failed other causes	1 (1 pre)		1 (1 unk)	
South Oso Flaco			14¹	18²
Nests hatched			3 (21%)	14 (78%) ³
Nests depredated			7 (4 rav, 1 coy, 2 un)	1 (1 rav) ⁴
Nests failed other causes			4 (1 fld, 3 unk)	3 (3 pre) ³
OSO FLACO TOTALS	5		6	19
Nests hatched	2 (40%)		5 (25%)	15 (79%)
Nests depredated	2 (1 rav, 1 er)		10 (7 rav, 1 coy, 2 un)	1 (1 rav)
Nests failed other causes	1 (1 pre)		5 (1 fld, 1 unk)	3 (3 pre)
GRAND TOTAL	127	12	42	24
Nests hatched	94 (74%)	11 (92%)	32 (57%)	20 (83%)
Nests depredated	22 (14 rav, 3 er, 1 coy, 4 ey)		12 (9 rav, 1 coy, 2 un)	1 (1 rav)
Nests failed other causes	11 (5 pre, 1 pos, 1 ukp, 3 rem, 1 unk)		12 (2 pre, 1 pos, 1 ukp, 3 rem, 1 fld, 1 unk)	3 (3 pre)

¹ Four nests initiated west of symbolic fencing in area open to pedestrian use. Symbolic fence moved west on date found.

² Seven nests initiated west of symbolic fencing in area open to pedestrian use. Symbolic fence moved west on date found.

³ Circular enclosures removed from 6 nests (SP25, SP29, SP52, SP63, SP68, SP90) in response to a plover carcass found within the SP68 circular.

⁴ Circular enclosure removed from SP26 nest after a plover carcass found within the circular.

Appendix F. Addendums to snowy plover nesting success (continued).

Table F.4 Nest protection used in the Foredune closure, closed buffer area, and Pismo Creek lagoon at ODSVRA in 2025.

Included in table are 79 nests with both known location and known fate. See Closures and fencing under Management Actions in this report on page 17 for definition of fencing types. Percent in parentheses is percent nests hatched.

Depredated fate codes: gul = gull; un = unknown predator; coy = coyote.

Failed other causes fate codes: ukp = abandoned, unknown pre- or post-term; rem = failed, nonviable eggs removed by staff; unk = failed, cause unknown.

Area	Nonpredator fencing					Shoreline symbolic fence		
	No additional fencing	Bumpout	Circular	Mini	Bumpout and Mini	No additional fencing	Bumpout	Circular
Foredune closure	36	7	1	3	1	25	1	2
Nests hatched	31 (86%)	5 (71%)	1 (100%)	2 (67%)	1 (100%)	18 (72%)	1 (100%)	1 (50%)
Nests depredated	3 (3 coy)					4 (1 gul, 1 coy, 2 un)		
Nests failed other causes	2 (2 rem)	2 (1 ukp, 1 rem)		1 (rem)		3 (1 rem, 2 unk)		1 (1 ukp)
Closed buffer area	2							
Nests hatched	1 (50%)							
Nests depredated								
Nests failed other causes	1 (1 unk)							
Pismo Creek lagoon	1¹							
Nests hatched	1 (100%)							
Nests depredated								
Nests failed other causes								
OTHER TOTALS	39	7	1	3	1	25	1	2
Nests hatched	33 (85%)	5 (71%)	1 (100%)	2 (67%)	1 (100%)	18 (72%)	1 (100%)	1 (50%)
Nests depredated	3 (3 coy)					4 (1 gul, 1 coy, 2 un)		
Nests failed other causes	3 (2 rem, 1 unk)	2 (1 ukp, 1 rem)		1 (rem)		3 (1 rem, 2 unk)		1 (1 ukp)

¹ Initiated in area with no protective fencing and nonpredator fencing installed on date found.

Appendix F. Addendums to snowy plover nesting success (continued).

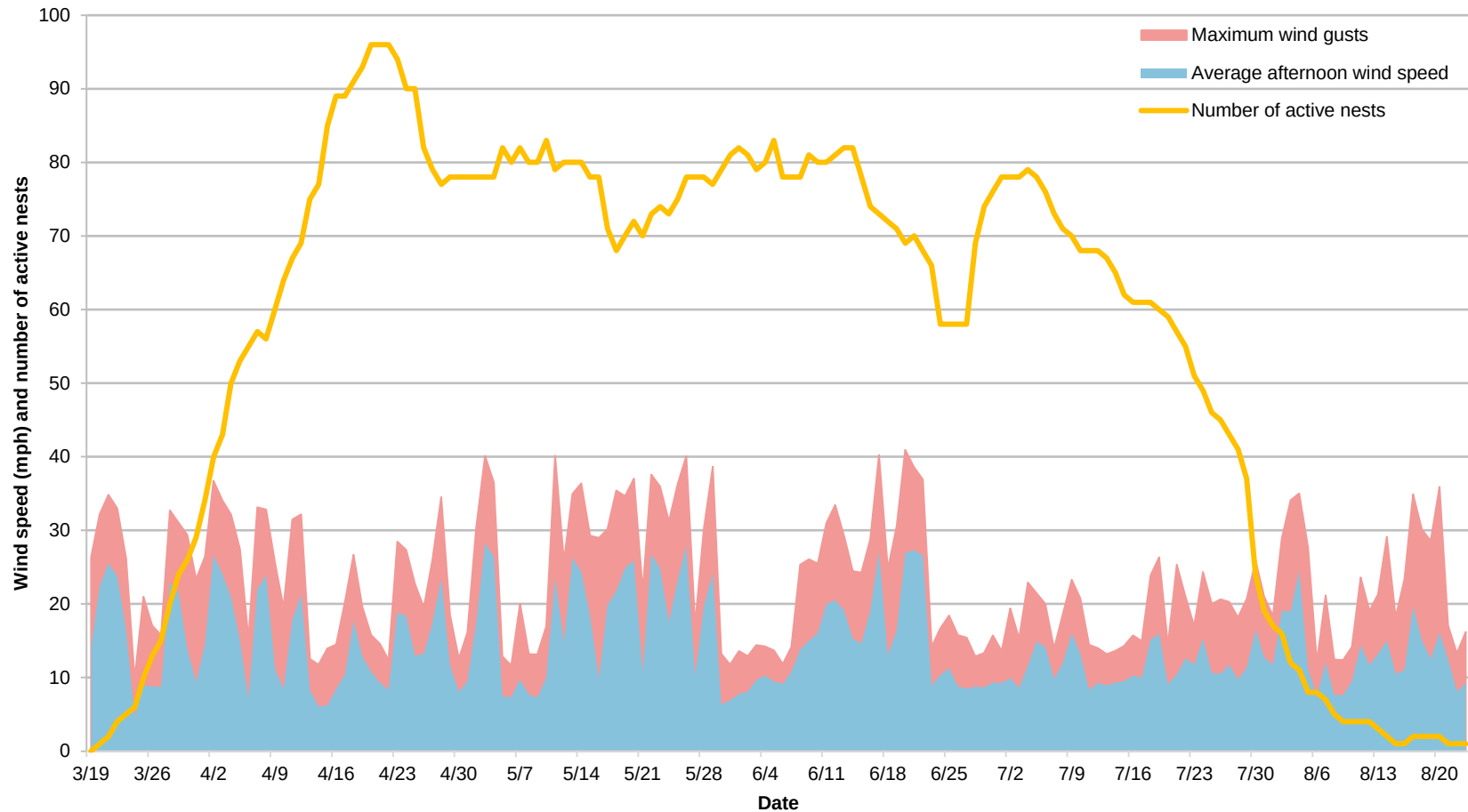


Figure F.1. Daily wind speed data (daily afternoon average and daily maximum wind gust) and active snowy plover nests at ODSVRA from 19 March to 23 August 2025.

Wind speed was collected at the S1 wind tower, located approximately 375 feet east of 6 enclosure since 2011, from an anemometer at 10 meters height. The daily afternoon average wind speed is calculated from the average of the hours 1:00 pm–5:00 pm. The maximum wind gust represents the maximum wind speed for the entire day. No plover nests were lost to wind in 2025.

Appendix F. Addendums to snowy plover nesting success (continued).

Table F.5. Selective transfer of abandoned chicks and potentially viable eggs to Santa Barbara Zoo, Santa Barbara County, in 2025.

All chicks and eggs were transferred to Santa Barbara Zoo on same day collected. Resulting fledglings were given unique color band combinations and released at Coal Oil Point Reserve in Santa Barbara County.

Nest no.	No. collected	Date collected	No. eggs hatched	Band combinations of fledglings	Release date (age)	Notes
10	3 eggs	11 April	3	ap:bb ap:bg ap:bo	25 June, 7 July (50 and 62 days)	On 28 March, nest found with 1 egg in 7 enclosure and progressed to 3 eggs by 2 April. Camera was installed 2 April and showed inconsistent incubation, with nest not attended most of the nighttime hours. The nest was abandoned 8 April. The 3 eggs hatched 6 May and all 3 fledged. Chick banded ap:bb was released 25 June and the other 2 chicks were given more time to develop and released 7 July.
68	3 eggs	2 May	1	ap:bw	25 June (44 days)	On 16 April, nest found with 3 eggs in South Oso Flaco and a circular enclosure was installed the following day. On 29 April, the associated male was found dead within the circular enclosure with evidence of depredation, the 3 eggs were intact, and the circular enclosure was removed the same day (see Table H.5 in Appendix H for carcass details). The nest was determined to be abandoned 2 May. One egg hatched 12 May, the other 2 eggs were fertile but did not hatch, and the 1 chick fledged.
52	3 eggs	4 May	3	ap:bk ap:bl ap:bv	7 July (51 days)	On 12 April, nest found with 1 egg in South Oso Flaco and progressed to 3 eggs by 17 April. A circular enclosure was installed 17 April and was removed 29 April after a plover carcass was found at the nearby SP68 nest, also with a circular enclosure. Nest incubation became inconsistent 30 April with only the female observed on nest 1 May and nest was determined to be abandoned 3 May. The 3 eggs hatched 17 May and all 3 fledged.
25	3 eggs	6 May	1	ap:br	25 June (47 days)	On 4 April, nest found with 2 eggs in South Oso Flaco and progressed to 3 eggs by 7 April. A circular enclosure was installed 10 April and a camera was installed 28 April. The circular enclosure was removed 29 April after a plover carcass was found at the nearby SP68 nest, also with a circular enclosure. Camera showed inconsistent incubation and was determined to be abandoned 3 May. One egg hatched 9 May, 1 egg was fertile but did not hatch, and 1 egg had no signs of fertilization. The 1 chick fledged.
99	2 chicks	23 May	N/A	ga:ly	7 July (45-46 days)	A nest in Foredune South hatched 3 chicks 22-23 May. On 23 May, 2 chicks were monitored for an extensive period of time not being attended by an adult. The third chick was observed moving west of the 2 chicks with an attending adult (this chick fledged). The abandoned 2 chicks were given veterinarian care at the Santa Barbara Zoo, 1 chick died 28 May, and the other chick fledged.
248	1 chick	24 July	N/A	ap:ar	23 September (71 days)	A nest in 6 enclosure hatched 3 chicks 14 July and all 3 chicks were last seen together 19 July. On 20 July, 2 chicks were with an injured adult male in 6 enclosure and another adult, believed to be associated with the brood was nearby and appeared to be leading the chicks away. The injured adult was rescued but died (see Table H.5 in Appendix H for details). The 2 chicks appeared alone after the rescue, remaining in 6 enclosure and actively foraging, and no adult was confirmed attending the chicks. One chick was adopted by the SP255 brood 24 July on the 6 enclosure shoreline and it fledged. The other chick continued to be seen alone on the 6 enclosure shoreline. After monitoring for an extended period of time, the abandoned chick was captured 24 July and the chick fledged.

APPENDIX G. PREDATOR SUMMARY TABLES AND FIGURES.

Table G.1. Summary of predators detected in the Southern Exclosure and Oso Flaco at ODSVRA in 2025.

Observations from 1 March to 10 September (a 194-day period). Contracted predator management specialists were essentially done and observer presence in field by park staff was reduced by September (very few remaining chicks). Min. no. individ. = minimum number of different individuals identified during season. This number was not determined for mammals or owls as these species are primarily nocturnal with occurrences detected by tracks with limited night observations and camera traps. For a summary of depredated tern and plover nests, see Table 2 and Table F.2 in Appendix F. Refer to Tables H.2 and H.4 in Appendix H for a summary of documented predation of terns and plovers, other than eggs.

Species	First date observed	Last date observed	No. days detected	Min. no. individ.	Notes
Mammalian					
Opossum	16 May	20 Jun	2	-	Opossum activity noted on 2 days. Tracks observed inside East Boneyard on 16 May and a live opossum observed inside 6 exclosure on 20 June.
Skunk	-	-	-	-	No activity noted.
Raccoon	31 May	25 Aug	15	-	Primarily observed is Oso Flaco.
Coyote	Present daily throughout season				Coyote tracks are present daily in South Oso Flaco and East Boneyard. There were 48 coyote occurrences inside the Exclosure predator fencing and 168 occurrences on Southern Exclosure shoreline and North Oso Flaco shoreline (see Table 10).
Avian					
Sharp-shinned hawk	3 Apr	3 Apr	1	1	Sharp-shinned hawk sightings are rare in the Southern Exclosure and Oso Flaco. On 3 April, an adult female sharp-shinned hawk depredated an adult plover on 6 exclosure shoreline.
Red-tailed hawk	11 Mar	6 Aug	14	2	Observed throughout the Southern Exclosure and Oso Flaco with peak activity in March and April. Minimum of 2 individuals (based on age and unique plumage characteristics) observed during the season.
Harrier	10 Mar	7 Sep	72	5	Harrier sightings primarily of an adult male hunting all areas of the Southern Exclosure May to August. Minimum of 5 individuals (based on age and sex characteristics and number seen simultaneously) observed during the season: 2 adult males with distinct plumage, 1 adult female, and 2 juveniles seen at same time on 21 July.
Kestrel	1 Apr	7 Sep	38	4	Primarily observed from June to September flying over and hunting 6, 7, and 8 exclosures. Minimum of 4 kestrels based on number seen simultaneously on 2 July (adult male, adult female, and 2 juveniles).
Merlin	22 Mar	17 Apr	3	2	Observed merlin (<i>Falco columbarius</i>) on 3 days in 6, 7, and 8 exclosure. Minimum of 2 individuals based on sex.
Peregrine	28 Mar	10 Sep	55	4	Observations of peregrines hunting all areas of the Southern Exclosure and Oso Flaco common throughout the season with peak activity from late June to September. Minimum of 4 individuals (based on bands, unique plumage, and/or age characteristics) observed during the season: one adult, two subadults with distinct plumage (one of which trapped and banded 94AB), and one juvenile.

Appendix G. Predator summary tables and figures (continued).

Table G.1. Summary of predators detected in the Southern Exclosure and Oso Flaco at ODSVRA in 2025 (continued).

Species	First date observed	Last date observed	No. days detected	Min. no. individ.	Notes
Large owl spp.	11 Apr	4 Sept	28	-	Great horned owl and barn owl documented on-site, but observations and tracks indicate great horned owl make up the majority of owl presence. Activity noted in all areas of the Southern Exclosure and Oso Flaco primarily in early May and June to September.
Osprey	Common throughout season				Although not documented as a predator of terns or plovers, ospreys (<i>Pandion haliaetus</i>) are included in this table due to the disturbance they can cause when perched for long periods of time in sensitive areas. Primarily observed flying over the Southern Exclosure shoreline and occasionally perched and eating fish. Hazed as appropriate.
Shrike	13 Jun	6 Sep	26	2	Shrike primarily seen hunting inside the Southern exclosure and Oso Flaco from late July to September. Minimum of 2 shrikes based on number seen simultaneously on 23 August.
Crow	1 Mar	16 Aug	28	17	Primarily observed from March to April and in early July flying over and perching inside the Southern Exclosure and Oso Flaco. Seventeen crows seen at same time on 1 March.
Raven	11 Mar	4 Aug	30	9	Primarily observed ravens hunting all areas of the Southern Exclosure and Oso Flaco March to May, and late June. Minimum of 9 ravens based on number removed and number seen simultaneously after.
Gull spp.	Present daily throughout season				Gulls were present the length of the shoreline of the Southern Exclosure and Oso Flaco.

Appendix G. Predator summary tables and figures (continued).

Table G.2. Documented predation of California least tern and western snowy plover, other than eggs, in Southern Enclosure and Oso Flaco at ODSVRA from 2002-2025.

Documented predation of chicks, juveniles, and adults of terns and plovers at ODSVRA likely represents a small percentage of actual occurrences because most predation events are not witnessed or leave little to no evidence behind, unlike eggs at a nest. Predation management that included options for selective relocation or lethal removal of avian and mammalian predators began in 2002. Documented predation represented in this table occurred from 1 March to 10 September (a 194-day period) from 2002-2025.

Unk pred. = Unknown predator, T = California least tern, P = Western snowy plover.

Year	Coyote		Skunk		Kestrel		Merlin		Peregrine		Harrier		Red-tailed hawk		Great horned owl		Owl spp.		Western gull		California gull		Ring-billed gull		Gull spp.		Brewer's Blackbird		Shrike		Avian spp.		Unk pred.		Raven		Sharp-shinned hawk		Total				
	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P					
2002																																							0	0			
2003																													3				1							1	3		
2004								1				5	1					1				2									1	3								7	7		
2005				2				1														1							1	2				1						2	6		
2006								1																									2							2	1		
2007		4				1																											2	2						3	6		
2008																				2				1										1						0	4		
2009										2												1																		0	3		
2010										2											2											2								0	6		
2011										2										2		15										1	2							1	21		
2012	1	3							1	3		1														3							1	3		2					3	15	
2013									1	2																							2								1	4	
2014									2	3												4														1					2	8	
2015							1			3										1																					0	5	
2016									1	2												9																			1	14	
2017										2				1																											0	3	
2018										5										9		2										1									1	16	
2019										9	1									4																	1				1	15	
2020		4								7		1								3															2	4					2	19	
2021						4			3	5	2	8			2		1	1														1		1								10	18
2022						7				3						2				1																1						0	14
2023						7				3	3									1																						3	11
2024										1	3									6		1																				1	10
2025										3	11	2	2							2		3											2				4				1	5	25
Total	1	11	0	2	1	18	0	4	15	67	10	13	0	1	2	2	2	1	0	33	0	38	0	1	0	3	0	1	1	8	5	14	9	12	0	4	0	1	46	234			
Total T and P	12		2		19		4		82		23		1		4		3		33		38		1		3		1		9		19		21		4		1		280				

Appendix G. Predator summary tables and figures (continued).

Table G.3. Mammalian and avian predators removed or trapped and relocated under predator management actions for least terns and snowy plovers at ODSVRA in 2025.

Three ravens, four coyotes, one crow, two California gulls, and one western gull were lethally removed. One peregrine and two great horned owls were live-trapped and relocated (release date in parentheses). All animals trapped or removed were within ODSVRA boundaries.

Date	Species	Age/Sex	Location
Lethally removed			
28 Mar	raven	adult	Open riding area east of BBQ Flats revegetation area
28 Apr	raven	adult	Open riding area east of Pipeline revegetation area
28 Apr	raven	adult	Open riding area north of Pipeline revegetation area
24 Jun	California gull	subadult	Foredune closure shoreline
30 Jun	coyote	adult	North Oso Flaco
1 Jul	coyote	adult	Closed buffer area north of 6 exclosure
11 Jul	coyote	adult	Closed buffer area north of 6 exclosure
28 Jul	coyote	adult	Bigfoot revegetation area
29 Jul	crow	juvenile	Eucalyptus North revegetation area
2 Aug	California gull	juvenile	Foredune closure shoreline
14 Aug	western gull	subadult	Foredune closure shoreline
Live-trapped and relocated			
7 May (8 May)	great horned owl	adult male	North Oso Flaco
17 Jul (18 Jul)	peregrine	subadult male	6 exclosure shoreline
12 Aug (13 Aug)	great horned owl	juvenile male	8 exclosure

Appendix G. Predator summary tables and figures (continued).

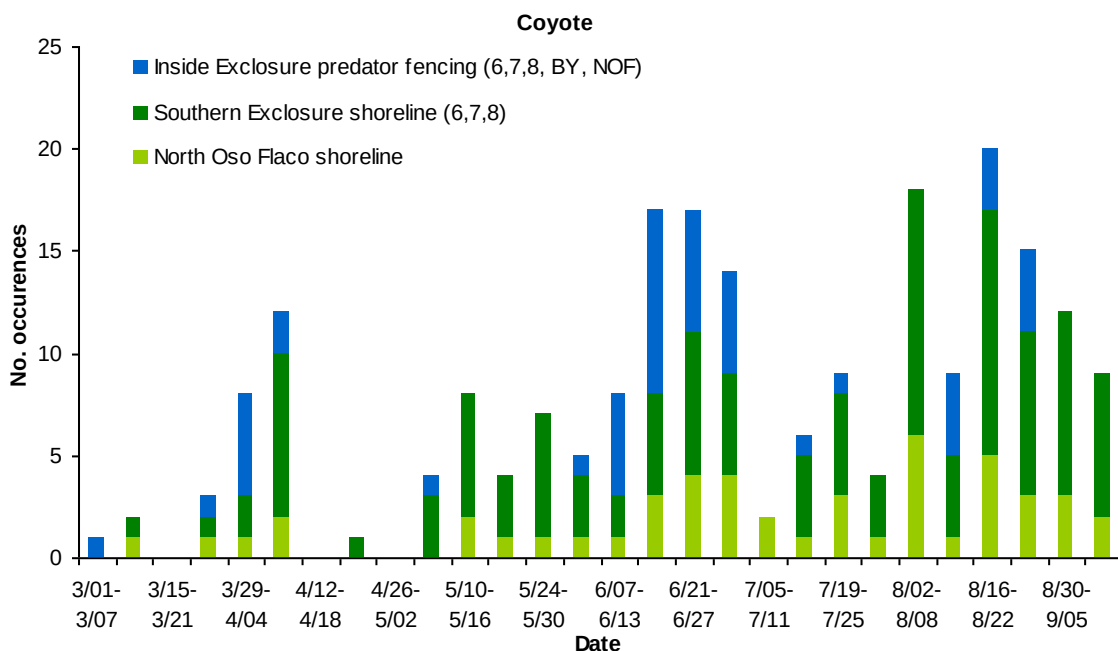


Figure G.1. Coyote occurrences documented in the Southern Enclosure and North Oso Flaco at ODSVRA in 2025.

Observations from 1 March to 10 September (a 194-day period). Coyote presence is documented for the Southern Enclosure shoreline (6, 7, and 8 enclosures), North Oso Flaco shoreline, and inside the predator fencing of both the Southern Enclosure (6, 7, 8, and Boneyard enclosures) and North Oso Flaco as separate occurrences. For the Southern Enclosure and North Oso Flaco, a distinction is made between the shoreline and inside the predator fencing of the enclosures because coyotes are intended to be excluded from the area protected by predator fencing.

Appendix G. Predator summary tables and figures (continued).

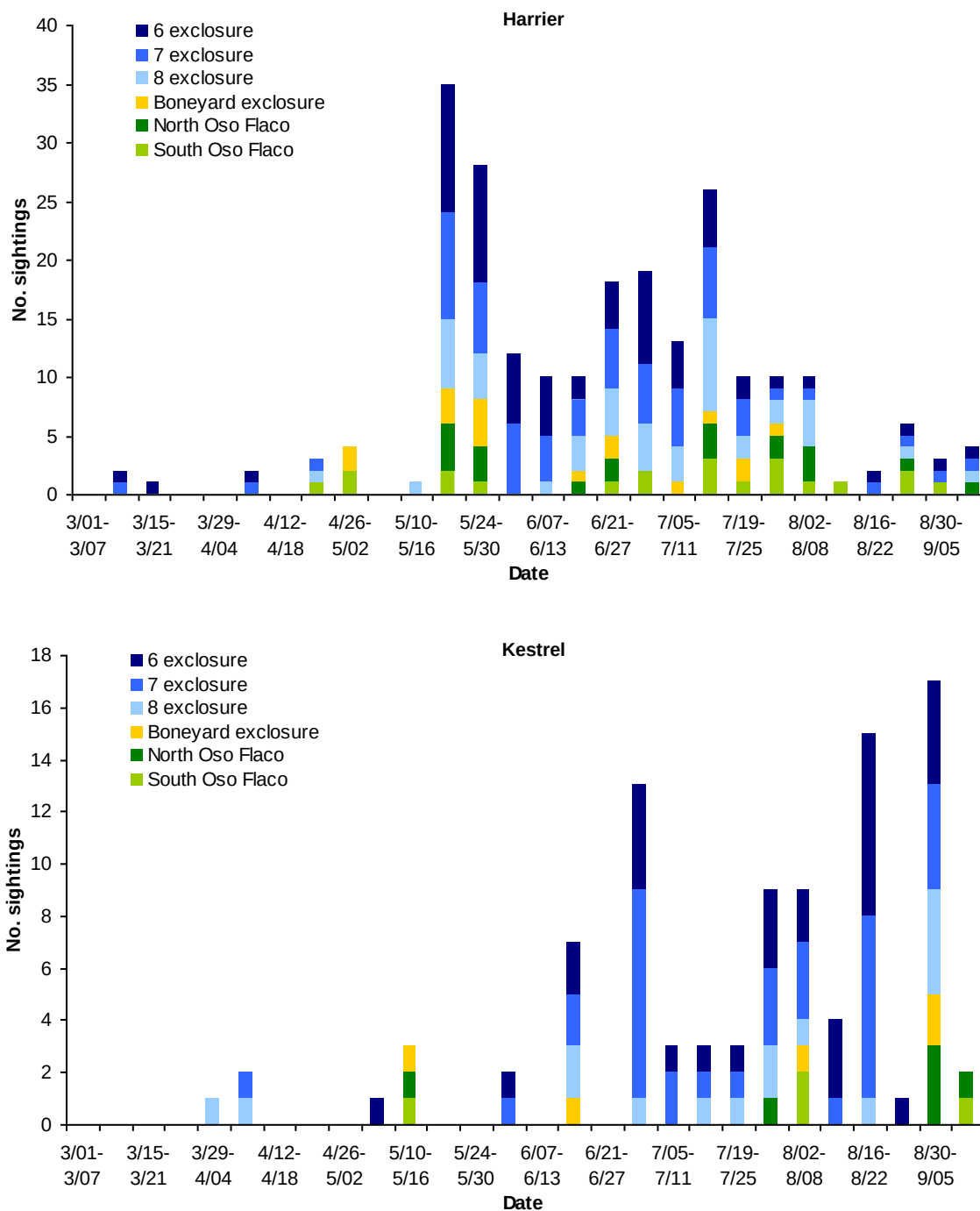
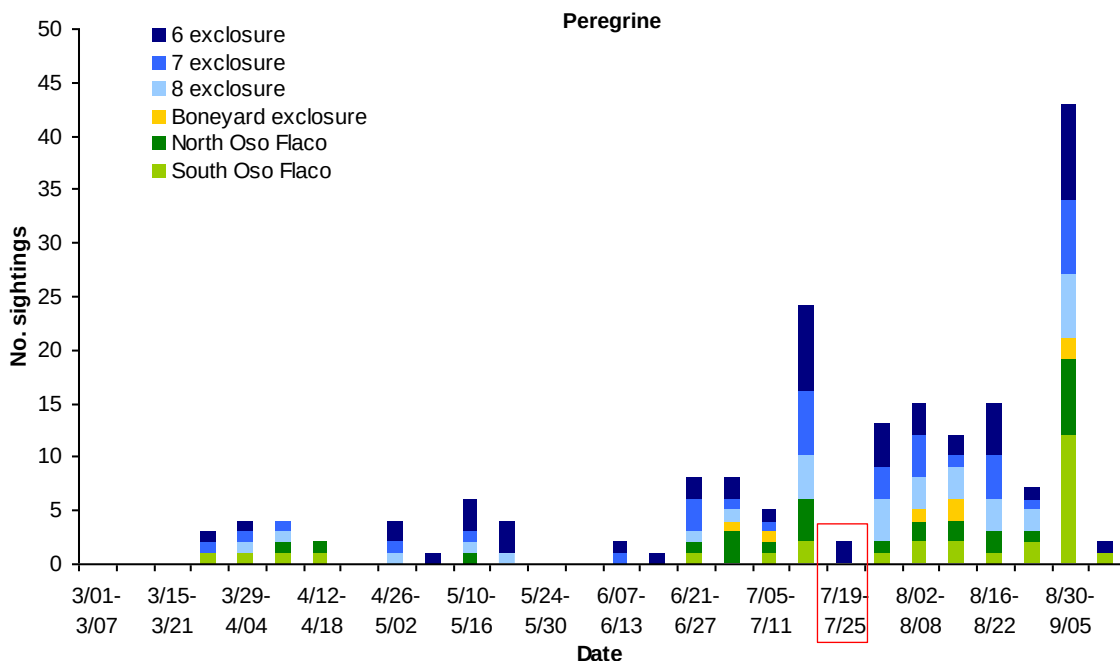


Figure G.2. Avian predator sightings documented in the Southern Exclosure and Oso Flaco at ODSVRA in 2025.

Observations from 1 March to 10 September (a 194-day period).

Appendix G. Predator summary tables and figures (continued).



Note for figure above: one peregrine trapped on 17 July, relocated 18 July, and resighted at ODSVRA 26 July.

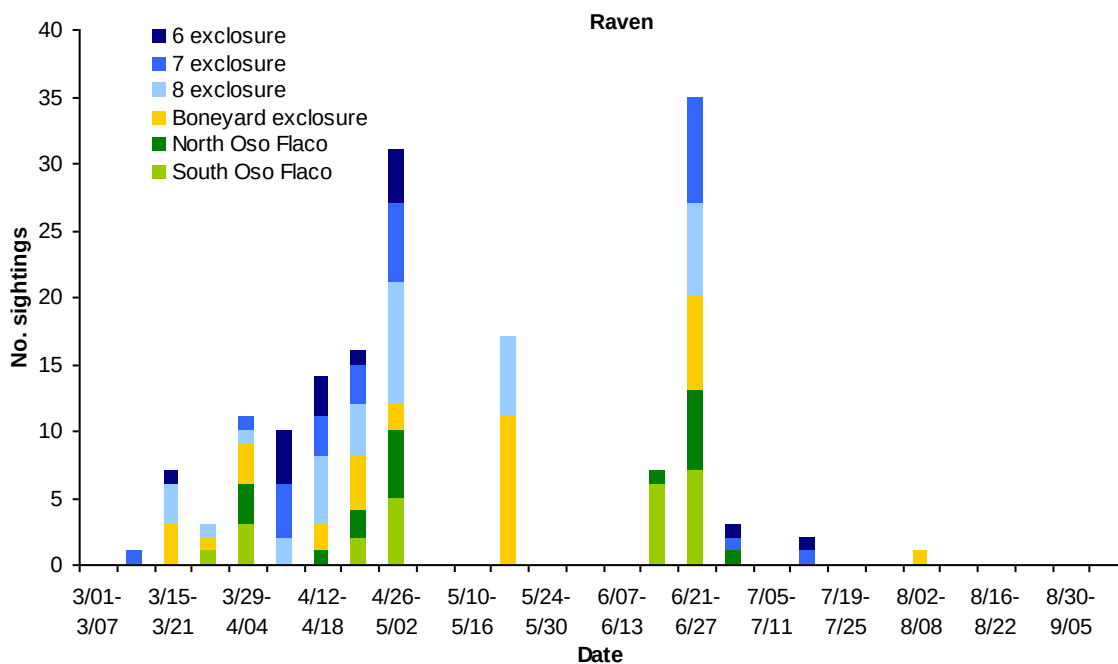


Figure G.2. Avian predator sightings documented in the Southern Exclosure and Oso Flaco at ODSVRA in 2025 (continued).

Observations from 1 March to 10 September (a 194-day period).

Appendix G. Predator summary tables and figures (continued).

