

---

## 2005 Final Report on the Western Snowy Plovers

---

Coal Oil Point Reserve, Santa Barbara, CA

*Contact for this report:*  
Cristina Sandoval  
Marine Science Institute  
University of California  
Santa Barbara, CA 93106  
[Sandoval@lifesci.ucsb.edu](mailto:Sandoval@lifesci.ucsb.edu)  
<http://coaloilpoint.ucnrs.org>

Site: Sand's 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: 400 m during Winter and fall 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 along protected areas

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 daily in the spring and

Summer.

Predator management? Trapping of mammalian predators, harassment of crows, mini-exclosures.

INDEX

ABSTRACT.....	3
INTRODUCTION .....	3
METHODS AND RESULTS .....	3
WINTERING POPULATION.....	4
BREEDING POPULATION .....	5
Beach nesting.....	5
Hand-raised chicks.....	5
Predation .....	7
Enforcement.....	9
Location of nests.....	10
Docent program .....	12
APPENDIX 1. Band sightings.....	13
CONCLUSION.....	13
RECOMMENDATIONS.....	13

## **ABSTRACT**

In 2005 we continued with the management of the WSP population at Coal Oil Point Reserve as in previous year. In addition, we started a predator management program and raised chicks from destroyed or abandoned nests. 30 chicks were fledged by their fathers and another 17 were fledged in our hand-raising nursery. 2005 was a year of high predation by skunks, but the plovers re-nested for a third time and were able to successfully raise chicks after we trapped skunks and reduced access of skunks to the beach.

## **INTRODUCTION**

Sands beach at Coal Oil Point Reserve (COPR) has a wintering and a breeding population of the Western Snowy Plover. The beach is open to the public all year, but a portion of the dry sandy beach, which is the plover habitat, has been protected since Spring 2001. The population of wintering plovers increased and a growing breeding population has been established. Although Sands beach is relatively small, it has the largest population of wintering plovers in US. Rich kelp wrack and an estuary provide food for plovers and other shorebirds all year around.

## **METHODS AND RESULTS**

The 2001-2004 report (Sandoval, 2004) describes the management actions taken to protect the wintering and breeding populations of WSP at the reserve since 2001. Figure 1 shows the location of the plover habitat and the permanent and seasonal fences to protect them.



Figure 1. Location of the habitat protected for the Western Snowy Plovers on Sands beach at Coal Oil Point Reserve.

### WINTERING POPULATION

Plovers were counted weekly by Melissa Kelly. She walked along the wet sand from the eastern boundary of Sands beach to the western boundary of the Reserve (Figure 1) spotting and counting plovers with a binocular. All plovers, including those feeding near the shore, were counted. Color bands were also recorded and photographed when possible. The number of plovers on the beach during the winter season increased each year reaching a maximum of 406 in 2003 Lafferty et al (2005).

Several banded plovers were observed during winter and one banded plover bred at COPR. A list of the individuals sighted and the dates are listed in Appendix 1.

BREEDING POPULATION

**Beach nesting**

The number and location of adult plovers, nests, and chicks was counted 3 times per week by Cristina Sandoval, during the breeding season. The maximum number of plover pairs observed in 2005 was 30. This is the highest number of pairs in the history of our monitoring. 65 nests were found and, of those, 16 successfully hatched at least one chick. Thus, nest loss reached 75% in 2005, a higher loss than previous years (Table 1). Yet, the number of chicks per male was still twice the minimum expected of 1.0

Table 1. Changes in breeding at Coal Oil Point since 2001. All values represent totals for the year except the pairs column, which represents the peak number of nests at one point in time.

