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2025 Final Report on the Western Snowy Plover

Coal Oil Point Reserve
University of California
Santa Barbara, CA

Cristina Sandoval, Jessica Gray, and Armando Aispuro

Permit Number **TE073205-5**

Date of Preparation: March 12th, 2026

Site: Sands Beach, Coal Oil Point Reserve (COPR)

Location: RU5, Santa Barbara, CA

Lat-Long: 34 25 00 N, 119 52 30 W

USGS maps: Goleta 7.5, Dos Pueblos Canyon 7.5, Goleta 15

Jurisdiction: Owned and managed by the University of California Santa Barbara.

Climate: Avg precip 14-21 in/year, avg min temp 42 F, avg max temp 75 F

Total linear beach length: 1,200 m

Protected linear beach length: 300-400 m during wintering season and 800 m during the breeding season

Protected area during breeding season: 30,700 sq meters or 7.6 acres

Docent program? Yes, all year, most daylight hours

Interpretive and regulatory signs? Yes, at beach entrances and fences

Management Plan? Yes

Enforcement? Docents request compliance with leash law and restricted areas. Officers are called when problem is not solved.

Monitoring: Yes, weekly in the winter and fall and 3-4 times per week in the spring and summer.

Predator management: Crow deterrence, fencing to prevent skunk, predator control, predator exclosures as needed.

TABLE OF CONTENTS

ABSTRACT 4
INTRODUCTION 4
METHODS AND RESULTS 5
Protected Areas 6
Monitoring of the Wintering Population 7
Monitoring of the Breeding Population 8
Monitoring Nest and Chick Fate 9
Nest Predation 15
Chick Survival 18
Nest Phenology 22
Intervention and Rehabilitation 23
Location of Nests 27
Enforcement 30
Docent Program and Beach Use 30
CONCLUSION 37
RECOMMENDATIONS 38
ACKNOWLEDGEMENTS 39
California Least Terns 39
Bibliography 40
APPENDIX A. Band sightings at the reserve 41
APPENDIX B. USDA Report 43
APPENDIX C. Nesting data from adjacent WSP habitats 45
APPENDIX D. California Least Tern nesting data at COPR 46

ABSTRACT

In 2025, we monitored the Western Snowy Plover (WSP) population at Coal Oil Point Reserve (COPR) as in previous years. The USFWS Recovery Plan's management potential for the number of breeding adults at COPR is 25. During the breeding window survey, the number of breeding adults was 68 - higher than the average of 39 for our site. During the wintering survey, the population size was 129 - below the average of 168. Flooding from high tides was the primary cause of nest failure. The hatching rate in 2025 was 67%, higher than the average (53%), and the fledging rate was average at 63%. The number of fledged chicks per male (1.97) exceeded our site's recovery goal of a minimum 1.0 fledged chicks per male. Most nests (80) were initiated on Sands Beach, while 4 were initiated on the mudflats of the Devereux Slough (delta). The nesting success of the Snowy Plover breeding population at Coal Oil Point Reserve can be directly attributed to the active management of human and dog disturbances to the nesting habitat. Prior to the implementation of conservation management in 2001, Snowy Plovers had not nested at this site for 30 years due to human impacts.

INTRODUCTION

Sands Beach at Coal Oil Point Reserve (COPR; Figure 1) is part of the University of California Natural Reserve System. The entire reserve, including Sands Beach, is designated as an Environmentally Sensitive Area by the California Coastal Commission. Sands Beach was also designated a "critical habitat" in the recovery of the threatened WSP (USFWS Western Snowy Plover Recovery Plan). Additionally, the National Audubon Society has deemed the reserve as an "Important Bird Area" because of the many migrating, wintering and breeding shorebirds that use it. Sands Beach sustains an average wintering population of 168 WSP and an average breeding population of 39. The lower beach, below the high tide line, is open to the public all year. Most of the dry sandy upper beach, where plovers nest and congregate while resting, is protected by a symbolic fence.

Parts of Sands Beach are open to the public for passive recreation (sunbathing, walking, and surfing). Managing public access to the beach has been essential in protecting the wildlife resources of Sands Beach in perpetuity. Active management to protect WSP began in 2001 and resulted in the reestablishment of a breeding population of WSP that had been lost for over 30 years and a general

increase in the wintering population (Lafferty, 2001a, 2001b and 2005). The most significant action that supported reestablishment of nesting at Sands Beach was the elimination of recreational public use on the upper beach habitat where Snowy Plovers nest. This is the primary area used by WSP for resting and nesting. Additionally, in 2001, a docent program was initiated to help inform visitors about the restricted areas and other reserve regulations. The docents provide direct communication with beach goers to encourage them to avoid sensitive areas and follow the posted beach regulations. This program resulted in the return of a breeding population at COPR and an increase in awareness by beach goers.

Enforcement of the Santa Barbara County leash laws has been sporadic and citations are rarely given. In 2017, the California Coastal Commission approved an amendment to the UC Santa Barbara Long Range Development Plan (LRDP) to prohibit dogs at Sands Beach. This prohibition was an attempt to eliminate the chronic issue of unleashed dogs at Sands Beach.

Starting in April 2024, the reserve replaced the 'leashed dog policy' with a 'no dogs policy.' In 2025, the estimated number of dogs arriving at the beach over the year was reduced by almost 2,000 dogs compared to the number of dogs on the beach in 2023, a 58% reduction in annual number of dogs (Figure 17, Figure 18). Despite these measures, some dogs were still coming to Sands Beach. In these cases, the docents talked about the new policy to dog owners. After contact with a docent, an additional 864 dogs left the beach resulting in an 86% reduction in annual number of dogs. Our goal for each year is to continue to inform the community to reduce the number of dogs on the beach to nearly zero.

METHODS AND RESULTS

The reserve staff monitors the WSP population and several aspects of beach use by the public. These include the number of people on the beach and in the ocean, number of trespassers, and dogs per hour. Standard protocols were established in 2001 to ensure that staff and regulatory agencies can rely on the data to understand trends, measure performance standards and goals, and evaluate the need for new actions. COPR staff uses a scientific approach to gather and interpret data which is applied to guide an adaptive management approach for protecting the WSP and other wildlife. This approach is also in accordance with the UC Natural Reserve System's mission of stewardship and conservation. The

protection of natural resources at Sands Beach is described in detail in the COPR Beach Access Management Plan (Sandoval, 2019).

Protected Areas

In 2025, we continued the same management practices established in the 2020 Snowy Plover and Beach Access Management Plan (Sandoval, 2020). Figure 1 shows the plover habitats and all plover nest locations since the reestablishment of the breeding population, and the maximum extent of the symbolic fences. The exact position of the fences varies based on tides and season, and whether the slough mouth is open. When the slough mouth is open, a portion of the fencing is removed to prevent it from being washed away. In the last several years, the entire fence had to be removed in the winter due to beach erosion. In these cases, protection of the upper beach habitat from trespassers is provided by a few signs on the dunes and the docents, who request trespassers to leave the area behind the signs (Photo 1). The entire Sands Beach is designated 'critical habitat' for WSP. Two decades of nest data encompassing over 1,000 nests shows that the highest density of nests was established in this area (Figure 1).

Photo 1. Signs along the protected area inform the visitors where to walk when on Sands Beach.

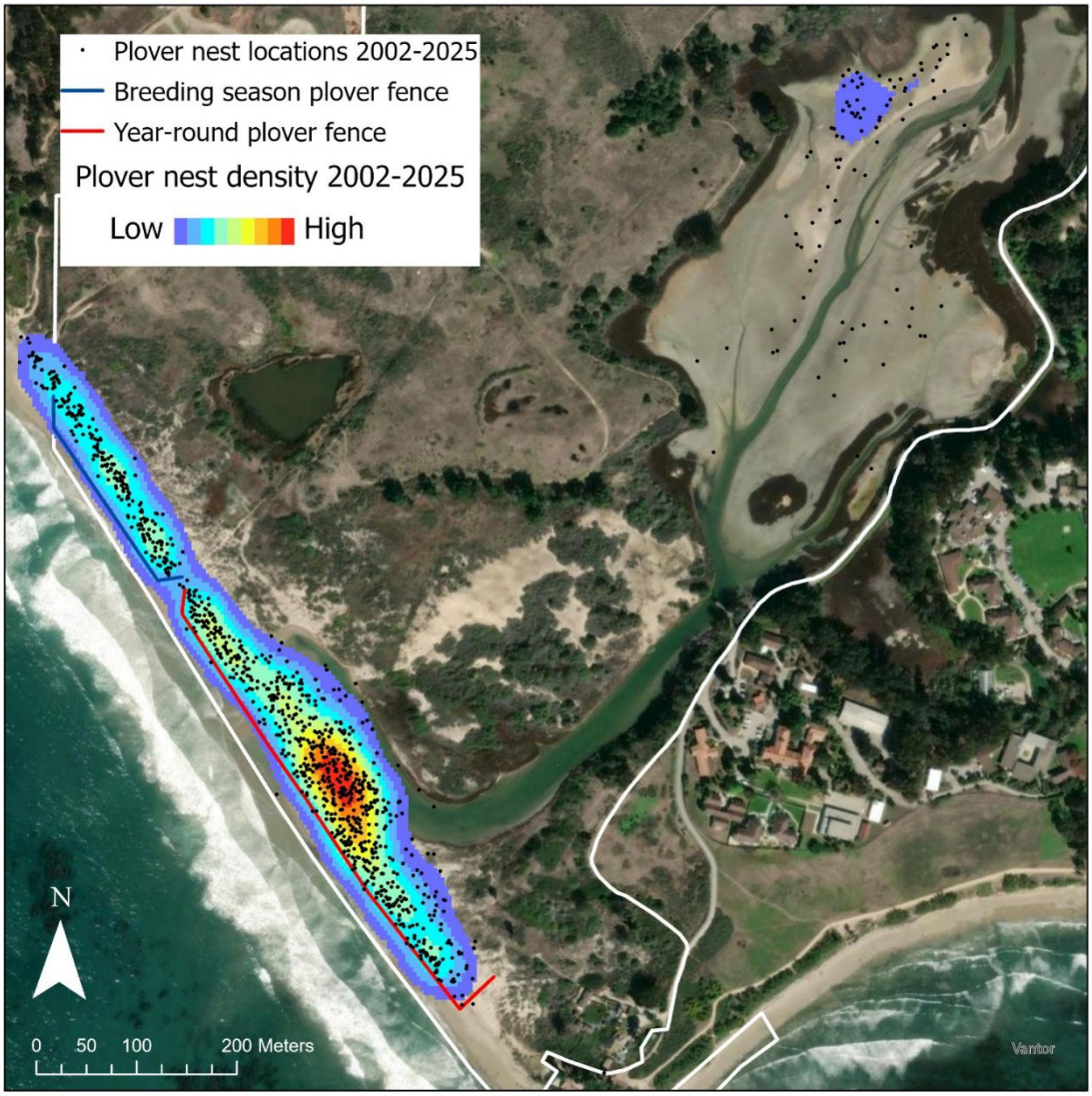

Figure 1. Critical habitat protected by symbolic fencing for WSP at Coal Oil Point Reserve and location of nests since the reestablishment of the breeding population in 2001. The heat map illustrates the density of nests from all the years.

Monitoring of the Wintering Population

During the wintering season, we counted wintering WSP and checked for banded individuals once a week. To count WSP, we walked along the wet sand from the eastern to western boundaries of Sands Beach recording all individuals seen with binoculars. On the way back, we checked for color bands by approaching WSP just enough for them to stand up making the legs visible. During the 2025 winter

window survey, we recorded 129 WSP (Figure 2). The average count of WSP during the winter window survey at COPR since 2001 is 168 individuals.

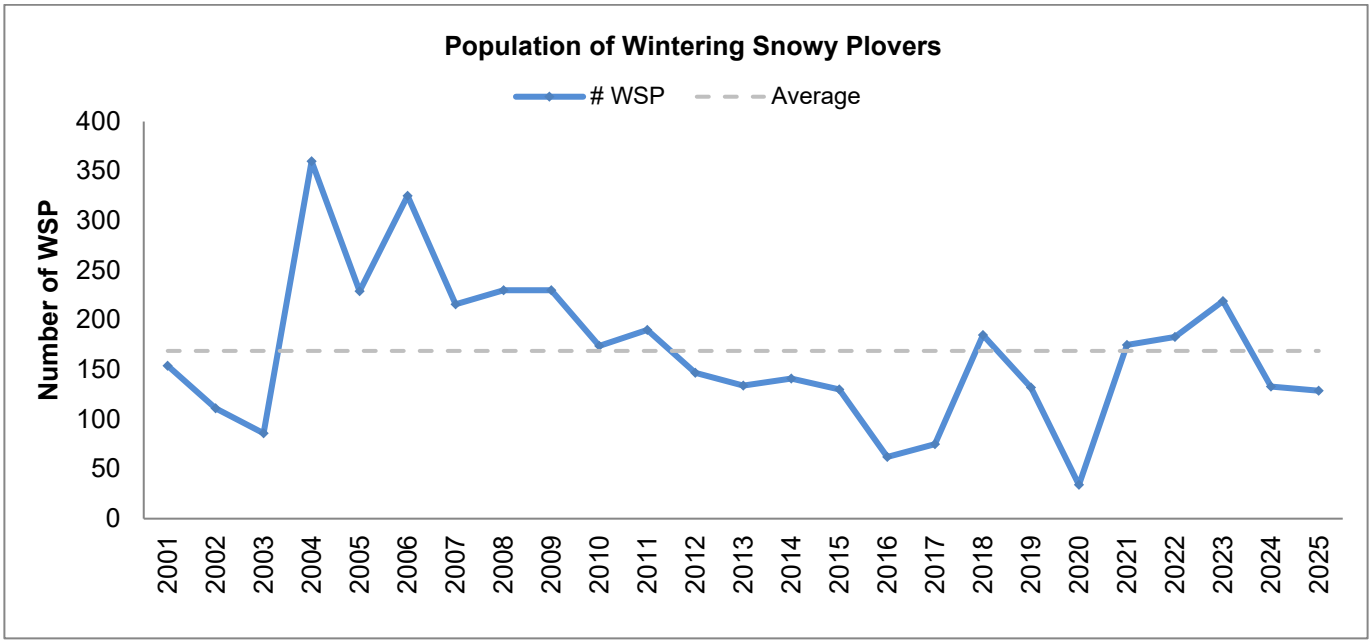

Figure 2. Counts of WSP during the winter window surveys at Coal Oil Point Reserve. *Average line represents the average from 2001-2025.*

Monitoring of the Breeding Population

For the annual breeding window survey, we counted WSP with the same method as in the wintering season window survey. We recorded 68 WSP during the 2025 breeding window survey, which is higher than the average (39) for COPR. The graph below shows that the number of breeding adults increased right after the implementation of the management plan in 2001 and has reached a mean of 39 adults since 2001 (Figure 3).