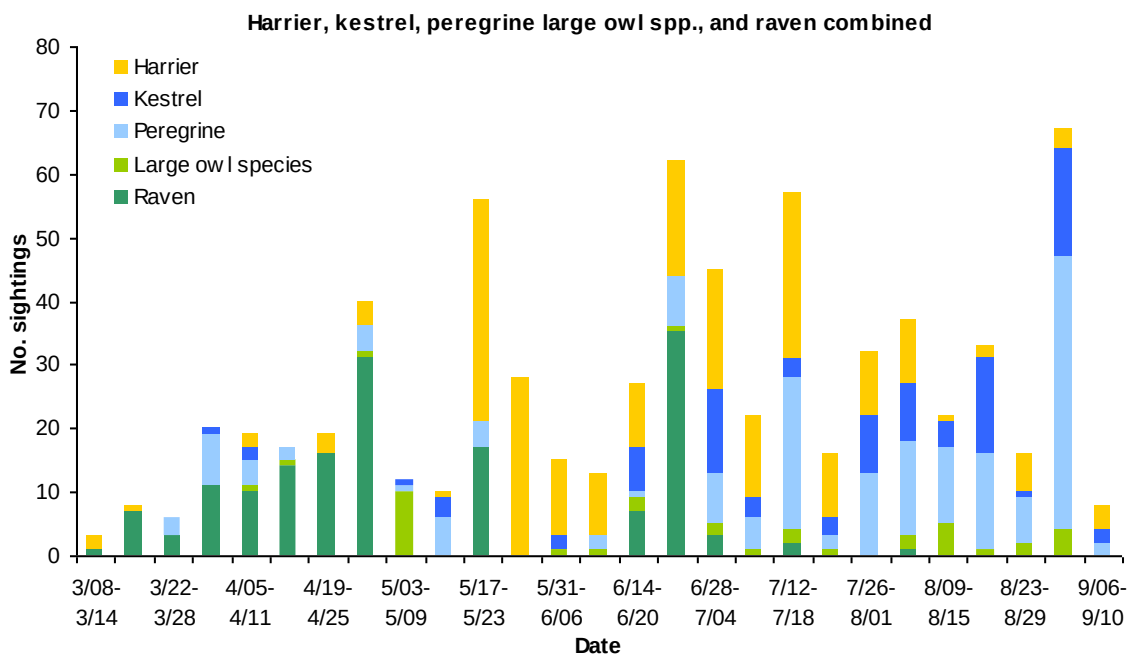


Figure G.2. Avian predator sightings documented in the Southern Exclosure and Oso Flaco at ODSVRA in 2025 (continued).

Observations from 1 March to 10 September (a 194-day period).

APPENDIX H. SIGHTINGS OF INJURIES AND DOCUMENTED MORTALITY OF CALIFORNIA LEAST TERN AND SNOWY PLOVER ADULTS, JUVENILES, AND CHICKS AT ODSVRA.

Table H.1. Sightings of injured least terns in 2025.

No. (age)	Location	Notes
1 (juvenile)	6 exclosure shoreline	On 12 August, the 27-day-old fledgling banded a/r:a/o from the LT40 nest was observed with the upper mandible abnormally pointed upwards halfway down the bill, appeared underdeveloped for its age, not flight-capable, and unable to eat fish provided by the adult. The injury or deformity was not observed when the 1-day-old chick was banded 17 July, or when sighted 19 July in 6 exclosure, and 25 and 27 July on the 6 exclosure shoreline. On 27 July, the 11-day-old chick was observed being fed and swallowing a fish. The tern was not sighted 28 July to 11 August or subsequent to 12 August.

Table H.2. Sightings of injured snowy plovers from December 2024 to November 2025.

No injured plovers were seen December 2024, subsequent to the 2024 annual report. A captured plover was taken to Pacific Wildlife Care, Morro Bay, CA (PWC), for veterinary treatment and the medical record is attached.

No. (age)	Location	Notes
1 (adult)	Riding area	On 29 January, an unbanded plover adult was observed not putting any weight on the left leg and toes on the leg appear curled. An adult with this description was not seen subsequently.
1 (adult)	Riding area	On 24-25 February, an unbanded plover adult was observed with material attached to the left leg and foot, possibly a stick or piece of wrack that extends approximately 6 inches from the left foot. Plover puts little weight on leg, hopping on right leg, and was observed flying with the object attached. An adult with this description was not seen subsequently.
1 (adult)	Riding area to Foredune North shoreline	From 6-25 March, an unbanded plover adult was observed with foreign stringlike black material wrapped around the left foot. The bird was hopping, only putting weight on toes occasionally, and the foot appeared swollen. Several rescue attempts were unsuccessful and adult with this description was not seen subsequently.
1 (adult)	South Oso Flaco	On 31 March, an unbanded plover adult was observed holding up the right leg with toes dangling down. An adult with this description was not seen subsequently.
1 (chick)	Foredune Central shoreline	On 3 May, a 5-day-old chick banded bb:yl from the SP6 nest was observed not putting any weight on the right leg and hops on the left leg. The injured chick was not seen subsequently. On 31 July, 1 bb:yl chick was found dead in Foredune Central (see Table H.6 for details).
1 (chick)	South Oso Flaco	On 9 and 11 May, a 3-day to 6-day-old chick banded gg:va from the SP29 nest was observed putting very little weight on the left leg, occasionally holding the leg up and dragging the foot on the ground as it moves. Injury was not seen subsequently, 3 chicks were last seen 11 May, and 2 chicks fledged.
1 (chick)	South Oso Flaco	From 2-10 June, a 18-day to 26-day-old chick banded bb:lo from the SP63 nest was observed limping on left leg and occasionally hopping on right leg. Injury was not seen subsequently, 3 chicks (2 banded, 1 unbanded) were last seen 10 June, and 1 bb:lo and 1 unbanded chick fledged.
1 (chick)	6 exclosure shoreline	On 3 June, a 16-day-old chick banded ga:ar from the SP71 nest was observed with right toes on foot curled and dark in coloration. It was putting weight on leg and able to function normally. One chick hatched from the nest and the chick was not seen subsequently.
1 (juvenile)	6 exclosure shoreline	From 6-11 June, a 35-day to 40-day-old fledgling banded gg:bb from the SP11 nest was observed holding up and putting very little weight on the right leg. Two chicks fledged from this nest, both last seen 11 June, and 1 juvenile was last seen 25 August with no noted injury.
1 (juvenile)	Foredune North shoreline	On 7 June, a 34-day-old fledgling banded bb:ll from the SP46 nest was observed with a broken left wing. The wing was hanging down, dragging on the ground, and was bloody. Later the same morning, a gull was observed catching the plover, picking at it, and the plover was dead afterwards (see Table H.5 for details).
1 (juvenile)	6 exclosure shoreline	On 7 June, a 43-day to 44-day-old fledgling banded bb:yb from the SP24 nest was observed holding up the left leg, hopping, and putting little weight on the leg. Three fledglings were last seen 9 June with no noted injury.

Appendix H. Sightings of injuries and documented mortality of California least tern and snowy plover adults, juveniles, and chicks at ODSVRA (continued).

Table H.2. Sightings of injured snowy plovers from December 2024 to November 2025 (continued).

No. (age)	Location	Notes
1 (juvenile)	6 enclosure shoreline	From 12-19 June, a 39-day to 46-day-old fledgling banded bb:bl from the SP40 nest was observed putting little to no weight on the left leg. On 20 June, the leg seemed to improve with the bird observed putting weight on the leg and foraging with a slight limp. Two chicks fledged from this nest and both last seen on 20 June. On 8 July, a juvenile banded bb:bl was found dead on the 6 enclosure shoreline, in the same general area where the injured bird had been observed (see Table H.6 for details). One juvenile was seen subsequent to 8 July on multiple days with no notable injury.
1 (juvenile)	Foredune Central shoreline	On 17 June, a 51-day-old juvenile banded bb:pb from the SP32 nest had a swollen right leg, was hopping, and putting little weight on the leg. Two chicks fledged from this nest and 1 juvenile was seen off-site at the Guadalupe Restoration Project site 30 June, approximately 2.5 miles south of ODSVRA, and no injury was noted.
1 (chick)	Foredune North shoreline	On 18 June, a 27-day-old chick banded pg:ll from the SP92 nest had a swollen and potentially fractured right leg, with the lower portion of leg at an odd angle, and was not putting weight on the leg. Two chicks hatched from this nest and none were seen subsequently.
1 (juvenile)	6 enclosure shoreline	On 1 and 3 July, a 43-day to 45-day-old fledgling banded pg:lo from the SP64 nest was observed hopping and putting no weight on the left leg. Three uninjured fledglings from this brood were last seen 17 June, 2 fledglings (1 injured, 1 uninjured) last seen 1 July, and 1 juvenile was last seen 9 August with no injury noted.
1 (adult)	North Oso Flaco shoreline	On 2 July, an unbanded male plover with an unbanded fledgling from the SP247 nest was observed hopping and not putting weight on the left leg. An adult with this description was not seen subsequently.
1 (juvenile)	6 enclosure shoreline	On 2 and 5 July, an unbanded plover juvenile was observed not putting weight on the right leg. A plover with this description was not seen subsequently.
≥1 (juvenile)	Foredune North shoreline, 6 enclosure, 6 enclosure shoreline	On 11 July, an unbanded plover juvenile was observed not putting weight on the left leg on the Fore dune North shoreline. On 22 and 23 July, an unbanded plover juvenile was observed with a similar leg injury in 6 enclosure and on the 6 enclosure shoreline, possibly the same bird, and was not seen subsequently.
1 (juvenile)	7 enclosure shoreline, South Oso Flaco	On 21 July, a 45-day-old fledgling banded pg:lr from the SP134 nest was observed on the 7 enclosure shoreline hopping and not putting any weight on the left leg. On 22 July, the fledgling was observed in the same location putting some weight on the leg but limping. One chick fledged from this nest and the 82-day-old juvenile was last seen 27 August in South Oso Flaco still with a noticeable limp.
1 (juvenile)	6 enclosure shoreline	From 6-10 August, an unbanded 33-day to 38-day-old fledgling from the SP318 nest was observed hopping and putting very little weight on the right leg. A plover with this description was not seen subsequently.
1 (juvenile)	6 enclosure shoreline	On 8-9 August, a 31-day to 32-day-old fledgling banded rr:po from the SP218 nest was observed running with toes on the right foot curled upward and possible swelling on the foot. Only 1 chick fledged from this nest and it was not seen subsequently.
1 (juvenile)	8 enclosure shoreline, Oso Flaco	On 8-9 August, a 30-day to 31-day-old fledgling banded pv:pw from the SP251 nest was observed on the 8 enclosure shoreline limping and putting very little weight on the right leg. On 28 and 30 August, the 50-day to 52-day-old juvenile was observed in North Oso Flaco and South Oso Flaco with the same injury with no notable improvement. Two chicks fledged from this nest, both were last seen 9 August, none were seen at ODSVRA subsequent to 30 August, but 1 uninjured pv:pw plover was seen off-site in Half Moon Bay, California, on 23 September.
1 (adult)	8 enclosure shoreline	From 13-16 August, a male plover banded pg:vb associated with the SP263 brood was observed limping and not putting full weight on the right leg. On 16 August, the condition of the adult had improved and the limp was barely noticeable.
1 (chick)	South Oso Flaco	From 21-28 August, a 16-day to 23-day-old chick banded rr:yv from the SP305 nest was observed hopping and limping, with no obvious injury initially identified. Although the chick appeared to forage well and keep up with the attending adult and sibling chick, the condition did not improve. On 28 August, the chick was captured and confirmed to have swelling between the bands on the right leg and was missing a toenail. The chick was taken to PWC and the veterinarian removed the bands revealing a serious constriction wound on the right leg with exposed tendons and bone. On 5 September, the 31-day-old young fledgling died while being treated (see attached medical record and Table H.6 for details).

Appendix H. Sightings of injuries and documented mortality of California least tern and snowy plover adults, juveniles, and chicks at ODSVRA (continued).

Table H.3. Documented predation of California least terns in 2025.

Peregrine (94AB subadult male) listed in table refers to individual trapped on-site 17 July, banded s:k with 94AB on right band, relocated, and soon returned to ODSVRA with first resighting 30 July. Location listed is where prey was likely caught based on observations.

No. (age)	Predator	Location	Notes
1 (chick)	Harrier (adult male)	unknown	On 3 July, harrier flying from 8 exclosure lands with prey in 6 exclosure and feather remains of a tern chick were collected.
1 (juvenile or chick)	Harrier (adult male)	unknown	On 10 July, harrier lands in 6 exclosure with prey and feather remains of a tern juvenile or chick were collected.
1 (juvenile)	Peregrine (subadult male)	6 exclosure shoreline	On 16 July, peregrine was observed catching prey on the 6 exclosure shoreline and flies with prey to 7 exclosure. Feather remains of a tern juvenile were collected.
1 (juvenile or chick)	Peregrine (94AB subadult male)	6 exclosure shoreline	On 28 July, peregrine was hunting over a large area of the Southern Exclosure and the Fore dune closure was observed catching and landing with prey on the 6 exclosure shoreline. Prey remains of a tern juvenile or chick were collected.
1 (juvenile)	Peregrine (94AB subadult male)	6 exclosure shoreline	On 5 August, peregrine was observed catching prey on the 6 exclosure shoreline and perches with it in 6 exclosure. Feather remains of a tern juvenile were collected.

Table H.4. Mortality, other than documented predation, of least terns in 2025.

No carcasses were found December 2024, subsequent to the 2024 annual report. Fresh carcasses are frozen and sent to CDFW, Office of Spill Prevention and Response, Marine Wildlife Veterinary Care and Research Center, Santa Cruz, CA, for necropsy and reports are attached, if available.

No. (age)	Location	Notes
1 (chick)	6 exclosure	On 25 June, a small chick banded a/r:w/r from the LT29 nest was found dead. The nest hatched 2 chicks 14 June, the sibling chick was last seen 16 June, and the a/r:w/r chick was last seen alive in 6 exclosure on 17 June. The carcass was highly desiccated and not appropriate for necropsy.
1 (chick)	7 exclosure	On 17 July, a chick banded a/r:a/b from the LT22 nest was found dead. The 1-egg nest hatched 26 June and the chick was last seen alive in 7 exclosure 13 July at 17 days old. The carcass had a dark spot on the underside and the beak and eyes were partially missing. The carcass was sent for necropsy and results are pending.

Appendix H. Sightings of injuries and documented mortality of California least tern and snowy plover adults, juveniles, and chicks at ODSVRA (continued).

Table H.5. Documented predation of snowy plovers from 1 March to 30 September 2025.

Peregrine (94AB subadult male) listed in table refers to individual trapped on-site 17 July, banded s:k with 94AB on right band, relocated, and soon returned to ODSVRA with first resighting 30 July. Location listed is where prey was likely caught based on observations.

No. (age)	Predator	Location	Notes
1 (adult)	Sharp-shinned hawk (female)	6 exclosure shoreline	On 3 April, sharp-shinned hawk was observed catching prey on 6 exclosure shoreline and perched in 6 exclosure eating prey. The hawk was hazed by staff and it flew with prey to open riding area where a red-tailed hawk was observed stealing the prey and flying with it to Eucalyptus North revegetation area. Feather remains of a plover adult were collected.
2 (adult)	Unknown avian	South Oso Flaco	Two plover adults were found depredated within circular exclosures for nests in South Oso Flaco. On 26 April, an unbanded female was found dead next to the SP26 nest. The intact carcass appeared fresh with bloody wounds on the body and the circular net top was slightly damaged with plover feathers attached. On 29 April, an adult male banded ga:pw was found dead near the SP68 nest with large avian tracks just outside the circular exclosure. The intact carcass was fresh with bloody wounds on 1 wing. The eggs for both nests were abandoned and taken to the Santa Barbara Zoo (see Table F.5 in Appendix F). The carcasses were sent to CDFW, Office of Spill Prevention and Response, Marine Wildlife Veterinary Care and Research Center, Santa Cruz, CA, for necropsy and results are pending.
1 (juvenile or chick)	Harrier (adult male)	Foredune North	On 6 June, harrier was observed catching an unbanded plover juvenile or large chick from Foredune North and lands nearby to consume prey. Prey remains were not collected.
1 (juvenile)	Western gull (juvenile)	Foredune North shoreline	On 7 June, a 34-day-old fledgling banded bb:ll from the SP46 nest seen with a badly broken wing on the Foredune North shoreline. Later the same morning, it was grabbed by a western gull, the gull flew to the waterline where it was observed picking at the plover before flying away, and the plover was collected and confirmed to now be dead. See Table H.2 for plover injury details.
≥4 (chick)	Raven (2 adult, 4 juvenile)	7 exclosure shoreline, 8 exclosure	On 23 June, raven adults were observed hunting the 7 exclosure shoreline and 8 exclosure and feeding accompanying raven young at least 4 plover chicks in 8 exclosure. The ravens were shot at, they flushed, and the remains of 2 large plover chicks were left behind.
≥3 (2 chick, 1 unknown age)	California gull (subadult)	Foredune Central shoreline	On 24 June, California gull was observed eating 2 approximately 8-day-old unbanded chicks from the SP314 brood on the Foredune Central shoreline. Gull was lethally removed and the 2 chicks and additional plover band pieces were recovered from the gut contents representing a minimum of 3 plovers depredated.
1 (chick)	Harrier (adult male)	unknown	On 4 July, harrier was observed landing in 7 exclosure and eating prey. Remains of an unbanded plover chick were collected.
≥1 (adult or juvenile)	Peregrine (subadult male)	Foredune closure shoreline, 6 exclosure shoreline	On 14 July, peregrine was observed hunting over the Foredune closure shoreline and lands on the 6 exclosure shoreline with a likely plover adult or juvenile. Immediately after consuming the prey, it was observed catching a plover adult or juvenile on the 6 exclosure shoreline and flies with it to 8 exclosure.
≥1 (chick)	Peregrine (subadult male)	Foredune South shoreline	On 16 July, peregrine was observed catching and consuming 2 unidentified prey items, 1 from 8 exclosure and 1 from the 6 exclosure shoreline. It was then observed landing briefly on the Foredune South shoreline and flying with a plover chick to 6 exclosure where the chick was consumed. The peregrine remained perched in 6 exclosure for approximately 1 hour.
2 (1 juvenile or chick, 1 chick)	Peregrine (subadult male)	Foredune closure, 6 exclosure shoreline	On 17 July, peregrine was observed hunting on the ground of the Foredune South shoreline and in Foredune North and flies to the Foredune South shoreline with a plover juvenile or chick and consumes prey. The peregrine then flies and lands on the 6 exclosure shoreline and perches nearby to consume a banded chick. Remains of the 9-day-old chick banded rr:po from the SP218 nest was later collected. The peregrine was trapped later on this day, banded s:k with 94AB on right band, and relocated.
≥1 (chick)	Peregrine (94AB subadult male)	6 exclosure shoreline, 7 exclosure	On 30 July, the peregrine banded s:k (94AB) was observed catching a likely plover while in flight over the 6 exclosure shoreline. The peregrine was also observed catching a plover chick in 7 exclosure, was flushed, and flew east over 8 exclosure. Prey remains were not collected.
1 (adult or juvenile)	Peregrine (94AB subadult male)	unknown	On 4 August, peregrine was observed landing on the 6 exclosure shoreline and then landing on the 7 exclosure shoreline with prey. Feather remains of a plover adult or juvenile were collected.

Appendix H. Sightings of injuries and documented mortality of California least tern and snowy plover adults, juveniles, and chicks at ODSVRA (continued).

Table H.5. Documented predation of snowy plovers from 1 March to 30 September 2025 (continued).

No. (age)	Predator	Location	Notes
1 (chick)	Western gull (subadult)	Foredune North shoreline	On 14 August, western gull was observed with a small unbanded plover chick in its bill on the Foredune North shoreline and gull flies and lands with a flock of gulls nearby. The gull thought to have eaten the chick was lethally removed, but no plover remains were recovered from the gut contents. Based on location of brood observations, the plover is likely a 9-day to 10-day-old chick from the SP296 nest.
≥1 (adult or juvenile)	Peregrine (94AB subadult male)	Foredune South shoreline, 6 exclosure shoreline	On 15 August, peregrine eats a large shorebird, possibly a black-bellied plover (<i>Pluvialis squatarola</i>), on the Foredune North shoreline and flies to the Foredune South shoreline where it catches a likely snowy plover of unknown age. Peregrine then was observed catching a plover adult or juvenile in flight and lands briefly on the 6 exclosure shoreline before flying to Boneyard exclosure to consume the prey.
1 (chick)	Peregrine (94AB subadult male)	7 exclosure shoreline	On 17 August, peregrine flies from the Foredune closure shoreline, lands on the 7 exclosure shoreline, and catches and consumes a large unbanded plover chick. Based on location of brood observations, the plover is likely the 18-day-old chick from the SP320 nest.
≥1 (adult or juvenile)	Peregrine (94AB subadult male)	Foredune North shoreline, Foredune South shoreline	On 28 August, peregrine was observed with prey on the Foredune North shoreline and flew with it to the Foredune Central shoreline. Feather remains of a plover adult or juvenile were later collected. Peregrine then caught unidentified prey, likely plover, from the Foredune South shoreline and carried it away out of sight.
1 (adult or juvenile)	Peregrine (94AB subadult male)	unknown	On 1 September, peregrine was observed hunting over the Foredune South shoreline and landing with plover prey on the 6 exclosure shoreline to consume the prey. Remains of a plover adult or juvenile were collected and included a plover left leg with a white plover band.
1 (adult or juvenile)	Peregrine (94AB subadult male)	7 exclosure shoreline	On 4 September, peregrine was observed catching prey on the 7 exclosure shoreline and perches nearby on the exclosure fence to consume a plover adult or juvenile with 2 green bands on 1 leg.

Appendix H. Sightings of injuries and documented mortality of California least tern and snowy plover adults, juveniles, and chicks at ODSVRA (continued).

Table H.6. Mortality, other than documented predation, of snowy plovers in 2025.

No carcasses were found December 2024, subsequent to the 2024 annual report. Fresh carcasses are frozen and sent to CDFW, Office of Spill Prevention and Response, Marine Wildlife Veterinary Care and Research Center, Santa Cruz, CA, for necropsy and reports are attached, if available. One injured plover was captured and later euthanized at Pacific Wildlife Care, Morro Bay, CA (PWC) and medical records are attached.

No. (age)	Location	Notes
1 (adult)	Riding area north of marker post 2	On 4 February, an intact unbanded plover adult was found dead in tire tracks, approximately 650 feet north of marker post 2 and 100 feet east of the waterline. Necropsy results indicate it had a fractured skull and died of severe trauma.
1 (adult)	Eucalyptus North revegetation area	On 21 April, an unbanded male plover was found dead approximately 25 feet east of the revegetation area fence that borders the open riding area. The carcass was desiccated and too decomposed for necropsy.
1 (chick)	Foredune Central	On 26 April, the SP5 nest camera show a plover chick appearing dead immediately next to the nest. The adult removed the dead chick, and carcass was not later recovered by staff. The nest hatched 2 chicks 25 April, both were not banded, and 1 chick fledged.
1 (adult)	Open riding area	On 12 May, an unbanded male plover was found dead approximately 160 feet east of Foredune Central with tire tracks nearby. The intact carcass appeared fresh, slightly flattened, with blood coming from the beak area. Necropsy results indicate it died of acute crush trauma.
1 (adult)	Foredune North	On 3 June, an unbanded adult was found dead with the left leg tangled in string which in turn was connected to vegetation growing in the Foredune closure. The carcass was too decomposed for necropsy.
1 (juvenile)	6 exclosure shoreline	On 16 June, a 29-day to 30-day-old juvenile banded ga:lb from the SP111 nest was observed repeatedly gaping and extending its neck, falling over and convulsing, and then dying. The carcass was intact with no obvious injury. Necropsy results presume the bird died of a congenital or infectious disease, causing torticollis, characterized by marked lateral displacement of the head and neck.
1 (juvenile)	6 exclosure shoreline	On 8 July, a juvenile banded bb:bl from the SP40 nest was found dead. The carcass was intact and heavily decomposed. Two chicks fledged from the SP40 nest, and 1 was observed with a leg injury from 12-20 June in the same general area the carcass was found and was not seen alive subsequently (see Table H.2 for injury details).
1 (adult)	6 exclosure	On 20 July, an unbanded male plover associated with the SP248 brood was observed convulsing and with a large neck protrusion, likely a broken neck, with 2 chicks attempting to brood with the adult. The adult was rescued and quickly died after capture. Necropsy results indicate it died of acute trauma with bruising and hemorrhage within the body and a hairline skull fracture. One of the associated chicks was later taken to the Santa Barbara Zoo (Table F.5 in Appendix F for details).
1 (chick)	Foredune Central	On 31 July, a chick banded bb:yw from the SP6 nest was found dead. Two chicks hatched from the nest, both chicks banded bb:yw were last seen together 3 May at 5 days old, 1 of which was injured, and 1 uninjured chick was last seen 14 May at 16 days old (see Table H.2 for injury details). The carcass was intact and heavily decomposed.
1 (chick)	Foredune North shoreline	On 2 August, a California gull was observed briefly grabbing a 3-day-old chick banded rr:yy from the SP288 nest and chick escaped and ran away. All 3 chicks banded rr:yy were seen the following day and appearing unharmed and normal. Only 1 chick was seen on 4 August and 1 chick was found dead on 5 August. The carcass appeared fresh and was intact with no obvious injuries. One chick was last seen alive approximately 1.5 hours prior to the dead chick being found and none were seen subsequently.
1 (chick)	Foredune North shoreline	On 7 August, a chick banded rr:ov from the SP292 nest was found dead. The carcass was intact and heavily decomposed. Two chicks hatched from the nest, both chicks were last seen together 2 August at 3 days old, and none were seen subsequently.
2 (chick)	Foredune North shoreline	On 13 August, 2 unbanded chicks were found dead a few inches from each other. The chicks appeared approximately 1.5 weeks old and were not associated with a known nest and were assigned as SP332. The carcasses were both intact, appeared fresh, with no signs of trauma.
1 (juvenile)	South Oso Flaco	On 28 August, a 23-day-old chick banded rr:yv from the SP305 nest was taken to PWC for a right leg injury (see Table H.2 for details). The veterinarian removed all the bands and reported the right leg had an open constriction wound with damaged tendons and exposed bone. On 5 September, the 31-day-old young fledgling suddenly died while being treated, likely due to respiratory or cardiac arrest. The attached medical record indicates the wound was healing prior to death.
2 (adult)	Riding area	On 6 October, 2 unbanded adults were found dead approximately 20 feet from each other and approximately 500 feet northeast of marker post 4. Both intact carcasses were partially buried and appeared flattened with dried blood on the bodies. The carcasses were too decomposed for necropsy.
1 (adult)	Riding area	On 7 October, 1 unbanded adult was found dead approximately 210 feet east of 6 exclosure. The intact carcass was found on the surface of the sand and appeared fresh with blood coming from the beak. Necropsy results are pending.

Oceano Dunes State Vehicular Recreation Area

2025 Predator Management Report



Submitted To:

Ronnie Glick
Senior Environmental Scientist
Oceano Dunes District
340 James Way, Suite 270
Pismo Beach, CA 93449

Submitted By:

Charlie Richards, Wildlife Biologist
&
Barry Lowry, District Supervisor
San Luis District
CA Wildlife Services Program

Introduction

USDA-APHIS-Wildlife Services (WS) worked on the Oceano Dunes State Vehicular Recreation Area (ODSVRA) from February 1st to September 30th for the 2025 nesting season. Wildlife Biologist Charlie Richards, District Supervisor Barry Lowry, Wildlife Specialist Donnie Simms, and Assistant District Supervisor Tom Young conducted predator management activities in and around the California Least Tern (*Sternula antillarum browni*) (CLTE) and Western Snowy Plover (*Anarhynchus nivosus*) (SNPL) nesting areas. Charlie Richards was responsible for the day-to-day fieldwork throughout the 2025 nesting season. WS surveyed, trapped, hazed, and removed predators threatening CLTE and SNPL.

Methods

A variety of predator management methods, including surveying, trapping, hazing, and lethal removal were utilized throughout the 2025 SNPL and CLTE nesting season.

Predator surveys were performed regularly by WS during the SNPL and CLTE nesting season. Surveys were conducted by vehicle and on foot to search for evidence of predator activity. Vortex Optics Viper HD 10x42mm binoculars and a Vortex Optics Diamondback 20-60x80 Spotting Scope were utilized during surveys to locate signs of predator activity and presence. Surveys mainly took place east of the nesting exclosures within the revegetation areas (Appendix 1), along the exclosure's shoreline, in the agricultural fields east of Oso Flaco Lake, and south to Brown Road in Santa Barbara County. Additionally, WS stayed in regular communication with State Parks staff to share information about predator sightings and activity via the communication software Zello Walkie Talkie.

Trapping was one of the methods of predator control used during the 2025 nesting season. The main type of traps used were Soft Catch Woodstream #3, which are padded leg hold traps. They were set to capture common ravens (*Corvus corax*). Padded leg-hold traps for common ravens were baited by creating false SNPL nests using quail eggs.

Wildlife Services regularly assisted Thadeus Sternberg and Daniel Biteman of Wildlife Innovations with trapping and hazing of problematic raptors on the Oceano Dunes property. Wildlife Services stayed in regular communication with Thadeus or Dan about the location and habits of avian predators. State Parks staff hazed problematic raptors by flushing the birds on foot, with a vehicle, or by firing a bird whistler.

Euthanasia by firearm was conducted with a Benelli M2 12-gauge semi-automatic shotgun with Hevi Shot Hevi XII 3-inch shells with #4, unless otherwise noted.

Egg platforms were used in an attempt to lure in and poison ravens during the 2025 nesting season. Chicken eggs were used to attract common ravens to the platform. The platform was monitored by a game camera to detect the presence of ravens at the platform. Given the opportunity, a platform frequently visited by common ravens would have the bait eggs treated with the compound DRC-1339.

DRC-1339 has been successful in removing ravens at other SNPL nesting sites. After ravens visit the platform regularly, the boiled chicken eggs are replaced with hard boiled chicken eggs dosed with two milligrams of the corvidicide DRC-1339. The active chemical in DRC-1339, 3-Chloro-p-Toluidine Hydrochloride, causes renal failure in the target bird species within 24 to 72 hours of ingestion. DRC-1339 was chosen because it is a selective avicide that is highly toxic to nest-depredating corvids but would require much larger doses to be toxic to mammals and other species of non-target birds.

Results

The 2025 SNPL and CLTE nesting season had a variety of predators: common ravens, American crows, peregrine falcons, coyotes, gulls, owls, northern harriers, and American kestrels. Wildlife Innovations focused on trapping raptor species and WS focused on mammals, common ravens, American crows, and gulls. Common ravens were responsible for the largest number of nest predations during this nesting season. 42 total SNPL nests were lost to predators: ravens (24), “event, raven” (3), coyote (6), “event, coyote” (4), unknown predators (4), and gull (1). 9 total CLTE nests were lost to predators: coyote (4), “event, coyote” (3), raven (1), “event, raven” (1).

5 individual CLTE were depredated during the 2025 season: northern harrier (1 juvenile or chick and 1 adult) peregrine falcon (1 juvenile or chick and 2 juveniles). 25 individual SNPL were depredated during the 2025 season to a variety of predators: unknown avian (2 adults), northern harrier (1 chick and 1 juvenile or chick), western gull (1 chick and 1 juvenile) raven (4 chicks) California gull (2 chicks and 1 of an unknown age), peregrine falcon (4 chicks, 1 juvenile or chick and 6 adults or juveniles), sharp-shinned hawk (1 adult).

During the 2025 nesting season coyote tracks were documented in areas with nesting SNPL and CLTE. WS removed four coyotes (*Canis latrans*) from ODSVRA. During the season, four coyotes were removed. The first coyote was removed on 6/30 from inside of the North Oso Flaco Foredunes and was caught on a padded leghold. The second coyote was removed on 7/1 inside of 6 alleyway and was caught in a padded leghold. The third coyote was removed on 7/11 inside of 6 alleyway and was caught in a padded leghold. The fourth and final coyote was removed from inside of Bigfoot on 7/28 and was removed with a firearm. Following the removal of the coyote in the North Oso Flaco Foredunes the park experienced no more known nest predation from coyotes. Predation on tern and plover chicks was never confirmed but was suspected at various times throughout the season.

Corvids such as common ravens (*Corvus corax*) and American crows (*Corvus brachyrhynchos*) are a predation threat to nesting SNPL and CLTE throughout their entire range.

One American crow was removed from ODSVRA. The American crow was removed following disturbance to SNPL and CLTE nests within the enclosures and was removed from Euc North using a firearm. Attempts were made to haze the individual with a bird whistler, but it kept returning to the enclosures prompting the decision to remove the individual.

Surveying efforts for common ravens began prior to March 1st and continued until the end of the season.

