
2006 Final Report on the Western Snowy Plovers

Coal Oil Point Reserve, Santa Barbara, CA

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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: harassment of crows, fencing to prevent skunk.

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ABSTRACT

In 2006 we continued with the management of the WSP population at Coal Oil Point Reserve as in previous year. We abandoned the use of mini-exclosures after Great Horned owls cued in the exclosure to pursue adult plovers. We continued to raise chicks from destroyed or abandoned nests and banded the 10 chicks that fledged in captivity. 48 chicks fledged at the beach and another 11 fledged in our nursery. This was the largest number of fledglings since management started in 2001.

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. Presently, all of the potential breeding habitat is protected during the breeding season and the beach east of the slough mouth is protected during the wintering months. Although Sands beach is relatively small, it has a large population of wintering plovers.

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

In 2006 we have counted plovers regularly as in 2005. When we counted, we 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. Several banded plovers were observed during winter. A list of the bands sighted and the dates observed are listed in Appendix 1.

BREEDING POPULATION

Nesting

The number and location of adult plovers, nests, and chicks was counted 2-3 times per week by Cristina Sandoval, during the breeding season. The maximum number of plover pairs observed in 2006 was 30. 43 nests were found and, of those, 24 successfully hatched at least one chick (75%) (Table 1). The number of chicks per male was still was 2.8 in 2006

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)
2006	20	43	?	24 (56%)	48 + 11 (2.8)

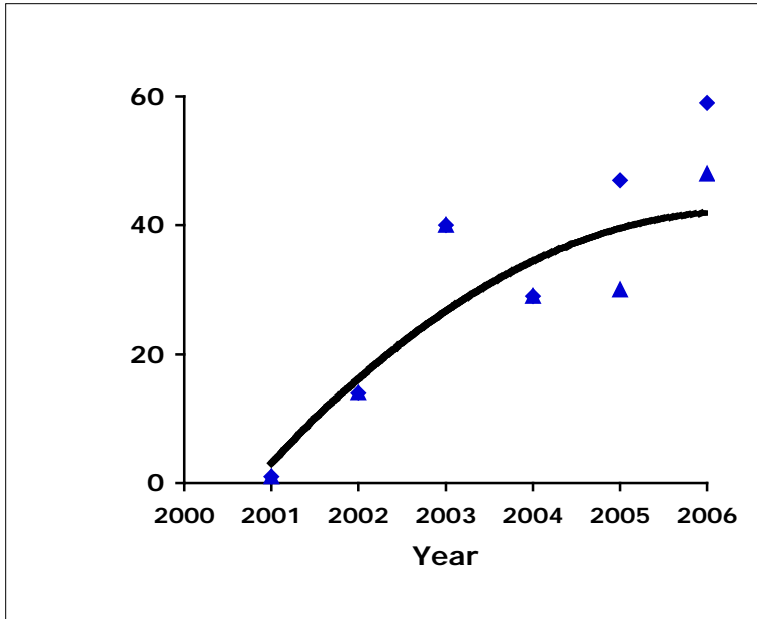


Figure 2. Number of fledglings at Coal Oil Point Reserve. Triangles are the number of chicks naturally fledged at the beach. The diamonds included the chicks fledged at the nursery.

We used mini exclosures for the 3rd year but removed all exclosures after we observed owl predation on some adults (Table 2).

Table 2. Fate of nests with or without exclosures in 2006.

2006		Caged	uncaged
Hatched		5	17
Abandoned	with owl prints/ feathers	5	0
Abandoned	no prints or feathers	2	2
Predated other		0	5
Failed other		3	4
Total		15	28

Table 3. Fate of nests with or without exclosures between 2004, 2005, and 2006.

2004-2006	Caged	uncaged	TOTAL
Hatched	14	47	61
Abandoned with owl prints/ feathers	6	2	8
Abandoned no prints or feathers	10	4	14
Predated other	18	34	52
Failed other	19	13	32
Total	67	100	

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 libidum 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 4).

Table 4. Cause of nest failure of the nests that were collected to be hand-raised.