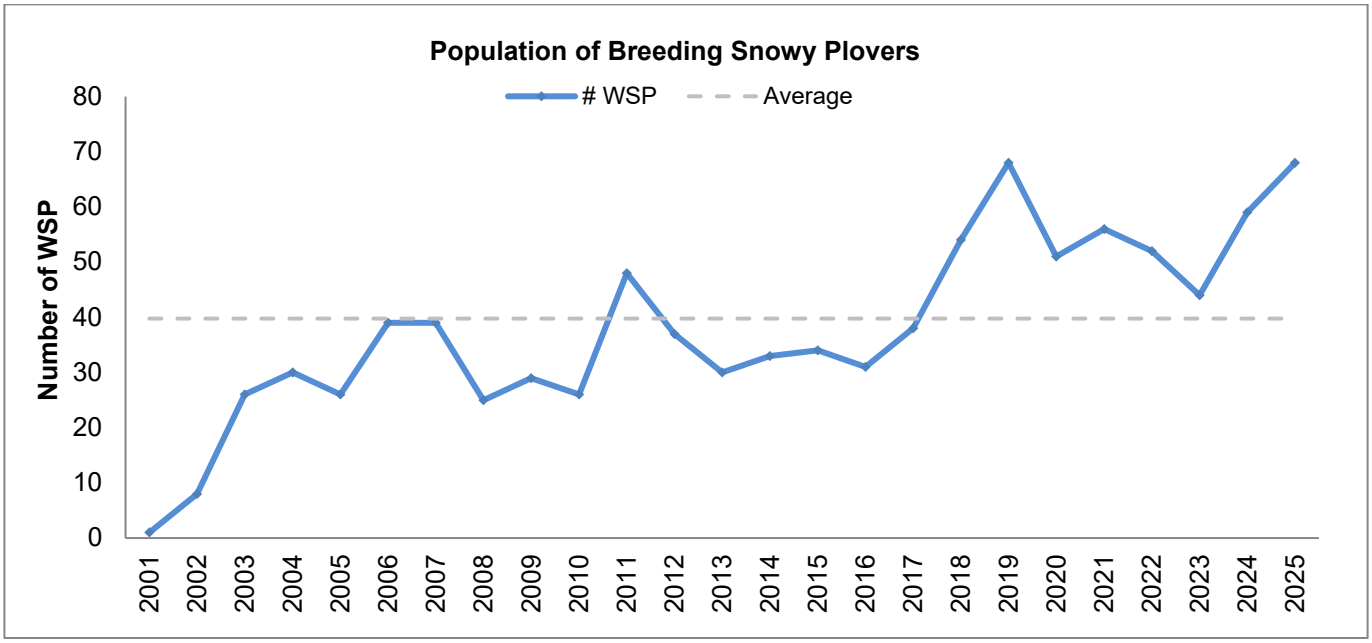

Figure 3. Counts of WSP during the breeding window surveys at Coal Oil Point Reserve. *Average line represents the average from 2003-2025. In 2001 and 2002, the breeding population was still beginning to grow. Note that these years are excluded from the calculation of all breeding averages.*

Monitoring of Nest and Chick Fate

During the breeding season, we monitored WSP a minimum of three times per week using binoculars and a spotting scope. We recorded the number of adults, the number of nests, and the fate of nests and chicks. Band combinations are also recorded.

We conducted nesting surveys from outside of the symbolic fence as described in the Snowy Plover Management Plan. We first looked for signs of territoriality and breeding behavior, then attempted to locate nests from a distance. When nests were identified (often by a female sitting and incubating or laying eggs), we entered the fenced area and approached the nest carefully. We counted the number of eggs, took a photo of the nest and a GPS location. We entered this information in the Field Maps application and stored in the ArcGIS platform (ESRI). Finally, we placed a small twig one meter in front of the nest to facilitate subsequent monitoring from a distance. Once the chicks hatched, we tracked individual broods and recorded the number of chicks in each brood until the chicks reached fledgling age (28 days). WSP chicks at Coal Oil Point Reserve are not banded, with the exception of captive reared chicks.

If the adult plover was not seen on the nest before the hatching date, we approached the nest to check for abandonment, predation, or loss from weather or high tides. Eggs were determined to be abandoned if the adults did not return to the nest for at least 2 days after the onset of incubation, and there were no new plover footprints leading to the nest. If the nest was predated, we looked for footprints to identify the predator. If the nest was washed out by tide or buried by wind, we searched for the eggs and replaced them in the nest location. If the parent did not return to the nest to incubate, the eggs were collected. The reason for collecting abandoned eggs is to reduce attraction of crows and skunks, and to incubate the eggs in captivity in hopes of releasing chicks back into the wild.

Table 1 summarizes the results of the breeding success each year. The number of males for the estimation of fledged chicks/male was calculated based on half of the adult number counted in the breeding window survey. Because males can arrive at COPR throughout the season, the number of males per season using the window survey count is likely to be underestimated.

Fledges per male is the traditional index for breeding productivity, and as an extent, habitat quality. However, more robust and comparative methods exist. Namely, breeding efficiency, defined as the number of fledglings over the number of eggs (Colwell et al. 2018). The main advantage of breeding efficiency is that it does not rely on counting 'breeding males' as males may be present without actually breeding. Our method has relied on halving breeding window surveys which assumes a balanced sex ratio and a closed population. Despite this, our estimates for breeding efficiency correlate strongly with fledges per male (adj. $r^2 = 0.964$, $F_{1,11} = 324.4$, $P < 0.001$, Figure 4), suggesting that both methods are adequate. Breeding efficiency, however, carries greater comparative capacity among management areas, and may aid in identifying locations of conservation concern range-wide. Additionally, the methodology is simpler, relying on counts of eggs rather than breeding males (Colwell et al. 2018). Therefore, we present breeding efficiency data from 2013-2025 in Table 2.

Table 1. Breeding success estimates of WSP at Coal Oil Point Reserve since 2001 until present.
*In 2001 and 2002, the breeding population was still beginning to grow. These years are excluded from the calculation of all breeding averages. Formal WSP monitoring did not begin until 2001, but Santa Barbara Audubon conducted general surveys of this site prior to 2001. *In 2006 and 2019-2021, exclosure cages were used to protect nests from crows. These years are excluded from the calculation of average hatching and fledging rates. **In 2007-2008 and 2021-2025, some nests were collected, incubated in the nursery, and returned to the nest prior to hatching. In previous reports, egg replacement interventions were not included in the calculation of hatched nests and fledged chicks but they have been included in the calculations for this report.*

Year	Breeding Window Survey (BWS)	# Nests	# Nests Hatched	Hatching Rate (nests hatched / #nests*100)	Apparent Hatching Rate (nests hatched / #nests*100) *excludes bonus nests	# Chicks Fledged	# Fledges Per estimated Male (BWS)	Fledging Rate (nests that fledged /nests that hatched *100)
1970- 2000	few	~2-4/30yr	none	0	0	none	none	none
2001	1	1	1	100%	100%	1	1.00	100%
2002	8	13	6	46%	46%	12	2.40	83%
2003	26	24	17	71%	70%	40	3.33	94%
2004	30	52	24	46%	46%	27	1.80	71%
2005	26	64	16	25%	25%	29	2.23	81%
2006*	39	43	23	53%	53%	39	2.05	91%
2007*	39	66	30	45%	45%	21	1.11	40%
2008*	25	56	22	39%	39%	33	2.75	64%
2009	29	65	39	60%	57%	58	4.00	74%
2010	26	75	42	56%	54%	19	1.46	26%
2011	48	84	35	42%	40%	9	0.38	14%
2012	37	73	34	47%	44%	22	1.19	44%
2013	30	66	34	52%	49%	30	2.00	41%
2014	33	77	21	27%	25%	26	1.58	67%
2015	34	62	34	55%	52%	45	2.65	74%
2016	31	43	29	67%	65%	49	3.16	86%
2017	38	52	34	65%	63%	53	2.79	77%
2018	54	81	59	73%	69%	82	3.04	70%
2019*	68	97	28	29%	28%	8	0.24	18%
2020*	51	76	42	55%	52%	23	0.90	38%
2021**	56	93	41	44%	38%	46	1.64	68%
2022**	52	102	37	36%	29%	47	1.81	68%
2023**	44	70	48	69%	51%	59	2.68	63%
2024**	59	84	43	51%	47%	78	2.64	84%
2025**	68	84	56	67%	65%	67	1.97	63%
COPR AVERAGE	**39.8**	**61.4**	**32.2**	**53%**	**51%**	**37.6**	**2.3**	**63%**
COPR SD	**12.0**	**15.9**	**11.5**	**15.3%**	**14.8%**	**19.6**	**1.0**	**24.1%**

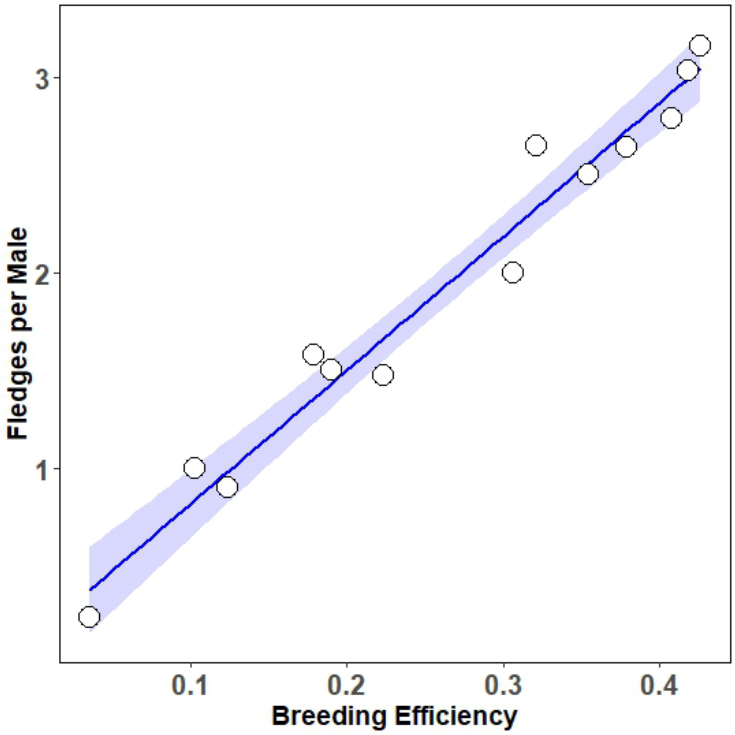

Figure 4: Strong relationship between fledges per male (per capita fledging success) and breeding efficiency (fledges/eggs) at Coal Oil Point Reserve between 2013 and 2025.

Table 2: Data on Fledges per Male and Breeding Efficiency between 2013-2025 at Coal Oil Point Reserve.

Year	Breeding Males	Total Eggs Laid	Fledglings	Fledges per Male	Breeding Efficiency
2013	15	98	30	2.00	0.31
2014	16.5	145	26	1.58	0.18
2015	17	140	45	2.65	0.32
2016	15.5	115	49	3.16	0.43
2017	19	130	53	2.79	0.41
2018	27	196	82	3.04	0.42
2019	34	223	8	0.24	0.04
2020	25.5	186	23	0.90	0.12
2021	28	221	42	1.50	0.19
2022	26	252	26	1.00	0.10
2023	22	155	55	2.50	0.35
2024	29.5	206	78	2.64	0.38
2025	34	224	50	1.47	0.22

In 2025, we recorded 84 nesting attempts; 81 were nests discovered with eggs, and 3 additional broods were observed with newborn chicks but the nest was not located. We refer to the latter as 'bonus nests.' To calculate the apparent hatching rate of 65.5%, we did not include the bonus nests.

Figure 5 shows the number of nests laid and the number of nests hatched between 2001-2025.
The primary cause of nest failure this year was flooding by high tides (Table 3, Figure 6). The primary nest predators were raccoon and unknown avian.

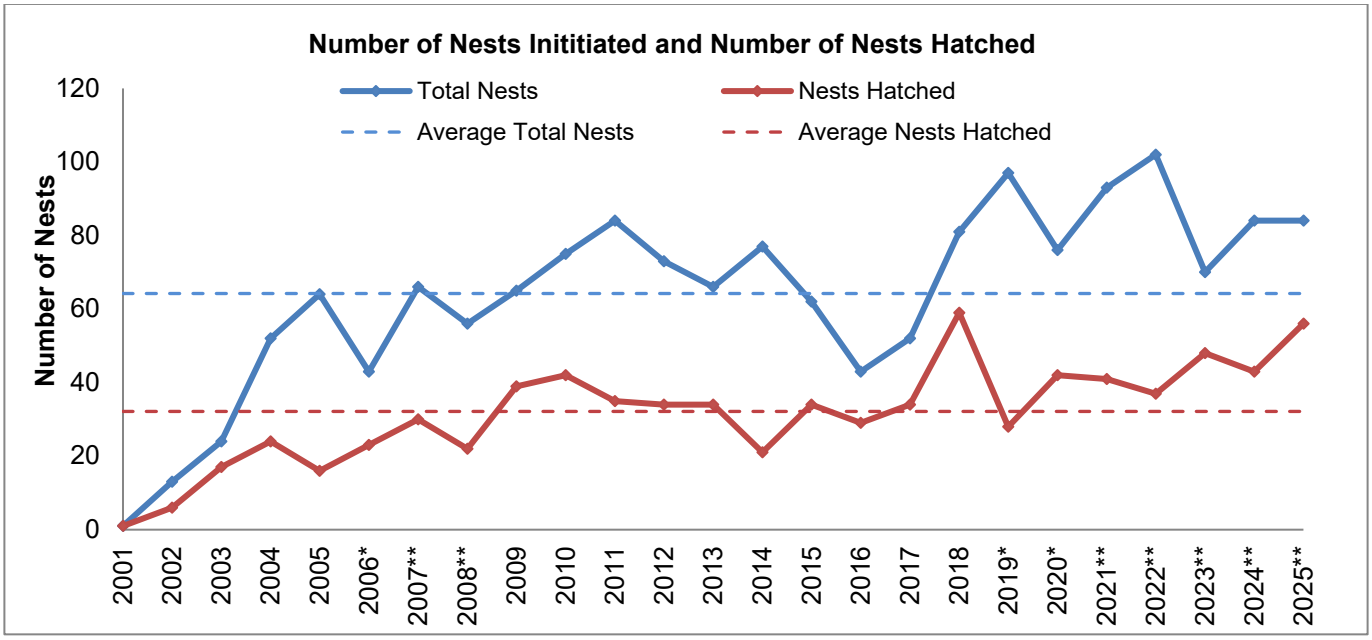

Figure 5. Nests initiated and hatched by year (total number of nests that had at least one egg vs. total number of nests that hatched at least one chick).
*In 2001 and 2002, the breeding population was still beginning to grow. These years are excluded from the calculation of all breeding averages. *In 2006 and 2019-2021, exclosure cages were used to protect nests from crows. These years are excluded from the calculation of average hatching and fledging rates. **In 2007-2008 and 2021-2025, some nests were collected, incubated in the nursery, and returned to the nest prior to hatching. In previous reports, egg replacement interventions were not included in the calculation of hatched nests and fledged chicks but they have been included in the calculations for this report.*

Table 3. Number of nests lost by fate from 2002-2025. Note: this table does not include data on chick mortality; which is shown in Table 4.