Trapping efforts began early in the season with the implementation of quail egg nest sets and the introduction of non-treated chicken eggs to nest platforms. Three common ravens were removed from ODSVRA during 2025. The first common raven was removed with a firearm on 3/28 in between BBQ Flats and Pavillion Hill flying over the ORA. The second common raven was removed with a firearm on 4/28 flying over the ORA near the pipeline. The third common raven was also removed with a firearm on 4/28 flying over the ORA near the White Route markers. 24 SNPL nests were lost to common ravens from 4/23-6/25. 3 additional SNPL nest depredation events were listed as “event, raven” from 4/26-4/28. This categorization is a result of there being no signs of predation at the nest besides eggs missing with a lack of counter evidence from human or environmental losses. These nests were spatially close enough to other nests that had resulted in failure due to evidence-based raven predation. 4 SNPL chicks were lost to ravens on 6/23 during a depredation event when 2 adult and 4 juvenile ravens were present in the park simultaneously. 1 CLTE nest was lost to ravens on 6/24. 1 CLTE was listed as lost from “event, raven” on 6/23.

Gull predation was a concern throughout the nesting season. WS staff watched groups of gulls along the shoreline to quickly respond to possible predation events. Two gulls were removed from ODSVRA. The first gull was a subadult California gull and was removed from the Foredune Shore using a firearm on 6/24. The gull was dispatched and there were the remains of three SNPL chicks upon inspection of the gull’s digestive tract. The second gull was also a subadult western gull removed on 8/14 from the Foredune Shore. The gull was dispatched and there were no remains of SNPL chicks upon inspection of the gull’s digestive tract. An additional gull was removed by a State Park Ranger on 8/2. A juvenile California gull was lethally removed by a park ranger after it chased and caught a plover chick that later ran off and appeared unharmed (state parks staff found no plover remains in the gull’s gut contents).

During the 2025 season the park was frequented by a subadult male peregrine falcon that was incredibly effective at hunting SNPL and CLTE. This PEFA depredated 4 SNPL and 1 CLTE from 7/14-7/17. Wildlife Innovations trapped this individual and banded it with the band 94AB on 7/17. This individual was relocated 458 miles away north of ODSVRA. 8 days after the relocation, 94AB was spotted back in ODSVRA on July 26th and depredated an additional 7 SNPL and 2 CLTE from 7/28-9/4. Attempts were made to re-trap this individual with no success. USDA WS made attempt to lethally remove this individual from 9/8-9/30 but with no success. Sightings of 94AB were very limited from 9/8-9/30 and CLTE were no longer on site and no more SNPL loss was documented. 94AB was last seen on 9/14.

WS conducted other duties as time permitted. WS reported predator sightings to State Parks Resources Staff as they occurred and submitted reports using the Microsoft Access database. WS also kept in communication with Thadeus Sternberg or Daniel Biteman of Wildlife Innovations to report sightings of raptors.

Future Recommendations

WS recommends that state parks continue to check the enclosure fencing regularly for changes in the sand that may cause gaps or mounded sand. WS should check frequently for dig in areas easily accessible including the east fence and boardwalk. This will help prevent coyotes from accessing sensitive nesting areas.

WS recommends that state parks continue to allow WS to safely walk within the enclosure to get into close positions for predator removal, accompanied by park staff when necessary.

WS recommends that state parks continue to remove carcasses off the beach as an effort to reduce attractants for scavenging predators.

WS recommends the continued removal of species that present a threat to the SNPL and CLTE populations at ODSVRA.

Report all common raven sightings to WS at any time of the year. Removal actions can take place year-round. Having knowledge of raven activity prior to each nesting season can allow removal efforts to be more productive.

WS recommends state parks continue hazing raptors from areas near SNPL and CLTE nesting areas. Caution should be used during hazing to avoid scaring SNPL and CLTE from their nests and to avoid interfering with any trapping efforts.

WS recommends state parks continues to consider the option to use baited egg platforms for future raven control efforts. The method of using egg platforms with chicken eggs treated with the corvicide DRC-1339 has been successful in removing ravens at other SNPL nesting sites. The active chemical in DRC-1339 3-Chloro-p-Toluidine Hydrochloride causes renal failure in the target bird species within 24 to 72 hours of ingestion. DRC-1339 was chosen because it is a selective avicide that is highly toxic to nest-depredating corvids but would require much larger doses to be toxic to mammals and other species of non-target birds (Appendices 3 and 4).

WS recommends monitoring for the presence of red fox within the park. WS should be contacted as soon as possible so that removal efforts can begin.

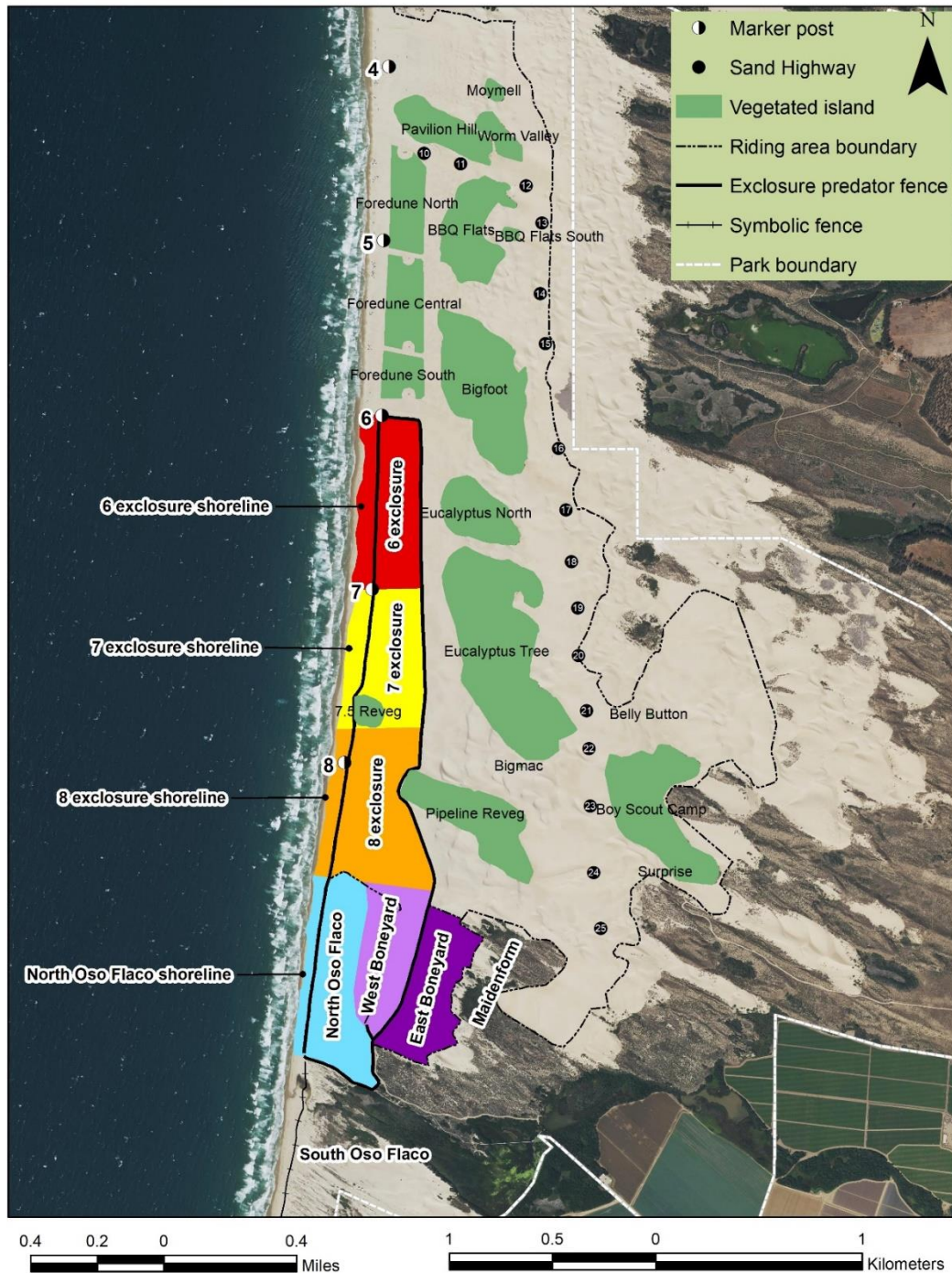
WS recommends continued monitoring for feral swine. If feral swine are located, contact WS as soon as possible so removal efforts can begin. If deceased feral swine are located with no obvious signs of death, do not approach or touch the carcass and contact WS as soon as possible at 1-866-4-USDA-WS. If it is possible and safe to do so, check the area for other signs of dead swine.

Table 1: USDA Predator Removal Summary

Date	Species	Age	Location	Method
3/28/2025	Common Raven	Adult	ORA/BBQF	Firearm
4/28/2025	Common Raven	Adult	ORA/Pipeline	Firearm
4/28/2025	Common Raven	Adult	ORA/White Route	Firearm
6/24/2025	California Gull	Subadult	FD Shore	Firearm
6/30/2025	Coyote	Adult	NOF	Padded Leghold
7/1/2025	Coyote	Adult	6 Alleyway	Padded Leghold
7/11/2025	Coyote	Adult	6 Alleyway	Padded Leghold
7/28/2025	Coyote	Adult	Bigfoot	Firearm
7/29/2025	American Crow	Adult	Euc North	Firearm
8/14/2025	Western Gull	Subadult	FD Shore	Firearm

Barry Lowry, District Supervisor
San Luis District
CA Wildlife Services

Appendix 1: Map of ODSVRA SNPL and CLTE Nesting Exclosures and Adjacent Areas



Appendix 2: DRC-1339 EPA Label

RESTRICTED USE PESTICIDE Due to High Acute Inhalation Toxicity and Eye and Skin Corrosiveness to Humans; High Acute Toxicity to Nontarget Birds and Aquatic Invertebrates; and the Need for Highly Specialized Applicator Training. For retail sale to and use only by USDA APHIS Certified Applicators trained in bird control or by persons under their direct supervision.		PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS DANGER Acute Hazards: Fatal if inhaled. Corrosive. Causes irreversible eye damage and skin burns. May be fatal if swallowed. Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some people. Hazard Avoidance: Do not get in eyes, on skin, or on clothing. Do not breathe dust. Wear protective clothing, eyewear, and respiratory protection as listed under "PERSONAL PROTECTIVE EQUIPMENT." Wash thoroughly with soap and water after handling and before eating or smoking. Remove contaminated clothing and wash before reuse. PERSONAL PROTECTIVE EQUIPMENT (PPE): Handlers who mix packages containing 1 lb (0.45 kg) or more of this product must wear: - Coveralls over long-sleeved shirt and long pants - Chemical-resistant gloves (such as waterproof or rubber gloves) - Chemical-resistant footwear plus socks - Protective eyewear (goggles or face shield) - A NIOSH approved particulate respirator with any N, R, or P filter with NIOSH approval number prefix TC-84A Handlers who mix packages containing less than 1 lb (0.45 kg) of this product must wear: - Long-sleeved shirt and long pants - Chemical-resistant gloves (such as waterproof or rubber gloves) - Protective eyewear (goggles or face shield) Applicators who handle bait must wear: - Long-sleeved shirt and long pants - Chemical-resistant gloves (such as waterproof or rubber gloves) User Safety Requirements: - Follow manufacturer's instructions for cleaning/ maintaining PPE. If no such instructions are provided for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. - Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. - Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. - Remove PPE immediately after handling this product. As soon as possible, wash thoroughly and change into clean clothing.	
COMPOUND DRC-1339 CONCENTRATE – LIVESTOCK, NEST & FODDER DEPREDATIONS <i>For control of crows, ravens, and magpies that prey on newborn livestock, that prey on eggs or the young of Federally-designated Threatened or Endangered Species or of other species designated to be in need of special protection or that damage and feed on the contents of silage/fodder bags.</i> ACTIVE INGREDIENT: DRC-1339, 3-chloro-p-toluidine hydrochloride: 97.0% OTHER INGREDIENTS: 3.0% TOTAL: 100.0%		KEEP OUT OF REACH OF CHILDREN DANGER-PELIGRO POISON 	
FIRST AID Have the product container or label with you when calling a poison control center or doctor, or going for treatment. If you need immediate medical attention call the Poison Control Center at 1-800-222-1222 or a doctor. For non-emergency information concerning this product, call the National Pesticide Information Center at 1-800-858-7378.			
If swallowed	- Call a poison control center or doctor immediately for treatment advice. - Have person sip a glass of water if able to swallow. - Do not induce vomiting unless told to do so by the poison control center or doctor. - Do not give anything to an unconscious person.		
If on skin or clothing	- Take off contaminated clothing. - Rinse skin immediately with plenty of water for 15-20 minutes. - Call a poison control center or doctor immediately for treatment advice		
If inhaled	- Move person to fresh air. - If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. - Call a poison control center or doctor immediately for treatment advice.		
If in eyes	- Hold eye open and rinse slowly and gently with water for 15-20 minutes. - Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. - Call a poison control center or doctor immediately for treatment advice.	ENVIRONMENTAL HAZARDS: This product is very highly toxic to birds and aquatic invertebrates. Do not use in any manner that may endanger nontarget and protected bird species. Runoff may be hazardous to aquatic organisms in neighboring areas. Do not apply when runoff is likely to occur. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water by the cleaning of equipment or disposal of waste. UNITED STATES DEPARTMENT OF AGRICULTURE ANIMAL AND PLANT HEALTH INSPECTION SERVICE 4700 River Road, Unit 149 Riverdale, MD 20737 EPA Reg. No. 56228-29 EPA Est. No. 56228-ID-1 Net Contents: _____ Batch Code No.: _____	
NOTE TO PHYSICIAN AND VETERINARIAN: Probable mucosal damage may contraindicate the use of gastric lavage. See additional "PRECAUTIONARY STATEMENTS" on right panel. If pet eats bait, call a veterinarian at once.			

ENDANGERED SPECIES CONSIDERATIONS:

Before undertaking any control operations with the product, consult with local, State, and Federal Wildlife authorities to ensure the use of this product presents no hazard to any Threatened or Endangered Species. **DO NOT** apply treated baits where there is a danger that Threatened or Endangered Species will consume baits unless special precautions are taken to limit such exposures.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

READ THIS LABEL:

Read the entire label. This product must be used strictly in accordance with this label's precautionary statements and use directions, as well as with all applicable State and Federal laws and regulations.

Before using this product, contact the U.S. Fish and Wildlife Service and the applicable State wildlife agency and obtain all necessary kill or collecting permits. Use only for the sites, pests, and application methods described on this label.

PRODUCT INFORMATION:

This product contains a slow-acting avicide which kills target bird species (see list below) in 1 to 3 days. As many types of nontarget birds are potentially vulnerable to DRC-1339, it is necessary to use care and to follow the requirements of this label to minimize impacts to nontarget species.

USE RESTRICTIONS:

Baits made from Compound DRC-1339 - Livestock, Nest & Fodder Depredations may only be used to control the following species:

- Common raven (*Corvus corax*),
- Chihuahuan raven (*Corvus cryptoleucus*),
- American crow (*Corvus brachyrhynchos*),
- Black-billed magpie (*Pica hudsonia*), and
- Fish crow (*Corvus ossifragus*).

This product may be used to prepare egg or meat-cube baits to control the target species listed above in the following use sites:

- Rangeland and pastureland areas where ravens or crows prey upon newborn livestock;
- Refuges or other areas where ravens or crows prey upon the eggs and/or young of Federally-designated Threatened or Endangered Species, or upon the eggs and young of other species which Federal or State wildlife agencies have determined to be in need of protection from nest predators due to documented declines in numbers and/or in nesting success; or
- Within 25 feet (7.6 m) of silage/fodder bags that have been damaged or are likely to be damaged by crows, ravens, or black-billed magpies.

Baits must be prepared and applied as specified on this label. **DO NOT** apply baits made from this product by air or by use of any mechanical equipment designed to broadcast baits or other pesticides. Users of this product must follow all limitations indicated on this label regarding the placement and monitoring of treated baits.

Before baits made from this product are applied, sites that are to be treated must be observed for evidence of nontarget activity and must be prebaited (see specific instructions for these activities). **DO NOT** apply treated baits where there is a danger that Threatened or Endangered Species will consume baits unless special precautions are taken to limit such exposures. Such precautions shall include observation of baited sites and use of hazing tactics to frighten away Threatened or Endangered Species that otherwise might feed upon baits.

DIRECTIONS FOR USE, continued**USE RESTRICTIONS, continued:**

DO NOT apply treated baits within 50 feet (15.2 m) of permanent manmade or natural bodies of water, unless baited sites are under constant observation while baits are exposed.

DO NOT exceed a maximum application rate of 0.083 lbs of active ingredient per acre (0.93 g active ingredient/100 m²), or a maximum yearly application rate of 0.5 lb of active ingredient per acre (5.61 g active ingredient/100 m²).

DO NOT store treated bait in locations accessible to children, pets, domestic animals, or nontarget wildlife.

Prior to application, and during the time between the conclusion of application and the disposal of unconsumed bait, **DO NOT** temporarily place treated bait in locations accessible to children, pets, domestic animals, or nontarget wildlife. Follow the directions in "ENTRY RESTRICTIONS" to avoid exposure to children, pets, or domestic animals during application. Follow the directions in "PRETREATMENT OBSERVATIONS" to mitigate exposure to nontarget wildlife during application.

DO NOT apply bait in a way that will contact workers or other persons.

DO NOT use treated baits as food or feed.

DO NOT apply baits made from this product in any way that could contaminate human food or animal feed.

ENTRY RESTRICTIONS:

Only protected applicators may be in the area during bait application. Keep pets and livestock, and persons other than authorized handlers away from the bait at all times, and exclude all unauthorized persons from application sites during prebaiting and baiting. For example, post signage near, in the vicinity of, or at main entrances or commonly used access points to prebaiting and baiting sites that warns persons not to pick up or handle any baits and to keep pets and livestock away from bait.

PRETREATMENT OBSERVATIONS:

Prior to application, carefully observe target birds' feeding habits to locate their preferred feeding sites, determine the optimum time of application, and evaluate potential hazards of the application to nontarget and protected species.

PREBAITING:

Prebaiting with untreated bait materials (or use of a draw station) is necessary to promote feeding by target species and to assess potential for exposure of nontarget species. Apply prebait using the same procedures that are prescribed below for the type of bait ("EGG BAITS" or "MEAT BAITS") that is to be used for toxic baiting.

Observe baited areas (from blinds) early in prebaiting period to determine whether nontarget species are approaching baits. Haze away Threatened or Endangered and nontarget species that might consume baits. Remove baits if such nontarget species continue to approach them.

(See next page for additional "DIRECTIONS FOR USE")

DIRECTIONS FOR USE, continued BAIT PREPARATION: MEAT BAITS: MEAT BAIT PREPARATION: Mix 0.027 oz (0.75 g) of this product with 0.18 oz (5.0 g) of powdered sugar. Pour or sprinkle concentrate-sugar mixture over 200 meat cubes that measure about 0.5 in (1.3 cm) on each side. Mix or tumble bait slowly until all meat cubes appear to be evenly covered. MEAT BAIT APPLICATION: NOTE: During application, wear all PPE as listed under "PERSONAL PROTECTIVE EQUIPMENT." Control of crows, magpies, and ravens with meat baits prepared from this product is limited to the sites indicated above under "USE RESTRICTIONS." Wear rubber gloves while handling baits. Place no more than 75 meat cube baits at each baited site. Place 5 to 10 baits in clusters over an area not to exceed 1,000 ft² (93 m²) where control of ravens, magpies, and/or crows is to be affected. Draw stations (fresh, unpoisoned animal carcasses) may be needed to attract ravens, magpies, and/or crows to the locations selected for bait exposure. If draw stations are used, place meat baits on or within a few feet of the animal carcasses. WHILE TREATED MEAT BAITS ARE EXPOSED, BAITED AREAS MUST BE OBSERVED CONTINUOUSLY FROM A DISTANCE OF NO MORE THAN 1,000 YARDS (914 m) TO DETECT APPROACHES BY THREATENED OR ENDANGERED SPECIES AND OTHER NONTARGET OR PROTECTED ANIMALS LIKELY TO EAT BAITS. Because of wariness of target bird species, it may be necessary to observe baits from behind natural or specially-constructed blinds. Haze away Threatened or Endangered and nontarget species that might consume baits. Remove baits if such nontarget species continue to approach them. Unconsumed bait cubes must be retrieved daily, at the conclusion of each observation period and no later than one hour after sunset. Dispose of retrieved baits in accordance with applicable State and Federal laws. EGG BAITS: EGG BAIT PREPARATION: Dissolve 0.07 oz (2 g) of the product in 0.2 pint (100 ml) of warm potable water at 110 °F (43.3 °C) to make an approximately 2% solution; or dissolve 0.14 oz (4 g) of the product in 0.2 pint (100 ml) of warm potable water at 110 °F (43.3 °C) to make an approximately 4% solution; or in other proportions to produce a 2% or 4% solution. Using an 18-gauge hypodermic needle or similarly-sized implement, make an entry hole in the end of each hard-boiled chicken, turkey, or duck egg to be used. Using a syringe and a 20-gauge hypodermic needle, slowly inject 0.002 pints (1 ml) of the 2% solution (or 0.001 pints or 0.5 ml of the 4% solution) into the yolk of each egg. Make only enough solution to treat the desired number of eggs. Mark treated eggs with small skull and crossbones or the word POISON.	DIRECTIONS FOR USE, continued EGG BAIT APPLICATION: NOTE: During application, wear all PPE as listed under "PERSONAL PROTECTIVE EQUIPMENT." Control of crows, magpies, and ravens with egg baits prepared from this product is limited to the sites indicated above under "USE RESTRICTIONS". Place all egg baits to be used at one baited site within 25 ft (7.6 m) of the center of the site or within 25 ft (7.6 m) of any silage/fodder bags that are to be protected. Place 1-4 eggs in each bait set, and do not use more than a total of 18 eggs per baited site. If a draw station (fresh, unpoisoned animal carcass) is used, all bait sets must be located at least 10 ft (3 m) from the carcass. Wherever practical, bait sets should be made in "dummy" nests created by making small depressions in the ground. Dummy nests may be partially hidden by vegetation or other debris. In other situations, eggs may be placed on elevated wooden platforms 1 to 2 ft² (0.1 to 0.2 m²) in area. Eggs placed on platforms must be restrained by wire to prevent them from falling off platforms or being removed by birds. Apply 2-3 eggs per platform. DO NOT USE MORE EGGS THAN ARE NEEDED TO EFFECT CONTROL, as ravens and crows tend to cache surplus food. Observe baited areas (from blinds) early in baiting period to determine whether nontarget species are approaching egg baits. Haze away Threatened or Endangered and nontarget species that might consume baits. Remove baits if such nontarget species continue to approach them. Rebait with additional treated eggs when more than 50% of the treated eggs offered have been removed by ravens, magpies, or crows. When replacing baits, take care not to frighten target birds actively removing or feeding upon eggs. Retrieve unconsumed treated eggs within 7 days of exposure. Old treated eggs and treated eggs not eaten by the time control operations cease must be disposed of in accordance with applicable State and Federal laws. POSTTREATMENT CLEAN-UP (Meat and Egg Baits): NOTE: During clean-up, wear long-sleeved shirt and long pants and chemical-resistant gloves (such as waterproof or rubber gloves). To further reduce the potential for exposure, use appropriate implements such as scoops or other tools to collect carcasses or uneaten bait. Collect unconsumed and leftover meat daily, and unconsumed and leftover egg baits, dying birds, and carcasses within 7 days of treatment. Dispose of such baits and carcasses by burning or burial, as authorized by applicable laws and ordinances. STORAGE AND DISPOSAL Do not contaminate water, food, or feed by storage or disposal. PESTICIDE STORAGE: Store only in original container, in a dry place inaccessible to children, pets, and domestic animals. PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spilled bait, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. CONTAINER HANDLING: Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Completely empty bags by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. If bags are not to be recycled, dispose of bags in a sanitary landfill or by incineration if allowed by State and local authorities. If burned, stay out of smoke. Revised: 05-06-2016 Registration No. 56228-29, Page 3 of 3
---	--

Appendix 3: Safety Data Sheet for DRC-1339



Safety Data Sheet

Issue Date: 2-Feb-2004

Revision Date: 21-Dec-2017

Version 4

1. IDENTIFICATION

Product Identifier

Product Name

Compound DRC-1339 Concentrate – Feedlots
Compound DRC-1339 Concentrate – Gulls
Compound DRC-1339 Concentrate – Pigeons
Compound DRC-1339 Concentrate – Livestock, Nest & Fodder Depredations
Compound DRC-1339 Concentrate – Staging Areas
Compound DRC-1339 Concentrate – Bird Control
DRC-1339 Technical

Other Means of Identification

SDS

USDA-0001

Synonyms

Starlicide
3-chloro-p-toluidine hydrochloride
3-chloro-4-methylamine hydrochloride
3-chloro-4-methylbenzamine hydrochloride
CPH

Registration Number(s)

EPA Reg. # 56228-10: Compound DRC-1339 Concentrate – Feedlots
EPA Reg. # 56228-17: Compound DRC-1339 Concentrate – Gulls
EPA Reg. # 56228-28: Compound DRC-1339 Concentrate – Pigeons
EPA Reg. # 56228-29: Compound DRC-1339 Concentrate – Livestock, Nest & Fodder Depredations
EPA Reg. # 56228-30: Compound DRC-1339 Concentrate – Staging Areas
EPA Reg. # 56228-63: Compound DRC-1339 Concentrate – Bird Control
EPA Reg. # 56228-59: DRC-1339 Technical

Recommended Use of the Chemical and Restrictions on Use

Recommended Use

Restricted Use Pesticide: For retail sale to and use only by USDA APHIS Certified Applicators trained in bird control or by persons under their direct supervision.

Uses Advised Against

Any use(s) not strictly adhering to the Directions for Use on the EPA-approved labels is strongly advised against and a violation of federal law.

Details of the Supplier of the Safety Data Sheet

Registrant Address

United States Department of Agriculture
Animal & Plant Health Inspection Service
4700 River Road
Riverdale, MD 20737

Manufacturer Address

Pocatello Supply Depot
238 E. Dillon Street
Pocatello, ID 83201-6623

Emergency Telephone Number

Company Phone Number

1-208-236-8920

Emergency Telephone (24 hr)

INFOTRAC: 1-352-323-3500 (International)
INFOTRAC: 1-800-535-5053 (North America)
National Pesticide Information Center Hotline: 1-800-858-7378
Poison Control Center: 1-800-222-1222

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: HAZARDOUS TO HUMANS AND DOMESTIC ANIMALS: Fatal if inhaled, harmful if swallowed, causes severe skin burns and serious eye damage, may be harmful in contact with skin, and may cause an allergic skin reaction. This chemical is a product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-EPA registered chemicals. Please see Section 15 for additional EPA information.

Appearance Off-white to yellow powder**Physical State** Powder**Odor** Moth ball**Classification**

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 1
Skin corrosion/irritation	Category 1C
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1B
Hazardous to aquatic environment, Acute	Category 1
Hazardous to aquatic environment, Chronic	Category 1

Hazards Not Otherwise Classified (HNOC)**Signal Word****Danger****Hazard Statements**

Fatal if inhaled.

Harmful if swallowed.

Causes severe skin burns and eye damage.

May cause an allergic skin reaction.

Very toxic to aquatic life with long lasting effects.

**Precautionary Statements - Prevention**

Wash face, hands and any exposed skin thoroughly after handling.

Do not eat, drink or smoke when using this product.

Do not breathe dust/fume/gas/mist/vapors/spray.

Use only outdoors or in a well-ventilated area.

Wear respiratory protection.

Wear protective gloves/protective clothing/eye protection/face protection.

Contaminated work clothing should not be allowed out of the workplace.

Avoid release into the environment.

Precautionary Statements - Response

Immediately call a poison center or doctor/physician.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Immediately call a poison center or doctor/physician.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

Wash contaminated clothing before reuse.

If skin irritation or rash occurs: Get medical advice/attention.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician.

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth. Do not induce vomiting.

Collect spillage. Hazardous to the aquatic environment.

Precautionary Statements - Storage

Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant.

WHMIS Classification

This product was classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations, and the SDS contains all the information required by these regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS**Synonyms**

3-chloro-p-toluidine hydrochloride
3-chloro-4-methylaniline hydrochloride
3-chloro-4-methylbenzamine hydrochloride
CPTH
DRC-1339
Starlicide

Chemical Name	CAS No	Weight-%
3-chloro-p-toluidine hydrochloride	7745-89-3	97

Chemical Additions

Other ingredients make up 3% of this product.

Molecular Weight

178.06 g/mol

Molecular Formula

C₇H₉NC₂

4. FIRST-AID MEASURES**First Aid Measures**

General Advice	Immediately call a poison center or doctor/physician.
Eye Contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.
Skin Contact	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Immediately call a poison center or doctor/physician.
Inhalation	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician. If person is not breathing, call an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.
Ingestion	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. DO NOT induce vomiting, unless directed by medical personnel. Have victim rinse mouth thoroughly with water and sip a glass of water, if conscious and able to swallow. Never give anything by mouth to a victim who is unconscious.
Self-Protection of the First Aider	Move the affected person from the hazardous exposure. If the exposed person has been overcome, notify someone else and put into effect the established rescue procedures. Do not become a casualty. Understand the facility's emergency rescue procedures and know locations of rescue equipment before the need arises.

Most Important Symptoms and Effects

Symptoms	Overexposure or poisoning symptoms include: central nervous system depression, hematuria, diuresis, and burning of skin and eyes.
-----------------	---

Indication of Any Immediate Medical Attention and Special Treatment Needed

Notes to Physician	Treat symptomatically. Possible mucosal damage may contraindicate the use of gastric lavage.
---------------------------	--

5. FIRE-FIGHTING MEASURES**Suitable Extinguishing Media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Water spray. Dry chemical. Carbon dioxide (CO₂).

Unsuitable Extinguishing Media	Not determined.
---------------------------------------	-----------------

Specific Hazards Arising from the Chemical

Non-flammable. Non-explosive. Can release hazardous vapors during a fire. Nitrogen oxides (NO_x). Hydrochloric gas (HCl(g)).

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES**Personal Precautions, Protective Equipment and Emergency Procedures**

Personal Precautions	Handle only with protective gloves, clothing and face mask or respirator.
-----------------------------	---

For Emergency Responders	Use personal protection recommended in Section 8: Exposure Controls/Personal Protection.
---------------------------------	--

Environmental Precautions	Prevent from entering ditches, sewers, waterways and/or groundwater. See Section 12: Ecological Information. Notify authorities if spill has entered watercourse or sewer or has contaminated soil or vegetation.
----------------------------------	---

Methods and Material for Containment and Cleaning Up

Methods for Containment	Prevent further leakage or spillage if safe to do so.
--------------------------------	---

Methods for Clean-Up	Pick up spillage mechanically and place in suitable, closed, properly labeled container for recovery or disposal. For waste disposal, see Section 13: Disposal Considerations.
-----------------------------	--

7. HANDLING AND STORAGE**Precautions for Safe Handling**

Advice on Safe Handling	Wash face, hands, and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Do not breathe dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Wear respiratory protection. Wear protective gloves/protective clothing and eye/face protection. Contaminated work clothing should not be allowed out of the workplace.
--------------------------------	---

Conditions for Safe Storage, Including Any Incompatibilities

Storage Conditions	Keep/store only in original container. Store locked up. Keep container tightly closed and store in a cool, dry and well-ventilated place. Keep away from children, pets and domestic animals. Keep away from other chemicals. Store away from food stuffs. Do not contaminate water, food or feed by storage.
Incompatible Materials	Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines	This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.
----------------------------	---

Appropriate Engineering Controls

Engineering Controls	Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation (dilution and local exhaust), and control of process conditions. In using this material follow suitable precautions to control dust, this helps to prevent fire and health hazards.
-----------------------------	--

Individual Protection Measures, Such as Personal Protective Equipment

Eye/Face Protection	ALL USERS: Protective eyewear (goggles or face shield).
Skin and Body Protection	ALL USERS: Chemical-resistant gloves. USERS MIXING PACKAGES CONTAINING 1 LB OR MORE OF THIS PRODUCT: Long sleeved shirt and long pants. Chemical-resistant gloves. Chemical-resistant footwear plus socks. USERS MIXING PACKAGES CONTAINING LESS THAN 1 LB OF THIS PRODUCT: Long sleeved shirt and long pants. Chemical-resistant gloves.
Respiratory Protection	USERS MIXING PACKAGES CONTAINING 1 LB OR MORE OF THIS PRODUCT: Respirator with a dust/mist filtering respirator (MSHA NIOSH approval number prefix TC-21C or NIOSH approved respirator with any N, R, P or HE filter). USERS MIXING PACKAGES CONTAINING LESS THAN 1 LB OF THIS PRODUCT: No special protection required.
General Hygiene Considerations	Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Wash face, hands and any exposed skin thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES**Information on Basic Physical and Chemical Properties**

Physical State	Powder	Odor	Moth ball
Appearance	Off-white to yellow powder	Odor Threshold	No data available
Color	Off-white to yellow		
Property	Values	Remarks • Method	
pH	2.67		
Melting Point/Freezing Point	Sublimes 220-230 °C (428-446 °F)	@ 760 mmHg	
Boiling Point/Boiling Range	No data available		
Flash Point	No data available		
Evaporation Rate	No data available		
Flammability (Solid, Gas)	No data available		
Upper Flammability Limits	No data available		
Lower Flammability Limit	No data available		
Vapor Pressure	1.408 x 10 ⁻² Pa (1.06 x 10 ⁻⁴ mmHg)	@ 25 °C	

Vapor Density	No data available	
Specific Gravity	No data available	
Water Solubility	9.1 g/100 ml water	@ 30 °C
Solubility in Other Solvents	0.5 g/100 ml n-octanol	@ 30 °C
	0.013 g/100 ml acetonitrile	@ 30 °C
Partition Coefficient	0.022	estimated
Auto-Ignition Temperature	No data available	
Decomposition Temperature	No data available	
Kinematic Viscosity	No data available	
Dynamic Viscosity	No data available	
Explosive Properties	No data available	
Oxidizing Properties	No data available	
Density	0.44 g/ml or g/cm ³	

10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions.