Year	Pairs	Nests	Eggs Laid	Nests Hatched Nests hatched/nests	Chicks Fledged (Fledged/male)
1970- 2000	few	~2-4/30yr	~7-8/30yr	none	none
2001	1	1	2-3	1 (100%)	1 (1)
2002	5	9	21	6 (67%)	14 (2.8)
2003	12	24	63	16 (67%)	40 (3.3)
2004	26	51	141	20 (39%)	27 (2.1)
2005	30	64	167	16 (25%)	30 + 17 (2.0)
Total during protection	74	149	434	59	119

**Hand-raised chicks**

Eggs from abandoned or destroyed nests were brought to our plover nursery and incubated at 99.5 degrees F until hatching. After hatching, they were transferred to a terrarium measuring 2 ft wide, 4 ft long, and 1.5 ft tall. After 3-5 days, they were moved outside of the building into an aviary 5.5 ft wide x 16 ft long x 7 ft tall. At night, the chicks were moved back to the building until 2 weeks of age. After that, they were left to

sleep outside, in a closed wooden box. The chicks had a source of heat from a warm lamp at all times. They were released back to the beach when they were 35 days old, or until they tails were fully developed. The chicks were fed beach hoppers at libitum and meal-worms, as a treat, once a day. The beach hoppers were collected daily from under kelp wrack on the beach. They were also offered (but rejected) bloodworms and cat food.

Most eggs that were collected came from nests abandoned after the nest was buried by sand during strong wind (Table 2).

Table 2. Cause of nest failure of the nests that were collected to be incubated.

Cause	# nests	%
Wind	8	47
Tide	4	24
Abandoned	4	24
Adult pred	1	6
Total	17	100%

The fate of 36 collected eggs was determined (Table 3). 61% of those hatched successfully. The eggs that did not hatch were infertile or had dead embryos inside. Of the 5 chicks that died after hatching, one had a breathing problem at birth, one was entangled in a string, and the others were apparently healthy and died for unknown reasons.

Table 3. Fate of abandoned eggs collected from the beach to be hand-raised.

	Number	Percent
Eggs collected	36	100%
Eggs hatched	22	61%
Eggs infertile	7	19%
Dead unborn embryo	7	19%
Fledged	17	77% (of eggs hatched)

### Predation

Skunks were the main cause of nest failure in 2005, followed by abandonment and wind. (Figure 2 and 3, Table 4). Mini-exlosures were effective in reducing nest failure by crows. Yet, there was still some crow predation when crows found a nest before we placed the exclosure. Skunks were able to pass through the 2" x 2" mesh of an enclosure. We also tried 2" x 2" mesh but the baby skunks could still pass through. We concluded from the footprints left that the skunk mothers took their young to the nest and the young entered the exclosure through the mesh. The exclosures did not seem to increase nest predation by skunks since the skunks ate all eggs with or without exclosures. To reduce skunk predation we installed a fine plastic mesh fence (1/2 " x 1/2") between the nesting area and the vegetated dunes, where the skunks sleep during the day. This fence was effective as long we did daily checks to repair holes made by squirrels. We also trapped skunks on the vegetated dunes and this corresponded with reduced nest loss at the end of the nesting season. The Red-tail hawk that roosted near the nesting area in 2004 moved away and did not take chicks in 2005.

Table 4. Number of nests lost by fate.

	2002	2003	2004	2005	Total nests
Total nests	9	24	51	64	148
Hatched	6	17	20	16	59
Skunk			10	18	28
Crow	2	4	8	3	17
Wind	1	3	2	6	12
Tide			5	5	10
Abandoned			0	9	9
Flooded			0	3	3
Raccoon			2	1	3
Whimbrel			1	0	1
Opossum				1	1
Unknown			0	1	1
Unk pred				1	1
Total lost	3	7	28	48	86
% loss	33%	29%	55%	75%	

Occasional sightings of domestic cats around the Devereux Slough have been report by docents. We do not know if cats have preyed on plover adults or chicks.

One chick died during the 4th of July fireworks. The fireworks were 2,500 m away from the nesting area, at the City of Goleta's Girsh Park. It is possible that the chick died because of disturbance of the nest by the fireworks. At the start of the fireworks, we observed all adult plovers (and other birds) take flight and chicks ran in a disoriented and stressed fashion (we could hear their peeping).