**Note that in 2006, & 2019-2021, predator exclosure cages were used which may have affected nest fate.*

***Note that in 2007-2008 & 2021-2025, some nests were collected, replaced with decoy eggs, incubated in the nursery, and replaced prior to hatching. The fate of the wooden eggs is assumed to be the implied fate of the real eggs had they been left on the beach.*

Year 20-XX	**'02**	**'03**	**'04**	**'05**	**'06 ***	**'07 ****	**'08 ****	**'09**	**'10**	**'11**	**'12**	**'13**	**'14**	**'15**	**'16**	**'17**	**'18**	**'19 ***	**'20 ***	**'21 ****	**'22 ****	**'23 ****	**'24 ****	**'25 ****
Total nests	**13**	**24**	**52**	**64**	**43**	**66**	**56**	**65**	**75**	**84**	**73**	**66**	**77**	**62**	**43**	**52**	**81**	**97**	**76**	**93**	**102**	**70**	**84**	**84**
Hatched	6	17	24	16	23	30	22	39	42	35	34	34	21	34	29	34	59	28	42	41	37	49	43	56
Skunk	0	0	10	18	2	19	18	10	0	0	0	4	10	15	6	4	3	9	0	24	23	2	10	1
Crow	2	4	8	3	0	0	0	1	1	0	0	0	0	0	0	0	0	32	7	0	9	0	0	1
Abandoned	0	1	1	9	3	1	0	2	3	5	3	4	9	1	2	1	4	2	0	6	0	1	1	5
Abandoned /Owl	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Raccoon	0	0	2	1	0	0	0	1	0	0	2	2	4	0	1	0	0	0	0	0	0	1	1	2
Whimbrel	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gull	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	1
Opossum	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
Dog	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Unknown Avian Predator	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	0	1	2
Unknown Canid Predator	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Unknown Mammalian Predator	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
Unknown Predator	0	0	0	1	1	0	0	4	0	10	3	15	9	3	0	2	3	0	1	4	4	0	2	1
Unknown Cause	0	0	0	0	0	0	4	0	17	8	3	0	21	0	0	0	0	0	0	0	2	1	0	0
Unknown Fate	0	0	0	1	3	12	4	1	0	0	9	0	0	3	0	0	3	2	0	2	4	1	0	0
Human	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	3	0	4	1	0
Wind	1	2	2	6	1	2	2	5	2	10	2	0	0	1	0	3	1	3	8	4	5	1	4	1
Tide	0	0	4	5	2	1	6	2	5	12	16	6	3	5	2	8	7	17	16	6	12	12	22	13
Flooded by Slough	0	0	0	3	0	0	0	0	4	3	0	0	0	0	0	0	0	3	1	0	0	0	0	0
Missing Data	4	0	1	0	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

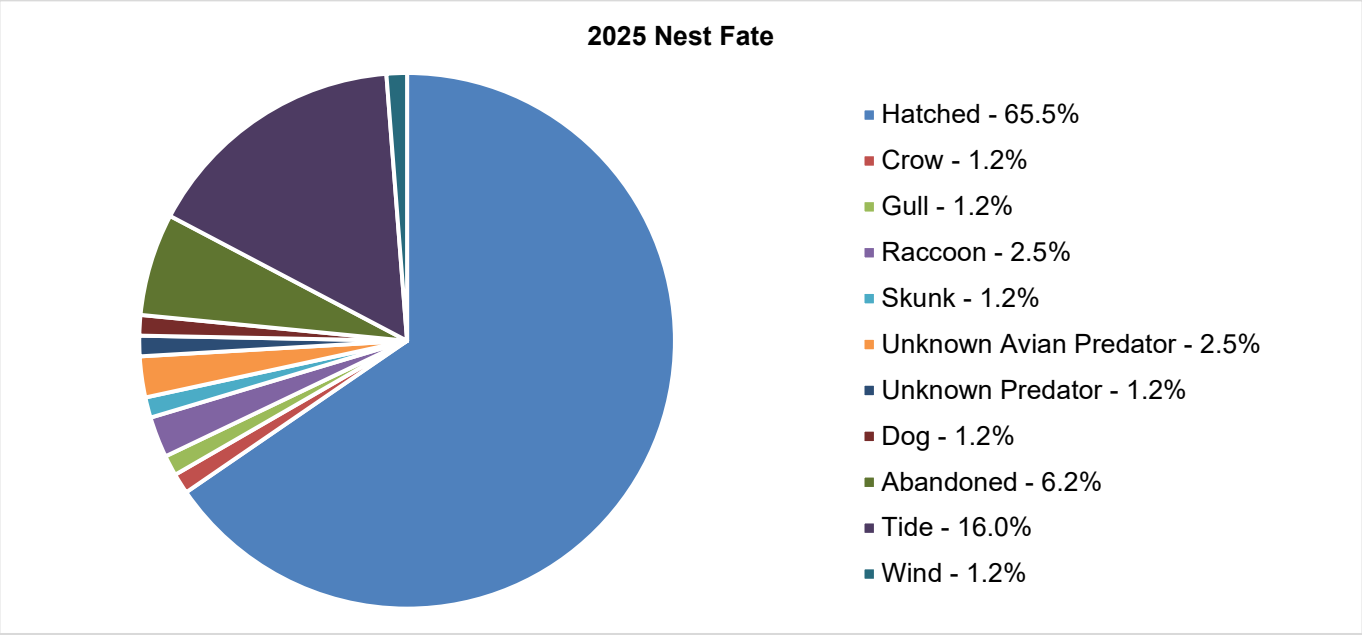

Figure 6. Nest fate proportions at COPR in 2025, excluding the 3 nests that were discovered as a hatched brood. Data is also in Table 2 above.

Nest Predation

There were low levels of predation on nests this year. Out of 84 documented nesting attempts, 1 nest each were predated by crow, gull, skunk, unknown predator, and dog. An additional 2 nests were predated by raccoon and another 2 by unknown avian predators. We attribute low levels of predation to the administration of USDA-contracted predator control early in the season. Predator control extended from March through July and focused on the common predators such as crows and skunks, and occasional predators such as opossums, raccoons and gulls. USDA was contracted to remove skunks and crows near the plover habitat and remove crows through the implementation of traps and corvicide treatment (see USDA report in Appendix C).

There was an apparent dog predation on one nest. All three eggs were gone even though the nest was not due to hatch for another week. Many large dog prints led directly to the nest, with some being within inches of the nest (Photo 2 and Photo 3). No adult plovers were attending. This nest was active the morning of July 21st, so the egg predation likely occurred the afternoon of the 21st or sometime on July 22nd. Adjacent to the dog tracks were human tracks appearing to follow the dog. This nest was located 30

meters east of the boundary of Ellwood Beach where there is no enforcement of dog prohibition or leash laws.

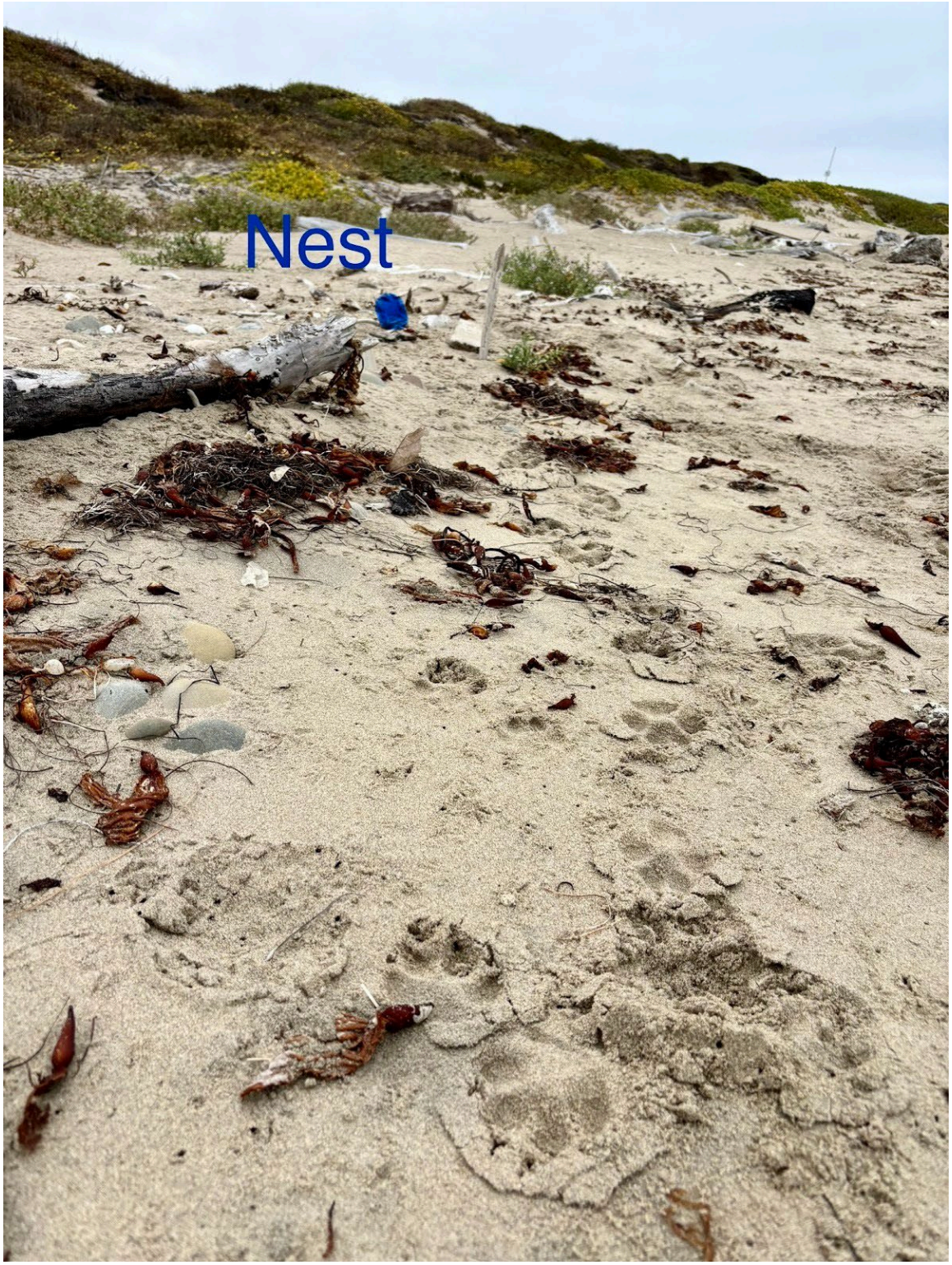

Photo 2. Dog tracks lead directly to the nest (marked by the standing stick).

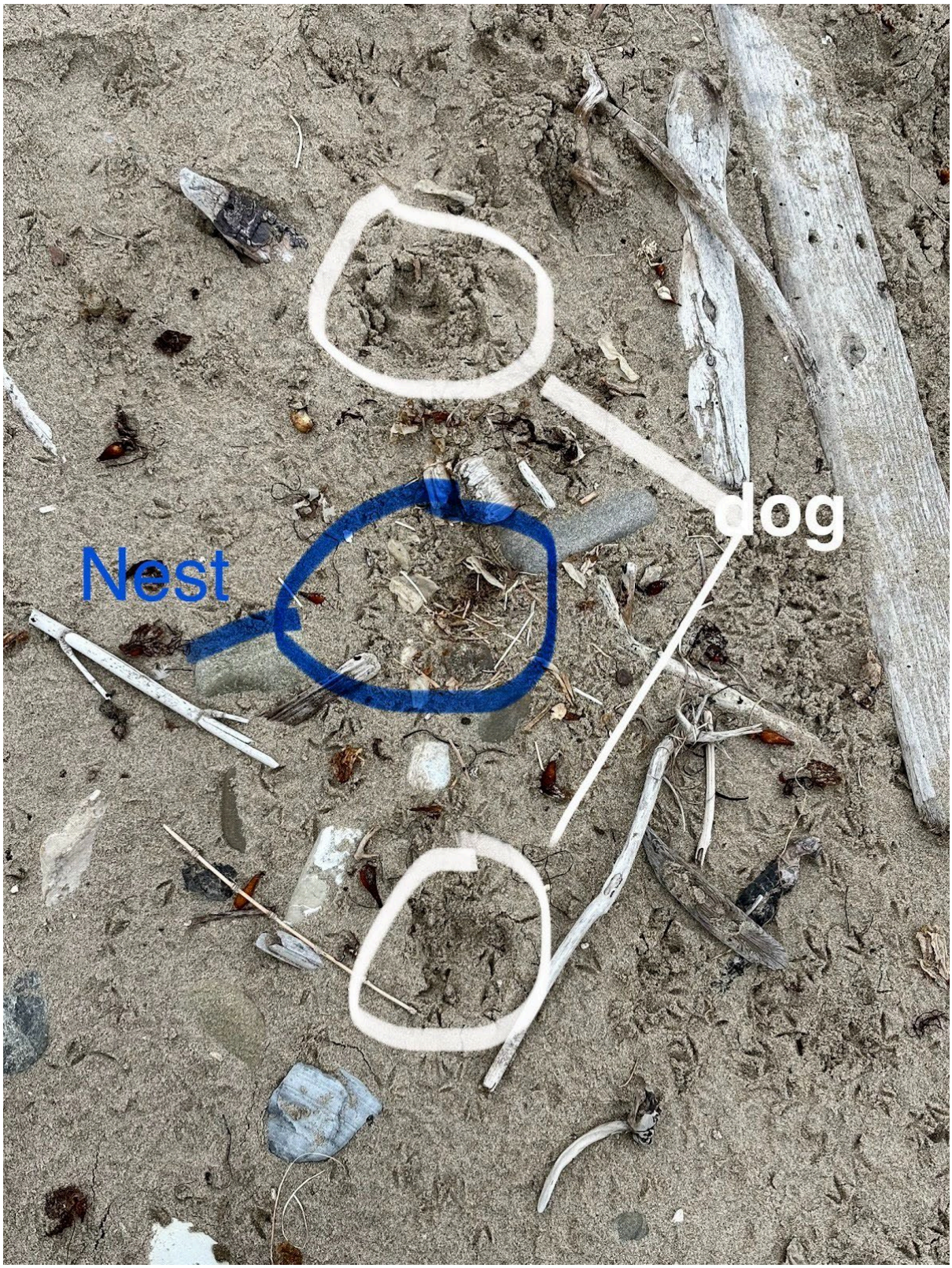

Photo 3. Dog tracks surround the nest cup within inches.