Chemical Stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid

Keep out of reach of children. Contact with incompatible materials. Heat above 300 °C (570 °F) will cause release of nitrogen oxides (NO_x) and hydrochloric gas (HCl(g)).

Incompatible Materials

Strong oxidizing agents.

Hazardous Decomposition Products

No data available.

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Product Information	The EPA did not require a subchronic toxicity study for DRC-1339 Concentrate based on the low volumes used and restricted use nature of its application. The agency does not believe the potential exists for significant exposure of production workers or applicators to DRC-1339 Concentrate.
Eye Contact	Causes severe eye damage. Contact causes burning, redness, and severe damage, including blindness.
Skin Contact	Corrosive to skin. Causes severe skin irritation, dermatitis, and chemical burns. May cause an allergic skin reaction. May be absorbed through the skin in harmful amounts.
Inhalation	Fatal if inhaled. Inhalation of dusts may be severely irritating and may cause chemical burns to the respiratory tract.
Ingestion	Harmful if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
3-chloro-p-toluidine hydrochloride 7745-89-3	302–350 mg/kg (rat)	>2,000 mg/kg (rabbit)	No data available

Information on Physical, Chemical and Toxicological Effects

Symptoms Please see Section 4: First-Aid Measures for symptoms.

Delayed and Immediate Effects and Chronic Effects from Short- and Long-Term Exposure

Sensitization May cause an allergic skin reaction.

Germ Cell Mutagenicity Negative test results in three mutagenicity studies.

Carcinogenicity This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Reproductive Toxicity The EPA did not require a developmental toxicity study based on the use characteristics of DRC-1339 Concentrate. The agency does not believe the potential exists for repeat oral, dermal or inhalation exposures to production workers or applicators.

Numerical Measures of Toxicity

Not determined.

12. ECOLOGICAL INFORMATION

Ecotoxicity

This product is very highly toxic to birds and aquatic invertebrates. This product is toxic to fish.

Chemical Name	Algae/Aquatic Plants	Fish LC ₅₀	Toxicity to Microorganisms	Crustacea EC ₅₀
3-chloro-p-toluidine hydrochloride 7745-89-3	No data available	9.7 mg/l: <i>Oncorhynchus mykiss</i> (rainbow trout); 10.5 mg/l: <i>Lepomis macrochirus</i> (bluegill sunfish)	No data available	0.07 mg/l: <i>Daphnia magna</i> (water flea)

Persistence/Degradability

No data available.

Bioaccumulation

Slightly accumulates in bluegill sunfish (*Lepomis macrochirus*).

Mobility

No data available.

Other Adverse Effects

Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes	Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinse is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or Hazardous Waste representative at the nearest EPA regional office. Never place any unused product down an indoor or outdoor drain. Do not contaminate water, food or feed by disposal.
Contaminated Packaging	Completely empty bag in application equipment. Then dispose of empty bag in a sanitary landfill or by incineration or if allowed by state and local authorities, by burning. If burned, stay out of smoke. Do not reuse or refill this container.

14. TRANSPORT INFORMATION

Note

Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT

UN/ID No	UN2239
Proper Shipping Name	Chlorotoluidines, solid
Hazard Class	6.1 (over 66 lbs)
Packing Group	III (over 66 lbs)

IATA

UN/ID No	UN2239
Proper Shipping Name	Chlorotoluidines, solid
Hazard Class	6.1
Packing Group	III

IMDG

UN/ID No	UN2239
Proper Shipping Name	Chlorotoluidines, solid
Hazard Class	6.1
Packing Group	III
EmS-No	F-A, S-A

TDG

UN/ID No	UN2239
Proper Shipping Name	Chlorotoluidines, solid
Hazard Class	6.1
Packing Group	III

15. REGULATORY INFORMATION

International Inventories

This product is excluded/exempt from TSCA regulation under FIFRA section 3(2)(B)(ii) when used as a pesticide (EPA Reg. # 56228-10, 56228-17, 56228-28, 56228-29, 56228-30, and 56228-63) and from DSL listing as it is regulated under the Pesticide Control Products Act when used as a pesticide.

TSCA	Exempt
DSL	Excluded

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

U.S. Federal Regulations**SARA 311/312 Hazard Categories**

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

U.S. State Regulations**U.S. State Right-to-Know Regulations**

Chemical Name	New Jersey	Massachusetts	Pennsylvania
3-chloro-p-toluidine hydrochloride 7745-89-3		X	

EPA Pesticide Registration Numbers

EPA Reg. # 56228-10: Compound DRC-1339 Concentrate – Feedlots
 EPA Reg. # 56228-17: Compound DRC-1339 Concentrate – Gulls
 EPA Reg. # 56228-28: Compound DRC-1339 Concentrate – Pigeons
 EPA Reg. # 56228-29: Compound DRC-1339 Concentrate – Livestock, Nest & Fodder Depredations
 EPA Reg. # 56228-30: Compound DRC-1339 Concentrate – Staging Areas
 EPA Reg. # 56228-63: Compound DRC-1339 Concentrate – Bird Control
 EPA Reg. # 56228-59: DRC-1339 Technical

EPA Statement

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Pesticide Label

SIGNAL WORD: Danger

PICTOGRAM: Skull and crossbones

ACUTE ORAL TOXICITY: May be fatal if swallowed.

ACUTE DERMAL TOXICITY: Harmful if absorbed through skin.

ACUTE INHALATION TOXICITY: Fatal if inhaled (EPA accepted Category I in lieu of animal testing data).

SKIN IRRITATION/CORROSION: Corrosive.

EYE DAMAGE/EYE IRRITATION: Causes irreversible eye damage and skin burns.

SENSITIZATION: Mild to moderate sensitizer. Prolonged or frequently repeated skin contact may cause allergic reactions in some people.

ENVIRONMENTAL HAZARDS: This product is very highly toxic to birds and aquatic invertebrates. Runoff may be hazardous to aquatic organisms in neighboring areas. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark.

16. OTHER INFORMATION

<u>NFPA</u>	Health Hazards	Flammability	Instability	Special Hazards
	3	0	0	None
<u>HMIS</u>	Health Hazards	Flammability	Physical Hazards	Personal Protection
	3	0	0	E

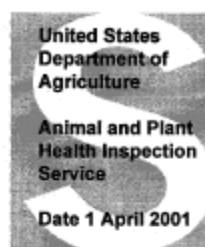
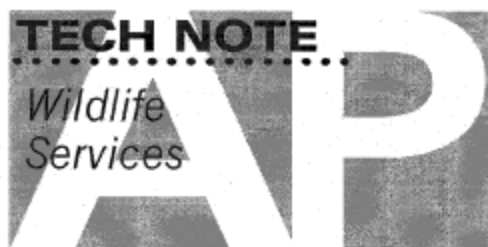
Issue Date: 2-Feb-2004
Revision Date: 21-Dec-2017
Revision Note: Information updated

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Appendix 4: Tech Notes for the use of DRC-1339



DRC-1339 (Starlicide)

DRC-1339 (3-chloro-4-methyl benzenamine HCl, Chemical Abstract Service Reg. No. 7745-89-3) is a slow-acting avicide that is registered with the Environmental Protection Agency (EPA) for the control of several species of pest birds, including blackbirds, starlings, pigeons, crows, ravens, magpies, and gulls. Technical DRC-1339 (Starlicide Technical, EPA Reg. No. 602-134) contains 97 percent DRC-1339. Starlicide products and DRC-1339 were developed jointly by Ralston Purina, Inc., Purina Mills, Inc., and the National Wildlife Research Center (NWRC) of the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS). Registrations are maintained by PM Resources, Inc., Earth City Resources, and APHIS.

APHIS/WS currently has the following DRC-1339 products registered with EPA to resolve bird problems that cannot be solved by the use of the commercially available Starlicide Complete (EPA Reg. No. 602-136) [See table].

The use of all APHIS/WS DRC-1339 registrations is restricted to Certified Applicators and WS personnel trained in bird control (or persons under their direct, onsite supervision). All APHIS/WS DRC-1339 products are prepared from Starlicide Technical.

A number of APHIS/WS State Special Local Need (Section 24(c)) registrations also are available to solve local problems, such as blackbirds in sunflowers, blackbirds in rice, and grackles in citrus.

Acute Toxicity to Birds and Mammals

DRC-1339 was developed as an avicide because of its differential toxicity to animals. More acute avian toxicity data are available for DRC-1339 than for any other pesticide used in the world: more than 40 species have been tested. DRC-1339 is highly toxic to most sensitive bird species (LD_{50} 's range from 1 to 10 mg/kg), allowing a toxic dose to be placed on a single bait. But it is only slightly to

moderately toxic to many nonsensitive birds, most predatory birds, and most mammals (LD_{50} 's range from 100 to 1,000 mg/kg). Some species, including waterfowl and gallinaceous birds, are intermediate in sensitivity to DRC-1339 (LD_{50} 's range from 10 to 100 mg/kg). Most bird species that are sometimes pests, including starlings, pigeons, blackbirds, crows, and magpies, are sensitive to DRC-1339. Many other bird species, such as raptors and some small granivores are classified as nonsensitive. Known exceptions are owls and felines, with LD_{50} 's of about 5 mg/kg placing them in the sensitive category.

Mode of Action

The mode of action of DRC-1339 in sensitive birds is irreversible kidney and heart damage; a quiet and apparently painless death normally occurs 1-3 days following ingestion. In nonsensitive species, the mode of action is quite different, and the process requires 10-100 times more DRC-1339. In these species, the central nervous system is depressed, resulting in cardiac

Product	Registered Uses
Compound DRC-1339 Concentrate-Feedlots (EPA Reg. No. 56228-10)	For controlling blackbirds and starlings in livestock feedlots.
1339 Gull Toxicant 98% Concentrate (EPA Reg. No. 56228-17)	For controlling gulls to protect colonial nesting seabirds.
Compound DRC-1339 Concentrate-Pigeons (EPA Reg. No. 56228-28)	For controlling pigeons in and around structures
Compound DRC-1339 Concentrate-Livestock Depredations (EPA Reg. No. 56228-29)	For controlling corvids (e.g., ravens) depredating on newborn livestock, threatened or endangered species, or other species needing special protection.
Compound DRC-1339 Concentrate--Staging Areas (EPA Reg. No. 56228-30)	For controlling birds in staging areas associated with roosts.

or respiratory arrest; a quiet death usually occurs after 2-10 hours. The kidney and heart damage that occurs in sensitive birds that ingest DRC-1339 is irreversible; however, the central nervous system depression resulting from ingestion of DRC-1339 in nonsensitive mammals and raptors can be successfully treated symptomatically.

DRC-1339 is metabolized and excreted from all animals very quickly, with 90 percent or more of the compound lost within 2 hours. Most metabolites are much less toxic than DRC-1339. DRC-1339 is not accumulated in the body, thus the compound's residues generally range from 0 to less than 0.1 ppm when death occurs.

Potential Primary Hazards

Repeated exposure to DRC-1339 in feed can result in the poisoning of sensitive species. The concentration of DRC-1339 in feed that is lethal to 50 percent of treated starlings (LC_{50}) is 4.7 ppm after 30 days of exposure and 1.0 ppm after 90 days exposure. For bobwhite quail, the LC_{50} concentration in feed is 14.1 ppm, and for species of intermediate sensitivity, such as mallard ducks, the 5-day LC_{50} is 322 ppm. DRC-1339 does not appear to affect avian reproduction except at levels very close to where toxicity is expressed.

Numerous studies conducted by NWRC and WS Operations show that DRC-1339 poses a small risk of primary poisoning to most nontarget species. The primary hazards to nontarget birds are generally site specific and can be controlled by selecting a bait and bait sites that are not used by nontarget birds. The risk to nontarget birds can be further mitigated by careful prebaiting and observation prior to bait application. The risk of primary poisoning to most mammals is extremely low because of the low level of toxicity of DRC-1339 to most mammals, the baits that are used, bait dilution factors, and minimal treatment rates. Birds and mammals that may be at risk are identified in the WS Technical Notes prepared for specific DRC-1339 end-use products.

Potential Secondary Hazards

NWRC and WS Operations have been monitoring the use of all DRC-1339 products since 1968. There have been no documented secondary poisonings of mammalian or avian scavengers and predators with DRC-1339, except for a crow that may have scavenged the gut contents of a recently treated pigeon. NWRC has conducted long-term feeding studies where birds poisoned by DRC-1339 were collected and fed to raptors and scavenger mammals for 30 to more than 200 days. No symptoms of poisoning or mortalities occurred.

Special precautions may be warranted when

using DRC-1339 where owls and cats may be exposed to poisoned birds. Although it is possible that a cat or owl could ingest a lethal dose of DRC-1339 if fed birds poisoned by the compound exclusively for more than 100 days, the actual risk is normally minimal because exposure to DRC-1339-poisoned birds occurs over a few weeks or less. To reduce any potential hazard, poisoned birds should be retrieved, then burned or buried, whenever possible.

Toxicity and Stability in the Environment

DRC-1339 is generally unstable in the environment and degrades rapidly when exposed to sunlight and heat or ultraviolet radiation. DRC-1339 is highly soluble in water but does not hydrolyze. Photodegradation occurs in water with a half-life that ranges from 6.5 to 41 hours, depending upon the season (faster in summer, slower in winter). DRC-1339 is very tightly bound to soil (70-90 percent) and has low mobility. The half-life of DRC-1339 in biologically active soil is about 25 hours, and identified metabolites have low toxicity. These data indicate that DRC-1339 degrades rapidly in soils, does not persist, and will not migrate. The 96-hour LC_{50} of DRC-1339 to bluegill sunfish is 11 ppm; to rainbow trout, 9.7 ppm; and to water fleas, 0.079 ppm, indicating that DRC-1339 is only moderately toxic to fish but that some invertebrates may be very sensitive to the compound.

Sources of Information

Additional information on this product can be found in the April 1994 ADC Final Environmental Impact Statement (Appendix P), in Material Safety Data Sheets supplied by the Pocatello Supply Depot, and in the 1995 Handbook on Prevention and Control of Wildlife Damage. Specific information on this product can be obtained through the National Wildlife Research Center (NWRC) (970-266-6000) or through the NWRC web site <http://www.aphis.usda.gov/ws/nwrc>. For further information about the availability of this product, contact your WS State Director, or the Pocatello Supply Depot.

**Raptor and Owl Management for the Protection of California Least Terns
and Western Snowy Plovers Nesting at Oceano Dunes State Vehicular
Recreation Area, San Luis Obispo County, California**

Annual Report – 2025

Prepared by:



Wildlife Innovations
11629 Westridge Place
Lakeside, CA. 92040

Prepared for:

California Department of Parks and Recreation
340 James Way, Suite 270
Pismo Beach, CA 93449

Under Agreement with:

Department of Parks and Recreation
1416 9th Street
Sacramento, CA 95814

Agreement No. C2053010

November 2025

ABSTRACT

Predation by native and non-native predators plays a major role in the recovery efforts for both the California Least Tern (*Sternula antillarum browni*; hereafter “tern”) and Western Snowy Plover (*Charadrius nivosus nivosus*; hereafter “plover”) at Oceano Dunes State Vehicular Recreation Area (ODSVRA), and populations throughout the West Coast. Predator control programs, including trapping and translocation of raptors and owls have contributed to increased reproductive success of sensitive shorebird species. Wildlife Innovations (WI) was hired to provide raptor and owl management at ODSVRA and developed a program that focused on the targeted capture and translocation of problem individuals identified during intensive surveillance to reduce predation pressure upon terns and plovers. During the 2025 nesting season, a total of 253 avian predators from 15 species were recorded in or near protected tern and plover nesting sites at ODSVRA. Of those, 64.0% were observed within colony nesting areas. Within colony nesting areas, more avian predators were recorded at the 6 Exclosure site (n=33, 20.4%) than other sites. Northern Harriers (*Circus hudsonius*; NOHA) and Common Ravens (*Corvus corax*; CORA) were the most observed avian predator species within colony nesting areas (NOHA: n=50, 30.9%; CORA: n=24, 14.8%). Avian predator observations peaked in July, with 31.2% (n=79) of all predators observed during that month. When observed within colony nesting areas, NOHA disturbed terns and/or plovers more frequently (78%) than other raptors or owls. One Peregrine Falcon (*Falco peregrinus*; PEFA) and two Great Horned Owls (*Bubo virginianus*;) were captured and translocated from tern and plover nesting sites at ODSVRA. Approximately 55.2% (n=178.3) of all trap hours were expended targeting PEFA.

TABLE OF CONTENTS

ABSTRACT	ii
LIST OF TABLES	iv
LIST OF FIGURES	iv
INTRODUCTION	1
STUDY AREA.....	2
METHODS.....	7
Predator Surveillance	7
Avian Predator Trapping	8
Predation Investigations.....	9
Data Management and Analysis	9
RESULTS.....	10
Predator Surveillance.....	10
Avian Predator Removal.....	20
DISCUSSION.....	24
Predator Surveillance	24
Avian Predator Trapping	24
Predation Investigations	25
Raptors as Predators of Terns and Plovers by Species	26
Northern Harriers	26
American Kestrel	28
Peregrine Falcon	29
Cooper's Hawk	31
Red-tailed Hawk.....	31
Owls as Predators of Terns and Plovers by Species	31
Great Horned Owl	31
American Barn Owls	33
Non-Raptor or Owl Predators	33
MANAGEMENT RECOMMENDATIONS	37
ACKNOWLEDGEMENTS.....	39
LITERATURE CITED	40

LIST OF TABLES

Table 1. Avian predator observations recorded by site and species in the 2025 at ODSVRA. ...	11
Table 2. Avian predators removed by species and trap type, at ODSVRA in 2025.	20
Table 3. Avian predators targeted for removal and trapping information for efforts conducted at ODSVRA in 2025.	21
Table 4. Raptors and owls captured and translocated from within ODSVRA during 2025.	22

LIST OF FIGURES

Figure 1. Map of ODSVRA, including nesting area fencing, ORA, and other points of interest, where raptor and owl management was conducted for terns and plovers in 2025.	6
Figure 2. Avian predator observations at ODSVRA in 2025, excluding PEFA, NOHA, owls, and corvids.	12
Figure 3. NOHA observations and traps placed by trap type at ODSVRA in 2025.	13
Figure 4. PEFA observations, traps placed by trap type, and the PEFA capture location at ODSVRA in 2025.	14
Figure 5. Owl observations, traps placed by trap type, and GHOW capture locations at ODSVRA in 2025.	15
Figure 6. Corvid observations at ODSVRA in 2025.	16
Figure 7. Number of avian predators observed by species, excluding all vegetation areas at ODSVRA in 2025.	17
Figure 8. Number of avian predators observed by month and species at ODSVRA in 2025.	18
Figure 9. Number of avian predators observed by species, and whether disturbance of terns and plovers occurred during those observations, within colony nesting areas at ODSVRA in 2025.	19
Figure 10. Capture and release locations of raptors and owls removed from ODSVRA in 2025. Release locations are depicted within the bounds of the inset map.	23

INTRODUCTION

California Least Terns (*Sternula antillarum browni*; hereafter “terns”) and Western Snowy Plovers (*Charadrius nivosus nivosus*; hereafter “plovers”) nest along the coastline of California (USFWS 1980, 2019). Due to population declines, resulting primarily from loss of habitat (Craig 1971, Cogswell 1977), California Least Terns were federally listed as endangered in 1970 (USFWS 1973) and were listed as endangered in California by the California Department of Fish and Game in 1971 (CDFG 1976). In 1993, the Pacific coast population of Western Snowy Plovers was listed as federally threatened under the Endangered Species Act (USFWS 1993) and is considered a “species of special concern” in California by the California Department of Fish and Wildlife (CDFW). The listings under the Endangered Species Act (ESA) mandated protection of tern and plover nesting sites in California (USFWS 1985). Oceano Dunes State Vehicular Recreation Area (ODSVRA) provides important habitat for nesting terns and plovers and was estimated to account for roughly 2% of the breeding population of terns in California in 2017 (Sin 2021).

California Least Terns nest along the coastlines of Western North America, from the San Francisco Bay area to Baja California, Mexico (USFWS 1980). They forage for small fish in the open ocean, along with bays, lagoons, estuaries, tidal marshes, river mouths, ponds, and lakes. California Least Terns are threatened by multiple factors, including 1) predation by native and non-native predators, 2) habitat availability, 3) decreased nesting and foraging habitat quality, 4) human disturbance at breeding sites, 5) potential degradation or loss of wintering habitat, and 6) other temporary or long-range factors such as changes in resource availability, disease, and potential effects of climate change (USFWS 2006).

The breeding range of the Pacific coastal population of plovers extends from Midway Beach, Washington to Bahia Magdalena, Baja California Sur, Mexico (USFWS 2019). Threats to plovers have not changed significantly since listing on the ESA, as habitat loss and degradation remains widespread. Although the degree by which their habitat has changed varies by geographic location, due to disturbance from human use of areas, urban development, introduced beach grass, and expanding predator populations, these areas remain the focus of management within all recovery units (USFWS 2007, 2019; Riensche et al. 2015).

Avian and mammalian predators are significant threats to nesting terns (Burr 1988, Massey 1988, USFWS 1988). Predation can result in a direct decrease in the number of birds but can also lead to nest and colony abandonment which can negatively impact site fidelity (Frost 2015, Velasco 2015). In tern breeding surveys conducted between 2014 and 2019 by CDFW, the predators primarily responsible for tern predations in California were Peregrine Falcons (*Falco peregrinus*; PEFA), Burrowing Owls (*Athene cunicularia*; BUOW), Great Horned Owls (*Bubo virginianus*; GHOW), Common Ravens (*Corvus corax*; CORA), Northern Harriers (*Circus hudsonius*; NOHA), American Crows (*Corvus brachyrhynchos*; AMCR), red fox (*Vulpes vulpes*), and coyotes (*Canis latrans*; Frost 2015, 2017; Sin 2021, 2024). In 2017, coyotes accounted for 62% of tern nest predations across California, and CORA and AMCR were responsible for 30% of nest predations. During that same season, PEFA were responsible for 62% of fledgling and 39% of adult predations, and American Kestrels (*Falco sparverius*, AMKE) and Great Blue Herons (*Ardea herodias*; GBHE) were the primary predators of chicks (Sin 2021). In 2018, coyotes, CORA, and PEFA were still responsible for the greatest proportion of predations. Other primary predators that season included red fox predating 17% of nests, GHOW accounting for 15% of chick, and 17% of adult predations, and BUOW responsible for 23% of chick and 24% of fledgling predations (Sin

2024). Other notable predators of terns included rats (*Rattus* spp.), Gull-billed Terns (*Gelochelidon nilotica*; GBTE), Elegant Terns (*Thalasseus elegans*; ELTE), and Western Gulls (*Larus occidentalis*; WEGU). During other years the predators listed above are also prevalent causes of predation of terns and tern nests, although additional predator species have also been documented to depredate terns.

Documented avian predators of plovers greatly overlaps with the predators of terns and include gulls (*Larus* spp.), PEFA, AMKE, NOHA, Cooper's Hawks (*Astur cooperii*; COHA), RTHA, GHOW, American Barn Owls (*Tyto furcata*; ABOW), BUOW, Loggerhead Shrikes (*Lanius ludovicianus*; LOSH), CORA, AMCR, European Starlings (*Sturnus vulgaris*; EUST), GBHE, GBTE, and Black-crowned Night Herons (*Nycticorax nycticorax*; BCNH; USFWS 2006; Zimmerman 2008; Marschalek 2012; CDPR 2019, 2020; Jake Manley pers. comm.). Due to increasing populations of some native predators on coastal beaches, such as AMCR and CORA, predation pressure upon plovers may also increase and threaten the survival of the species (USFWS 1993, Neuman et al. 2004).

Due to the reduction in the number of nesting terns and plovers on the Pacific Coast and their federal listing under the ESA, wildlife agencies increased their monitoring and management efforts. Tern and plover monitoring at ODSVRA began in 1991 and 1992, respectively (CDPR 2017). From 2002 through 2024, the number of breeding plovers at ODSVRA ranged between 32 and 281, with an average of 167 adults and an average fledging rate of 39.1%. From 2005 through 2024, the average number of tern pairs at ODSVRA ranged from 40 to 43. Between 2006 and 2024, the average fledging rate was 70.5% (CDPR 2024). During the 2025 nesting season, more tern pairs (n=41) nested at ODSVRA and laid more nests (n=42) than during 2024. Less adult plovers (minimum 267 breeding adults) laid more nests than during 2024 (n=333). Fewer terns (n=31) and more plovers (n=266) reached fledging age, during 2025 than during 2024.

Wildlife Innovations (WI) continued a three-year contract with the California Department of Parks and Recreation (CDPR) during the 2025 nesting season, providing surveillance, behavioral evaluation, and mitigation of predation of terns and plovers nesting at ODSVRA by raptors and owls. All other avian and mammalian predators are managed by USDA/APHIS/Wildlife Services (WS) under a separate contract with CDPR. WI initiated field work efforts for the 2025 nesting season on 24 March. WI investigated all predations discovered and reported by ODSVRA staff, when possible, to attempt to determine the predator species responsible. The results of predation investigations were combined with direct predator surveillance and behavior evaluation data, and used to inform a very targeted approach to managing predators. This targeted approach can ensure that only high-threat predators are targeted for management, thereby reducing potential for negative impacts to the native predator community, while also supporting needed protections for terns and plovers.

STUDY AREA

Oceano Dunes State Vehicular Recreation Area is a park managed by the CDPR in southern coastal San Luis Obispo County, California. It is part of the 18-mile-long Guadalupe-Nipomo Dunes complex that extends from Pismo Beach to Point Sal. The southern end of the park directly abuts Guadalupe-Nipomo Dunes National Wildlife Refuge. Inside the park, both street-legal and off-highway vehicles are allowed throughout designated open riding areas (ORA). These areas extend approximately 0.5 to 1.5 miles from the coast. Eight numbered marker posts, approximately one-half mile apart, are positioned along the coastal strand to orient park visitors and staff (CDPR

2025). From the shoreline to the western edge of the ORA, beginning at the northern edge of the Foredune Closures, are regions both seasonally and permanently closed to public access, collectively referred to as colony nesting areas. These exclosures have been established to protect nesting terns and plovers, of which terns are only present during the breeding season (April–September) whereas plovers are onsite year-round (CDPR 2025).

The following terminology and associated descriptions are used within this report (taken from CDPR 2025).

ODSVRA—All areas administered by the Oceano Dunes District are part of the ODSVRA. The CDPR manages 4,900 acres, 9.1 of which are ocean shorelines (CDPR 2024). During 2023, an estimated 183,900 street-legal vehicles and 73,000 off-highway vehicles visited ODSVRA (CDPR 2024).

Open Riding Area (ORA)— The area within ODSVRA open to vehicle use during the nesting season (approximately 874 acres at the beginning of the nesting season). The installation of buffer fencing decreases the open riding area acreage. (see Closed buffer area description below). Fencing designates the eastern perimeter of the open riding area, however this fence is not maintained as predator fencing and coyotes and other mammals can easily move through this fencing. The majority of the open riding area is not optimal nesting habitat, with mostly bare sand, limited areas of artificial debris patches, little to no vegetation, and regions with steep topography. (CDPR 2025).

Closed buffer area— Portions of the open riding area are closed to the public to provide a buffer for tern and plover nests, chicks, and for the tern night roost. As staff finds nests or chicks outside of protected areas, management closes those areas of the open riding area to the public to provide this buffer. Additional areas of the open riding area are closed as staff finds tern nests within closed areas to provide larger buffers for these nests. The closed buffer area varies in size during the nesting season, as well as from year to year, depending on locations of nests or chicks found. Because the closed buffer area can be large in size, it is often adjacent and connected to the Foredune closure, revegetation areas, or the Southern Exclosure fence using symbolic or wire fencing to keep people and vehicles out of the area, but the fence is not maintained as predator fencing and coyotes and other mammals can easily move through the area.

Foredune Closure— Vegetation restoration area within the open riding area closed in January 2020 to improve air quality conditions. Fencing was installed approximately a quarter mile south of marker post 4 to north of marker post 6 (approximately 0.8 miles of shoreline). The closure, totaling 48 acres, is broken into three plots: Foredune North, Foredune Central, and Foredune South. The fence surrounding each plot is intended to keep people and vehicles out of the restoration area, but the fence is not maintained as predator fencing and coyotes and other mammals can easily move through the area. The adjoining shoreline west of the area and the western portions of the alleyways between these three plots are closed to public use during the breeding season (1 March to 30 September). The total acreage of plots, shoreline component, and alleyway area closed during the nesting season is approximately 77 acres.

Southern Exclosure— A single contiguous area within the southern portion of the riding area that is fenced and closed to public entry to protect nesting terns and plovers. The adjoining shoreline is also part of the Southern Exclosure (Fig. 1). The colony fencing of the exclosure is maintained predator fencing, unlike the fences of the Foredune Closure and vegetation islands.

Although contiguous, for the purpose of data collection and accurate reporting there are individually identified areas referred to as the following:

6 Exclosure— The area from marker post 6 to marker post 7, (approximately 0.5 miles of shoreline and approximately 62 acres), first incorporated into the Southern Exclosure for a full season in 2004. Habitat includes areas of bare sand, small to medium sized hummocks, limited areas of organic surface debris (shells, driftwood, dried algal wrack), and while the area was once sparsely vegetated it is more heavily vegetated in recent years.

7 Exclosure— The area extending from marker post 7 to the southern edge of 7.5 Revegetation Area, approximately 0.4 miles of shoreline and 62 acres. 7.5 Revegetation Area, although within 7 Exclosure, is treated as a separate location for the purpose of data collection and reporting.

7.5 Revegetation Area— Restoration area in the southwestern corner of 7 Exclosure, approximately 5 acres, established in 1995 and has become densely vegetated with Dune mat habitat and has formed tall foredunes. The shoreline component of 7 Exclosure is immediately west of this restoration area, 8 exclosure is immediately south, and 7 exclosure is immediately north and east.

8 Exclosure— The area from the south side of the 7.5 revegetation area to the North Oso Flaco fencing south of marker post 8 (approximately 0.5 miles of shoreline and approximately 81 acres). Habitat includes areas of tall dunes with bare sand in the eastern portion, areas of moderate to tall foredune hummocks with mostly dense vegetation in the western portion, and limited areas of organic surface debris (shells, driftwood, and dried algal wrack).

Boneyard— The area east of the North Oso Flaco dunes. Primarily bare sand, although has more densely vegetated hummocks in the western portion. The area is bisected by a predator fence during the nesting season, establishing the western portion as West Boneyard (WBY) and the eastern portion as East Boneyard.

Oso Flaco— The shoreline and dunes in ODSVRA located approximately 0.4 miles south of marker post 8. The approximately 1.7 miles of shoreline is narrow in width, and the dunes are typically heavily vegetated, relative to the riding area. The area is part of the Oso Flaco Lake area, with some areas partially open to pedestrian use but closed to vehicles. For purposes of discussion in this report, Oso Flaco is divided into North Oso Flaco and South Oso Flaco.

North Oso Flaco— The area extending south of 8 Exclosure to the Oso Flaco boardwalk (a pedestrian access trail) to the Oso Flaco shoreline (approximately 0.5 miles of shoreline and approximately 68 acres). The shoreline portion is closed to pedestrians with symbolic fencing during the nesting season. The area east of the shoreline is surrounded by predator fencing and, along with the Southern Exclosure, is referred to as the “exclosures”.