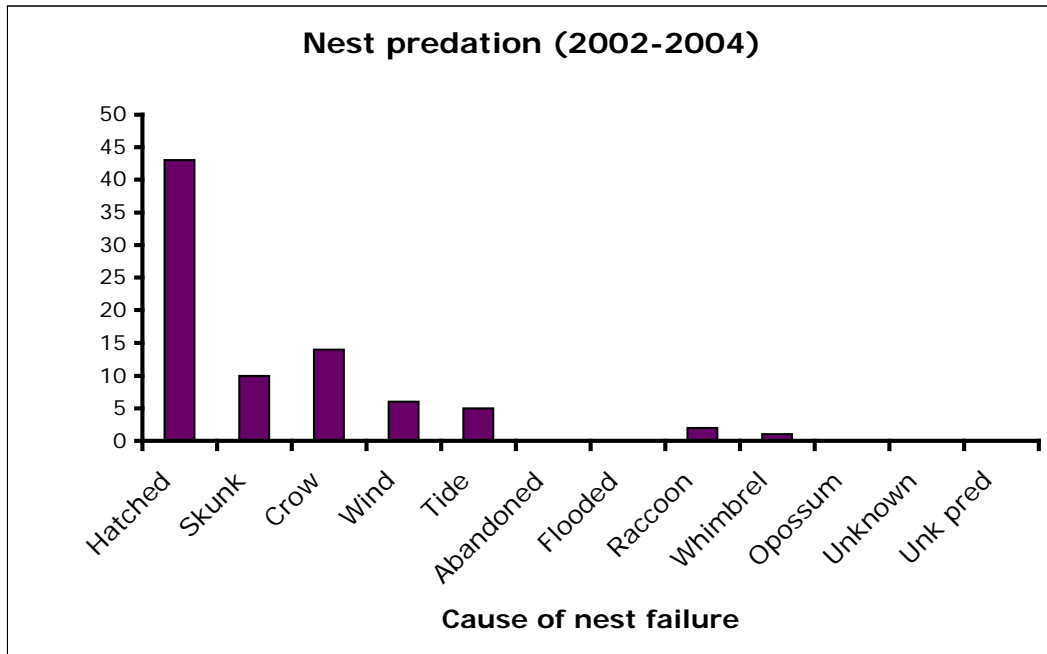


Figure 2. Percent of nests destroyed by various agents between 2002 and 2004



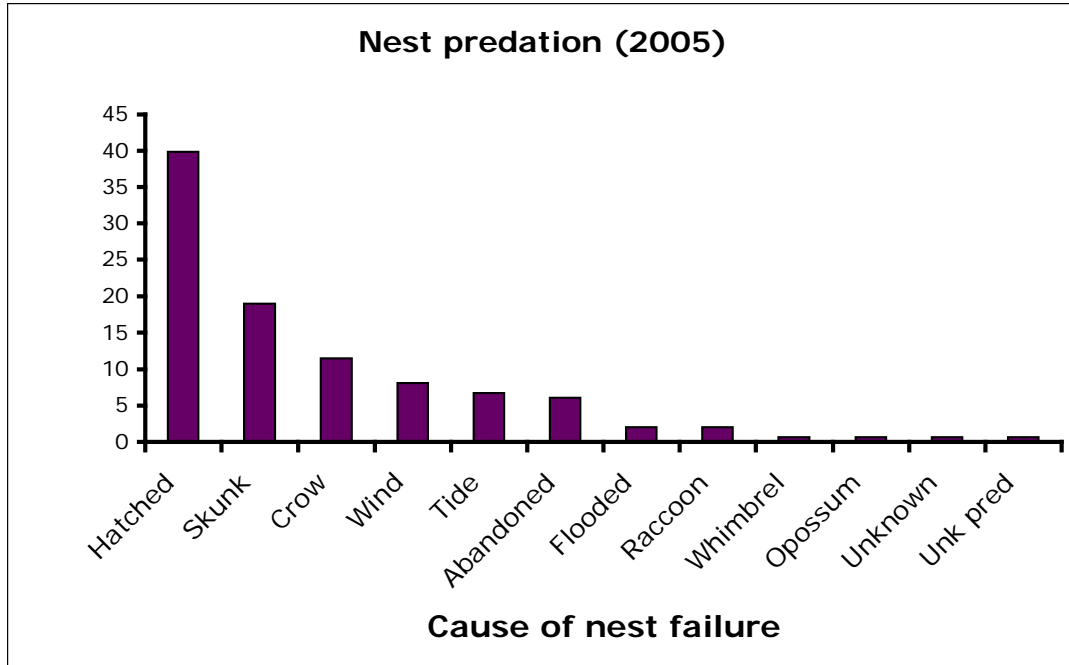


Figure 3. Nest predation in 2005.