Cause	#	
	nests	%
Abandoned		
(owl predation on adult)	3	50
Abandoned	2	33

(unknown)		
Human		
(trespasser stepped on nest)	1	16
Total	6	100%

Of the 18 eggs collected 14 hatched (Table 5). In 2006, we did not determine if the unhatched eggs were infertile because we sent these eggs to the laboratory for a study of mercury contamination. One of the unhatched eggs one chick that died while piping. Of the 3 chicks that died after hatching, 2 died right after hatching and one did not thrive and eventually died.

Table 5. Fate of abandoned eggs collected from the beach to be hand-raised.

	Number	Percent
Eggs collected	18	
Eggs hatched	14	78% of eggs collected
Eggs infertile	?	
Dead unborn embryo	1	
Fledged	10	71% (of eggs hatched)

Predation

Great Horned Owls were one of the main causes of adult mortality in 2006, particularly in nests protected by nest exclosures (Figure 3 and 4, Table 2). We promptly removed the exclosures after the first evidence of owl predation on adults. It is likely that the owls also preyed upon on adults of the 3 nests that did not have exclosure and were abandoned. Unfortunately, the owls may not live a footprint when there is not an exclosure so we cannot confirm this hypothesis.

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A meshed skunk fence was again used to help prevent skunks from moving from inland to the beach. Only 2 nests were eaten by skunks in 2006 (Table 6), compared to 18 in 2005. We don't know why 2006 had a low nest loss by skunks.

Table 6. Number of nests lost by fate.

	2002	2003	2004	2005	2006	Total nests
Total nests	9	24	51	64	43	191
Hatched	6	17	20	16	25	84
Skunk			10	18	2	30
Crow	2	4	8	3	0	17
Wind	1	3	2	6	1	13
Tide			5	5	2	12
Abandoned unknown			0	9	3	12
Abandoned Owl	0	0	0	0	6	6
Flooded			0	3	0	3
Raccoon			2	1	0	3
Whimbrel			1	0	0	1
Gull	0	0	0	0	1	0
Opossum				1	0	1
Unknown cause			0	1	3	4
Unk pred				1	1	2
Total lost	3	7	28	48	19	105