South Oso Flaco— Extends from the Oso Flaco boardwalk to the ODSVRA southern boundary (approximately 1.2 miles of shoreline). Oso Flaco Lake drains through Oso Flaco Creek and the mouth of this creek is within the northern portion of South Oso Flaco. The shoreline is open to the public and symbolic fencing and signage have been used since 2002 to designate the seasonally closed upper beach and dune habitat.

Exclosures—The contiguous area enclosed by the predator fencing surrounding the Southern

Exclosure and North Oso Flaco. The area within the fencing is approximately 270 acres (does not include the closed shoreline areas) and was established to exclude coyotes, humans, and vehicles for the protection of nesting terns and plovers (CDPR 2025).

Dunes Preserve— Located south of Arroyo Grande Creek and 0.4 miles north of the Foredune closure (1.3 miles in length). The area includes tall sand dunes with densely vegetated foredunes in the western portion and primarily bare sand dunes in the eastern portion.

Vegetation Islands—Revegetated areas fenced to prevent access by vehicles and referred to as the following: Pipeline (PLR), Maidenform, Eucalyptus North, Eucalyptus Tree, Bigfoot, Boy Scout Camp, Pavilion Hill, and BBQ Flats (Fig. 1).

Arroyo Grande Creek— Creek that seasonally flows into the Pacific Ocean approximately 1 mile south of Pier Avenue and 1.5 miles north of the Foredune closure. The associated lagoon is variably located east of the area near marker post 1 and north of marker post 2. The upper creek area and lagoon are closed to vehicle use year-round to protect sensitive aquatic habitat. Pedestrian and equestrian entry is prohibited during the nesting season and permitted during the nonbreeding season. Posts and signs delineate the closed area during the nonbreeding season; symbolic rope fence is added during the nesting season.

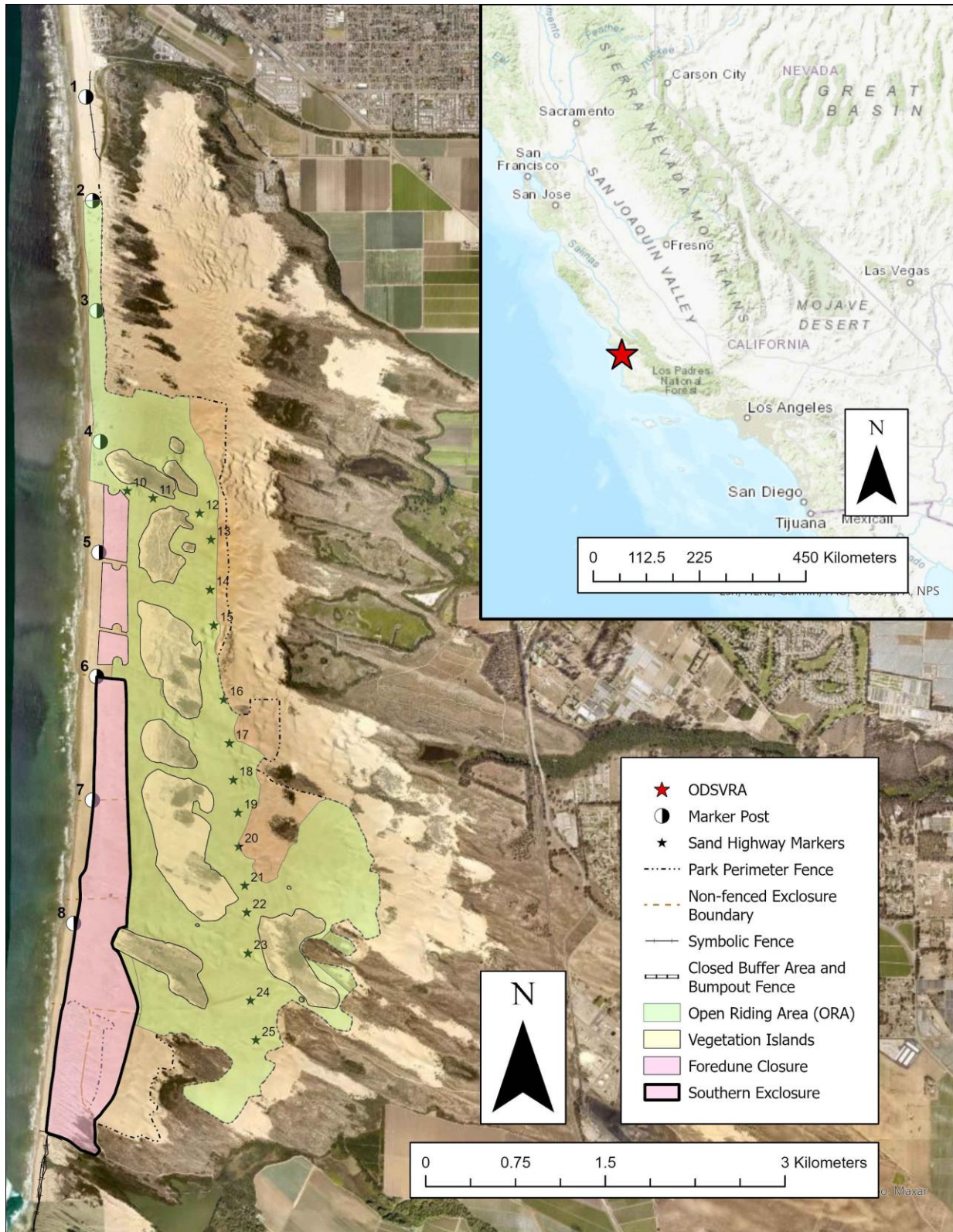


Figure 1. Map of ODSVRA, including colony nesting area fencing, ORA, and other points of interest, where raptor and owl management was conducted for terns and plovers in 2025.

METHODS

At ODSVRA, WI was contracted to manage raptors and owls during the 2025 nesting season, and WS was contracted to manage all other avian predators and all mammalian predators. Therefore, surveillance and associated data collected by WI focused on raptor and owl observations and predations and focus and data collection for non-raptor or owl avian species were not a focus of the program.

Raptor and owl management efforts during the 2025 tern and plover nesting season were conducted in and near previously identified beach nesting areas at ODSVRA between 24 March and 7 September 2025. Those efforts included conducting predator surveillance, behavioral evaluation and threat assessment of individual predators, investigation of tern and plover predations to determine species or individual responsible, and targeted trapping for raptors or owls documented predating or threatening terns or plovers or their nests. Surveillance data and predation investigations reported within the Results section are of data collected by WI, and do not include observations made by ODSVRA staff or other cooperative entities. However, all observations and information reported to WI were used to inform adaptive management efforts and may be referenced during species specific narrative summaries within the Discussion as that information contributed to management decisions.

Predator Surveillance

The amount of time spent surveilling each nesting site or area varied throughout the season. More patrols and fixed-position surveillance were conducted in areas where there were more avian predator observations or signs of predator presence, and in areas where documented or suspected predations of terns or plovers occurred. Additionally, when WI personnel were not required to remain in one location (e.g., while monitoring active traps), more time was spent monitoring high-density tern and plover nesting sites. Fixed-position surveillance was also utilized frequently during the 2025 nesting season to assess or to pattern the timing, location, and behavior of individuals to support informed trapping.

Predator observations were recorded during the day and at night while conducting routine patrols, during surveillance, while trapping, and while performing predation investigations. Predator observations were mapped where predators were first detected, unless the predator depredated or attempted to depredate a tern or plover in a location different than where it was initially observed, or if it entered a nesting area after it was first observed in another location. For predators that visited multiple nesting areas or other relevant locations after the initial observation, subsequent locations were recorded in order of visitation. Multiple observations of a nondescript individual belonging to the same species within ten minutes of the first observation were assumed to be the same individual and only recorded once. However, if physical characteristics allowed for confident differentiation between individuals, multiple individuals were recorded as appropriate.

In addition to observations of predators, WI recorded any predator disturbance of terns and plovers. If a predator's presence or activity elicited a behavioral response from a tern or plover (e.g., crouching, alarm calling, displaying, mobbing), it was recorded as a disturbance. When avian predators were observed within areas expected to be occupied by terns or plovers, but disturbance could not be confirmed, it was recorded as "disturbance unknown". If an avian predator was observed flying over terns or plovers visible to the observer and no disturbance to terns or plovers was observed, "no disturbance" was recorded. All disturbance may not have been detected due to factors such as topography, the cryptic nature of tern and/or plovers, distance, and weather induced

reductions in visibility, therefore disturbance measurements are a minimum value.

To better utilize personnel time while conducting field work, observations of species not known to predator terns or plovers or individuals that were observed far enough from nesting areas to not pose a threat of predation, were sometimes not recorded. For example, Osprey (*Pandion haliaetus*; OSPR) were not recorded as their diet is nearly entirely comprised of live fish. In addition, while RTHA were commonly observed in and near vegetation islands, they rarely threatened nesting terns and plovers. As a result, only those RTHA observed inside tern and plover nesting exclosures were recorded. Also, while many gulls are predators of terns and plovers, because there are so many present at ODSVRA, only individuals observed threatening or depredating terns or plovers were recorded. Due to these factors, “avian predators” will include all raptors, owls, and corvids observed, but may not include all gulls, RTHA, or OSPR observed.

During the 2025 nesting season, WI modified the standard surveillance schedule to improve coverage and prioritize overnight surveillance. The 2025 standard schedule consisted of at least two mornings, one evening, and one overnight each week, when possible. The standard schedule was modified as needed based on expected or detected predator presence, and as requested by ODSVRA staff, to fill gaps between work schedules of other entities to best meet the needs of the tern and plover program.

Nighttime surveillance was conducted using thermal imaging optics to gather information on nocturnal predator activity. Nighttime surveillance was conducted by determining the most appropriate observation location based on knowledge of predator presence and reports provided by ODSVRA staff detailing locations of tern and plover nests, chicks, and fledglings. Signs used to indicate presence and activity of owls included tracks and pellets found during daytime surveillance, prey remains, and whitewash (fecal matter). In most cases, WI personnel arrived at surveillance locations prior to sunset to become familiar with terrain to improve understanding and evaluation of habitat and predator behaviors observed at night. Beginning nighttime surveillance shifts prior to sunset also enabled WI to assist ODSVRA staff in documenting tern roosting locations and numbers.

During portions of the 2025 nesting season, diurnal raptor activity necessitated that WI shift personnel efforts from nighttime surveillance to diurnal surveillance or trapping. In those instances, weekly nighttime surveillance was resumed as soon as the threat from diurnal raptors decreased. When shifts in surveillance efforts occurred, nighttime surveillance was most often resumed by conducting consecutive nights within multiple areas to prevent high-threat owls from going undetected.

Avian Predator Trapping

Trapping and translocation of raptors and owls is a complicated process, requiring sufficient justification of the impacts or potential for impacts to listed species to satisfy requirements of state and federal regulatory agencies. In addition, WI must obtain translocation site approval and complete banding and reporting paperwork. Before initiating trapping, focused surveillance was conducted to gather ample justification, planning for translocation was conducted, and state and federal regulatory agency representatives were contacted. Justification to begin trapping followed guidelines developed by CDFW and the U.S. Fish and Wildlife Service (USFWS) for the translocation of raptors associated with Threatened and Endangered species protection programs (Migratory Bird Permit Office 2013). Capture and justification forms were completed and delivered to both regulatory entities, as requested.

Raptors or owls documented depredating terns or plovers, observed exhibiting threatening predatory behavior towards terns or plovers, or repeatedly hunting within nesting habitat were targeted for removal via capture with traps and subsequently translocated. Raptors and owls that did not meet those criteria continued to be surveilled to further determine degree of threat. WI tailored the type of trap and method of deployment to be most effective for the species and the behavior of the targeted individuals. Any characteristics or constraints posed by the trap site were also considered. A variety of standard trap types as described by Hull and Bloom (2001) were used to target and capture avian predators. Most traps were anchored by attaching them to two-to-five-pound weights via a bungee cord which acted as a shock-absorber to reduce potential injury to captured individuals and served to maintain tension for snare-based traps.

All captured raptors and owls were banded with an aluminum USGS service band and, depending on species, an auxiliary band that contained an alpha-numeric code intended to be readable from a distance using optics. All non-PEFA species received a black code on silver band (Acraft Sign and Name Plate Co. Ltd., Edmonton, Canada) and PEFA receive a black V.I.D. band (silver code on black band). Captured individuals were released at CDFW- and USFWS-approved locations.

Predation Investigations

WI investigated all reported tern and plover predations when in the field and made additional trips to assess incidents—particularly those suspected to involve raptors or owls—when ODSVRA staff could not confirm predator identity. Investigations were conducted by a permitted WI biologist experienced in working within nesting colonies and trained in identifying predator sign; in some cases, ODSVRA staff accompanied WI personnel. Each depredation was identified to species when possible, based on available site evidence, and assigned a confidence level for determination.

Because WI did not conduct regular nest checks, detections typically originated from ODSVRA staff observations—such as a plover or tern found off the nest during routine monitoring—or from opportunistic discoveries of depredated nests. When WI was not onsite, ODSVRA staff performed the initial investigation and documented evidence with photographs. Frequent high winds at ODSVRA often damaged or removed evidence if not examined promptly, complicating species identification. Consequently, some predations could not be attributed to a specific predator and were recorded as “unknown” or “unknown avian.”

A complete summary of all 2025 nesting season predations is provided in the ODSVRA monitoring report (CDPR 2025).

Data Management and Analysis

Smart phones and tablets containing the ESRI Field Maps application were used to record all predator management data collected in the field. The application has been customized for collection of all relevant information for effective predator management including the date and time of observation, the name of nesting area where work was conducted, the type of predator control work being performed, predator species, and any equipment used. These data were later summarized, analyzed, and mapped using ESRI ArcGIS Pro and Microsoft Excel. Observation data were summed by time period, geographic area (e.g., site or enclosure), and species, and were reported as the number of individuals observed or as a percentage of those observed, which was calculated by dividing the number of observations within a given category by the total number of observations made. Observations recorded in vegetation areas were summed across all areas rather than by reporting individually. Predator observations recorded within occupied plover or tern

areas, such as the nesting exclosures or on the shoreline, were summarized by site to better describe predator activity and predation threat within each site and across all sites. Survey data contained observational events at the location of an initial predator sighting, superseded by location of the most important observation (e.g., consuming prey, hunting within a nesting site), and each point may represent more than one individual observed. Many raptors and owls are solitary, so most points only represent a single individual. Corvids were most often seen in groups or pairs, so their points frequently represent more than one individual. Observational data were summarized by the total number of individuals observed, rather than of observation events.

RESULTS

Predator Surveillance

Between 24 March and 7 September 2025, a total of 253 avian predators representing 15 species were recorded within and near tern and plover nesting areas at ODSVRA (Table 1). Over half of these observations (n = 162; 64.0%) occurred within or entering colony nesting areas. The highest number of observations occurred at 6 Exclosure (n = 33; 20.4%).

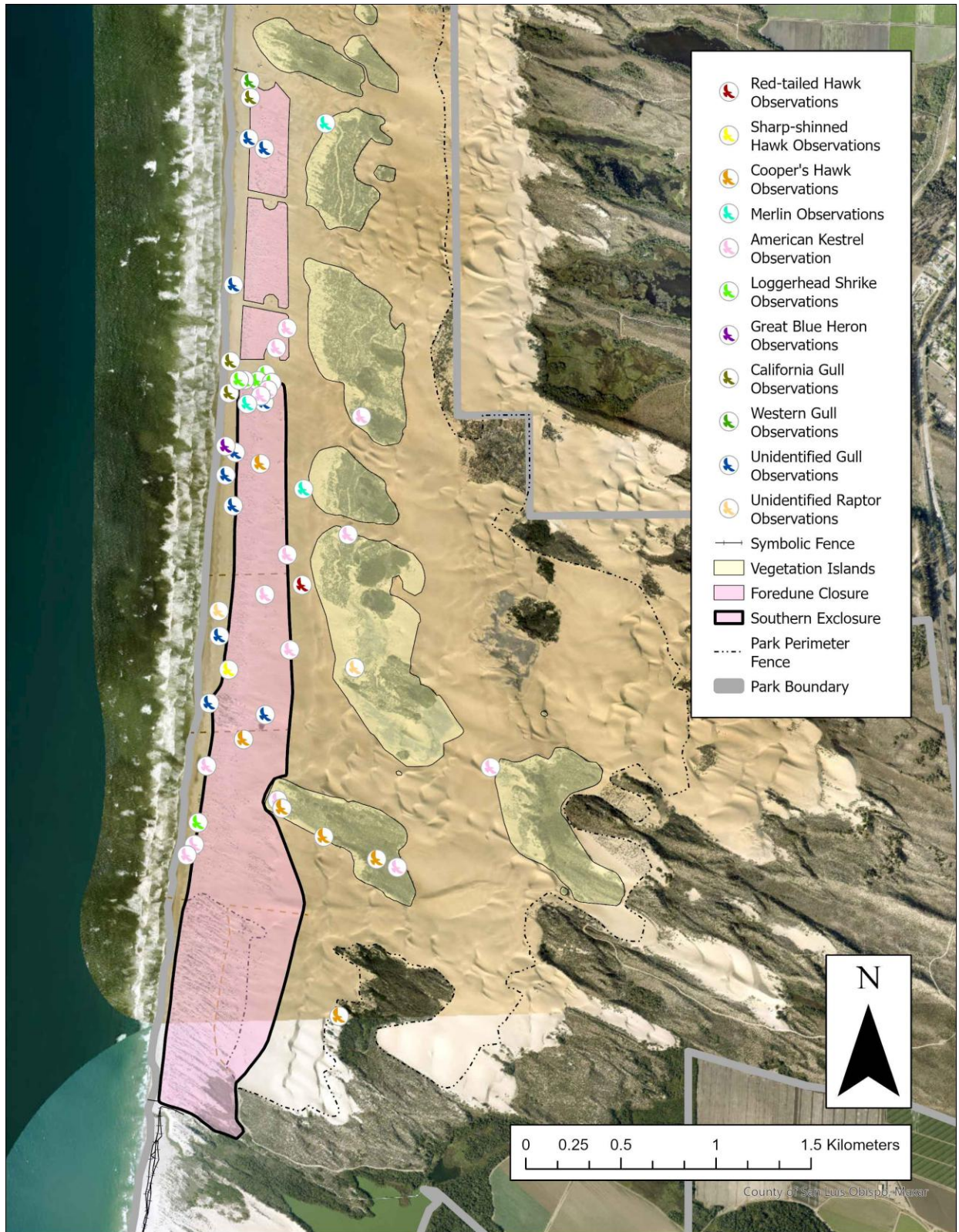
Northern Harriers (NOHA) were the most frequently observed species (n = 80; 31.6%), with 62.5% of sightings occurring within nesting areas (Table 1; Fig. 3). Common Ravens (CORA; n = 24; 14.8%) and Peregrine Falcons (PEFA; n = 22; 13.6%) were the next most common predators recorded (Table 1; Figs. 4, 6).

Avian predator activity peaked in July (n = 79; 31.2%) and was lowest in September (n = 6; 2.4%; Fig. 8). American Crows (AMCR) were most frequently observed in March and July, whereas CORA were most common in April. Observations of NOHA (n = 39; 78.0%) and American Kestrels (AMKE; n = 9; 64.3%) within colony areas resulted in disturbance to terns and/or plovers more often than other raptor or owl species (Fig. 9).

Table 1. Avian predator observations recorded by site and species in 2025 at ODSVRA.

Site	AMCR	AMKE	ABOW	CAGU	CORA	COHA	GBHE	GHOW	LOSH	MERL	NOHA	PEFA	RTHA	SSHA	WEGU	Corvid	Unidentified Gull	Unidentified Raptor	Total
Colony Area	11	14	0	3	24	2	1	7	6	1	50	22	3	1	1	5	10	1	162
Foredune Closure	2	2	0	0	2	0	0	0	0	0	13	2	0	0	0	0	1	0	22
Foredune Closure Shoreline	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	2	0	5
6 Exclosure	1	2	0	0	0	1	0	2	5	1	13	3	1	0	0	3	1	0	33
6 Shoreline	0	0	0	2	0	0	1	0	0	0	0	8	0	0	0	0	3	0	14
7 Exclosure	0	7	0	0	2	0	0	0	0	0	9	2	0	1	0	1	1	0	23
7.5 Revegetation Area	8	0	0	0	1	1	0	0	0	0	4	0	0	0	0	0	0	0	14
7 Shoreline	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	2	1	6
8 Exclosure	0	1	0	0	7	0	0	2	0	0	6	0	0	0	0	1	0	0	17
8 Shoreline	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	4
North Oso Flaco	0	0	0	0	5	0	0	3	0	0	3	2	0	0	0	0	0	0	13
South Oso Flaco	0	0	0	0	2	0	0	0	0	0	2	0	2	0	0	0	0	0	6
Boneyard (West of IBY)	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Other Areas	7	4	1	0	16	5	0	10	0	2	30	2	0	0	0	13	0	1	91
Off Site	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
ORA: Open Riding Area	4	1	0	0	8	0	0	3	0	1	1	0	0	0	0	8	0	0	26
East Boneyard (East of IBY)	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
Vegetation Areas ^a	3	3	1	0	8	5	0	7	0	1	26	2	0	0	0	5	0	1	62
Total	18	18	1	3	40	7	1	17	6	3	80	24	3	1	1	18	10	2	253

^a Vegetation Areas include: BBQ Flats, Bigfoot, Dune Preserves, Eucalyptus Tree, Eucalyptus North, Oso Flaco Boardwalk/Flats/Lake, Pavilion Hill, Pipeline, and Maidenform.



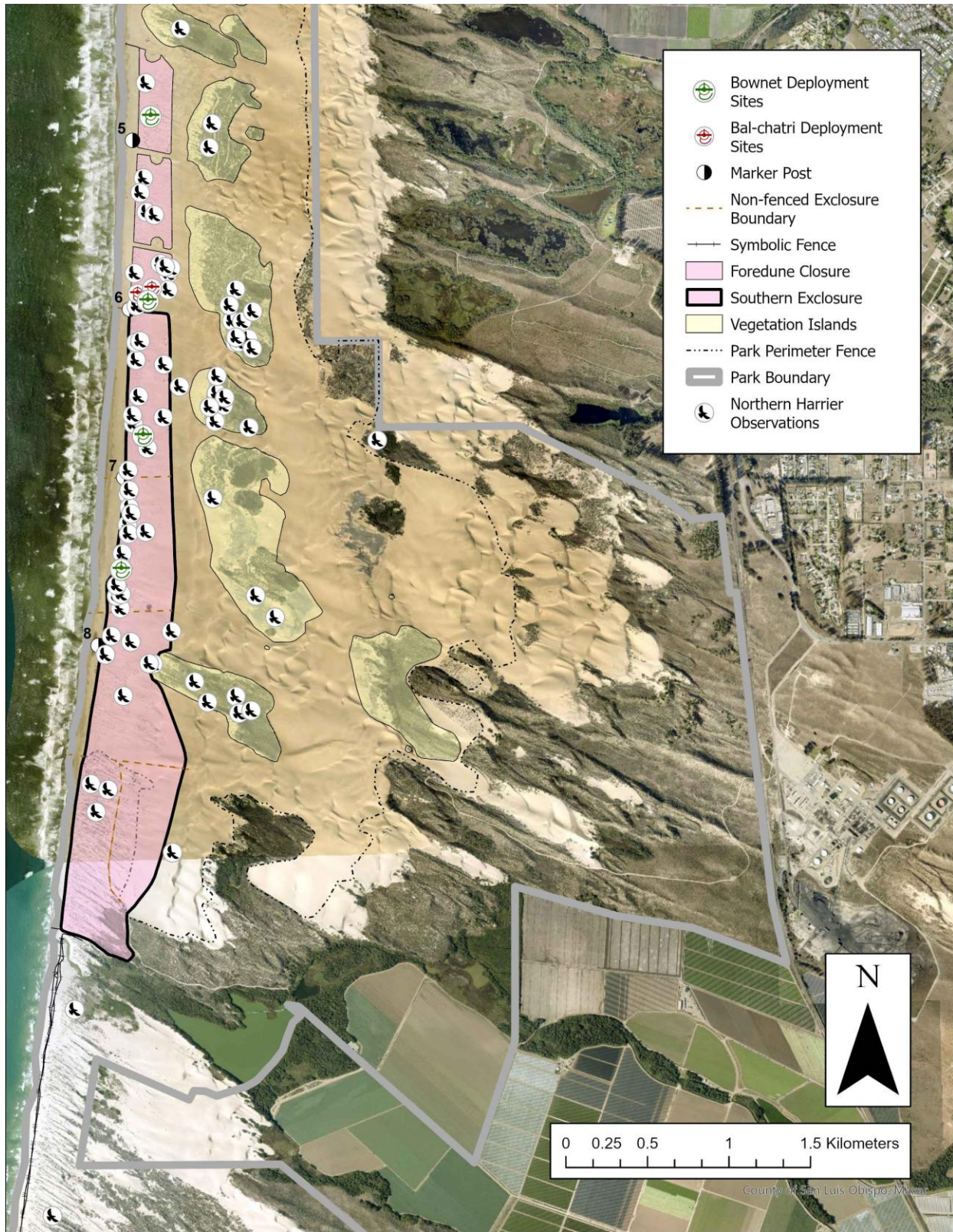


Figure 3. NOHA observations and traps placed by trap type at ODSVRA in 2025.

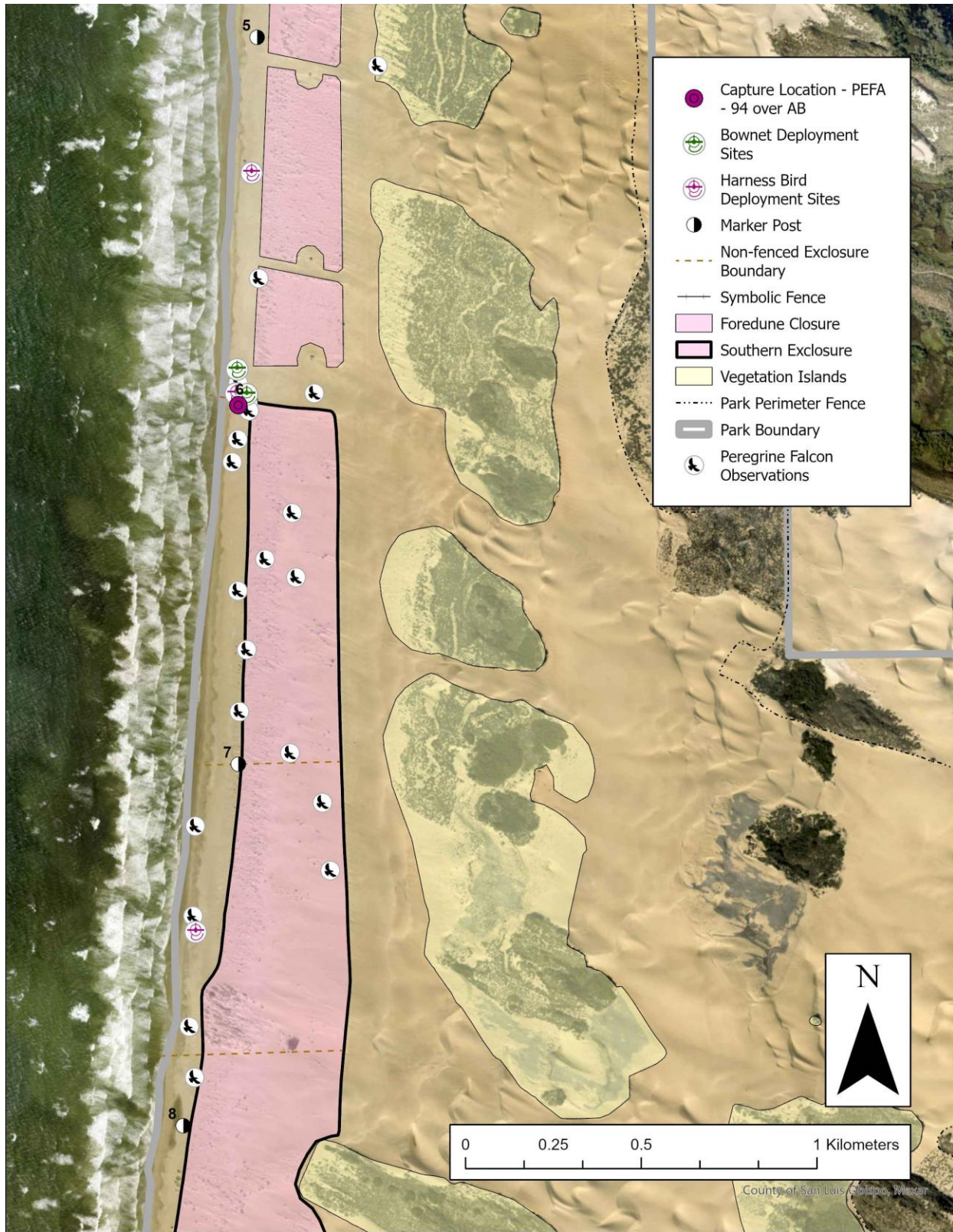


Figure 4. PEFA observations, traps placed by trap type, and the PEFA capture location at ODSVRA in 2025.

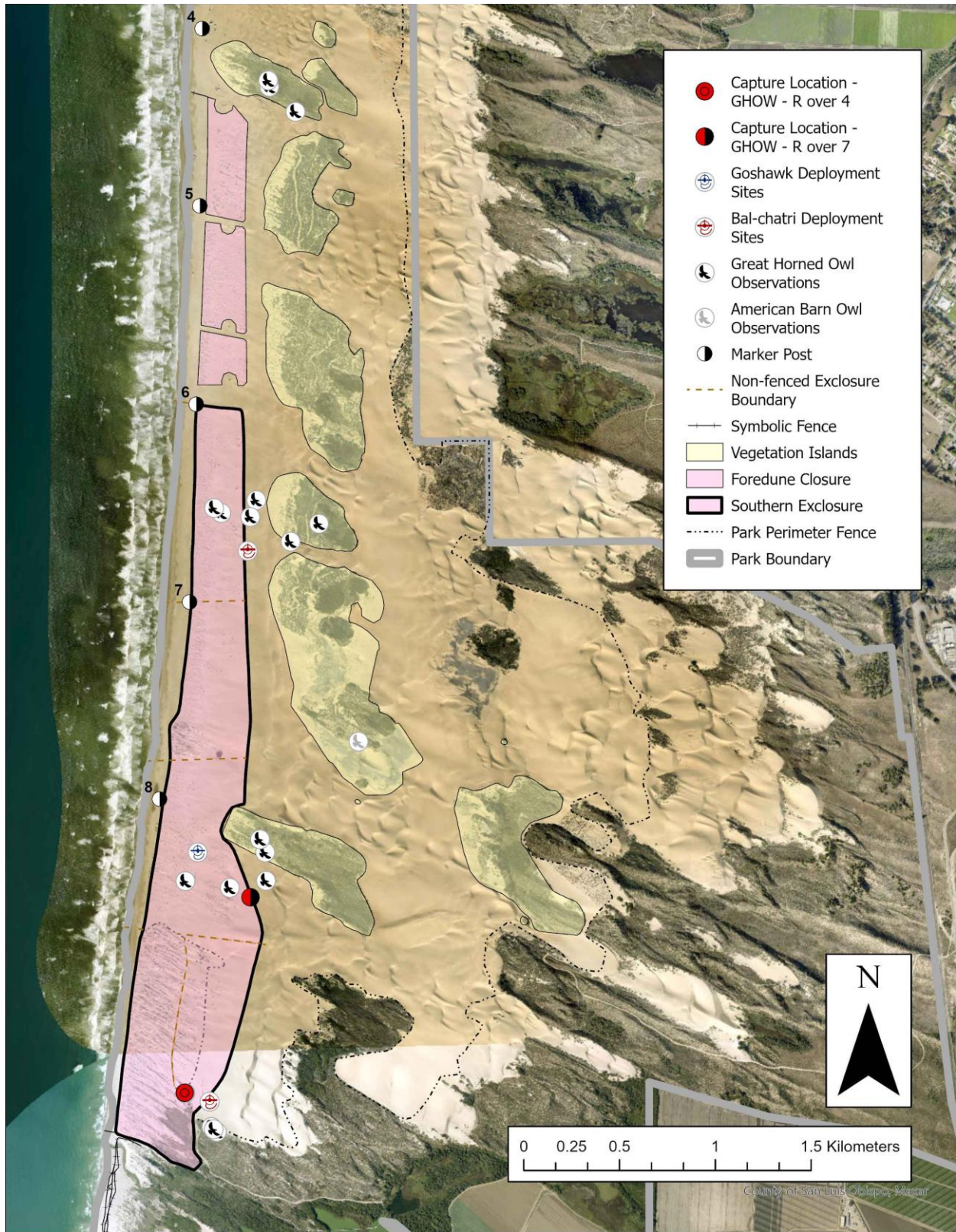


Figure 5. Owl observations, traps placed by trap type, and GHOW capture locations at ODSVRA in 2025.