Chick Survival

The survival rate of chicks (63%) was average this year (Figure 7). In 2025, 67 WSP chicks fledged at COPR (Figure 8). This year, COPR plovers produced 1.97 fledged chicks per male, which exceeds the minimum goal of one chick per year per male to maintain a stable population (Table 2).

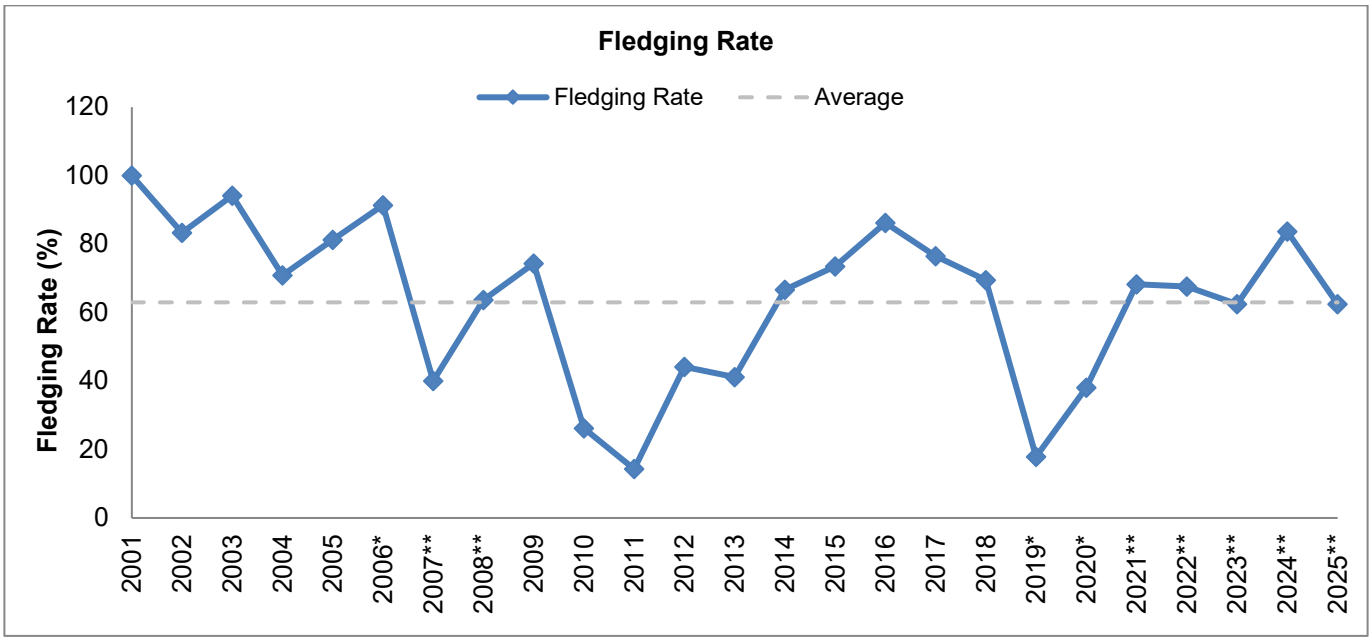

Figure 7. Fledging rate by year (# nests that fledged at least one chick/# total nests *100).

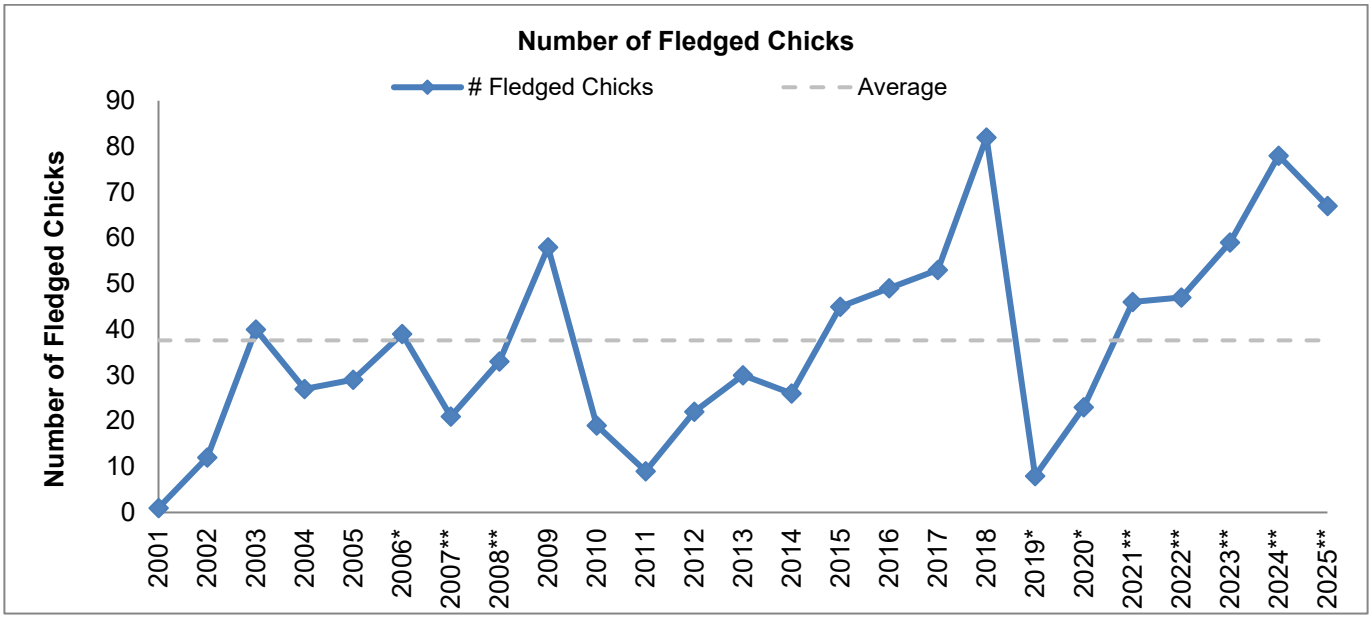

Figure 8. Number of chicks fledged by year.

There were no direct observations of predation on plover chicks. However, one dead chick was discovered by a docent on 6/3/2025 (Photo 4). The chick belonged to nest 1511 and was 29 days old, so it would be categorized as a fledgling. However, the flight feathers were not very developed and it was still under the care of its father within the natal territory. There were no obvious signs of trauma to the chick. It did not appear to be stepped on nor did it seem like a predation. No mammal tracks were seen nearby. The carcass was still flexible, suggesting it recently died. The tide was not particularly high. The carcass and stored it in the COPR freezer. It will be sent for necropsy for more clues as to its cause of death. The two chicks associated with this nest were observed earlier in the day at 8:00 am and did not exhibit any atypical behavior. Some territory disputes had been active in the area. Interestingly, the group from 1511 appeared to have been displaced somewhere else and had recently returned.

Photo 4. Plover carcass discovered by docent on 6/3/2025. Cause of death unknown, pending necropsy.

Two known chicks died as a result of oiling. Both were reported with significant tar on their bodies and were transferred to Santa Barbara Wildlife Care Network for cleaning and treatment. After initial cleaning, the chicks' health declined and they passed away. The last documented plover chick mortality directly attributed to oil was in 2003.

Direct observations of predation and other take of chicks and adults can be difficult to document. Table 4 lists the reported causes of chick and adult mortality since 2001. Table 5 and Figure 9 summarizes all documented take of WSP by humans and dogs.

Table 4. Documented cause of chick and adult mortality. Almost half of the chicks that hatch die before fledging, but it is difficult to observe the cause of chick and adult mortality because they are mobile and some mortality events happen fast. "C" means chick mortality and "A" means adult mortality.

Year 20-XX	**01**	**02**	**03**	**04**	**05**	**06 ***	**07 ******	**08 ******	**09**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19 ***	**20 ******	**21 ******	**22 ******	**23 ******	**24 ******	**25 ******	**Total**
Total # chicks hatched	2	16	45	56	40	62	48	9	90	95	79	59	81	57	80	74	83	136	71	105	85	41	113	113	126	1527
Red-Tailed Hawk	0	0	0	13 C	0	0	0	0	0	0	0	0	0	0	0	0	2 C	0	0	0	0	0	0	0	0	15
Wind	0	0	1 C	4 C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Dog	0	0	1 C	0	0	0	0	0	0	0	0	0	0	0	1 C	0	0	0	0	0	0	0	2 C	0	0	4
Crow	1 C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1 C	2 C	0	0	0	0	0	4
Western Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3 C 4 A	0	0	1A	0	8
Peregrine Falcon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1 A	0	0	2
Tar	0	0	1 C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2 C	1

Table 5. Documented take of nests and chicks by humans and dogs.

Year	Take by Dogs	Take by Humans
2001	0	0
2002	0	0
2003	**1 chick**	0
2004	0	0
2005	0	0
2006	0	0
2007	0	0
2008	0	0
2009	0	0
2010	0	**1 nest**
2011	0	0
2012	0	**1 nest**
2013	0	0
2014	0	0
2015	**1 chick**	0
2016	**1 nest**	0
2017	0	0
2018	0	0
2019	0	0
2020	0	0
2021	0	**3 nests**
2022	0	0
2023	**2 chicks**	**4 nests**
2024	0	0
2025	**1 nest**	0

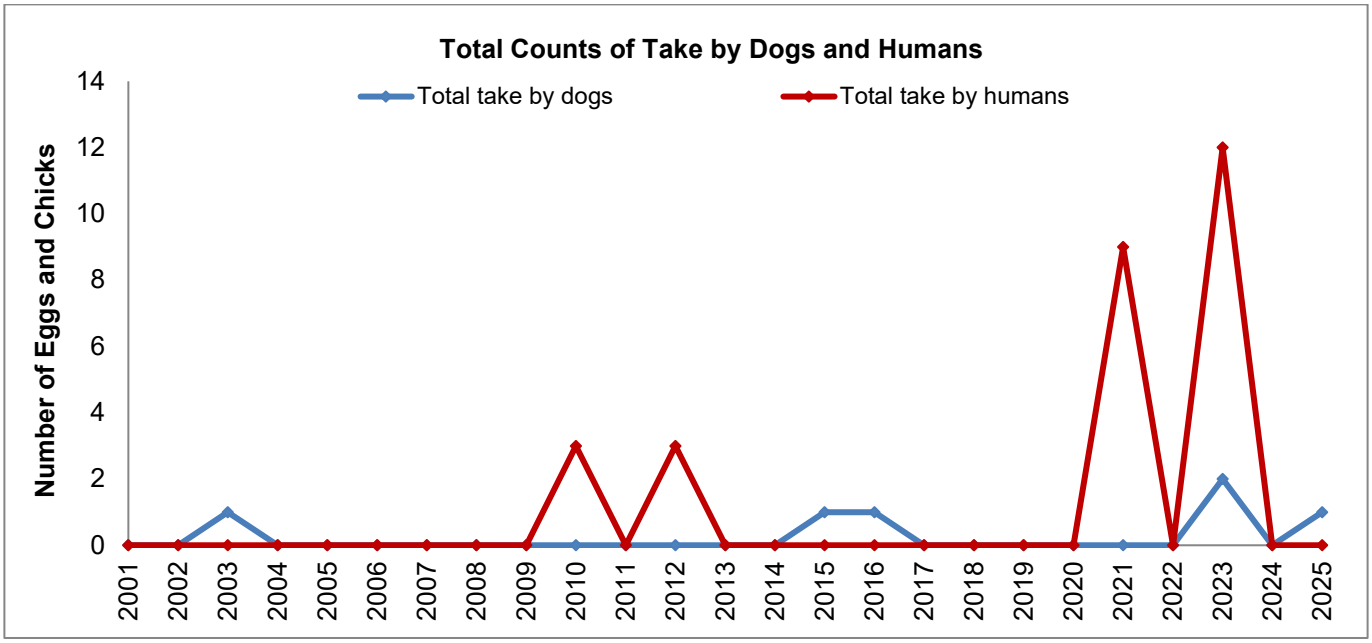

Figure 9. Number of eggs and chicks of WSP taken by dogs or people trespassing in the nesting area, mostly at night when the docents are not present to intervene.

Nest Phenology

In 2025, the nesting season began on March 31st, 12 days later than the average for our site (March 19th). The first nest was initiated on March 31st and the last chick fledged on September 2nd (Table 6), for a total breeding season length of 155 days (defined by the number of days between first nest initiation and last observed chick or nest). This year's breeding season was 2 days shorter than the average for Coal Oil Point Reserve. The peak nesting period fell between April 16th and April 22nd. The dates of all nesting events in 2025 fell within the range of previous years' dates (Figure 10).