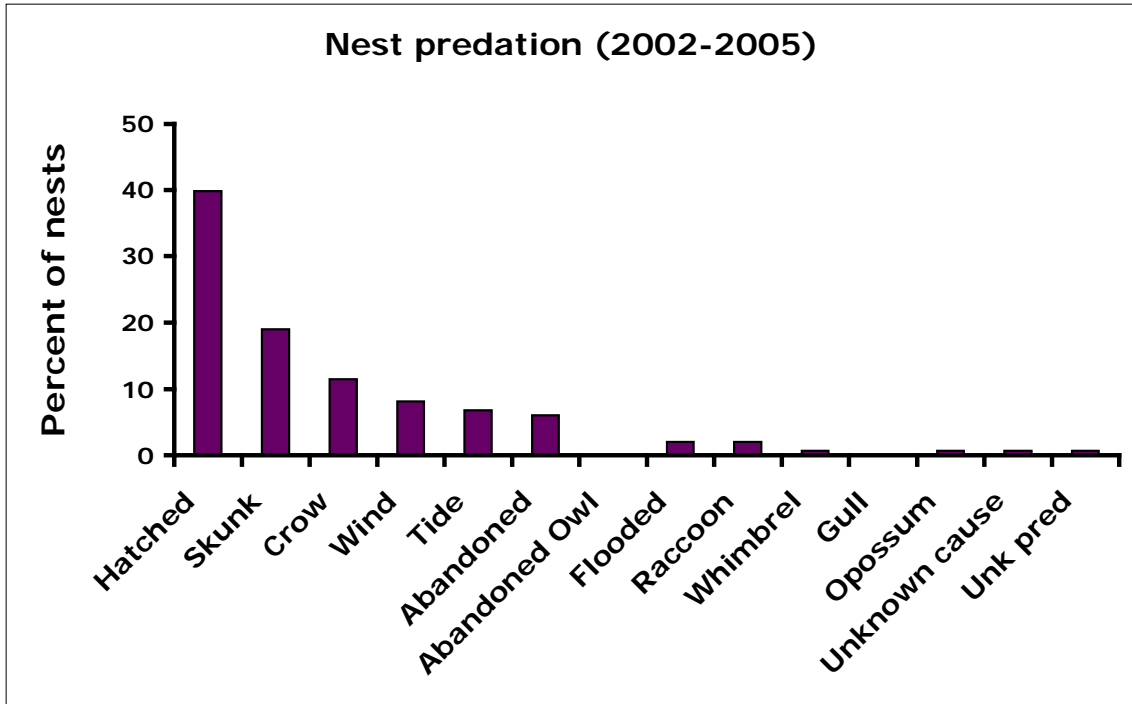


Figure 3. Percent of nests destroyed by various agents between 2002 and 2005

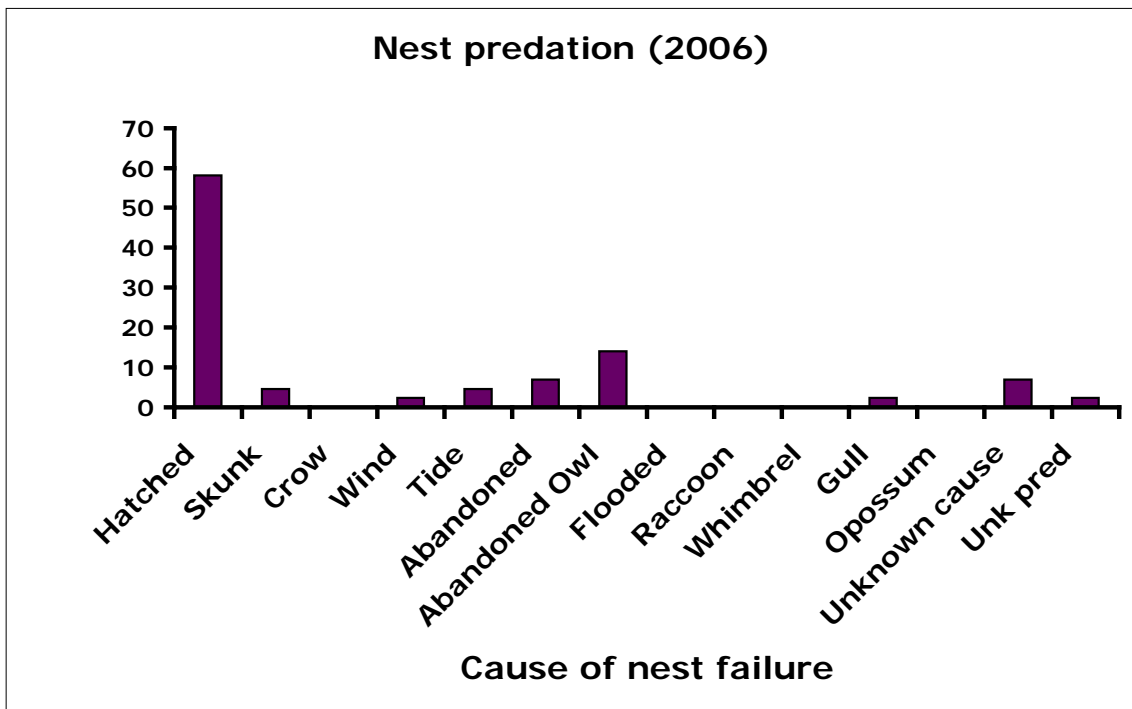


Figure 4. Nest predation in 2006.

Enforcement

Enforcement levels continued in 2006 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 nests was not recorded in 2006 to avoid disturbance to nests and broods. In 2006, several broods were at the beach at the same time and intrusion into the nesting area by the monitor caused the broods to move and the adult plovers to dispute territories. Thus, the monitor only monitored nests from outside of the fence most of the time.

Docent program

Every month during 2006, the Snowy Plover Docent Program at COPR trained and welcomed an average of 4 new volunteer docents to the team. The full team included 80 docents most of the year (60 active volunteers regularly scheduled each week and 20 on-call volunteers), totaling 3,400 work-hours at the beach for the year. Each Snowy Plover Docent spent at least 2 hours per week on the beach to educate the public about how to help protect snowy plovers and least terns by using the beach responsibly and respecting the Reserve rules.

Snowy Plover Docents have a wide array of specialties or expertise that they have contributed to the program. A retired engineer assists with the maintenance of the symbolic fencing, a professor from UCSB has helped recruit his students, a few are artists and have contributed with their paintings, a bilingual student is helping with the translation of our educational material into Spanish.