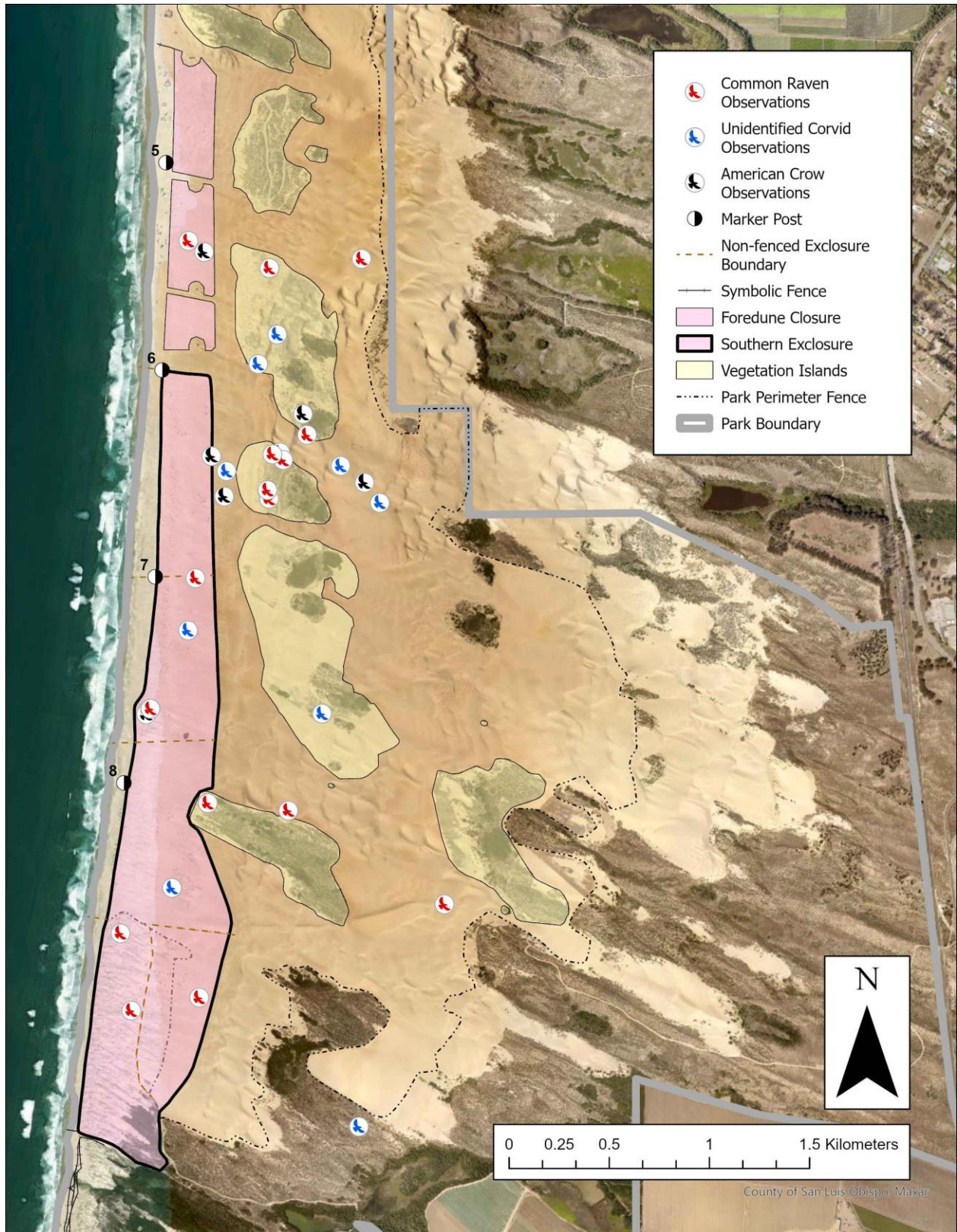


Figure 6. Corvid observations at ODSVRA in 2025.

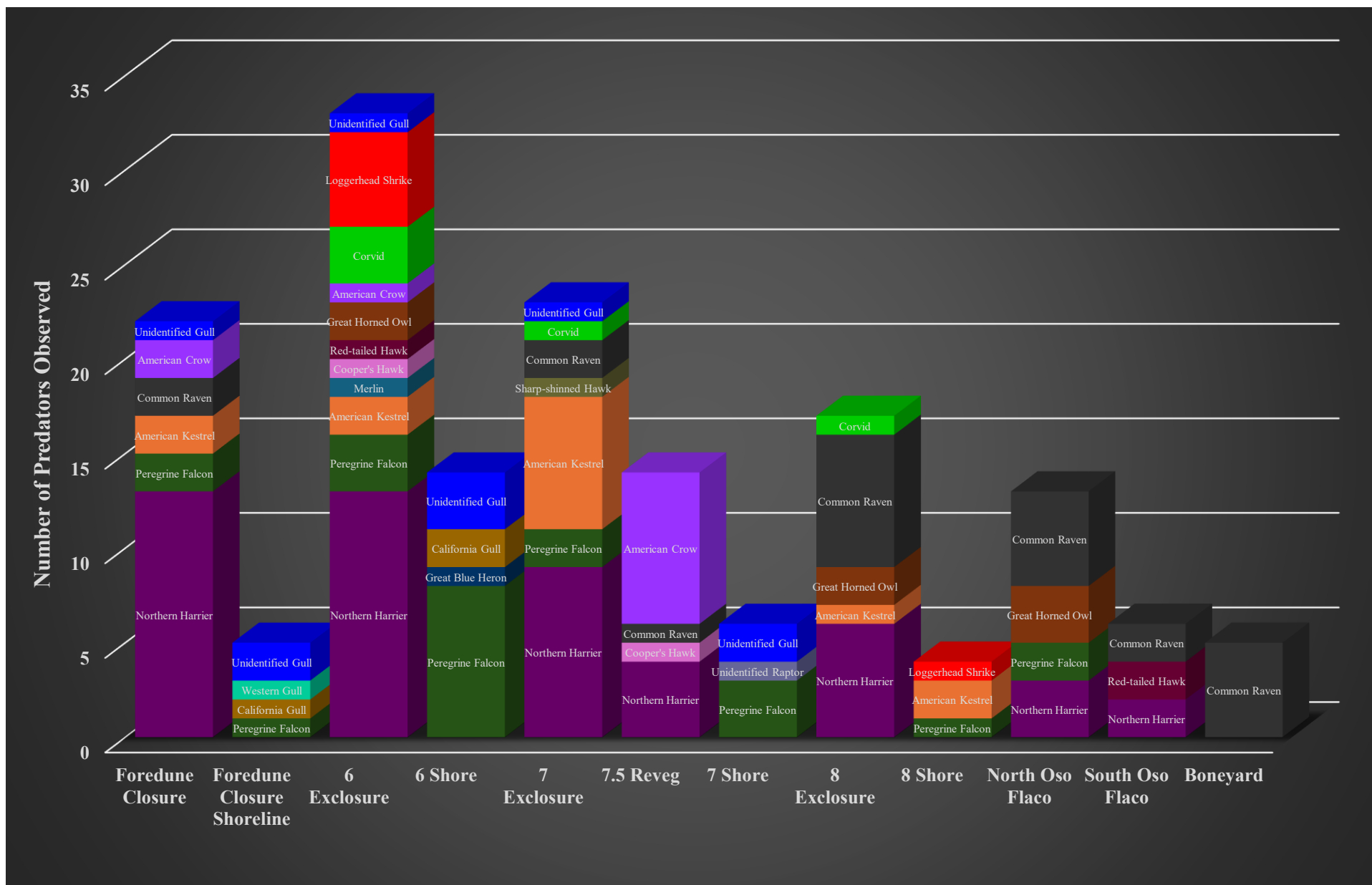


Figure 7. Number of avian predators observed by species, excluding all vegetation areas at ODSVRA in 2025.

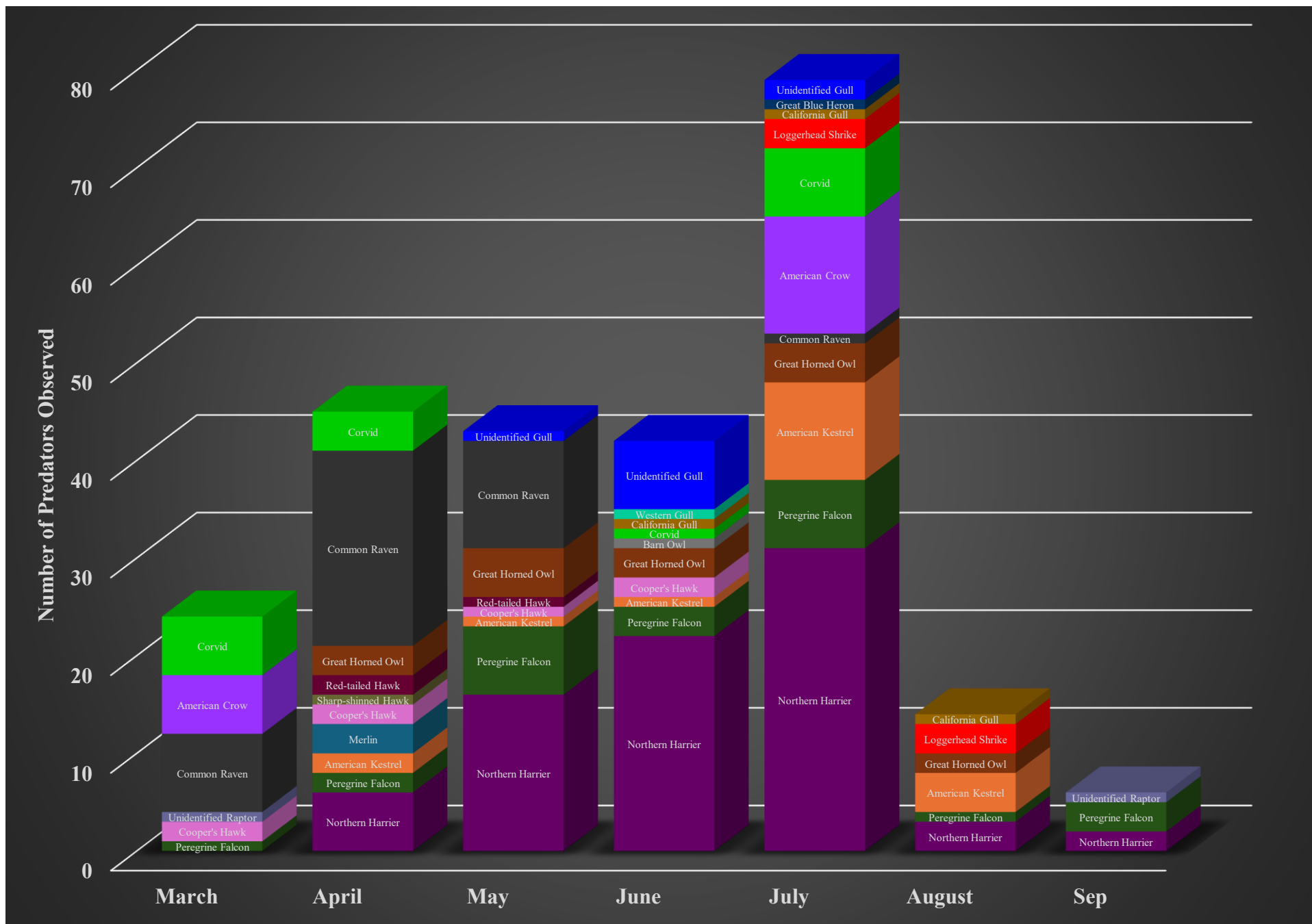


Figure 8. Number of avian predators observed by month and species at ODSVRA in 2025.

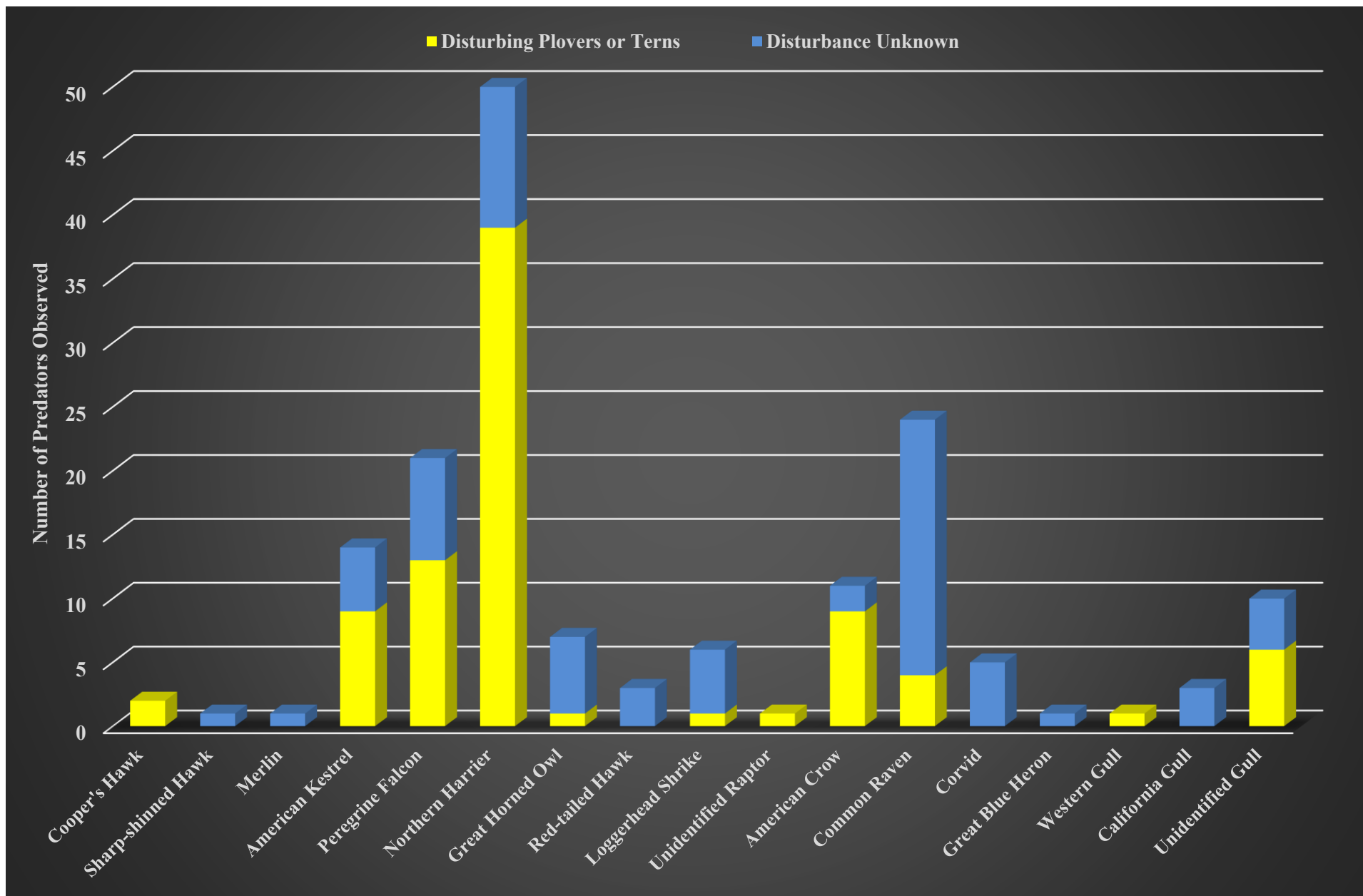


Figure 9. Number of avian predators observed by species, and whether disturbance of plovers and terns occurred during those observations, within colony nesting areas at ODSVRA in 2025.

Avian Predator Removal

WI trapped and translocated one PEFA and two GHOW from ODSVRA to mitigate predation of terns and plovers this season (Table 2–3; Fig. 10). During 14 trapping events, WI utilized four different trap types and operated those traps for a total of 322.78 trapping hours. Just over half of all trap hours (55.2%) were spent attempting to capture PEFA (Table 3).

A second-year (SY) male PEFA was captured on 17 July and banded with a black V.I.D. band (94/AB), and transported to the Horseshoe Ranch Wildlife Area in Siskiyou County, CA for release (Table 4; Fig. 10). This individual returned to ODSVRA on 26 July, just eight days after it was translocated. Of the 178 trap hours expended targeting PEFA, 48.0% were spent attempting to recapture 94/AB following his return to ODSVRA. In addition to PEFA 94/AB, an after hatch-year (AHY) male GHOW was released at Winton Park in Sanger, CA and a hatch-year (HY) male GHOW, was released at the Blue Oak Ranch Preserve in Santa Clara County, CA. Neither of the GHOW were documented to have returned to ODSVRA during the 2025 nesting season.

Table 2. Avian predators removed by species and trap type, at ODSVRA in 2025.

Species	Harnessed Bird	Bal-chatri	Captures
Peregrine Falcon	1	0	1
Great Horned Owl	0	2	2
Total	1	2	3

Table 3. Avian predators targeted for removal and trapping information for efforts conducted at ODSVRA in 2025.

Date Trapping Initiated	Targeted Individual	Age	Sex	Location Trapped	Trap Types Used	# Of Days Trapping	# Of Trap Hours	Targeted Individual Captured	Date Captured
5/7/2025	GHOW	Adult	Male	EBY, WBY, NOF	Bal-Chatrri	1	1.5	YES	5/7/2025
6/7/2025	NOHA	Adult	Male	Foredune N	Bownet	2	16.34	No	N/A
6/11/2025	NOHA	Adult	Male	6 Alleyway	Bal-Chatrri, Bownet	3	31.08	No	N/A
6/17/2025	NOHA	Adult	Male	6 Alleyway	Bownet	2	14.83	No	N/A
6/30/2025	GHOW	UNK	UNK	8 Exclosure	Modified Goshawk	3	30	No	N/A
7/11/2025	NOHA	Adult	Male	6 Exclosure, 7 Exclosure	Bownet	5	30.75	No	N/A
7/15/2025	PEFA	Sub-Adult	Male	6 Shoreline, 7 Shoreline, 6 Alleyway	Harnessed Bird, Bownet	3	23.2	YES	7/17/2025
7/20/2025	NOHA	Adult	Male	7 Exclosure	Bownet	2	10.75	No	N/A
7/24/2025	GHOW	UNK	UNK	CBA	Bal-Chatrri	1	6.5	No	N/A
7/27/2025	PEFA	Sub-Adult	Male	Shorelines, Foredune Shoreline, 6 Alleyway	Harnessed Bird, Bownet	6	67.83	No	N/A
8/6/2025	PEFA	Sub-Adult	Male	6 Alleyway	Harnessed Bird, Bownet	3	37	No	N/A
8/12/2025	GHOW	Juvenile	Male	8 Exclosure	Bal-Chatrri	1	2.75	YES	8/12/2025
8/18/2025	PEFA	Sub-Adult	Male	6 Alleyway	Harnessed Bird, Bownet	1	13.5	No	N/A
9/3/2025	PEFA	Sub-Adult	Male	Shorelines	Harnessed Bird	5	36.75	No	N/A
TOTAL						38	322.78		

^a Hours reported include only those during which a trap was operated. Additional hours were spent on-call to trap for the PEFA during September.

Table 4. Raptors and owls captured and translocated from within ODSVRA during 2025.

Capture Date	Capture Site	Species	Age	Sex	Service Band #	Service Band Leg	Secondary Band Type	Secondary Band ID (Color)	Secondary Band Leg	Capture Method	Bait Used	Translocation Site	Translocation Distance	Release Date	Released By
5/7/2025	NOF	GHOW	AHY	Male	2207-09387	Right	ACRAFT	R over 4 (Black over Silver)	Left	Bal-Chatrri	Starling	Winton Park	227.2 km	5/8/2025	Wildlife Innovations
7/17/2025	6 Shoreline	PEFA	SY	Male	1266-01952	Left	VID	94 over AB (Silver over Black)	Right	Harnessed Bid	Pigeon	Horseshoe Ranch Wildlife Area	737.8 km	7/18/2025	Wildlife Innovations
8/12/2025	8 Exclosure	GHOW	HY	Male	2207-09388	Right	ACRAFT	R over 7 (Black over Silver)	Left	Bal-Chatrri	Starling	Blue Oak Ranch Preserve	210.1 km	8/13/2025	Wildlife Innovations

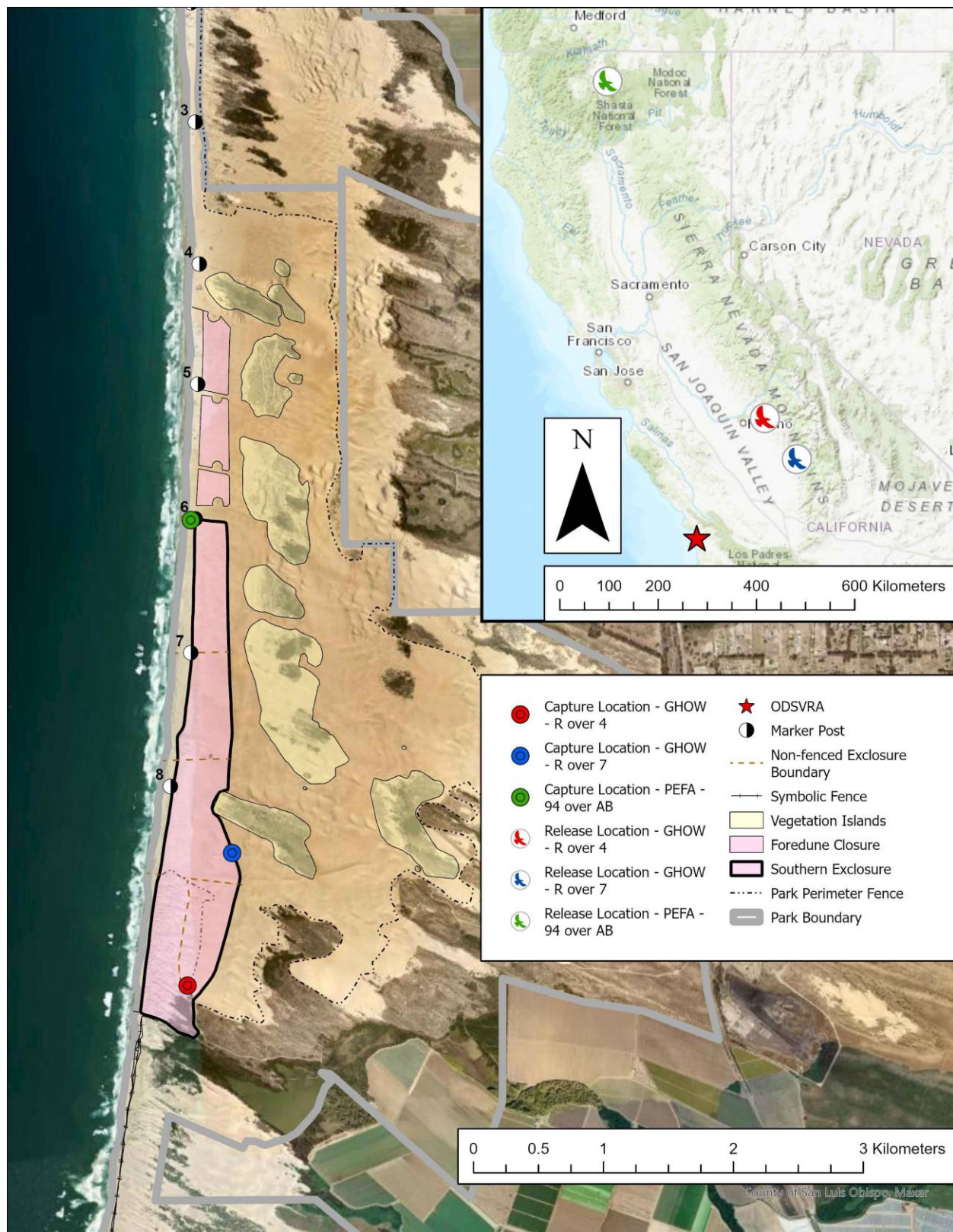


Figure 10. Capture and release locations of raptors and owls removed from ODSVRA in 2025. Release locations are depicted within the bounds of the inset map.

DISCUSSION

The 2025 season marked the second year of a renewed three-year agreement between ODSVRA and WI to provide raptor and owl management supporting nesting terns and plovers. Predator surveillance was led by an experienced returning biologist, with additional support for behavioral assessment, trapping, and project oversight from senior staff. Building on five years of experience at ODSVRA, WI continued to evaluate and refine management strategies to enhance program efficiency and effectiveness. This deeper understanding of site dynamics and predator activity informed continued development and implementation of innovative raptor and owl management strategies during the 2025 nesting season.

Predator Surveillance

WI conducted surveillance work using two different types of schedules: a standard surveillance schedule and a modified surveillance schedule. The standard schedule was developed with input from ODSVRA staff at the beginning of the season. That schedule was modified as needed to best support the program, based on predator observations, behavior, predations, needed trapping, and other factors. In most cases a modified surveillance schedule was only necessary for a week or two, before returning to a standard surveillance schedule.

The standard surveillance schedule employed this season prioritized surveillance across all time periods. This methodology supported standardized survey efforts across space and time to help ensure that predators present were detected. Once predators were detected or were suspected, the modified schedule allowed flexibility to cover times and locations where predators were active and to surveil areas with high densities of tern and plover nesting more intensely during peak times. The combination of schedules was effective and contributed to success within the program this season.

Avian Predator Trapping

Raptor and owl traps were placed outside of tern and plover nesting areas when possible to do so while also effectively target specific raptors or owls for capture. This was done to avoid disturbance to nesting birds which may be associated with placing and operating traps. When it was necessary to trap within nesting exclosures or on shoreline areas densely occupied by plovers and/or terns, trap placement and operation permissions required detailed coordination, approval, and often an escort from ODSVRA staff. This limited the number of suitable trapping locations in or near high-density nesting areas, where raptors and owls often preferred to hunt. As a result, traps were sometimes placed in less suitable locations where capture success relied on trap sets to attract raptors and owls as they transited to or from their preferred hunting locations. On some occasions, mobbing by terns in high density nesting areas deterred raptors from reaching and/or entering traps. These factors may have reduced efficiency of some trapping efforts, delayed capture of targeted individuals, and may have resulted in more predations or prevented capture of some individuals.

As a raptor or owl depredates more terns and plovers, they may become more fixated on that food source, which can make it more difficult to attract a targeted individual to pursue an alternative prey item offered when trapping. In addition, species such as NOHA are innately hesitant to approach unfamiliar prey sources or presentations, this may further reduce potential for successful capture. For species such as PEFA that cover lots of ground while hunting, it can be difficult to predict where they might travel and place traps where they will encounter them. Trapping may be further delayed or ultimately unsuccessful if a trap cannot be placed very close to the area where

a predator last successfully captured prey and quickly after the raptor was last observed hunting there. For these reasons, it is important to place traps as close to the location where predators were last hunting, to promote successful capture and mitigate predation loss of terns and/or plovers.

Deploying some traps during the day increases the potential for targeted birds to observe trap-deployment or prevent trap deployment in ideal locations if the targeted bird is already onsite. The level of risk associated with this varies by trap type and species targeted. If targeted birds observe personnel or vehicles interacting with trap sets, they may negatively associate the trap or lure presentation with the vehicles and humans observed. This may result in targeted individuals avoiding traps, thereby inhibiting or preventing capture. If raptors or owls documented to depredate terns or plovers cannot be nonlethally captured and translocated, lethal removal may be the only option to prevent predation impacts to nesting terns and plovers. Where and when site access restrictions for trapping are necessary and cannot be adapted, WI has and will continue to develop innovative ideas to maximize efficiency and effectiveness of capturing problem raptors and owls within the guidelines of the program.

Predation Investigations

To detect tern or plover predations from raptors or owls, WI relied on ODSVRA staff reports of signs of predation or other activity within or near colony nesting areas and direct observations of raptor or owl activity to prompt further investigation. Typical signs included plover or tern feather piles near raptor or owl tracks or owl pellets containing plover or tern remains and/or bands. Because monitors do not walk the entirety of tern and plover nesting areas to avoid unnecessary disturbance, most predations are detected using binoculars or spotting scopes from a distance or discovered while traveling on foot to and from a limited number of scheduled in-person nest checks. Given the dynamic topography at ODSVRA, it is likely that not all nests, predator signs, or predations were detected. This is compounded by frequent high wind events that move sand and blow away signs of predator presence or other remains from predations. These site-specific challenges emphasize the need for extensive personnel time to attempt to visually cover as much of the nesting area as frequently as possible from a distance using optics, and during all time periods to attempt to not miss predator activity and predation that may otherwise go undetected. As a result of the site characteristics and programmatic structure, it is likely that not all predations are able to be documented, and predation by nocturnal predators may go undetected more than predation by diurnal predators.

The following data summary is a compilation of predations discovered and investigated or directly observed by both ODSVRA staff and WI personnel. A more comprehensive summary of nesting efforts and results can be found within Appendix B and H of CDPR 2025. During 2025, terns laid a total of 42 nests, 40 with known location and fate, 5 (12.5) of which were determined to have been predated, and 28 (70.0%) of which hatched. Plovers laid 333 nests, 296 with known location and fate, 42 (14.2%) of which were determined to have been predated. Of those predated, 28 (66.7%) are strongly suspected to have been by avian predators. These predations were attributed to CORA (n=24, 85.7%), event raven (n=3, 10.7%), and gull (n=1, 3.6%). Additional plover nests with failed, unknown cause or abandoned pre-term fates, were likely the cause of predation (CDPR 2025). In addition to nest predation, a total of 25 plovers and five terns were determined to have been predated. Of the plovers predated, 48.0% (n=12) were chicks, 12.0% (n=3) were chicks or juveniles, 4.0% (n=1) was a juvenile, 24.0% (n=6) were juveniles or adults, 12% (n=3) were adults, and 4.0% (n=1) was of unknown age. Of the predated plover individuals for which the predator was able to be determined, 47.8% (n=11) were PEFA, 17.4% (n=4) were raven, 43.5% (n=1) was sharp-shinned hawk, 87.0%

(n=2) were harrier, 87.0% (n=2) were western gull, and 13.0% (n=3) were California Gull (*Larus californicus*; CAGU). Of the terns predated, 20.0% (n=1) was a chick, 40.0% (n=2) were chicks or juveniles, and 20.0% (n=2) were juveniles. Of the predated tern individuals, 60.0% (n=3) were PEFA and 40.0% (n=2) were NOHA.

In late April, two adult plover mortalities were discovered within circular exclosures placed on active nests in South Oso Flaco. In both cases, the plover carcasses were intact, appeared fresh, and had puncture wounds that may have been consistent with predation by a raptor or owl. During the first incident, the top of the circular was slightly damaged, and blood and feathers were stuck to it. In the second, unidentified avian tracks were observed just outside the circular exclosure. Since no other cause of death could be determined, and because evidence supported that an avian predator may have at least visited both sites, both were recorded as predation by an unidentified avian predator. Both exclosures were removed following detection of the mortalities, to attempt to avoid additional mortalities, if a predator returned. Additionally, circular exclosures were removed from five other active plover nests in South Oso Flaco to prevent a predator that could have learned that circular exclosures have food within them, from targeting those nests. Two of the five additional nests that circulars were removed from, were later found abandoned pre-term, possibly indicating additional predator activity or predation as a cause. Follow-up surveillance for predator activity did not detect predator activity in the area, so trapping was not necessary.

Raptors as Predators of Terns and Plovers by Species

Northern Harriers

Northern Harriers are cryptic marsh hawks that specialize in hunting birds and small rodents and are known to depredate eggs, nestlings, and chicks of plovers and terns at many California nesting sites, including ODSVRA (CDPR 2019, 2020; Wooten et al. 2017, 2018, 2019). Since the NOHA is a Species of Special Concern in California, and the coastal NOHA population in California is facing challenges. Therefore, more justification is required before attempting to capture and translocate NOHA.

NOHA were the most frequently observed avian predator this season, and more than half of all NOHA observations involved individuals entering or exclusively hunting within colony nesting areas. Age and sex classes for NOHA observed included HY, SY, and After Second-Year (ASY) females, as well as at least two uniquely identifiable ASY males. While most non-ASY males appeared to transit though the site without hunting, ASY males were regularly documented hunting along the western dune hummocks of the exclosed colony nesting areas. Within vegetation islands, NOHA were observed primarily targeting small mammals, whereas ASY males hunted both mammalian and avian prey. A minimum of two plovers and two terns were depredated by ASY males, including one plover by the lighter grey male targeted for capture earlier in the season, and one plover and two terns by the darker mottled-grey male targeted in July.