### Mini-exclosures

We used mini exclosures on most nests and had a higher proportion of abandoned nests on nests with than without exclosures (Table 5). We suspect the exclosures are causing an increased adult mortality.

Table 5. fate of nests with or without nest exclosures

2005	Caged	uncaged
Hatched	8	8
Abandoned with owl prints/ feathers	1	0
Abandoned no prints or feathers	7	1
Predated other	17	5
Failed other	16	2
Total	49	16

### Enforcement

Enforcement levels continued in 2005 as in previous years. The UCSB Police department has law enforcement jurisdiction at the Reserve. Docents phone Campus Police if beach users refuse to cooperate with requests to follow regulations. Citations to owners of unleashed dogs are at the discretion of each officer. The number of dogs entering the beach without a leash continues to be around 40%. Due to a need for increased enforcement, the Reserve will continue to request regular police patrols of Sand's Beach during the day and at night and will push for a no-tolerance policy for unleashed dogs.

### **Location of nests**

The location of each nest was mapped into a GIS database. The plovers preferred to nest on the wider overwash zone near the slough mouth, but also used the narrower beach backed by dunes east and west of the slough (Figures 4 and 5). There was no clear spatial pattern in nests that hatched or failed (Figure 5).

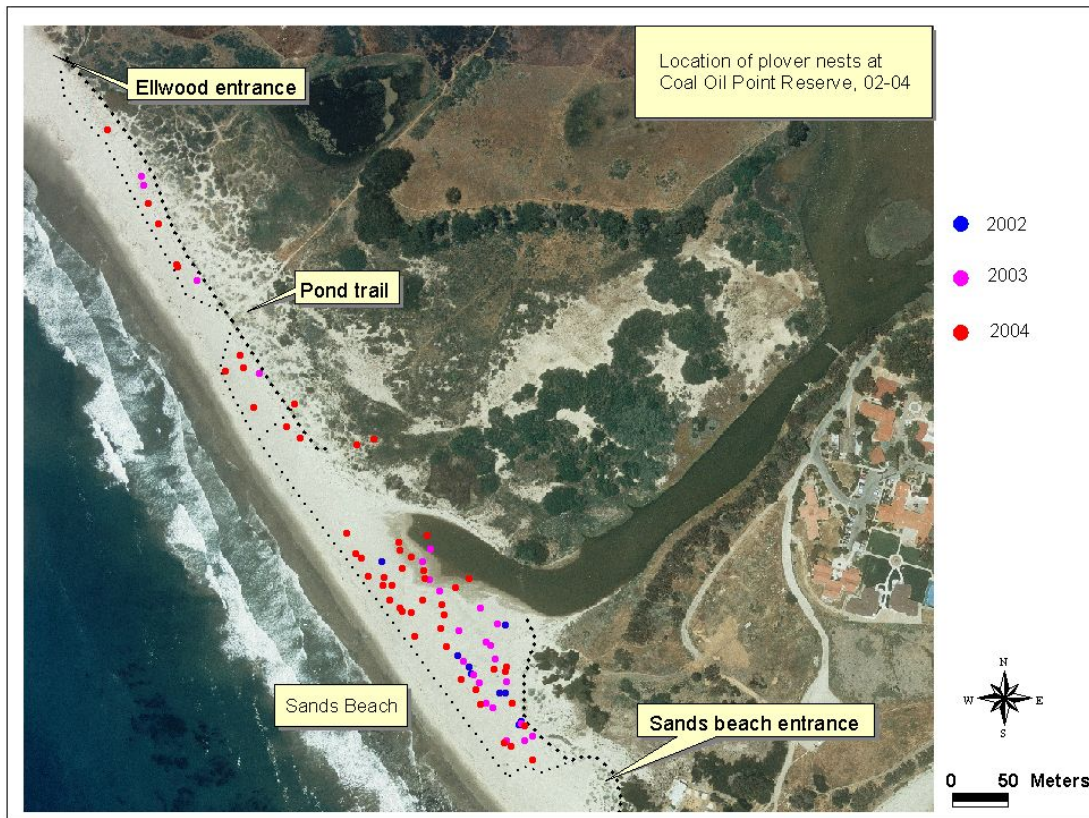


Figure 4. Location of all plover nests in 2005.