The docent team had met three times during the year: once to kick off the breeding season, again to celebrate the end of the breeding season, and one other time for re-training and socializing. The docents, who started a 503-C organization called Friends of Coal Oil Point Reserve, have increased their Board of Directors from three to ten members and the organization is helping fundraise and provide tours of the Reserve.

New information recorded by the docents since May 2006 has indicated that during any 2-hour shift, a docent on duty will interact with an average of 4 beach users for outreach. That information and the information about leashed and unleashed dogs on the beach has been and will become even more useful as we implement an educational campaign for dog owners to improve compliance with the leash law in 2007 and 2008.

APPENDIX 1. Band sightings banding at the reserve

Banding

We banded and released 11 chicks raised in the nursery, 10 from COPR, and 1 from Oceano Dunes (Table 5). 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.

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Table 5. List of chicks that were raised in captivity, banded, and released at COPR.

nest #	Band Combo	Hatched	Date released	Sightings			
162	PA:RG	16-May	22-Jun	6/25/2006 COPR			
162	PA:BG	16-May	22-Jun	lost at June 12			
162	PA:AY	16-May	22-Jun	6/25/2006 COPR	7/26/06 NAB San Diego		
163	PA:AR	18-May	1-Jul		8/12/06 Hermosa beach		
163	PA:RW	18-May	27-Jun	6/28/2006 COPR			
163	PA:BR	18-May	27-Jun	6/28/2006 COPR	12/23/06 COPR	12/29/2006 Estero Punta Banda MX	
164	PA:RB	25-May	1-Jul				
164	PA:AW	25-May	2-Jul	(bad eye)			
167	PA:BY	24-May	27-Jun	6/28/2006 COPR	9/16/06 @ Sandspit	11/14/06 at Sanspit SB	12/15/06 Sandspit
167	PA:BW	24-May					
177		June 6th					
177		6-Jun	died thin on July 1st, it was not triving				
Oceano	GG:RW	25-May	2-Jul	(broke tip of bill and recovered)			

Sightings

Two plovers, banded elsewhere, nested at COPR in 2006.

G:B nested on 4/7/2006, produced 3 eggs, and fledged 2 chicks.

BR:AO nested on 5/6/06, produced 3 eggs and the nested was predated by an unknown predator.

CONCLUSION

The plover breeding and wintering populations at COPR appear to have increased since 2001 and become stable relative to other populations along the coast. The combination of light predator management, education, and recreation control has been working to benefit the plovers.

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.
- In November 2006 the California Coastal Commission prohibited dogs and horses at the beach. This was a response to the lack of compliance and enforcement of the leash law. The reserve submitted a proposed enforcement plan to the University and is waiting for the University's response to this plan (the reserve does not have enforcement authority). 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 problem was greatly reduced, perhaps as a result of the skunk fence.
- The hand-raising of chicks was again successful in 2006. We are working with volunteers from Friends of the Coal Oil Point Reserve to collaborate in this effort.

- The Rotary Club fireworks at Girsh park 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.
- The California Coastal Commission prohibited dogs in the Ellwood Beach (City of Goleta) but this prohibition has not been enforced. Stray dogs from Ellwood continue to trespass 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.
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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. Jennifer Stroh, the docent coordinator, recruited docents and ensured that they were well prepared and happy. Darcie Goodman and Kevin Lafferty monitored 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.

CALIFORNIA LEAST TERNS

The California Least Terns started appearing in the reserve on May 1, 2006. 5 tern pairs nested in the reserve in 2006. 4 of those successfully hatched and fledged a total of 7 chicks. From observations during feeding, it appears that there was sufficient food at the slough and ocean since chicks sometimes refused fish. One nest started very late (mid July) and was abandoned in early august. There was no predation observed on nests, adults, or chicks.

Table x.

TERNs	Post	Discovery	#eggs	hatch day	Chicks hatched	Chicks fledged
7	198	06/04/06	2	06/30/06	2	2
8	217	06/11/06	2	07/04/06	2	2
9	177	06/26/06	2	07/16/06	2	2
10	110	06/16/06	1	07/08/06	1	1
11	222	07/16/06	2	abandoned 8/1	0	0

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.

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