Table 6. Dates of nesting events in 2025

2025 Nesting Event	Date
First Nest Initiation	3/31/2025
Last Nest Initiation	7/11/2025
First Hatch	4/27/2025
Last Hatch	8/5/2025
First Fledge	5/29/2025
Last Fledge	9/2/2025

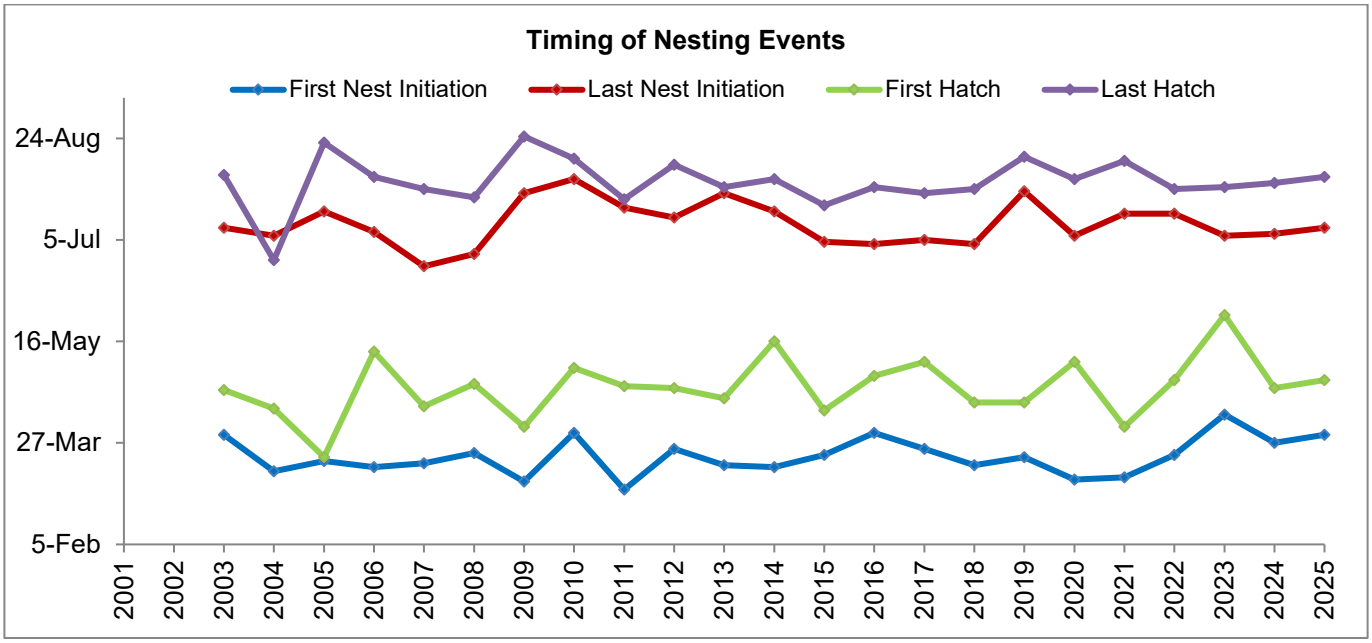

Figure 10. Timing of nest events by year.
***In 2007-2008 and 2021-2025, some nests were collected, incubated in the nursery, and replaced prior to hatching. This was a change from the standard protocol at this site. Hatch and fledge dates reported are for nests that hatched and fledged in the wild without intervention.*

Intervention and Rehabilitation

Thirteen nests were replaced with wooden eggs before extreme high tide events. We deployed wooden egg replacement when a tidal event was predicted to cover the eggs and possibly destroy the nest. Determinations were based on beach conditions, previous days' high tide levels relative to nests, and water level forecasting from the Coastal Data Information Program. After the danger of nest flooding passed, we returned the real eggs to 7 of the original nests that survived the tide. These eggs hatched on the beach. The eggs from the other 6 egg-replaced nests were hatched in captivity because the nest with wooden eggs was destroyed by either tide or predator. The fates of these nests are listed in Table 7.

The wooden eggs may be considered to be surrogates for real eggs, so that the fate of the wooden eggs on the beach is the implied fate of the eggs had they been left on the beach. Under this assumption, we have included the fates of the wooden eggs in the calculations of hatching and fledging rates so that we do not underestimate the impacts of tide on nest loss. This is a change from previous reports in which we excluded the fates of egg replaced nests in calculations.

For the years in which egg replacement intervention was implemented, calculations of predation attempts on natural nests compared to wooden nests suggest that predators may not remove wooden eggs as they would real eggs (Table 8). We acknowledge that this introduces a potential bias in which we may underestimate predation rates during the time the wooden eggs are on the beach.

Table 7. Fates of the nests in which eggs were replaced with wooden eggs in 2025.

Nest Number	Nest Fate	Number of eggs returned to the beach
1530	3 eggs successfully returned to the beach. 1 hatched and 1 fledged.	3
1532	3 eggs successfully returned to the beach. 3 hatched and 0 fledged.	3
1534	3 eggs successfully returned to the beach. 3 hatched and 3 fledged.	3
1545	3 eggs successfully returned to the beach. 1 hatched and 1 fledged.	3
1546	Tide washed out wooden eggs and nest site; real eggs transferred to SB Zoo.	0
1566	Tide washed out wooden eggs and nest site; real eggs transferred to SB Zoo.	0
1567	Raccoon destroyed nest site; real eggs transferred to SB Zoo.	0
1568	2 eggs successfully returned to the beach. 2 hatched and 1 fledged.	2
1569	Tide washed out wooden eggs and nest site; real eggs transferred to SB Zoo.	0
1570	3 eggs successfully returned to the beach. 3 hatched and 2 fledged.	3
1571	Tide washed out wooden eggs and nest site; real eggs transferred to SB Zoo.	0
1574	2 eggs successfully returned to the beach. 1 hatched and 1 fledged.	2
1577	Tide washed out wooden eggs and nest site; real eggs transferred to SB Zoo.	0

Table 8. Predation rates on natural egg nests compared to wooden egg nests for the years in which egg replacement intervention was used.

Year	Reason for Intervention	Predation Rate on Natural Egg Nests	Predation Rate on Wooden Egg Nests
2007	Predation Risk	35%	0%
2008	Predation Risk	55%	0%
2021	Predation Risk	48%	14%
2022	Predation Risk	55%	18%
2023	Tide Risk	5%	0%
2024	Tide Risk	17%	0%
2025	Tide Risk	10%	8%

Four chicks were captured at Sands Beach for rehabilitation in 2025. In May, a chick that was lethargic and twitchy on the beach was transferred to Santa Barbara Zoo (SBZ) for veterinary care. This chick was successfully treated, banded (ap:by), and released. In July 2025, two oiled chicks were transferred to

Santa Barbara Wildlife Care Network for cleaning and rehabilitation. After initial cleaning efforts, neither chick survived. In August, a chick was seen limping. It was captured and found to have human hair tightly wrapped around its foot, constricting its toes and the tarsometatarsus. It was extremely tight but did not appear to break the skin, nor was any blood evident. COPR staff, Armando Aispuro, used miniature scissors to carefully clip the hair away from the tarsometatarsus. With no resulting injuries or lesions, the chick was immediately released back to its brood. This chick belonged to female ny:rv, a plover that lost her leg over the winter as the result of a foot wound. She was not rehabilitated for the injury, but recovered from it and nested successfully.

Thirty-two eggs were collected from Coal Oil Point Reserve (Table 9) to be transferred for viability testing and captive rearing at SBZ. Of these eggs, 14 were eventually released as chicks at COPR in addition to 13 more chicks rescued as eggs and 2 chicks rescued as chicks from other sites (Oceano Dunes, Ormond, and Oso Flaco).

Table 9. Number of eggs collected from COPR in 2025 and taken to the Santa Barbara Zoo to be tested for viability, and then hand reared for release if they were viable.

Reason for collection	Number of eggs collected	Number of chicks released
Tide	14	11
Wind	1	1
Predation	3	1
Abandoned	14	1
Total eggs	*32*	*14*

We placed the collected eggs in an incubator on site at COPR at a temperature of 98.5º F, with a water dish to achieve adequate humidity. As soon as possible, they were transported to the zoo in a dish with warm sand to keep them from rolling over. Once hatched, SBZ staff fed the chicks a diet of bloodworms, pinhead crickets, mini mealworms, and beach hoppers. Special care was taken to keep the chicks from imprinting on humans. The terrarium was in an isolated area of the zoo's veterinary hospital and care for plovers was limited to only the SBZ bird team. When the chicks reached about 14 days old, they were moved from the terrarium to a flight pen. The flight pen was enriched with fresh kelp to mimic conditions of a beach. All individuals satisfied the USFWS requirements of age, health, and minimum size for release prior to their release date.

Three groups of captively reared chicks from COPR and other sites were released on Sands Beach on the mornings of July 7th, July 31st, August 11th, August 21st and September 23rd. They were released away from any current nest or brood territories (~200 m west of the start of plover fence). The captive-reared plovers spent one hour in mesh pens on the beach to allow for acclimation to their new environment prior to release. The pens were constructed out of chicken wire with 1" x 1.5" mesh size. The dimensions of the pens were 3’ x 2’ x 2’. Pens were secured to the ground with PVC posts in each corner. In order to supplement the plovers while they acclimated, kelp wrack and beach hoppers were added to the pens.

The chicks were observed during acclimation to ensure normal behavior, and to ensure that the chicks were not disturbed by predators or humans. All chicks exhibited normal behavior within minutes of being in the pen, alternating between feeding, standing, walking, and stretching wings. Wild plovers in the area approached the pen and did not display any territorial behavior towards the plovers within the pen. At release time, the side of the pen facing the fenced plover habitat was opened. Some released plovers took flight within five minutes of opening the holding pen, while others calmly walked out and remained as a group in the area.

Prior to release, all captive-reared plovers and rehabbed plovers were banded at SBZ with a unique band combination (Table 10). Of the 30 banded and released plovers, 23 have been resighted at COPR by staff or docents.

Table 10. Band data for plovers from around the central coast that were captively reared or rehabbed at SB Zoo and released at COPR in 2025.

Release Date	Lay Location	Stage At Arrival to SBZ	Left Leg	Right Leg	Sightings at COPR post-release
6/25/2025	ODSVA	Egg	ap	bb	Yes
6/25/2025	ODSVA	Egg	ap	br	Yes
6/25/2025	Oso Flaco	Egg	ap	bw	Yes
7/7/2025	COPR	Egg	ap	aa	Yes
7/7/2025	COPR	Chick	ap	by	No
7/7/2025	ODSVA	Egg	ap	bg	No
7/7/2025	ODSVA	Egg	ap	bk	No
7/7/2025	ODSVA	Egg	ap	bl	Yes
7/7/2025	ODSVA	Egg	ap	bo	Yes
7/7/2025	ODSVA	Egg	ap	bv	No
7/7/2025	ODSVA	Chick	ga	ly	Yes
7/31/2025	COPR	Egg	ap	wa	Yes
7/31/2025	COPR	Egg	ap	wb	Yes
7/31/2025	COPR	Egg	ap	wg	No
7/31/2025	COPR	Egg	ap	wn	Yes
8/11/2025	COPR	Egg	ap	wl	No
8/11/2025	COPR	Egg	ap	wp	Yes
8/11/2025	COPR	Egg	ap	wr	Yes
8/11/2025	COPR	Egg	ap	ww	Yes
8/11/2025	COPR	Egg	ap	wy	Yes
8/21/2025	COPR	Egg	ap	ag	No
8/21/2025	COPR	Egg	ap	ap	Yes
8/21/2025	Ormond	Egg	ap	ab	Yes
8/21/2025	Ormond	Egg	ap	an	Yes
8/21/2025	Ormond	Egg	ap	ao	Yes
9/23/2025	COPR	Egg	ap	aw	Yes
9/23/2025	COPR	Egg	ap	wo	Yes
9/23/2025	ODSVA	Chick	ap	ar	Yes
9/23/2025	Ormond	Egg	ap	al	Yes
9/23/2025	Ormond	Egg	ap	ay	Yes

Location of Nests

GPS coordinates were recorded for each WSP nest. We used the location of nests to look for spatial patterns in hatching and fledging success. This year, 80 nests were initiated on the beach and 4 were

initiated on the delta (mudflat) of Devereux Slough (Figure 11). The low level of nesting on the delta may be attributed to the consistent presence of a large population of crows at Devereux Slough and adjacent North Campus Open Space.

The majority of the nests were concentrated on the slough mouth and west side of the beach (Table 11). Each winter, the slough has been breaking farther west and widening the slough mouth. This has created a large nesting habitat for plovers in the slough mouth and has also resulted in the establishment of increased vegetation and the development of nascent dunes on the east half of the slough mouth where the slough no longer breaks through. The map of nest location and fate is shown below Figure 12.

Table 11. 2025 hatching rate and fledging rate by location. *Nests that hatched and fledged as the result of egg replacement are included in the number of nests initiated, but excluded from the calculation of hatching and fledging rates. East and west sides refer to the beach east or west of the slough mouth. The east side of slough mouth is designated between 0-200 meters along the protected fence, the slough mouth is between 200-399 meters, and the west side of slough mouth is between 400-800 meters.*

Location at COPR	**Total Nests Initiated**	**Hatching Rate**	**Fledging Rate**
	# nests	**(# nests that hatched / # nests *100)**	**(# nests that fledged / #nests that hatched *100)**
East of slough mouth	10	67%	50%
Slough mouth	37	41%	73%
West of slough mouth	33	63%	60%
Delta	4	100%	100%

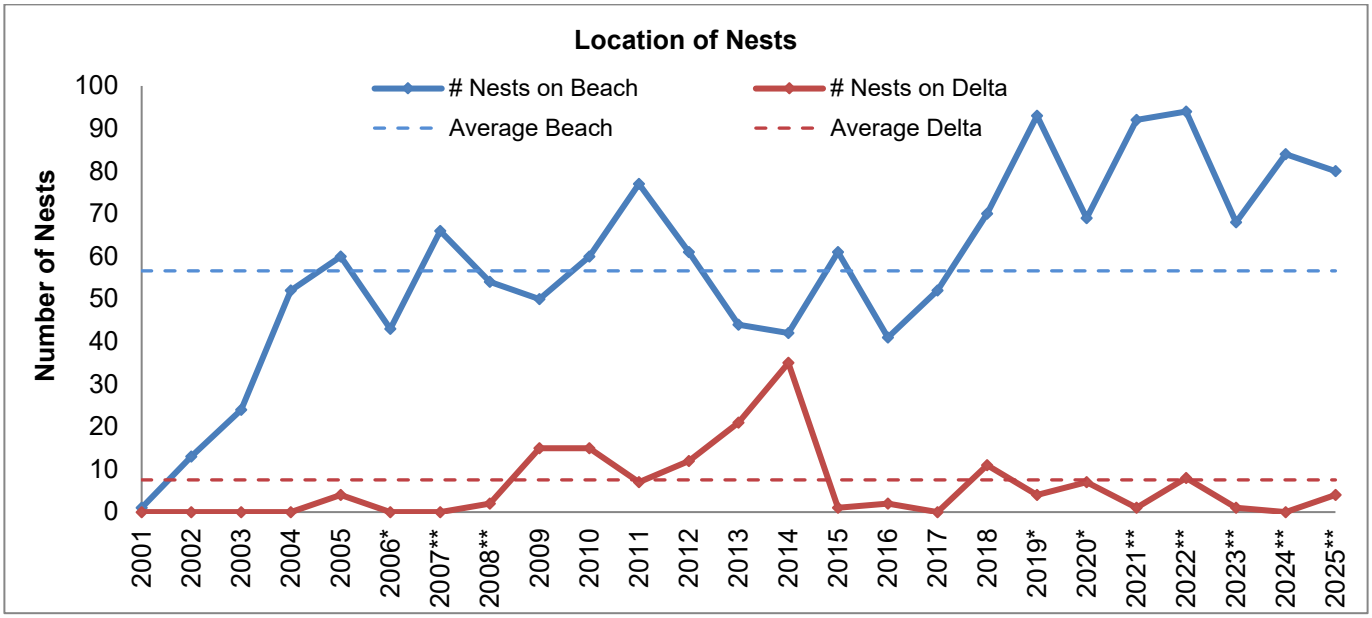

Figure 11. Number of nests on Sands Beach and the Devereux Slough mudflat between 2001-2025.