Adult male NOHA were observed more frequently in 2025 than in 2024, with activity peaking from April to July and declining sharply in August—consistent with their nesting chronology. This decline likely reflects males provisioning mates and young away from tern and plover nesting areas. While NOHA at ODSVRA primarily hunted rodents, they were also observed preying on plovers, terns, and Horned Larks (*Eremophila alpestris*; HOLA). Two after-second-year (ASY) males occupied the site simultaneously during part of the season, while other age/sex classes were mostly seen in vegetation islands. Maintaining low-threat resident males that primarily hunt rodents may benefit tern and plover conservation by deterring occupation by higher-risk

individuals and influencing juvenile foraging behavior toward rodents.

Capturing NOHA is challenging due to their wariness and neophobia toward unfamiliar prey or trap setups. Females are more easily trapped near nests, while males are difficult to predict and rarely recaptured if translocated. Consequently, accurate identification of problem individuals is essential, and only those verified as threats should be targeted for capture or translocation. Trap deployment must be discreet and flawlessly executed to avoid detection and ensure success. These challenges make NOHA management more time-intensive and complex than for most other raptors or owls.

No NOHA were captured during the 2025 nesting season. WI spent two distinct periods conducting trapping for NOHA, subdivided into five intervals in which trapping was paused due to surveillance needs, competing trapping priorities, or reduced threatening behaviors (Table 3). Observations and trap deployments are detailed by time period and individuals targeted for capture below.

Foredune N ASY Male NOHA trapping (Early June)—Adult male NOHA were first observed at ODSVRA on 24 April. Observations of adult male NOHA predominantly hunting in vegetation islands were infrequent until 19 May, when an individual identifiable by lighter grey plumage was recorded hunting within colony nesting areas on three occasions each separated by several hours. No predations of plovers or their nests were detected during this period. In response to increased hunting activity, WI initiated focused diurnal surveillance. From 19 May through 03 June, the male NOHA was observed on most days hunting in both the nesting areas and vegetation islands, and one HOLA predation was documented. On 4 June, it attempted to catch another HOLA in the colony nesting area but after failing, it instead depredated another small bird, possibly a plover chick. Continued surveillance was maintained to assess whether the NOHA was targeting plovers, which would allow for initiation of trapping. On 6 June, the NOHA depredated a plover chick or juvenile. WI then began bownet trapping on 7 June in Foredune N at a site scouted and approved by ODSVRA staff to minimize plover disturbance. Trapping efforts continued for three days but were suspended when the NOHA shifted to hunting almost exclusively in vegetation islands, avoiding colony nesting areas near the trap site. On 9 June, WI resumed mobile surveillance to further evaluate the bird's behavioral patterns, improve trap site selection, and reassess the threat level from this individual.

6 Alleyway ASY Male NOHA trapping (Early–Mid-June)—Surveillance for the adult male NOHA occurred on 9 and 10 June, where it was primarily hunting within vegetation islands and focusing on non-plover prey. On 11 June, it was observed predating an unidentified small brown avian prey species in the nesting area, prompting WI to deploy a bownet in 6 Alleyway. The trapping site was farther west in a more suitable location that was better aligned with the NOHA's typical flight path. Capture efforts via bownet continued through 12 June, supplemented with bal-chatri traps to increase the likelihood of the NOHA encountering the traps; however, the NOHA was not able to be captured. On 13 June, the NOHA hunted intensively within colony nesting areas, repeatedly circling over the bownet without landing. Since no plover or tern predations were documented during this period, trapping was temporarily discontinued.

The male NOHA continued hunting periodically in the nesting areas and vegetation islands without any documented predations. On 17 June, WI resumed trapping using newly acquired

lure birds that better mimicked plover and HOLA. The NOHA did not enter colony nesting areas that day and was observed hunting only briefly the next day. Trapping was then discontinued, as WI and ODSVRA staff determined the individual was not actively targeting plovers. On 18 and 19 June, coyote predation of multiple tern and plover nests were confirmed, and at the request of ODSVRA staff, WI shifted to overnight surveillance to support WS as they attempted to remove the offending coyotes.

6/7 Exclosure ASY Mottled Grey Male NOHA trapping (Early July)— Between 19 and 24 June, the male NOHA initially targeted for trapping intermittently hunted within both colony nesting areas and vegetation islands, showing increasing preference for vegetation islands and rodent prey. On 25 June, a different ASY male NOHA was confirmed during simultaneous presence with the previous male NOHA. This bird, distinguishable by darker mottled-grey colored dorsal feathers and a more erratic flight style, was observed intermittently through 3 July. Concurrently, WI was conducting both coyote and raven surveillance to assist WS, GHOW trapping, and monitoring for a SY male PEFA. On 3 and 4 July the mottled-grey NOHA depredated three avian prey items, one identified by ODSVRA staff as a tern chick and one as a plover chick. Scheduling conflicts prevented trapping on 5 and 6 July, but trapping was planned if tern or plover predation continued. However, the NOHA was observed hunting onsite without taking additional terns or plovers until 10 July, when it predated a tern juvenile or chick. WI then initiated trapping with a bownet in 6 Exclosure on 11 July. The NOHA avoided the colony nesting area that day, but on 12 July approached the trap but then departed the nesting area, possibly deterred due to mobbing by nesting terns. After being absent on 13 July, it was next observed hunting farther south, leading WI to reposition the bownet to southwestern 7 Exclosure on 15 July. That day, the bird hunted exclusively in vegetation islands. On 16 July, simultaneous trapping for the SY male PEFA was initiated and NOHA trapping was continued, but the mottled-grey NOHA only briefly transited colony nesting areas and did not see the deployed traps. Due to reduced hunting pressure by the male NOHA, and increasing predation pressure from the SY male PEFA, NOHA trapping was suspended on 17 July to focus on PEFA trapping.

7 Exclosure ASY Mottled Grey Male NOHA trapping (Mid-July)—Following the capture of the SY male PEFA on 17 July, NOHA trapping resumed on 20 July. Observations of the target NOHA decreased from 17 through 21 July, and trapping was discontinued after two consecutive days without detection. The mottled-grey NOHA was not documented again at ODSVRA until 26 July, when a NOHA with the same plumage characteristics was briefly observed hunting in South Oso Flaco. No further NOHA predations of terns or plovers were documented during the 2025 nesting season, and few observations of male NOHA at ODSVRA were rare. Since reduced hunting by mottled-grey NOHA at ODSVRA coincided with increasing detections of HY NOHA, the mottled-grey male may have been provisioning a nest outside the site in July. Once that nest fledged, his hunting patterns and frequency were altered changing the frequency and type of observations made within ODSVRA.

American Kestrels

American Kestrels are aggressive predators of insects, small rodents, and birds (Toland 1987) and can be a significant threat to nesting terns and plovers on coastal California sites, including ODSVRA. AMKE have been documented depredating chicks more often than other age classes of terns or plovers, although they have also been observed taking adults. In one instance, a single male AMKE was observed depredating up to six plover chicks in less than two hours (S. J. Manley,

pers. comm.). Given their capacity to quickly depredate large numbers of tern or plover chicks in a single depredation event, especially when feeding their own chicks and mate, AMKE can be a significant threat to chick survival within tern and plover colonies.

More AMKE observations were recorded during 2025 (n=18) than were recorded during 2024 (n=7). Despite the increase in observations, most observations were of AMKE in transit rather than actively hunting. Several late-season observations involved pairs or groups, which may indicate that AMKE nested closer to ODSVRA in 2025 than in previous years, which resulted in them bringing their young to ODSVRA while dispersing from close by natal territories. Most AMKE observations occurred within nesting areas; however, no predations or attempted predations of terns or plovers were documented. Assuming that no predations were missed, this may suggest that AMKE preferred foraging outside of nesting areas due to prey preference or abundance, or they were discouraged from hunting in nesting areas by hazing efforts and the presence of other avian predators. As AMKE were not identified as a significant threat to nesting terns or plovers this season, no AMKE were targeted for trapping.

Peregrine Falcons

Peregrine Falcons are prominent predators of tern and plover chicks, fledglings, and adults (Marschalek 2009; Wooten et al. 2016, 2017, 2018, 2019; C DPR 2019, 2020, 2023, 2024; Biteman and Manley 2021). PEFA are commonly observed using the central coastline of California for nesting, hunting, and perching, and as a result, were a focus of raptor monitoring efforts again this season.

Capture and translocation of PEFA is time-intensive, and some individuals return soon after release. Because some PEFA have been documented returning from over 800 miles away (Biteman and Manley 2021), PEFA captured at ODSVRA must be translocated as far as possible within California—up to about 500 miles—to reduce the likelihood of return. Adult PEFA with established territories are more likely to return than younger birds, and once previously trapped, are often very difficult or not possible to recapture.

Given these constraints, only well-documented individuals that consistently target terns or plovers are selected for capture and translocation. Regulatory guidelines require evidence of repeated threatening behavior, attempted predation, or confirmed predation before authorization is granted. To meet these standards, WI conducted focused surveillance to identify and evaluate individual PEFA within and near nesting areas.

PEFA were observed using or transiting through all nesting areas at ODSVRA during the 2025 season. Because non-resident or migrating individuals pass through quickly, identifying every bird to the individual level is often not feasible. WI therefore prioritized identifying PEFA that repeatedly used the site and posed ongoing threats to nesting terns and plovers.

Kill-site investigations, direct observations of hunting behavior, and ODSVRA staff reports indicated that most PEFA hunting at ODSVRA primarily targeted shorebirds other than terns or plovers. However, one SY male PEFA was documented depredating at least 11 plovers and 3 terns during the season, and seemed to prefer plovers after its first successful predation.

This individual was trapped and translocated in mid-July after a single trapping event (Table 3). However, it returned to the site eight days later, and it resumed hunting plovers. As a result, WI attempted to recapture it. However, the bird was noticeably more wary of vehicles, and exhibited more variable arrival times and locations, making it difficult to target via trapping.

6 Alleyway/Shorelines Initial PEFA Capture (July)—The first confirmed sighting of the SY male PEFA occurred on 25 June. Between 26 June and 13 July, the SY male was observed intermittently hunting and depredating avian prey, none of which were determined to be terns or plovers. On 14 July, while conducting NOHA trapping, the PEFA was observed predated at least one adult or juvenile plover and an additional prey item that was suspected to also be a plover. Following those observations, WI began trapping for the PEFA while continuing to trap for the NOHA. The PEFA was not seen on 15 July, but the PEFA predated a plover chick, and two unidentified avian prey items the next day. During consecutive days of trapping, the PEFA did not go near deployed traps. On 17 July, two WI biologists began trapping within two locations of the closed shoreline simultaneously. That day, the PEFA depredated a plover chick and one plover juvenile or chick before being captured with a harnessed bird. It was banded 94/AB, translocated to the Horseshoe Ranch Wildlife Area and released on 18 July, which is approximately 737.8 kilometers from ODSVRA.

6 Alleyway/Shorelines PEFA Recapture Efforts (late July to early September)—On 26 July, eight days after release at the Horseshoe Ranch Wildlife Area, 94/AB was resighted at ODSVRA. At that time, WI was preparing to resume trapping for GHOW but instead shifted to diurnal surveillance and prepared to resume trapping for the PEFA if it resumed hunting plovers or terns. After no sightings of the PEFA on 27 July, it predated a tern juvenile or chick on the 28th after WI had left the site for the day. In response, WI shifted to conducting surveillance later in the day and initiated trapping with both a harnessed bird and a bownet each with a different type of lure, in case it was wary of the trap or lure it was captured with previously. Due to the shoreline topography and the PEFA's aversion to vehicles, traps were placed in 6 Alleyway, where the traps could be monitored more remotely while keeping vehicles away from the trapping area. On 30 July, 94/AB predated a plover chick and another bird that was likely a plover but did not approach the deployed traps.

PEFA 94/AB was not resighted again until 4 and 5 August, when it predated one plover adult or juvenile and one tern juvenile. Trapping was resumed from 6 through 8 August, but after no sightings of 94/AB on 9 or 10 August, trapping was suspended again. The PEFA was next observed from 15 through 17 August, predated at least three plovers (two chicks and one adult or juvenile) and one bird that was likely a plover. At that time, WI was conducting intensive GHOW trapping and working night shifts. PEFA trapping was resumed on 18 August, but 94/AB was not detected. With very few field work hours remaining within the annual budget, WI and ODSVRA agreed on 19 August that WI would be available on an on-call basis to trap for the PEFA if needed. No additional sightings of the PEFA were recorded through 27 August, and ODSVRA staff ended on-call trapping, concluding the 2025 WI predator management field work season.

On 28 August, 94/AB returned to ODSVRA, hunting on four of six consecutive days and predated at least two adult or juvenile plovers and one bird that was likely plover. On 2 September, ODSVRA and WI discussed the risks associated with leaving the PEFA onsite through the offseason, given the number of overwintering plovers at ODSVRA and the PEFA's apparent preference for plovers as prey. Following that discussion, WI resumed trapping efforts for the PEFA, and on 3 and 4 September it was observed and interacted with traps on both days. On the first occasion, it landed beside the harnessed bird, but did not attempt to predate it, likely due to its prior experience being captured with that method. On the second day, WI deployed a redesigned incognito harness on a lure bird. That day, 94/AB depredated one adult or juvenile

plover before successfully capturing the lure bird, but did not become entangled in the trap's snares. After this event, 94/AB was not resighted for the remainder of the trapping period, concluding on 7 September. No additional plover or tern predations were documented during the final trapping effort. Trapping was discontinued and WS was asked to attempt to lethally remove the PEFA. Following multiple days of attempting, efforts to lethally remove the PEFA were discontinued due to erratic PEFA presence, reduced predation threat to remaining plovers, and limited available staff time.

Last known sighting of 94/AB was on 14 September. Field observer presence, and presence of both WI and WS staff were reduced by 14 September due to the absence of terns, active plover nests, and plover broods. Wintering plovers form roosting flocks at ODSVRA during non-breeding months and are at risk of predation from this PEFA, but wintering plovers are less vulnerable to predation than birds attending nests and broods during the nesting season. Staff presence is reduced during winter months for monitoring of wintering plovers at ODSVRA, and predator control staff are not present during the non-breeding season. Reduced staff makes it more difficult to monitor PEFA activity, in addition to wintering plover surveys and other duties. ODSVRA staff will continue to watch for the PEFA and will notify WI, if PEFA 94/AAB is observed again before the beginning of the 2026 nesting season.

Cooper's Hawks

Cooper's Hawks are typically found in woodland habitats and have been documented as a significant threat to nesting terns and plovers, particularly chicks (Frost 2015, Velasco 2015). Cooper's Hawks were observed seven times during the nesting season by WI personnel. Most observations were outside of nesting areas, and observations within nesting areas were rare. Since no threatening behaviors or predations were documented, no mitigation efforts were conducted.

Red-tailed Hawks

Red-tailed Hawks have been documented to predate nesting terns and plovers (Caffrey 1998, Carillo 2004) and have been observed killing multiple chicks in a short period of time (Biteman and Manley 2021, 2022). RTHA were observed frequently this season and were active throughout the day. Individuals observed were most often within or near the vegetation islands, but no threatening behavior was observed. This was also the case during previous nesting seasons. This year, RTHA observations within nesting site exclosures only occurred during the early part of the season prior to the hatching of most plover chicks.

Maintaining close surveillance of RTHA when tern and plover chicks are present will continue to be an important part of predation mitigation efforts, because RTHA can be the most problematic at those times. Early detection of RTHA targeting terns or plovers can allow for expedited mitigation efforts and prevent unnecessary loss of chicks.

Owls as Predators of Terns and Plovers by Species

Great Horned Owls

Great Horned Owls are common within many ecosystems, occupying a variety of habitats, and are well known to predate tern and plover adults, fledglings, and chicks (Lau et al. 2017). Since they are typically uniformly distributed across the landscape, it is important to only remove individuals that are a high threat to nesting terns or plovers, as the removal of an individual that does not pose a threat can open a territory for another GHOW that does. During the 2025 nesting season, WI balanced surveillance of diurnal predators with nights conducting surveillance for, and behavioral

assessment of, GHOW activity within and near tern and plover nesting areas when there was an indication of their presence.

Following the detection of signs of GHOW near nesting terns and plovers, WI placed and operated Modified Goshawk Traps (MGTs), which is a trap that does not need to be monitored constantly by personnel. Use of this trap type can allow personnel to continue diurnal surveillance and trapping, while also conducting defensive trapping for GHOW within high-risk areas. MGTs were most often placed within areas GHOW would likely use to transit to areas to hunt, or where signs of GHOW presence had previously been detected. The MGTs were also utilized during periods of heavy fog that obstructed nocturnal surveillance efforts required to use other trap types, and in conjunction with thermal surveillance and bal-chatri trapping when weather permitted. This season, two GHOW were successfully captured and translocated (Table 3). Observations, signs detected, and trap deployments are summarized below, including reports specific to each trapping event.

NOF/WBY GHOW Trapping (May)—On 3 May, WI conducted overnight surveillance and observed a GHOW emerging from the Oso Flaco vegetation and hunting from perched locations on the IBY fence, WBY fence, and high western NOF hummocks. As no signs of GHOW or predations were detected over the following weekend, WI repeated surveillance on 6 May, again documenting the GHOW using and hunting from the same locations. On 7 May, WI initiated trapping and successfully captured the AHY male GHOW in the SE corner of NOF using a bal-chatri trap. The GHOW was translocated the next day to Winton Park in Sanger, CA, 227 kilometers from ODSVRA.

8 Exclosure GHOW Defensive Trapping (June)—On 25 June, WS reported hearing an owl calling southwest of their position near the Fore-dune Plots during their nighttime coyote surveillance and removal operations. The next day, ODSVRA staff found owl tracks in 8 Exclosure. In response to the documented owl tracks and ongoing CORA and coyote nest predations, WI shifted to evening and overnight thermal surveillance on 26 June to assist WS. That night a GHOW was observed perching on fences and vegetation in PLR. As it was not observed entering the nesting area, surveillance was continued. On 27 June, dense fog prevented effective surveillance. Additional owl tracks of unknown age were later located in 8 Exclosure under low wind conditions. On 30 June, WI began trapping with a MGT inside 8 Exclosure to attempt to intercept any GHOW that may hunt there. The trap was operated until 3 July, allowing concurrent crepuscular surveillance of NOHA, PEFA, CORA, and coyote activity. No additional signs of GHOW presence were detected. After an AMKE perched on the MGT on 2 July, and with no indication that further GHOW trapping was warranted, trapping was discontinued.

6 Exclosure GHOW Trapping (July)—On 22 July, standard overnight surveillance shifts were resumed after several weeks of PEFA and NOHA trapping precluded them. That night, an AHY GHOW was observed perching on the Eucalyptus Tree fence, and GHOW vocalizations were heard near the high point east of 6 Exclosure. The following night, GHOW vocalizations were heard at Eucalyptus North, followed by the observation of a GHOW perched inside of 6 Exclosure, which elicited plover alarm calls. The owl attempted to capture a small bird, likely a plover, before departing south. On 24 July, WI deployed bal-chatri traps east of 6 Exclosure. No GHOW were detected that evening or the next night. Trapping was discontinued on 26 July when PEFA 94/AB was resighted, as the PEFA was a higher threat at that time.

8 Exclosure GHOW Trapping (August)—On 7 August, ODSVRA staff discovered GHOW tracks in 8 Exclosure. At that time, trapping for PEFA 94/AB was occurring and continued until it was absent for five consecutive days, prompting a shift back to GHOW trapping. On 11 August, ODSVRA reported multiple fresh GHOW tracks in 8 Exclosure, and tracks were again detected on 12 August near a plover nest in 7 Exclosure. That night, WI deployed bal-chatri traps in 8 Exclosure, observing a GHOW early in the evening and later documenting a HY GHOW inside the exclosure. After nearly an hour and a half of repeated trap interactions, the bird was successfully captured. It was translocated the next day to Blue Oak Ranch Preserve in Santa Clara County, 210.1 kilometers from ODSVRA.

In 2025, weekly overnight surveillance—supplemented by owl-focused monitoring when needed—allowed personnel to focus on high-risk diurnal predators when needed. As a result of effective mitigation, no predations were attributed to GHOW at ODSVRA in 2025. Early detection of GHOW within nesting areas remains critical for effective management.

Cellular camera equipped owl poles were deployed on perimeter fences at ODSVRA during 2024 to attempt to improve detection of owls when active within nesting areas. Since the exclosure fencing provides many alternative perches to the owl poles, detection of owls by owl poles was less effective than hoped. WI requested to place owl poles within the interior of nesting areas to improve remote detection of both diurnal and nocturnal avian predators, but that request was not approved. As a result, owl poles were not deployed in 2025.

Placement of owl poles inside nesting areas where they would be the tallest and most attractive perches, could improve detection by funneling owls and raptors to reliable detection points. Effective use of owl poles could improve detection of predator presence during periods of fog when personnel cannot see into the interior of nesting exclosures from the outside. Rapid response and targeted trapping at these sites could then increase capture efficiency and success, thereby reducing predation.

American Barn Owls

American Barn Owls are documented predators of adult and fledgling terns and plovers in California. During the 2025 nesting season, no tern or plover predations at ODSVRA were attributed to ABOW. This year, the number of ABOW observations was low, despite the time spent surveilling nesting areas for GHOW. Multiple ABOW carcasses were collected in the ORA, suggesting their activity was more focused outside of the nesting areas ABOW typically only land on the ground when attempting to capture prey, making detection of their presence that is reliant on discovery of tracks, impact marks, or predations, more difficult and less reliable. Since ABOW like to perch on tall objects, owl poles placed within nesting areas could be an effective means of detecting presence of ABOW within nesting areas. If owl poles cannot be placed within nesting areas to help detect ABOW, regular nighttime surveillance will continue to be important to provide early detection of ABOW activity in nesting areas.

Other Tern and Plover Predators

Although WI is primarily responsible for managing raptors and owls as predators of terns and plovers at ODSVRA, WI provides support and management of other avian predators when requested in support of the program. The following sections describe efforts to monitor and assist with management of other high-threat predators.

Loggerhead Shrikes—LOSH are a perch-hunting passerine known to target insects,

amphibians, reptiles, small mammals, and small birds including plovers. During the breeding season, LOSH primarily consume insects, whereas they target other vertebrates during winter months (Craig 1978). In 2025, LOSH were only observed later in the breeding season, hunting primarily from predator exclosure fences, both along shorelines and within exclosures. During most LOSH encounters, ODSVRA staff hazed the individuals repeatedly with personnel and pyrotechnics before LOSH left the area. Behavioral observations indicated that while LOSH were in or adjacent to the tern and plover nesting areas, they were primarily targeting insects and rodents, and no tern or plover predations were documented from LOSH. LOSH are a California Species of Special Concern, which requires additional justification before capture and translocation of LOSH can be authorized. Since no evidence of tern or plover predation from LOSH was documented during 2025, capture and translocation were not attempted.

American Crows—AMCR are a prominent and problematic predator of nesting terns and plovers (Liebezeit and George 2002, Brinkman and Garcelon 2016, Manley and Johnson 2019, Biteman and Manley 2021). AMCR are synanthropic predators that thrive around human development and whose populations in urban areas of California may be growing (Johnston 2001, Marzluff et al. 2001). WI assisted with monitoring of AMCR again during the 2025 breeding season. When AMCR were directly observed or after being alerted by ODSVRA staff, WI assisted WS personnel by helping visually track AMCR to support successful predation mitigation efforts. During 2025, AMCR were most often observed during March and July, and were more frequently observed by WI within nesting areas. Despite the observed presence of AMCR within developed areas to the northeast of ODSVRA, they were seldom observed entering nesting sites or shorelines from those directions. As AMCR have the potential to be a significant predator of nesting terns and plovers, monitoring should be continued and the threat to nesting terns and plovers continuously reevaluated.

Common Ravens—CORA are intelligent, effective predators, can have large territories, and can significantly impact tern and plover populations (Craighead and Craighead 1956; Smith and Murphy 1973; Liebezeit and George 2002; Burrell and Colwell 2012; Frost 2015; Wooten et al. 2016, 2017, 2018, 2019). CORA populations in the United States have increased at an estimated 2.87% annually for the last 50 years and by 3.46% annually during a more recent 10-year period (Sauer et al. 2017). Additionally, CORA populations within California deserts have increased by more than 1000% during a recent 25-year period (Boarman and Berry 1995). Based on those growth trends, it is likely that CORA populations near ODSVRA are also growing. With a growing CORA population the threat of predation to terns and plovers by CORA will likely increase.

This season, CORA were observed foraging within nesting site exclosures and preyed a minimum of 27 plover nests, two tern nests, and four plover chicks (CDPR 2025). CORA were most often observed in pairs, foraging and hunting while flying through the site. As with AMCR, when directly observed or after being alerted by ODSVRA staff, WI assisted WS personnel by helping visually track CORA to support effective removal. All CORA observations recorded by WI occurred between March and July. The largest number of CORA were observed in April, which is similar to the 2024 nesting season. When WI observed CORA during 2025, they were primarily in 8 Exclosure.

Careful management of CORA is important for effective predation mitigation of terns and plovers. To support CORA management, targeted individuals should not observe management methods due

to their high intelligence and potential to learn to avoid management methods once educated to them. CORA that observe personnel or management methods employed may be difficult or impossible to remove, and predation from educated CORA may be prolonged, as they can live up to 15 years (Lutmerding and Love 2020). Attempting to mitigate recurring predation from an educated CORA can be time-intensive and take time away from other programmatic aspects thereby reducing overall program effectiveness. To prevent educating CORA to management methods, great care should be taken to only attempt to remove CORA with a firearm when all individuals in proximity or view can be removed simultaneously, and all trap sets should be maintained at all times.

Gulls—Gull species, including WEGU and CAGU, are well known predators of both eggs and chicks of terns and plovers and have been observed depredating plover chicks at ODSVRA. Chick activity within the nesting areas during the latter part of each season can draw gulls into nesting areas, resulting in predations. Additionally, adult terns begin to leave the site later in the season, leaving fewer to defend the colony. As such, nests and chicks present later in the season are more vulnerable to gull predation. Chick predations from gulls often require direct observation to detect, since little or no evidence is typically left at the scene as chicks are consumed whole. In 2025, WEGU were directly observed depredating one plover chick and one juvenile plover, while a CAGU depredated at least two plover chicks and one plover of unknown age. Additional observations were made of attempted predations of chicks or of suspicious activity by gulls during July and August. However, more predations probably occurred than were able to be observed. It is likely that once individual gulls learn to target chicks they will continue or increase predation of chicks if they are not removed quickly. Early detection and efficient removal of high-threat individuals can prevent large-scale predation by gulls. To mitigate gull predation, ODSVRA personnel and WS should continue to concentrate their presence on shorelines during times when chicks are at high densities to detect and mitigate predation by gulls quickly to prevent loss of chicks.

Coyotes—Coyotes are a major predator of nesting terns and plovers, responsible for significant nest losses (Frost 2015; Wooten et al. 2016–2019). With large home ranges spanning urban and rural areas (Gehrt 2007), a single coyote can destroy many nests in one predation event. As an olfactory-driven predator, a coyote can locate prey without visual cues, posing a particular threat to hidden nests and chicks. Frequent coyote presence and repeated predation may also reduce site fidelity. At ODSVRA, coyote impacts may be underreported because current monitoring and predator control protocols do not include regular on-foot inspections of nesting sites, and chick predation within shoreline areas may go undetected since chicks are typically consumed whole.

During the 2025 nesting season, coyote tracks were frequently documented by WI, ODSVRA staff, and WS personnel along the shoreline, within or adjacent to nesting exclosures, and in areas occupied by tern and plover nests, chicks, and fledglings. While tracks outside nesting areas (e.g., between vegetation islands) may not indicate a direct threat, those observed in the Fore dune Closures, Boneyard, and within chick-concentrated exclosures signified elevated risk.

Tidal movement made sand below the high-tide line a reliable indicator of recent coyote activity. Observations of coyote tracks indicated regular shoreline use and foraging, with tracks often leading from the hard-packed sand into dune habitats, and several plover nests were depredated by coyote from areas outside the predator fencing (shoreline exclosures, Fore dune Closure, South Oso Flaco). Periodically, gaps in predator-exclusion fencing caused by sand movement or digging allowed coyotes to enter exclosures, resulting in depredation of additional plover nests. A total of six plover and four tern nests were predated by coyote, with an additional four plover and three tern nests likely to have

been predated by coyote. During periods of high coyote activity, and as requested by ODSVRA staff, WI adjusted surveillance to prioritize overnight detection and patterning of coyotes using thermal optics.

Nighttime surveillance, conducted primarily for owl monitoring, occasionally detected coyotes foraging on the shoreline and within exclosures. However, the owl-focused surveillance procedures and frequent fog likely resulted in fewer coyotes being detected than were actually active within or near nesting areas. Despite these limitations, the combination of track observations and nighttime surveillance observations indicated that coyotes foraged within tern and plover nesting areas and may have affected tern and plover reproductive success in 2025. These observations emphasize the need to continue improving exclusion, deterrence, and removal measures to best support tern and plover recovery.

MANAGEMENT RECOMMENDATIONS

- 1) **Data Sharing**—Data coordination and sharing between WI and ODSVRA staff has been effective and efficient during recent years of the program. WI recommends that ODSVRA staff continue to notify WI personnel of significant changes in tern and plover nesting activity as soon as they are realized. In 2025, WI again used ODSVRA’s brood concentration and fledge rate summaries to evaluate predation threats and prioritize location and timing of management efforts. Frequently updated summaries of nesting and predator observations help to maximize efficiency and effectiveness of predator control efforts.
- 2) **Management Focus**—ODSVRA is a large nesting site, the diversity and abundance of the predator suite present are high, and predator control and monitoring personnel resources are finite within each season. Due to these factors, WI recommends that raptor and owl management for terns and plovers continue to be conducted with population level implications in mind, rather than expending limited resources attempting to protect smaller outlier groups or individuals with the same level of effort as expended within higher density nesting areas. Raptors or owls operating within low-density tern and plover nesting areas (e.g., the veg islands), and assessed to be low threat, should be allowed to remain within those areas free from hazing.
- 3) **Hazing Protocols**— Overuse of any hazing method can result in desensitization of predators to methods applied. WI recommends that pyrotechnic hazing is only used on individual predators posing an immediate threat to terns or plovers in high-density nesting areas (e.g., exclosures, shorelines). Raptors that become vehicle-wary may become harder to trap. To avoid raptors associating hazing with vehicles, hazing should be conducted on foot whenever possible. When vehicles must be used for/during hazing, to minimize association between vehicles and hazing methods, vehicles should be parked out of view of raptors, and personnel should exit from the side of the vehicle away from the raptor.
- 4) **Pre-dawn Trapping**—Pre-dawn access to nesting areas is an important component of predator management programs, as it allows personnel to position and deploy traps before raptors become active and enter tern and plover nesting areas. Early setup increases the likelihood of capturing high-threat individuals—particularly PEFA, which often perch and hunt at sunrise—and improves response efficiency when targeting predators known to predate nests or chicks. This timing also helps reduce disturbance by ensuring traps are in place before nesting birds are active. While pre-dawn access involves limited activity within nesting areas, the benefits of timely predator removal generally outweigh the brief, low-level disturbance it may cause. In some cases, it is possible to use trap-types that can be deployed rapidly, thereby reducing the need to access trapping areas well ahead of sunrise. In other cases, only trap types that require more time to properly set are required to support effective trapping. WI recommends that ODSVRA staff continue to grant pre-dawn access to areas for trapping, when possible, to best support effective mitigation of predation by raptors and owls.
- 5) **Trapping Conduct**— To ensure effective and efficient capture of targeted raptors and owls, WI recommends that non-trapping staff avoid trapping areas whenever possible and maintain at least a 400-meter distance. Coordination with WI trapping staff before entering these areas remains essential to prevent trap site disturbance, especially when target raptors are present. Coordination between ODSVRA staff and WI trapping staff worked very well during the 2025 nesting season, and WI recommends continuing to use the same or similar coordination

procedures in future seasons.