QuickTime™ and a  
TIFF (LZW) decompressor  
are needed to see this picture.

Figure 5. Location of failed and hatched nests in 2005.

### **Docent program**

The docent program continued in 2005 with approximately 65 docents, totaling 3,400 work-hours at the beach. We trained docents once a month, except for December 2005. The docents were responsible for informing beach goers about Reserve rules and about the need to protect plovers. They used a spotting scope to show plovers and chicks to the public. Chick viewing was an effective outreach tool for demonstrating the sensitivity of plovers to human impact.

The docents met twice a year to receive updates about plover status and socialize. Some docents assisted the Reserve director in installing and maintaining the fences and signs. The docents started a new 503-C organization called Friends of Coal Oil Point Reserve, with the mission to support the Reserve and the plover program.

## **APPENDIX 1. Band sightings**

We did not band adult plovers or chicks in 2005. Several banded plovers were observed at the reserve in 2005. A detailed list of the sightings of banded plovers is given in Appendix 1 as a separate attachment.

## **CONCLUSION**

The plover breeding and wintering populations continue to increase since 2001, when we began active management of beach recreation. The management strategies we have employed at Sands beach dramatically benefit plovers without greatly inconveniencing beach users.

## **RECOMMENDATIONS**

- The management actions implemented so far have been effective in reducing disturbance caused by humans and encouraged successful breeding of plovers. These actions should continue in perpetuity since, without them, the plover population and other shorebirds, are not sustainable at the Reserve due to disturbance by beach recreation.
- Unleashed dogs continue to be a problem, requiring constant vigilance by the docents. We recommend that the leash law be strictly enforced by regular patrols of an officer or ranger, or that dogs not be allowed at the reserve.
- The skunk population at the beach needs to be reduced. The reserve staff should continue trapping throughout the breeding season. An electric fence between the nesting area and the vegetated dunes may help keep the skunks away from the beach.
- The hand-raising of chicks significantly contributed to the breeding success in 2005. This project was labor-intensive because of the feeding with beach hoppers that had to be caught daily. This effort is worth continuing if additional funds are available to pay a staff who would assist with feeding.
- The fireworks display should be moved farther from the plover nesting area to a distance that the plovers don't react to it.

- The educational signs need to be updated to reflect current information.
- Management of the Goleta City Ellwood Park needs to be coordinated with the reserve such that dogs in the park do not stray into the reserve.
- Proposed development of faculty and student housing by the university and family housing by the Ocean meadows Golf course will likely increase domestic cats at the reserve. A program for trapping cats may need to be implemented in the future.
- The Open Space management Plan for these developments propose a number of parking lots around the reserve to facilitate beach access. These parking lots, particularly the one at Coal Oil Point will likely increase beach use and the potential for take of plovers.

## **ACKNOWLEDGEMENTS**

We are very thankful to the following individuals who went the extra length to make the program work. Melissa Kelly volunteered to count plovers every Sunday morning. Jennifer Stroh, the docent coordinator, recruited docents and ensured that they were well prepared and happy. Darcie Goodman and Kevin Lafferty continue to monitor the human disturbance. Steve Ferry continues to assist with fence maintenance and removed Arundo from the beach. Callie Bowdish recorded the beauty of the plovers and their natural history through photography. Her photos are kindly available at her website (<http://homepage.mac.com/cjbowdish/COPP/>). The USFWS staff and plover managers provided support, information and ideas, and most importantly, shared enthusiasm for the recovery of the WSP. The docents, too many to count, showed that people care and are willing to work from their hearts to save the plovers.

### **Bibliography of other Snowy Plover studies at COPR:**

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.

Kevin D. Lafferty, Darcie Goodman and Cristina P. Sandoval 2005 (in press).

**Restoration of breeding by snowy plovers following protection from disturbance.** Biodiversity and Conservation. Online at: <http://www.kluweronline.com/issn/0960-3115>