Figure 12. Locations of WSP nests color-coded by their fates at Sands Beach in 2025. Nests where wooden egg replacements occurred are outlined in red (see Table 8 for details). Not included in the map are initiated on the delta (mudflats of the slough) and bonus nests in which chicks were observed after hatching but original nest location was unknown.

Enforcement of Beach Regulations

COPR policies are not enforced by rangers. In 2020, officers from UCSB Police Department communicated to the COPR staff that they would not enforce the leash law at COPR. In addition, UCSB PD made a determination that the beach below the symbolic fence, where the WSP feed and rest, is not part of their jurisdiction and therefore they would not enforce laws in that area. In December 2017, the California Coastal Commission approved an LRDP amendment that prohibits dogs at COPR. This new policy was implemented in April 2024. The COPR advisory committee met in 2021 and recommended providing alternatives for parking and beach access to reduce the number of people recreating on Sands Beach.

Docent Program and Beach Use

The docent program continues to be crucial to the success of WSP recovery at Coal Oil Point. In 2025, docent coverage averaged 71 hours per week (Figure 13).

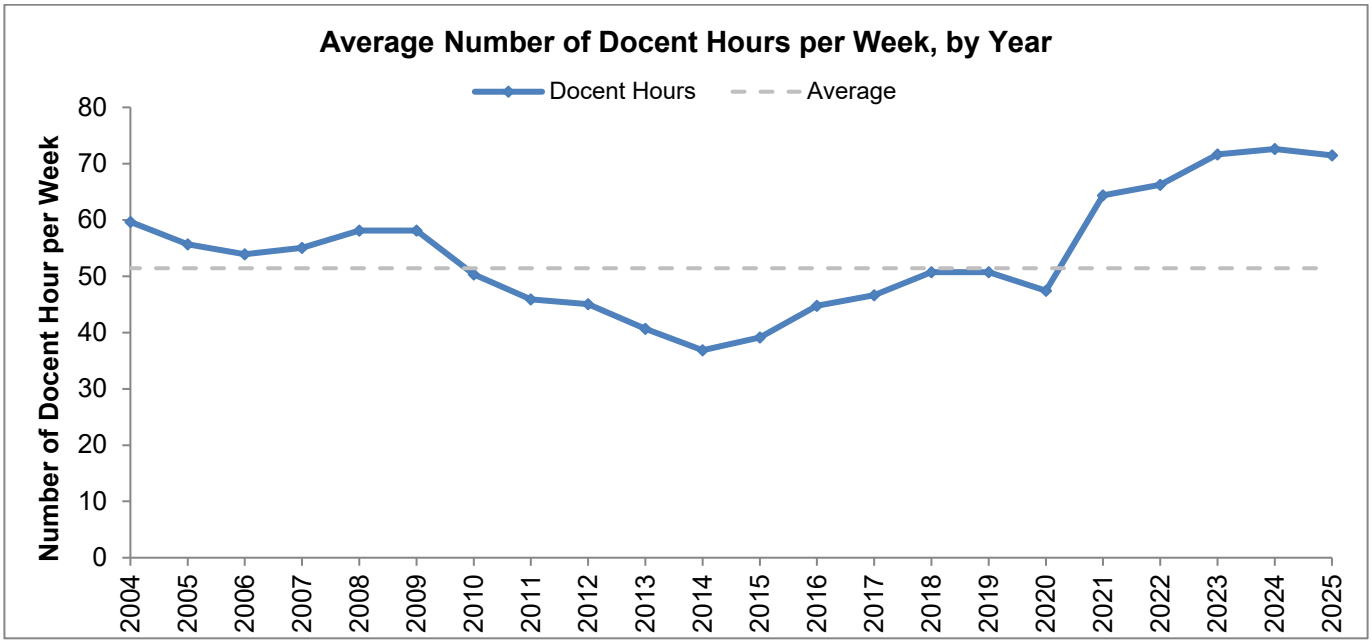

Figure 13. Average number of hours that Snowy Plover Docents spent per week at Sands Beach (total number of docent hours/52 weeks). Note that in 2020, the docent program was inactive for 6 weeks due to Covid-19 restrictions, so the total number of hours for 2020 was divided by 46 weeks.

The docents teach people about the plovers, request compliance with the dog policy, request people to stay away from the symbolic fence and avoid ball games on the beach, request people to move around the

plover flock, scare away crows, and inform the staff about birds of prey observed around the nesting area. During each shift, the docents collect data on the numbers of people, dogs, and trespassers, as well as other data on beach use. Docents recorded a total of 7,602 interactions with beach visitors, the highest number recorded since the docent program started (Figure 14). Of these interactions, docents recorded that 96% of visitors responded with a positive or neutral attitude.

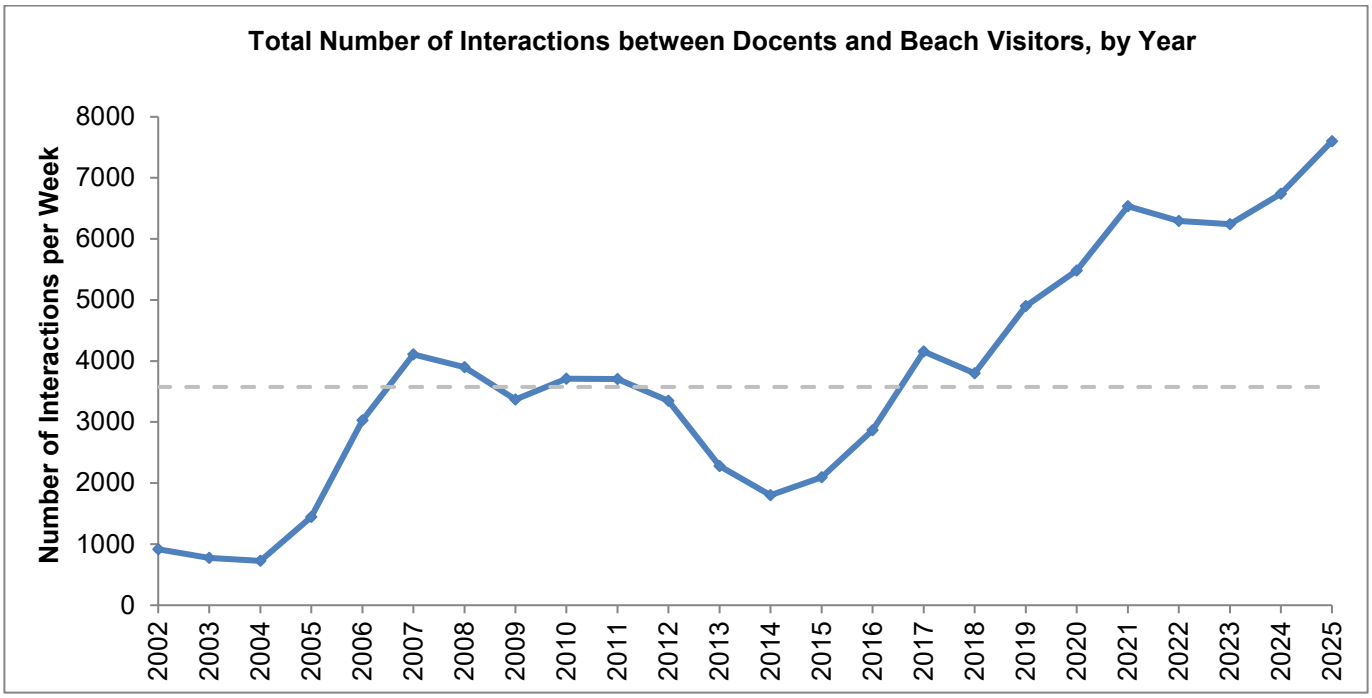

Figure 14. Number of interactions between docents and beachgoers each year.

The most important times for a docent presence on the beach are the breeding season (March 15-September 15), holidays, and weekends. The spring and summer quarters that coincide with breeding season are when the beach is most busy (Figure 15). These are precisely the most difficult times to find available volunteers. As a result, the COPR staff pays UCSB student interns to fill in these gaps. The interns are paid through grants provided by UCSB Coastal Fund and private donors.

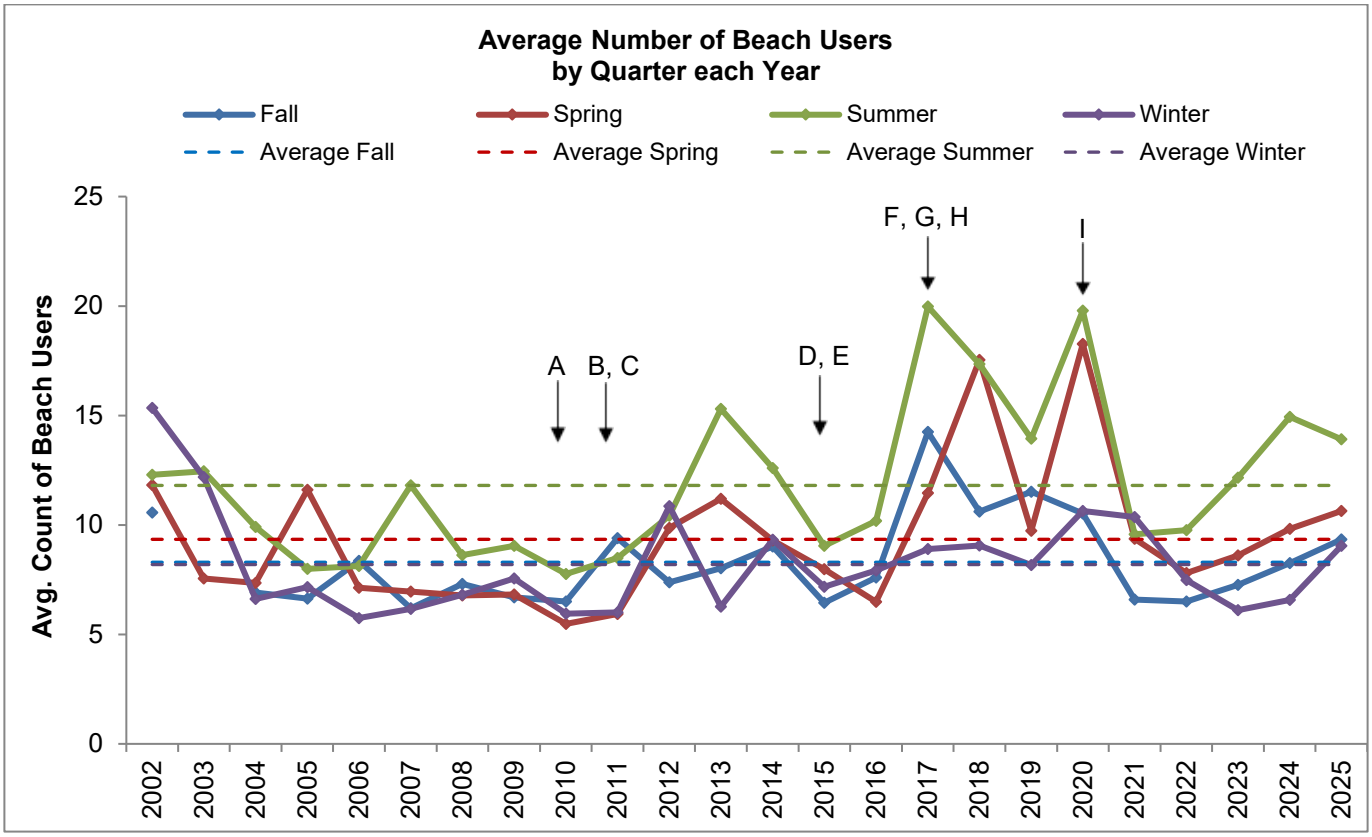

Figure 15. Average number of beach users counted by docents on snapshot surveys at Sands Beach. These data do not include people in the ocean. This graph shows the frequency of "busy beach" days by quarter, since 2002. The arrows correspond to various events that may have influenced changes in beach use: (A) 2010: A gate was installed at the end of Slough Road to reduce illegal beach parking, (B) 2011: A new beach parking lot (Lot 45) opened on West Campus, (C) Summer 2011: UCSB started offering Summer sessions, (D) Summer 2015: Refugio oil spill closed the beach for 4 weeks, (E) Fall 2015: Opening of Sierra Madre Dormitory, 506 students, (F) Fall 2017: Opening of San Joaquin Dormitory, 1,300 students, (G) Fall 2017: Opening of Sierra Madre Apartments, 36 units, (H) 2017 Opening of Santa Catalina renovations, 1,500 students, and (I) Covid-19 year (2020).

The area where sunbathing is permitted on Sands Beach has space for approximately 50 beachgoers. When the number of people on the beach exceeds this threshold, sunbathers are more likely to overflow into the plover feeding area and trespass. In 2011, a new parking lot for recreation, requested by the CA Coastal Commission, opened on UCSB's West Campus which provided the nearest access to Sands Beach. Since then, the docents have recorded a higher percentage of periods when the beach exceeds 50 people at Sands Beach (Figure 16).