- 6) **Scheduling Flexibility**— Flexibility in the timing and location of personnel effort is essential for an effective adaptive predation management program. During the 2025 season, WI maintained a flexible schedule to best meet program needs. WI recommends implementing an adaptive staffing system across all program components, where personnel hours are reduced when high-threat predators (e.g., CORA or educated individuals) are absent and increased when such predators are present and active. This approach will optimize efficiency and enhance the program's ability to effectively mitigate predation.
- 7) **Seasonal Surveillance Shifts**—To best support success within the predator management program at ODSVRA, WI recommends that the timing and location of predator surveillance are adjusted within the season. For example, to monitor and prevent predation by CORA during the early nesting season, predator-specific surveillance should be conducted from the east side of the exclosures where CORA activity has been highest. To prevent predation loss from gulls, gull-specific surveillance should be conducted during the latter part of the nesting season from the shorelines to monitor for gulls predating chicks. These seasonal shifts in predator-specific surveillance will best support effective mitigation of impacts from those predators.
- 8) **Mini-Exclosures**—Mini- or circular exclosures are a valuable predation mitigation tool and WI recommends that use of minis is continued as needed. During times of high nest predation, minis should be placed on all plover nests meeting criteria as soon as possible (ideally upon the discovery of the first egg). Some evidence supports that exclosures may cause adults or tending to nests within them to be vulnerable to predators that may be attracted to the exclosures. To prevent adult mortality, exclosures should be monitored closely to provide early detection of predators that become interested in them, so that mitigation can be implemented quickly if detected. Use of minis may be particularly important in SOF where predator and nest surveillance are conducted less frequently. Nests that cannot be easily viewed from the east side of the exclosures, or in areas where CORA are known to be active, should be prioritized to receive minis. WI recommends that cameras are deployed on as many mini- or circular exclosures as possible to help identify predators that visit minis and improve efficiency of predator management responses.

ACKNOWLEDGEMENTS

We thank Ronnie Glick, with California State Parks, for his trust and support throughout the course of this contract year. We thank the ODSVRA monitoring lead staff, Joanna Iwanicha, Amber Clark, Ryan Slack, Sarah Robinson, and Mattie Reddell, and other staff for their onsite assistance and collaboration throughout the breeding season, including timely reporting of predator observations and predations, troubleshooting, guidance, and for their help compiling predation data after the breeding season. We thank Amy Walsh, of the USFWS Migratory Bird permitting office, Dan Applebee, and Esther Burkett, with California Fish and Wildlife (CDFW), and members the CDFW Volunteer Network and CDFW Natural Resource Volunteer Program for their support and coordination with raptor translocation logistics and permitting. We would also like to acknowledge that this work was funded by the California State Parks Division, Sacramento, California.

LITERATURE CITED

- Boarman, W. I. and K. H. Berry. 1995. Common Ravens in the Southwestern United States, 1968–92. E. T. Laroe (Eds) *Our living resources: a report to the nation on the distribution, abundance, and health of US plants, animals, and ecosystems*. US Department of the Interior–National Biological Service Washington DC 73–75
- Biteman, D.S. and S. J. Manley. 2021. California Least Tern and Western Snowy Plover Predator Control on Marine Corps Base Camp Pendleton, California. Annual Report - 2020. Unpublished report prepared by Wildlife Innovations for the United States Marine Corps, Marine Corps Base Camp Pendleton, Natural Resources Office, San Diego, California. 47 pp.
- Biteman, D. S., and S. J. Manley. 2022. California Least Tern and Western Snowy Plover predator control on Marine Corps Base Camp Pendleton, California. Annual Report - 2022. Unpublished report prepared by Wildlife Innovations for the United States Marine Corps, Marine Corps Base Camp Pendleton, Natural Resources Office, San Diego, California.
- Brinkman, M. P. and D. K. Garcelon. 2016. Predator control in support of the recovery of the California least tern and western snowy plover on Marine Corps Base Camp Pendleton. Annual report – 2016. Unpublished report prepared by the Institute for Wildlife Studies for the United States Marines, Marine Corps Base Camp Pendleton, Oceanside, California. 43 pp. + app.
- Burrell, N.S. and M.A. Colwell. 2012. Direct and indirect evidence that productivity of Snowy Plovers *Charadrius nivosus* varies with occurrence of a nest predator. *Wildfowl* 62:204-223.
- Burr, T.A. 1988. Director, Natural Resources Office, Marine Corps Base, Camp Pendleton, California 92055-5010. Letter to Mr. Ronald A. Thompson, State Director, USDA-APHIS-ADC, dated April 1, 1988.
- Caffrey, C. 1998. California least tern breeding survey, 1996 season. Calif. Dep. Fish and Game, Wildl. Manage. Div., Bird and Mammal Conservation Program Rep. 98-2, Sacramento, CA. 57 pp.
- California Department of Fish and Game [CDFG]. 1976. *At the crossroads: A report on California's endangered and rare fish and wildlife*. State of California, Sacramento.
- California Department of Parks and Recreation, Off-highway Recreation Division [CDPR]. 2019. Nesting of the California Least Tern and Western Snowy Plover at Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California, 2019 Season. Unpublished Report. 174pp.
- California Department of Parks and Recreation, Off-highway Recreation Division [CDPR]. 2020. Nesting of the California Least Tern and Western Snowy Plover at Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California, 2020 Season. Unpublished Report, CDPR, Off-Highway Recreation Division. 187pp.
- California Department of Parks and Recreation, Off-highway Recreation Division [CDPR]. 2021. Nesting of the California Least Tern and Western Snowy Plover at Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California, 2021 Season.

- Unpublished Report, CDPR, Off-Highway Recreation Division.
- California Department of Parks and Recreation, Off-highway Recreation Division [CDPR]. 2022. Nesting of the California Least Tern and Western Snowy Plover at Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California, 2022 Season. Unpublished Report, CDPR, Off-Highway Recreation Division.
- California Department of Parks and Recreation, Off-highway Recreation Division [CDPR]. 2023. Nesting of the California Least Tern and Western Snowy Plover at Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California, 2023 Season. Unpublished Report, CDPR, Off-Highway Recreation Division.
- California Department of Parks and Recreation, Off-highway Recreation Division [CDPR]. 2024. Nesting of the California Least Tern and Western Snowy Plover at Oceano Dunes State Vehicular Recreation Area, San Luis Obispo County, California, 2024 Season. Unpublished Report, CDPR, Off-Highway Recreation Division.
- Carillo, C.D. 2004. Predator management for the protection of the endangered California Least Tern and Documentation of Bullsnae predation in San Diego County, California.
- Cogswell, H. L. 1977. Water Birds of California. University of California Press, Berkeley and Los Angeles, CA. 399 pp.
- Craighead, J.J., and F.C. Craighead. 1956. Hawks, Owls and Wildlife. Stackpole and Wildlife Management Institute; 1st Edition. 443pp.
- Craig, A.M. 1971. Survey of California least tern nesting sites. California Department of Fish and Game, Spec. Wildl. Investigations, Proj. W-54-R-4, Job Final Report, II-5.1. 7 pp + app.
- Craig, R. B. 1978. An analysis of the predatory behavior of the Loggerhead Shrike. *The Auk* 95(2): 221-234.
- Frost, N. 2015. California least tern breeding survey, 2015 season. California Department of Fish and Wildlife, Wildlife Branch, Nongame Wildlife Program Report, 2016-01. Sacramento, CA. 24 pp + Appendices.
- Frost, N. 2017. California least tern breeding survey, 2015 season. California Department of Fish and Wildlife, Wildlife Branch, Nongame Wildlife Program Report, 2017-03. Sacramento, CA. 20 pp + Appendices.
- Gehrt, S.D. 2007. Ecology of coyotes in urban landscapes. *Proceedings of the 12th Wildlife Management Conference*. Pages 303–311.
- Hamerstrom, F., F. Hamerstrom, and C. Burke. 1985. Effect of voles on mating systems in a central Wisconsin population of harriers. *Wilson Bulletin* 97:332–346.
- Hull, B., and P. Bloom. 2001. The North American banders' manual for raptor banding techniques. Report prepared for The North American Banding Council, Point Reyes Station, California, USA. 25 pp.
- Johnston, R. F. 2001. The synanthropic birds of North America, p. 49-67. In J. M. Marzluff, R. Bowman, and R. Donnelly [EDS.], *Avian ecology and conservation in an urbanizing world*. Kluwer Academic, Norwell, MA.
- Lau, M.J., King, T.R., & Press, D.T. 2017. Observation of a Great Horned Owl inside a Western

- Snowy Plover nest exclosure. Wader Study. 124. 10.18194/ws.00059.
- Liebezeit, J.R. and T.L. George. 2002. A Summary of Predation by Corvids on Threatened and Endangered Species in California and Management Recommendations to Reduce Corvid Predation. Calif. Dept. Fish and Game, Species Conservation and Recovery Program Rpt. 2002-02, Sacramento, CA. 103 pp
- Lutmerding, J. A. and A. S. Love. 2020. Longevity records of North American birds. Version 2020. Patuxent Wildlife Research Center, Bird Banding Laboratory 2020.
- Manley, S. J. and R. B. Johnson. 2019. Predator management and research to protect California least tern and western snowy plover, at Naval Base Coronado, San Diego, California.
- Marschalek, D.A. 2009. California least tern breeding survey, 2008 season. California Department of Fish and Game, Wildlife Branch, Nongame Wildlife Program Report, 2009-02. Sacramento, CA. 23 pp.
- Marschalek, D.A. 2012. California least tern breeding survey, 2011 season. California Department of Fish and Game, Wildlife Branch, Nongame Wildlife Program Report, 2011-02. Sacramento, CA. 72 pp.
- Marzluff, J.M., K.J. McGowan, R. Donnelly, and R.L. Knight. 2001. Causes and consequences of expanding American Crow populations. In J. M. Marzluff, R. Bowman, and R. Donnelly [EDS.], Avian ecology and conservation in an urbanizing world. Kluwer Academic, Norwell, MA
- Massey, B.W. 1988. California Least Tern Field Study, 1988 Breeding Season. Final Report to California Department of Fish and Game, Contract FG 7660. 22 pp.
- Migratory Bird Permit Office. 2013. Guidance for avian predator trapping and relocation to protect threatened and endangered species in California. Migratory Bird Permit Office. Pacific Southwest Region, U.S. Fish and Wildlife Service. 20 pp.
- Neuman, K.K., G.W. Page, L. E. Stenzel, J. C. Warriner, and J. S. Warriner. 2004. Effect of mammalian predator management on snowy plover breeding success. Waterbirds: Journal of the Waterbird Society 27:3 257-376 pp.
- Rienschke, D.L., S.C. Gidre, N.A. Beadle, and S.K. Rienschke. 2015. Western snowy plover (*Charadrius alexandrinus nivosus*) nest site selection and oyster shell enhancement. Western Wildlife 2:38-43.
- Sauer, J. R., D. K. Niven, J. E. Hines, J. D. J. Ziolkowski, K. L. Pardieck, J. E. Fallon, and W. A. Link. 2017. The North American Breeding Bird Survey, Analysis Results 1966 - 2015.
- Sin, H. 2021. California least tern breeding survey, 2017 season. California Department of Fish and Wildlife, Wildlife Branch, Nongame Wildlife Program Report, 2021-03. Sacramento, CA. 20 pp + Appendices.
- Sin, H., C. Clatterbuck, and K. Rice. 2024. California least tern breeding survey, 2018-2019 season. California Department of Fish and Wildlife, Wildlife Branch, Nongame Wildlife Program Report, 2024-01-22. Sacramento, CA. 23 pp + Appendices.
- Smith, D.G. and J.R. Murphy. 1973. Breeding Ecology of raptors in the eastern Great Basin of Utah. Brigham Young University Science Bulletin, Biological Series: Vol. 18: No. 3,

Article 1.

- Toland, B.R. 1987. The effect of vegetative cover on foraging strategies, hunting success and nesting distribution of American kestrels in central Missouri. *Journal of Raptor Research*. 21(1): pp14–20.
- U.S. Fish and Wildlife Service [USFWS]. 1973. Threatened Wildlife of the United States. Bureau of Sport Fisheries and Wildlife. Resource Publication 114. Washington, DC: U.S. Govt Printing Office.
- U.S. Fish and Wildlife Service [USFWS]. 1980. California least tern recovery plan. U.S. Fish and Wildlife Service, Region 1. Portland, OR. 58 pp.
- U.S. Fish and Wildlife Service [USFWS]. 1985. Recovery plan for the California least tern, *Sterna antillarum brownii*. U.S. Fish and Wildlife Service, Portland, OR. 112 pp.
- U.S. Fish and Wildlife Service [USFWS]. 1988. Red Fox Removal Program at Seal Beach National Wildlife Refuge, U.S. Naval Weapons Station. Seal Beach, CA 90740. 36 pp.
- U.S. Fish and Wildlife Service [USFWS]. 1993. Endangered and threatened wildlife and plants: determination of threatened status for the Pacific coast population of the western snowy plover. *Federal Register*. 58(42): 12864–12874.
- U.S. Fish and Wildlife Service [USFWS]. 2006. California Least Tern, *Sternula antillarum browni*, 5-year review summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California.
- U.S. Fish and Wildlife Service [USFWS]. 2007. Recovery plan for the Pacific coast population for the western snowy plover (*Charadrius alexandrinus nivosus*). U.S. Fish and Wildlife Service, Sacramento, California.
- U.S. Fish and Wildlife Service [USFWS]. 2019. Pacific coast population for the western snowy plover (*Charadrius alexandrinus nivosus*). 5-year review summary and evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California.
- Velasco, V. N. 2015. Investigation of non-lethal electric shock on American crows as a predator aversion treatment for reducing depredation on California least tern eggs. LMU/LLS
- Wooten T., R. Smith, G. Ibarguchi, A. Aguiar, I. Vilchis, and R. Swaisgood. 2016. Status of California Least Terns Breeding at Marine Corps Base, Camp Pendleton, California, 2016. Report prepared for Department of the Navy, Environmental Core, Naval Facilities Engineering Command Southwest, San Diego, CA, under Agreement Number N62473-15-2-0002 Mod 2. San Diego Zoo Institute for Conservation Research, Escondido, CA.
- Wooten T., R. Smith, G. Ibarguchi, A. Aguiar, I. Vilchis, and R. Swaisgood. 2017. Status of California Least Terns Breeding at Marine Corps Base, Camp Pendleton, California, 2017. Report prepared for Department of the Navy, Environmental Core, Naval Facilities Engineering Command Southwest, San Diego, CA, under Agreement Number N62473-15-2-0002 Mod 2. San Diego Zoo Institute for Conservation Research, Escondido, CA.
- Wooten T., R. Smith, G. Ibarguchi, A. Aguiar, J. Schuetz, I. Vilchis, and R. Swaisgood. 2018. Status of California Least Terns Breeding at Marine Corps Base, Camp Pendleton, California, 2018. Report prepared for Department of the Navy, Environmental Core, Naval Facilities Engineering Command Southwest, San Diego, CA under Agreement Number

- N62473-15-2-0002. San Diego Zoo Global, Institute for Conservation Research, Escondido, CA.
- Wooten T., A. Aguiar, R. Smith, I. Vilchis., R. and Swaisgood. 2019. Monitoring of Nesting California Least Terns on Marine Corps Base Camp Pendleton, California. 2019. Annual Report. Report prepared for Department of the Navy, Environmental Core, Naval Facilities Engineering Command Southwest, San Diego, CA under Agreement Number N62473-20-2-004
- Wooten T., A. Aguiar, E. Oey, L. Vilchis, and R. Swaisgood 2021. Monitoring of Nesting California Least Terns and Western Snowy Plovers on Marine Corps Base Camp Pendleton, California. 2021. Annual Report. Report prepared for Department of the Navy, Environmental Core, Naval Facilities Engineering Command Southwest, San Diego, CA under Agreement Number N62473-20-2-004
- Zimmerman, P.P. 2008. Nocturnal predation of California least terns at a southern California least tern colony. M.S. Thesis. Humboldt State University. 50pp.



WILDLIFE HEALTH LABORATORY
California Department of Fish and Wildlife
1701 Nimbus Road, Suite D
Rancho Cordova, CA 95670
Phone: (916) 358-2790/Fax: (916) 358-2814
Necropsy Report

FINDINGS MAY NOT BE DISTRIBUTED OR PUBLISHED WITHOUT CDFW & PATHOLOGIST PERMISSIONS
- FINAL RESULTS -

WHL Case ID: Z25-0253		Species: Western Snowy Plover	Animal ID: ISP2006
Collection: 2/4/2025	Submission: 2/25/2025	Sex: Female	Age: Adult
City, County, State: Oceano, San Luis Obispo Co., CA		Postmortem Condition: Fair	
Submitter Information: California State Parks		Laboratory Contact: Krysta Rogers Wildlife Health Laboratory California Dept. of Fish and Wildlife Email: Krysta.Rogers@wildlife.ca.gov Phone: (916) 531-7647	

Clinical History: A western snowy plover (*Charadrius nivosus nivosus*) was found dead on the ground near post 2.5 in the riding area of Oceano Dunes State Vehicular Recreation Area, Oceano, California, in San Luis Obispo County on February 4, 2025. The carcass was stored frozen until submitted to the CDFW WHL on February 25, 2025.

Summary of Findings: The snowy plover is aged as an adult (after hatch year). The plover is in fair postmortem condition with mild autolysis. The flight feathers are in fair condition. Blood is noted around the right eye and in the oral cavity. The plover weighs 44 grams at necropsy and is in fair nutritional condition with adequate fat reserves and well-developed pectoral muscles. Internally, the muscles are light red in color. The heart is red and contains clotted blood in the atria. The lungs are red and congested with blood. The right liver lobe appears fractured and clotted blood is present in the body; the left liver lobe is pink in color with sharp margins. The spleen is small and pale. The kidneys are pink. The stomach contains scant food debris. The intestines appear expanded and somewhat pale. The ovary has mildly enlarged follicles. Significant bruising is present on the head and neck, especially along the dorsal skull and upper neck (Fig. 1a). There is a roughly lateral fracture of the dorsal skull (Fig. 1b). Blood is present in the bone of the skull (Fig. 1b) and the brain is reddened.

Laboratory Findings/Diagnosis: Trauma (suspect vehicle collision)

Ancillary testing:

- Avian influenza not detected by PCR (oropharyngeal/cloacal swabs)

Comments: Cause of death for this adult female snowy plover was trauma. Evidence of trauma included severe bruising on the dorsal head and upper neck; the dorsal skull was fractured. The right liver lobe also appeared fractured with associated bleeding. These findings are consistent with collision-type trauma. Given the location where this plover was found, a vehicle collision is suspected.

Gross necropsy performed at CDFW WHL on 2/26/2025.
Ancillary testing completed at CAHFS, Davis on 3/5/2025.



WILDLIFE HEALTH LABORATORY
California Department of Fish and Wildlife
1701 Nimbus Road, Suite D
Rancho Cordova, CA 95670
Phone: (916) 358-2790/Fax: (916) 358-2814
Necropsy Report

FINDINGS MAY NOT BE DISTRIBUTED OR PUBLISHED WITHOUT CDFW & PATHOLOGIST PERMISSIONS
- FINAL RESULTS -

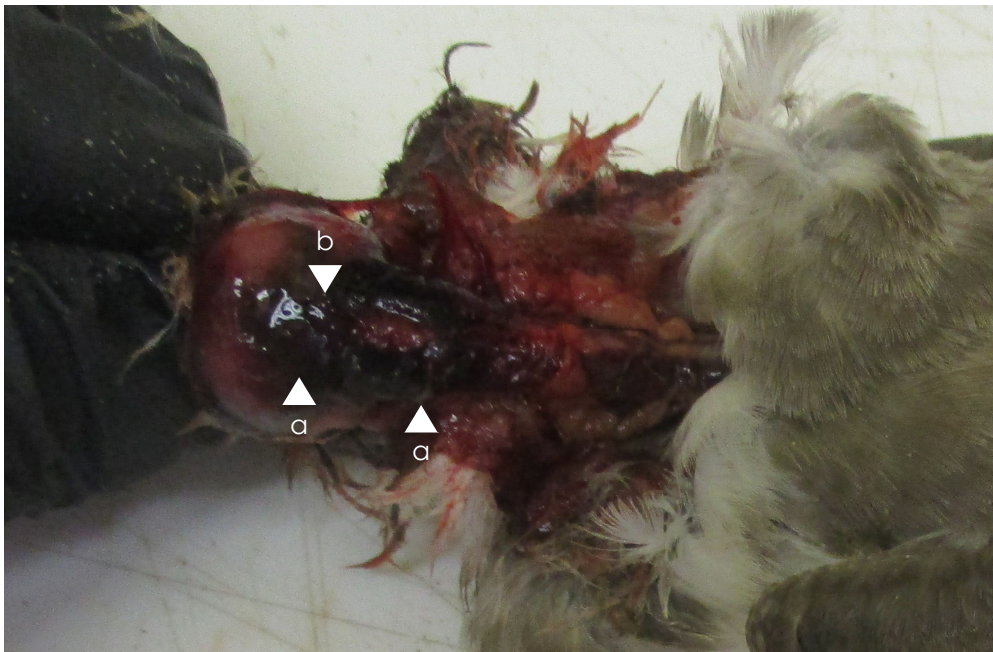


Figure 1. Dorsal view of the skull and neck with the skin reflected. (a) Extensive bruising is present along the dorsal skull and upper neck (arrowheads). (b) A roughly lateral fracture is present on the dorsal skull (arrowhead).



California Department of Fish and Wildlife, Office of Spill Prevention and Response
Marine Wildlife Veterinary Care and Research Center, 151 McAllister Way, Santa Cruz, CA 95060
Data contained in this report not to be published without knowledge and support of CDFW -MWVCRC

Shorebird Mortality Necropsy Report

NECROPSY NUMBER: 25-0277, 25-0278, 25-0280

OTHER IDENTIFICATION: N/A

COMMON NAME: Snowy Plover

SCIENTIFIC NAME: *Charadrius nivosus*

DATE FOUND: 5/12/25 (25-0277), 6/16/25 (25-0278), 7/20/25 (25-0280)

COUNTY: San Luis Obispo County

STATE: CA

NECROPSY DATE: 10/29/2025

REPORT DATE: 11/12/2025

NECROPSY BY: Corinne Gibble

Background

25-0277 - On May 12, 2025, Oceano Dunes State Vehicular Recreation Area (ODSVRA) staff found a relatively fresh carcass of a western snowy plover in the open riding and camping area of Oceano Dunes State Vehicular Recreation Area. The unbanded bird was located approximately 200 feet east of the foredune restoration site in an area with active vehicle tracks.

25-0278 – On June 16, 2025, ODSVRA biologists watched a young snowy plover fledge (29-30 days old) spasm, fall over and die. The carcass was collected soon after and was placed in a freezer. The bird had been seen the prior day with no abnormal behavior noted. The bird was found in an area that was closed to visitors.

25-0280 - On July 20, 2025, an unbanded adult snowy plover was observed to be convulsing nearby ODSVRA biologists while two unbanded chicks (11 days old, SB248) attempted to brood with it. This occurred approximately 60 ft east of the west fence of the enclosure and away from the area open to public camping and driving (over 1,000 feet). The two chicks were later observed to be led away by what was believed to be a second attending adult at the time. The injured bird was then collected and soon died while in transit to a rescue facility. While in hand, the biologists reported that the bird appeared to have a broken neck: large protrusion from neck area on birds left side and head in opposite direction from body (see photos for details). No injury was noted the day prior.

After collection, all birds were stored frozen and sent to the Marine Wildlife Veterinary Care and Research Center (MWVCRC) for gross necropsy.

Necropsy Summary

All birds were swabbed for Highly Pathogenic Avian Influenza (HPAI) prior to necropsy, and all results were negative.

25-0277 – At gross necropsy, externally the eyes were sunken, and the mouth was dry with sand and blood covering the exterior and interior. Internally, this bird was an adult male in good nutritional body condition. The liver was congested and there was pallor of the kidneys. There is bruising and hemorrhage found at the right side of the keel and on the dorsal side of the keel plate. There was bruising and hemorrhage on the spine and a severe acute fracture to the left tibia with associated bruising and hemorrhage at the left leg insertion. There was severe acute hemorrhage and bruising in and around the brain tissue and bruising visible at the neck. There was multifocal acute fracturing of the skull on the right side with hemorrhage and bruising surrounding the skull. No gross evidence of pre-existing disease or postmortem scavenging was found.

25-0278 - Radiographic images showed an intact chick carcass with no obvious fractures, but a pattern in the neck resembling torticollis. External examination confirmed obvious torticollis (abnormal, asymmetrical head or neck position, which may be due to a variety of causes). At gross necropsy, externally the eyes are sunken, and there was blood at the mouth and covering the head feathers. Internally, this was a juvenile (chick) male bird in good nutritional body condition. Major organs were within the normal limits of health, bright in color, and with no lesions present. There was bilateral bruising of the brain near the rear of the skull and associated mild vascular congestion was found in the musculature near the insertion of the skull (presumptive: related to strain from torticollis). The neck is quite curved and rigid consistent with torticollis (presumptive: congenital). No gross evidence of pre-existing disease or postmortem scavenging was found.

25-0280 – At gross necropsy, externally the eyes were sunken the mouth was dry with sand and blood covering the exterior and interior. This was an adult male bird in good body condition. There was bruising along the keel and mild displacement. There was vascular congestion in the liver and kidneys, and hemorrhage within the coelomic cavity. Bruising and hemorrhage were found at the back of the skull near the cerebrum. There was bruising and hemorrhaging at the back of the neck. There was a hairline fracture on the right side of the skull. No gross evidence of pre-existing disease or postmortem scavenging was found.

Completed Tests and Procedures

- 1.) Gross photographs
- 2.) Radiographs
- 3.) Gross necropsy with standard morphometrics

Final Diagnoses

25-0277 - Presumptive cause of death: Acute, crush trauma

25-0278 - Congenital or infectious disease (presumptive), causing torticollis, which was characterized by marked lateral displacement of head and neck

25-0280 - Presumptive cause of death: Acute, trauma

Radiographic Images



Radiographs of SNPL 25-0277 showing acute fractures to left leg and skull.



Radiographs of SNPL 25-0278 showing torticollis of neck with no fractures.



Radiographs of SNPL 25-0280 showing mild keel displacement and hairline fracture to the skull.

CASE#: 25-2448

SPECIES: SNOWY PLOVER

Date Admitted 8/28/2025 1:30 pm

Band

Name

Reference Number

Microchip Number

Intake

Admitted By: Sari Pinto

Address Found: South shore of Oso Flaco Oceano, CA United States

Date Found: 8/28/2025

Reasons for Admission: injured leg

Care by Rescuer:

Notes About Rescue: Brought in by Soledad Arguello 805 202 1252

Intake Exam

Dehydration: None

Weight: 19.50g

Sex: Unknown

Age: Hatchling / Chick

Attitude: Alert

BCS: Reasonable

Mucous Membrane Color:

Temperature

Body Area:

Comments:

Eyes / Ears / Mouth / Nares

No significant findings

Neurologic

No significant findings

Heart / Lungs

No significant findings

GI / Vent

No significant findings

Musculoskeletal

No significant findings

Feathers / Fur / Skin

No significant findings

Body

No significant findings

Wings / Arms

No significant findings

Legs / Feet / Hocks

Abnormal : Missing distal tip R D3. Large, deep wound along caudal surface distal R TMT.

Comments: Removed all bands. Wound on R TMT appears to correspond w/distal band (purple) on that leg. Cleaned w/saline.

When eschar/debris removed, wound full-thickness, exposing bone. Applied redi-heal to site. Covered w/telfa and tape. Using leg quite normally. Gave oral meds. Recheck tomorrow.

Treatments: Removed bands, cleaned/dressed wound, meloxicam, tramadol, enrofloxacin, clindamycin, ivermectin**Examiner:** SR/Finley

Diagnosis

Constriction injury, R TMT

Treatment Log

Date:	Type:	Comments:
Sep 5, 2025 5:41 pm	Treatment Log	BAR. Decent body condition. Changed dressing on R TMT. Wound continuing to fill in well. Replaced dressing as before. Tape splint on L D3 coming off. Removed. Toe still deviating so elected to place shoe for better alignment. At that point, bird went limp and was found to be in respiratory and cardiac arrest. Could not revive. SR/Sarah

Sep 3, 2025 5:19 pm Treatment Log

BAR. Decent body condition. Finley noticed deviation of L D3. Sedated w/midazolam and butorphanol. Removed dressing, R TMT. Wound continuing to fill in and remains vascular and clean. Cleaned surface w/saline and removed loose dressing material. Replaced redi-heal and covered w/telfa and tape. Splinted L D3 w/tape. Recheck Friday. SR/Finley

Sep 3, 2025 Prescription

RX: 0.01ml of 5mg/ml Midazolam 2mg/kg im sd. from 9/3/2025 until 9/3/2025

Sep 3, 2025 Prescription

RX: 0.02ml of 2mg/ml Butorphanol 2mg/kg im sd. from 9/3/2025 until 9/3/2025

Sep 1, 2025 1:26 pm Treatment Log

BAR. Decent body condition. Continues to use R leg normally. Changed wound dressing. Bone covered w/layer of fibrinous material. Cleaned w/saline. Applied redi-heal gel, telfa, tape. Continue meds. Recheck Thursday. SR/Alyssa

Aug 31, 2025 12:52 pm Patient Location

Moved to TA Entry

Aug 31, 2025 Lab Values

FECAL: Float=Negative, Direct=Negative. Technician: vm

Aug 29, 2025 4:49 pm Treatment Log

BAR. Decent body condition. Using R leg well. Changed dressing on wound. Redi-heal adhering to surface of bone already. Cleaned away loose debris. Applied redi-heal gel and covered w/telfa and tape. Recheck Monday. SR/Danielle

Aug 29, 2025 4:46 pm Patient Location

Moved to BBR

Aug 28, 2025 1:36 pm Patient Location

Moved to TXR

Aug 28, 2025 Prescription

RX: 0.01ml of 1mg/ml Ivermectin 0.4mg/kg po sd. from 8/28/2025 until 8/28/2025

Aug 28, 2025 Prescription

RX: 0.02ml of 25mg/ml Tramadol 30mg/kg po bid. from 8/28/2025 until 9/3/2025

Aug 28, 2025 Prescription

RX: 0.03ml of 1.5mg/ml Meloxicam 2mg/kg po bid. from 8/28/2025 until 9/1/2025

Aug 28, 2025 Prescription

RX: 0.01ml of 22.7mg/ml Enrofloxacin 15mg/kg po bid. from 8/28/2025 until open

Aug 28, 2025 Prescription

RX: 0.02ml of 25mg/ml Clindamycin 25mg/kg po bid. from 8/28/2025 until open

Aug 28, 2025 Exam

Intake Exam: Weight: 19.50g Age: Hatchling / Chick Sex: Unknown BCS: Reasonable Dehydration: None Attitude: Alert Legs / Feet / Hocks: Missing distal tip R D3. Large, deep wound along caudal surface distal R TMT. Comments: Removed all bands. Wound on R TMT appears to correspond w/distal band (purple) on that leg. Cleaned w/saline. When eschar/debris removed, wound full-thickness, exposing bone. Applied redi-heal to site. Covered w/telfa and tape. Using leg quite normally. Gave oral meds. Recheck tomorrow. Treatment: Removed bands, cleaned/dressed wound, meloxicam, tramadol, enrofloxacin, clindamycin, ivermectin Examiner: SR/Finley

Disposition

Disposition: Died +24hr**Criminal Activity?:****Transfer Type:****Disposition Date:** 9/5/2025**Carcass Saved?:****Release Type:****Reason for Disposition:****Disposition Location:** PWC CA

Egg Processing Guidelines

Overview of developmental stages and landmarks

H&H stages	Chicken	Ostrich		
	Age of egg (days)	Age of egg (days)	Major landmarks	
1	0	0	Early Embryonic Development	Gradual enlargement of blastoderm causing visible bump on yolk
7	1	2		Blood island formation, head and heart distinguishable
13	2	4		Head fully turned onto left side, blood vessels becoming obvious
18	3	6		Head bent over 90 degrees from body trunk
20	3-5	7	Mid Embryonic Development	Eye pigment visible
23	4	8		Tailed turned onto left side, limbs visible
26	5	10		Beak visible
28	6	12		Egg tooth visible
31	7	14		Joints on limbs visible
33	8	16		Eye ball surrounded by scleral papillae (small white dots in eye)
35	9	18		Digits separate, feather germs visible
36	10	20		Nictitating membrane covers front of eye, flight feather germ visible
37	11	22		Claws on wing and toes visible
38	12	24		Eyelid opening reduced
39	13	26		Eye opening very narrow
40	14	28	Late Embryonic Development	Eye closed, urates visible, limbs progressively larger
41	15	30		
42	16	32		
43	17	34		
44	18	36		Aircell draw down, embryo getting into hatch position
45	19-20	38-40		Internal pip, external pip, yolk sac absorption
46	20-21	42		Hatch

Modified from Hamburger and Hamilton 1951

Excerpt taken from: Jensen, T., P. Witman, N. LaGreco, and J. Theule. 2019. *A Practical Guide to Avian Embryonic Development: Developmental Stages of the Avian Embryo*. San Diego Zoo Wildlife Alliance.