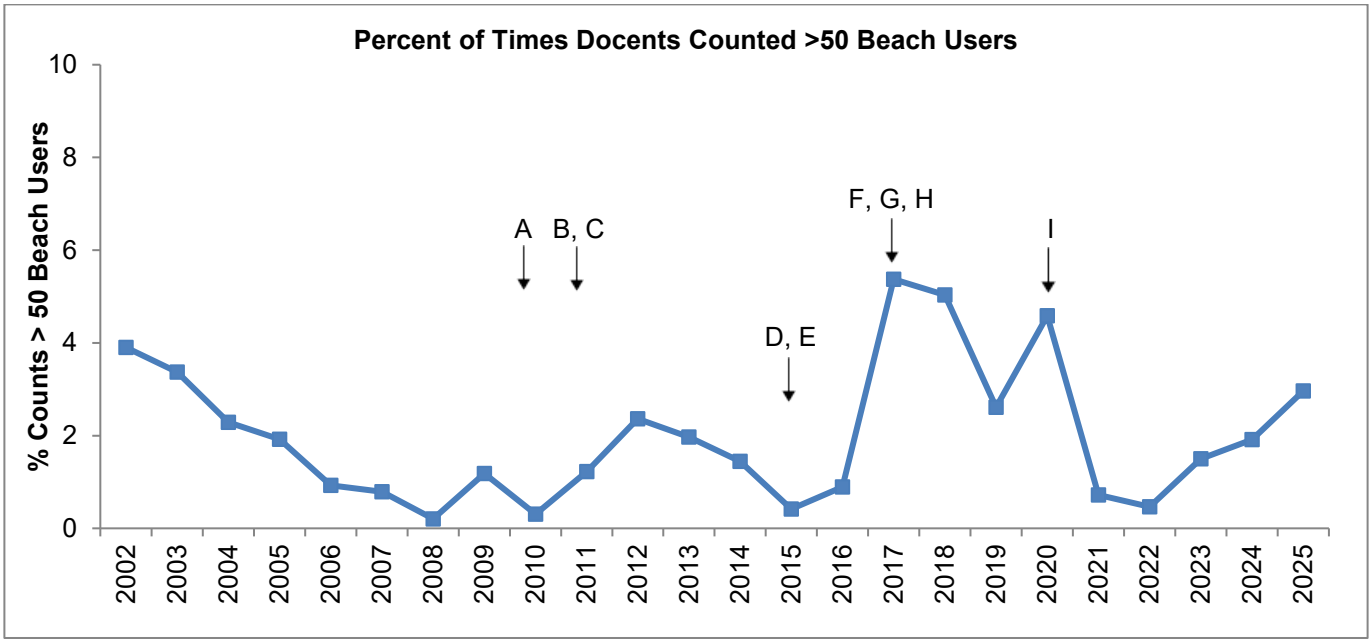

Figure 16. Percent of times that the docents counted more than 50 beach users during snapshot surveys (blue line, left axis). These data do not include people in the ocean. The arrows correspond to various events that may have influenced changes in beach use: (A) 2010: A gate was installed at the end of Slough Road to reduce illegal beach parking, (B) 2011: A new beach parking lot (Lot 45) opened on West Campus, (C) Summer 2011: UCSB started offering Summer sessions, (D) Summer 2015: Refugio oil spill closed the beach for 4 weeks, (E) Fall 2015: Opening of Sierra Madre Dormitory, 506 students, (F) Fall 2017: Opening of San Joaquin Dormitory, 1,300 students, (G) Fall 2017: Opening of Sierra Madre Apartments, 36 units, (H) 2017 Opening of Santa Catalina renovations, 1,500 students, and (I) Covid-19 year (2020).

A dog prohibition policy was implemented in April 2024. In 2025, the estimated number of dogs arriving at the beach over the year was reduced by almost 2,000 dogs compared to the number of dogs on the beach in 2023, a 58% reduction in annual number of dogs (Figure 17, Figure 18). Despite these measures, some dogs were still coming to Sands Beach. In these cases, the docents talked about the new policy to dog owners. After contact with a docent, an additional 864 dogs left the beach resulting in an 86% reduction in annual number of dogs. Our goal for each year is to continue to inform the community to reduce the number of dogs on the beach to nearly zero.

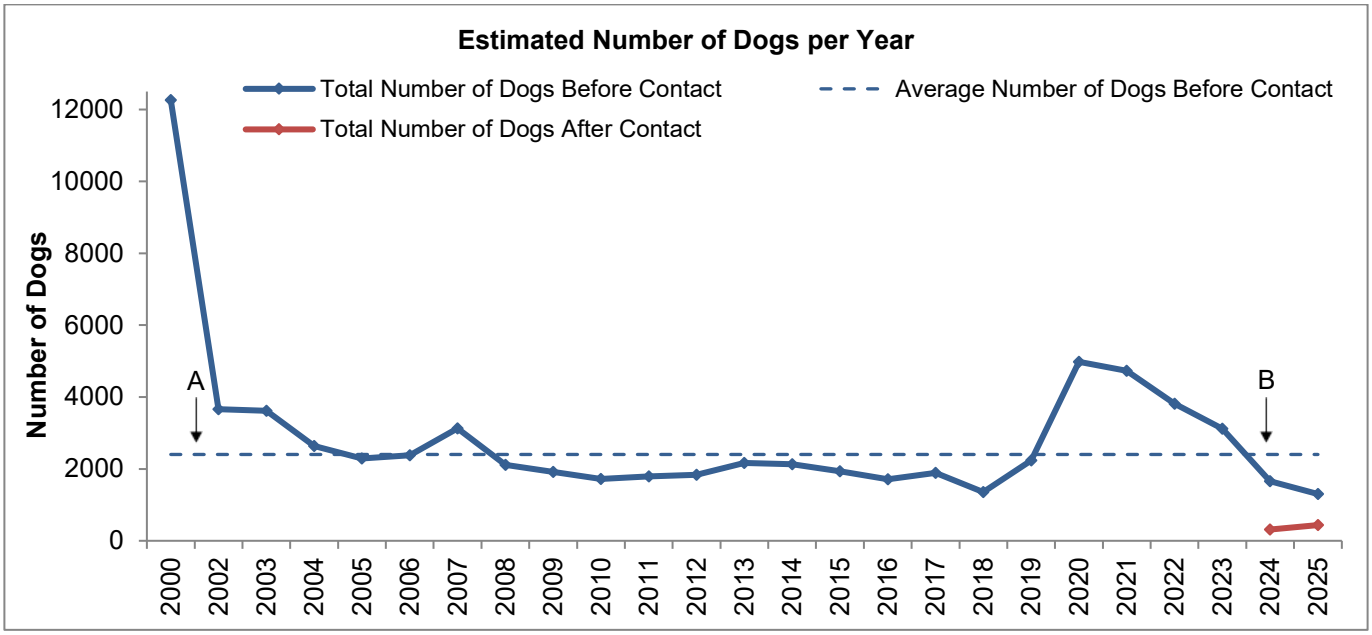

Figure 17. Estimated total number of dogs at the reserve each year. Estimates based on the hourly rate of dogs observed by docents ((# dogs/hr)*(12 hrs/day)*(365 days/yr)). The arrows correspond to policy changes that may have influenced changes in beach use by dog owners: (A) 2001: the Snowy Plover Recovery Program was implemented; docents began requesting dog owners to leash their dogs on Sands Beach, (B) 2024: the dog prohibition policy was implemented; docents began requesting dog owners not to bring their dogs to Sands Beach.

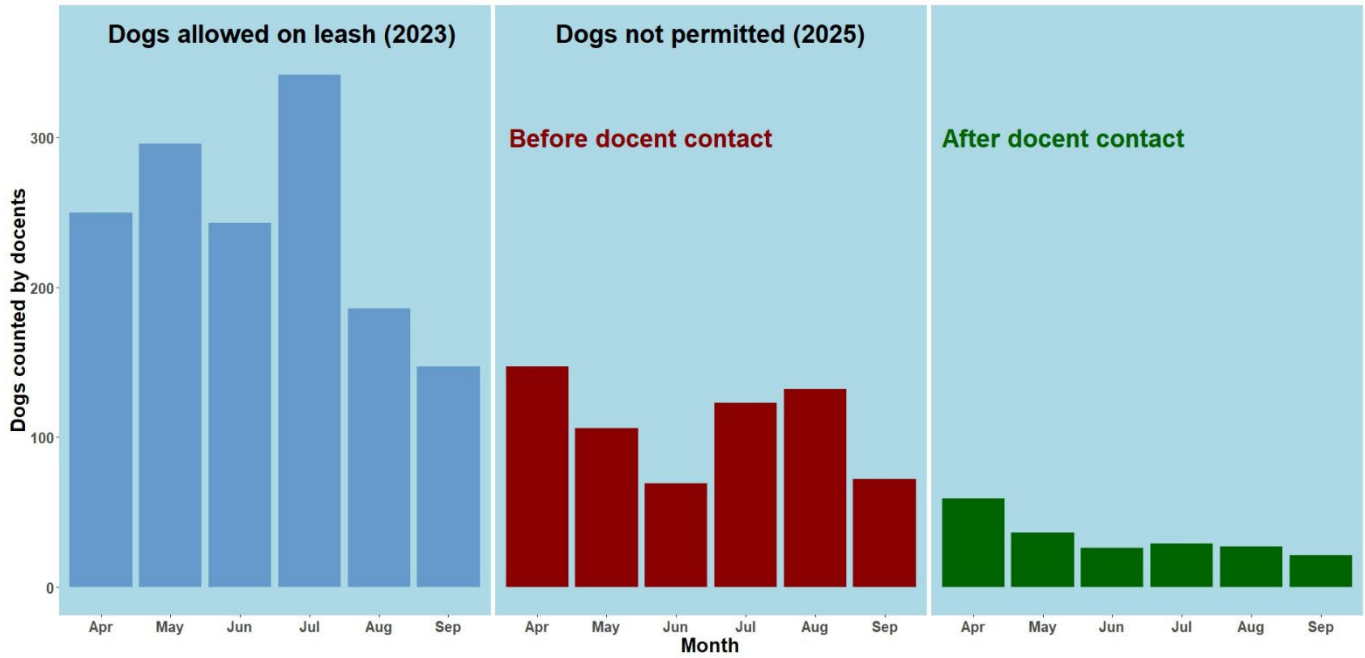

Figure 18. Number of dogs counted by docents each month. The first panel, in blue, shows counts from 2023 when dogs on leashes were allowed on the beach. The center panel, in red, shows dog counts for the same months in 2024 when the dogs were not permitted on the beach. The last panel in green shows dog counts in 2024, after a docent politely informed the dog owner about the ban.

Based on docent data, we estimate that there were 697 trespassing events of people into the plover nesting area in 2025 (Figure 19). This is higher than average and likely related to the additional time that the symbolic fence was absent from the beach during the winter and spring season. Typically, the symbolic fence is installed in early March, however over the last few years it has not been installed until early April due to the late season storms. The fence was removed for the winter season in early November. The majority of trespassing occurred when the fences were removed due to storms. This explains the clearly elevated rate of trespassing in winter (Figure 20).

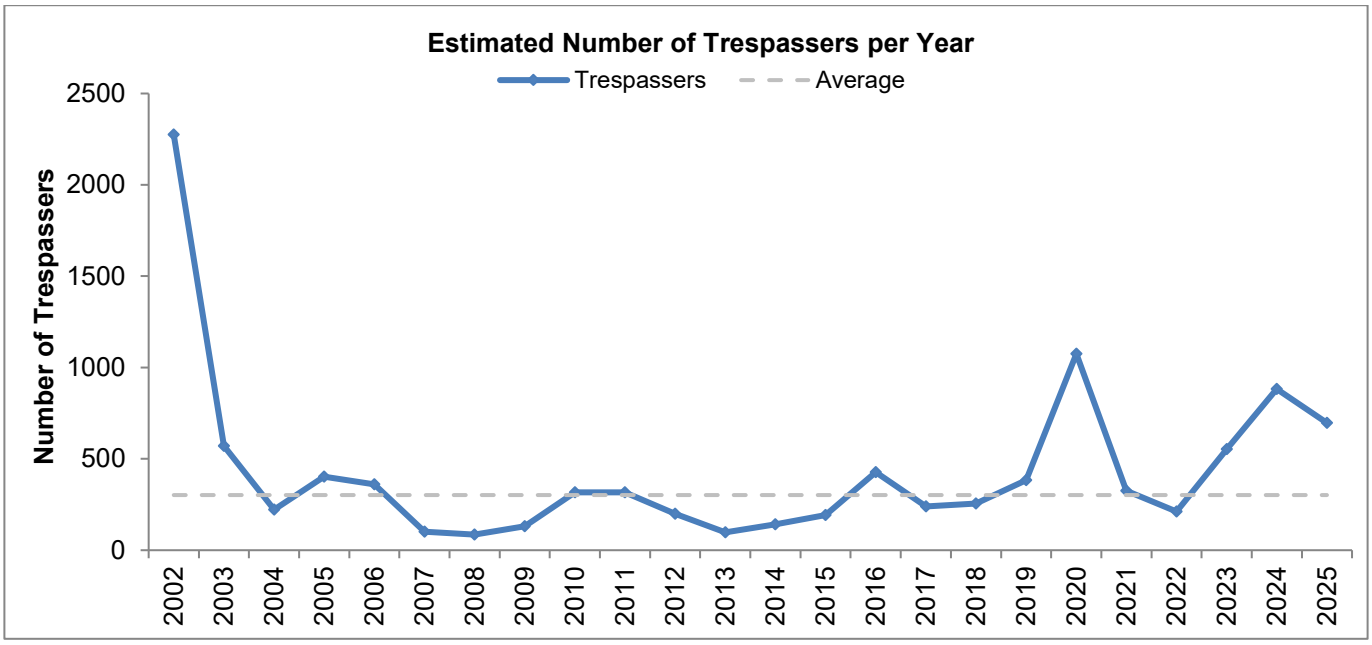

Figure 19. Estimated total number of visitors trespassing into protected habitat each year. Estimates based on the hourly rate of trespassers observed by docents ((# trespassers/hr)*(12 hrs/day)*(365 days/yr)).

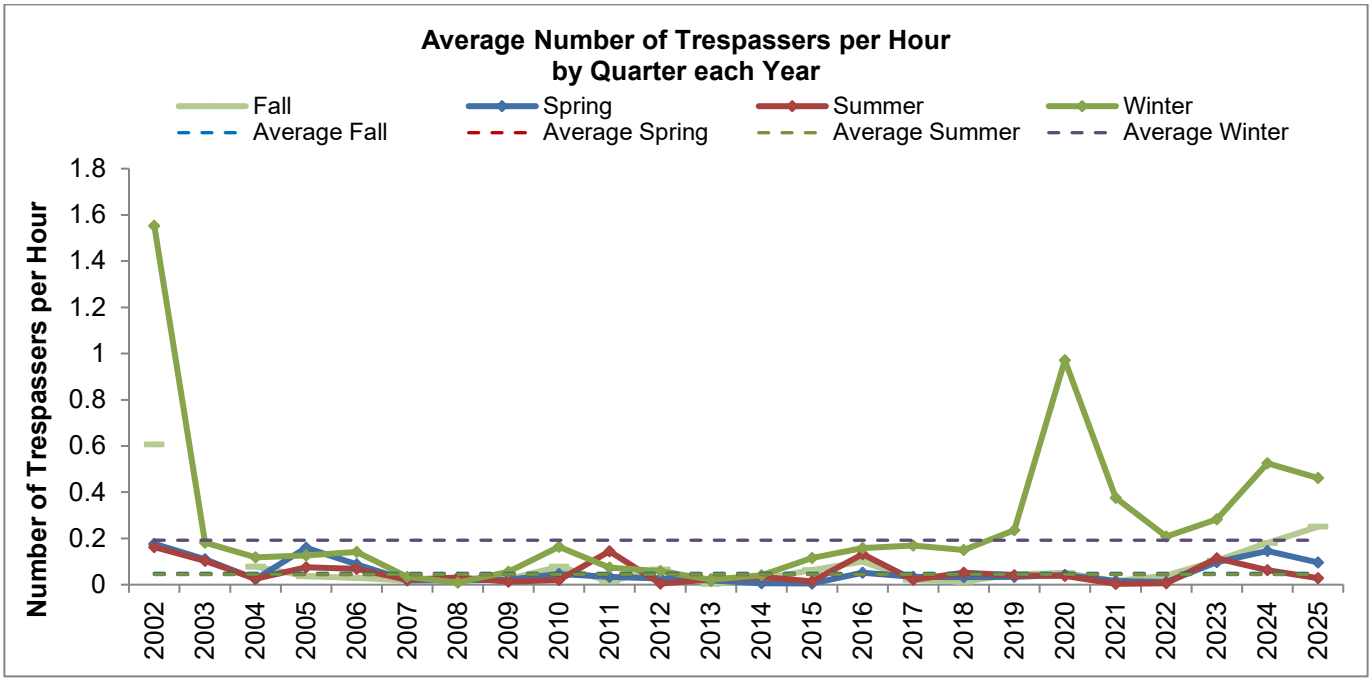

Figure 20. Average number of trespassers each quarter. Note that the highest numbers of trespassers are during the winter quarter when the symbolic fence is removed and the WSP habitat is marked only with signs.

CONCLUSION

The breeding population of WSP at COPR has recovered since the implementation of a conservation plan in 2001. The wintering population at the reserve this year was below average for this site and the number of breeding adults has been above average over the last eight years. The docent program continues to be an effective and integral conservation strategy to reduce human disturbance on the plovers. However, pressure from increasing human population using the beach, a university-owned parking lot with approximately 120 visitor spaces on West Campus, and a reduction in beach area from sea level rise are making it more challenging for docents to protect the plovers from human disturbance. Despite the great benefits that signs, fences, and docents contribute towards improving compliance of beach regulations by beach goers, the total amount of disturbances can still increase as the number of people on the beach increases. A great example is the problem of dogs off leash. In the last 5 years before dogs were prohibited on the beach, more people were complying with the leash law, but still, the number of unleashed dogs had increased because the total number of both leashed and unleashed dogs had increased at Sands Beach. Only once we implemented the dog prohibition policy at Sands Beach in 2024 did we see

the total number of dogs decrease. This pattern shows the importance of capping the number of people on beaches that are habitats for sensitive wildlife such as WSP. The CA Coastal Commission's mandate to provide more beach access through parking lots has increased impacts on sensitive resources and should require careful planning to avoid beach overuse and deterioration of natural resources. For example, in 2025, despite signs and education about dog prohibition at Sands Beach, a nest was lost to a dog and its owner inside the nesting habitat. Even with consistent docent efforts and signage about appropriate beach use, a large group of students had a frisbee game and caused the "take" of one chick in 2024. In 2023, bonfires in the plover habitat resulted in "take" of 4 nests. Relocating parking lots to less sensitive areas and reducing the number of parking spaces may be a way to improve the impacts of beach overuse and better comply with the Coastal Commission's priority of conservation over beach access.

The control of urban predators such as skunks, crows, and gulls has become a management priority to improve both hatching and fledging success of plovers. COPR has not yet secured recurrent funds for predator control and thus employs a minimum number of USDA staff hours each year. It continues to be crucial to initiate predator control prior to the plover nesting season, or as soon as there is evidence of potential predators in the vicinity of the nesting area.

RECOMMENDATIONS

- The predator control program needs to be funded with more trap hours and in perpetuity.
- Other means to deter skunks should be explored, as exclosures and trapping have not always been effective in protecting nests from skunks. Skunks are an urbanization problem and may be improved if dog and cat food in local neighborhoods were not left outdoor at night.
- An alternative beach access and parking for Devereux Beach could help reduce recreational pressure at Sands Beach and protect the WSP.
- The number of take by people trespassing and partying in the plover nesting area has increased. A possible way to reduce the take is to close the West Campus parking lots at night since these trespassing happen at night when docents are not available.
- The reserve staff is developing a campaign to reduce the disturbance to chicks along the corridor, their main feeding area.

ACKNOWLEDGEMENTS

Armando Aispuro (Resource Manager), Cristina Sandoval (Reserve Director), and Jessica Gray (Conservation Specialist) conducted plover monitoring. Jessica managed the docent program. We are very thankful to Rick Fellows and Bill Boelcke who each donated over 200 hours towards the Snowy Plover Docent Program this year, in addition to countless additional hours spent conducting restoration work and maintaining the reserve. The docents, 63 volunteers and interns over the course of 2025, maintained a presence at the beach every day of the year. Arthur Young, Charles Richards, and Don Simms (USDA) implemented predator management during the breeding season. The Santa Barbara Zoo conducted all captive rearing of WSP rescued from COPR.

California Least Terns

We did not observe any courtship or mating behavior of California Least Terns this year. There has not been confirmed nesting of Least Terns at COPR since 2011 (Table 12).

Bibliography of other Snowy Plover studies at COPR:

Colwell, M. A., Raby, K. M., & Feucht, E. J. 2018. Breeding efficiency: a metric for assessing habitat quality and individual performance?. *Wader Study*, *125*(3), 2018.

Lafferty, K.D. 2000. Status, trends and conservation of the western snowy plover with a focus on the Devereux Slough population at Coal Oil Point Reserve, Santa Barbara County, CA. Museum of Systematics and Ecology, University of California, Santa Barbara, Santa Barbara, CA.

Lafferty, K.D. 2001a. Birds at a southern California beach: seasonality, habitat use and disturbance by human activity. Biodiversity and Conservation 10: 1-14.

Lafferty, K.D. 2001b. Disturbance to wintering western snowy plovers. Biological Conservation 101: 315-325.

Lafferty, K.D., Goodman, D., & Sandoval, C.P. 2005. Restoration of breeding by snowy plovers following protection from disturbance. Biodiversity and Conservation. Online at: http://www.kluweronline.com/issn/0960-3115

Nielsen, J., Hampton, S. & Sandoval, C. 2017. Cooperation between Response Crews and Land Managers Protects Snowy Plovers during the Refugio Oil Spill. International Oil Spill Conference Proceedings. 2017. 618-633. 10.7901/2169-3358-2017.1.618.

Sandoval, C.P. 2019. COPR Beach Access Management Plan and Snowy Plover Management Plan. Coal Oil Point Reserve, University of California Santa Barbara.

US Fish and Wildlife Service, 2007. Recovery plan for the Pacific coast population of the Western Snowy Plover (*Charadrius alexandrinus nivosus*).

APPENDIX A

Band sightings by COPR staff at Sands Beach

Note: "X" represents unknown band, i.e. when plover is standing on one leg and observer can only view bands on exposed leg.

Table 7. Summary of banded WSP recorded at COPR by staff and docents in 2025.

Left leg	Right leg	Band Origin (if known)
aa	kr	unknown
ak	gp	Eden Landing Ecological Reserve, Hayward (2022)
ak	pg	Don Edwards SF Bay NWR in Menlo Park (2024, banded as adult second year)
ao	nk	unknown
ap	aa	SBZ (2025), rescued at COPR, released at COPR
ap	ab	SBZ (2025), rescued at Ormond, released at COPR
ap	al	SBZ (2025), rescued at Ormond, released at COPR
ap	an	SBZ (2025), rescued at Ormond, released at COPR
ap	ao	SBZ (2025), rescued at Ormond, released at COPR
ap	ap	SBZ (2025), rescued at COPR, released at COPR
ap	ar	ODSVRA (2025), chick taken to SBZ, released at COPR
ap	aw	SBZ (2025), rescued at COPR, released at COPR
ap	ay	SBZ (2025), rescued at Ormond, released at COPR
ap	bb	SBZ (2025), rescued at ODSVA, released at COPR
ap	bl	SBZ (2025), rescued at COPR, released at COPR
ap	bo	SBZ (2025), rescued at ODSVA, released at COPR
ap	br	SBZ (2025), rescued at ODSVA, released at COPR
ap	bw	SBZ (2025), rescued at Oso Flaco, released at COPR
ap	wa	SBZ (2025), rescued at COPR, released at COPR
ap	wb	SBZ (2025), rescued at COPR, released at COPR
ap	wn	SBZ (2025), rescued at COPR, released at COPR
ap	wo	SBZ (2025), rescued at COPR, released at COPR
ap	wp	SBZ (2025), rescued at COPR, released at COPR
ap	wr	SBZ (2025), rescued at COPR, released at COPR
ap	ww	SBZ (2025), rescued at COPR, released at COPR
ap	wy	SBZ (2025), rescued at COPR, released at COPR
bb	gy	ODSVRA (2025)
bb	ry	ODSVRA (2021)
bb	vr	ODSVRA (2024)
ga	ab	ODSVRA (2025), chick taken to SBZ, released at COPR
ga	ly	ODSVRA (2025)
ga	og	ODSVRA (2025)
ga	pb	ODSVRA (2017)
ga	vv	OSDVRA (2023 or 2024)

Gb	kb	unknown
gg	br	ODSVRA (2023)
gg	gw	ODSVRA (2024)
gg	lg	ODSVRA 2025
gg	og	ODSVRA (2024)
gg	vw	OSDVRA (2023)
gg	yb	ODSVRA 2024
gn	aa	VSFB – Surf Beach North (2022)
k	a	Rancho Guadalupe County Park 2025
kb	kb	unknown
Kg	pb	unknown
ny	rv	VSFB - Shuman South Beach (2021)
pg	aa	OSDVRA (2023)
pg	oo	ODSVRA (2023)
pv	ga	ODSVRA (2024)
pv	la	ODSVRA (2025)
py	ao	SBZ (2022), rescued at Ormond Beach, released at COPR
py	ar	SBZ (2022), rescued at ODSVRA, released at COPR
py	gg	SBZ (2021), rescued at ODSVRA, released at COPR
py	gl	SBZ (2024)
py	la	SBZ (2024), rescued at COPR, released at COPR
py	lg	SBZ (2024)
py	lv	SBZ (2024), rescued at ODSVRA, released at COPR
py	oo	SBZ (2021), rescued at COPR, released at COPR
py	vy	SBZ (2022), rescued at ODSVRA, released at COPR
py	wa	SBZ (2021), rescued at ODSVRA, released at COPR
py	ww	SBZ (2021), rescued at ODSVRA, released at COPR
py	yy	SBZ (2022), rescued at ODSVRA, released at COPR
r	a/r/a	VSFB - Minuteman (2022)
rr	al	ODSVRA (2025)
rv	gg	unknown
vg	lg	ODSVRA (2025)
vg	or	ODSVRA 2024
vg	wa	ODSVRA (2024)
vv	ay	ODSVRA (2024)

APPENDIX B
USDA Report

USDA
United States Department of Agriculture

Animal and Plant Health Inspection Service

Wildlife Services

3419A Arden Way
Sacramento,
CA 95825
Voice
916.979.2675

Subject: Coal Oil Point Reserve Predator Management Report for Fiscal Year 2025.

Date: 01/08/2025

To: Cristina Sandoval

Coal Oil Point Reserve
Natural Reserve System
University of California

This report covers predator management activities conducted by USDA Wildlife Services (WS) between October 1st, 2024 and September 30th, 2025, at Coal Oil Point Reserve. The main objective of this project is to protect the Federally Endangered Western snowy plover (*Charadrius nivosus)* from mammalian and avian predation. Predator removal was conducted by Assistant District Supervisor Arthur Young, Wildlife Biologist Charles Richards, and Wildlife Specialist Don Simms. A breakdown of the hours worked on the project can be found in Table 1.

Table 1. Hours worked

Task	Hours
Field work	109.00
Office duties	5.00
Equipment Maintenance	0
Travel	0
Total	114.00

Control methods used were DRC-1339 avian pesticide, cage traps, and firearms to remove a total of 52 target predators. 39 American crows, 8 raccoons, 3 Virginia opossums, 2 striped skunks were removed during this period (Table 2). All mammals were euthanized by shooting, CO2, or sodium pentobarbital. Predator carcasses were disposed of according to WS directives, and all applicable state and federal laws and regulations. Traps were mostly set along the exclusion fence on the southern part of reserve. DRC-1339 was deployed in accordance with label restrictions (FY25 usage: 0.58 g).

Table 2. Predators captured and methods employed

Method	Opossum	Raccoon	Crow	Skunk	Total
Cage Trap	3	8	0	2	13
DRC-1339	0	0	33	0	33
Firearm	0	0	6	0	6
Total	**3**	**8**	**39**	**2**	**52**

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Map 1. Locations of fieldwork

APPENDIX C

Nesting Data from WSP habitat adjacent to COPR

Table 11. WSP nesting data from UCSB North Campus Open Space (NCOS). First nest observed in 2018.

Year	# nests	# nests hatched	# nests predated by skunks	# nests predated by crows	# nests abandoned	# nests fledged
2018	1	0	0	1	0	0
2019	3	0	2	1	0	0
2020	1	1	0	0	0	0
2021	0	n/a	n/a.	n/a.	n/a	n/a
2022	3	2	unknown	unknown	0	2
2023	0	n/a	n/a.	n/a.	n/a	n/a
2024	0	n/a	n/a	n/a	n/a	n/a
2025	2	2	0	0	0	1

Table 12. WSP nesting data from Ellwood Beach, Goleta. First nest observed in 2019.

Year	# nests	# nests hatched	# nests predated by skunks	# nests predated by crows	# nests washed out by tide	# nests abandoned	# nests fledged
2019	1	0	0	1	0	0	n/a
2020	0	n/a	n/a	n/a	0	0	n/a
2021	0	n/a	n/a	n/a	0	0	n/a
2022	0	n/a	n/a	n/a	0	0	n/a
2023	2	2	0	0	0	0	2
2024	5	2	0	0	2	1	2
2025	2	2	0	0	0	0	2

APPENDIX D

California Least Tern Nesting Data from at COPR

Table 13. LETE nesting data from COPR. First nest observed in 2006.

Year	# nests	# nests hatched	# nests predated by skunks	# nests predated by crows	# nests abandoned
2006	5	4	0	0	1
2007	6	1	5	0	0
2008	1	0	1	0	0
2009	0	n/a	n/a	n/a	n/a
2010	0	n/a	n/a	n/a	n/a
2011	1	0	0	0	1
2012	0	n/a	n/a	n/a	n/a
2013	0	n/a	n/a	n/a	n/a
2014	0	n/a	n/a	n/a	n/a
2015	0	n/a	n/a	n/a	n/a
2016	0	n/a	n/a	n/a	n/a
2017	0	n/a	n/a	n/a	n/a
2018	0	n/a	n/a	n/a	n/a
2019	0	n/a	n/a	n/a	n/a
2020	0	n/a	n/a	n/a	n/a
2021	0	n/a	n/a	n/a	n/a
2022	0	n/a	n/a	n/a	n/a
2023	0	n/a	n/a	n/a	n/a
2024	0	n/a	n/a	n/a	n/a
2025	0	n/a	n/a	n/a	n/a