



COAL OIL POINT RESERVE
UC SANTA BARBARA NATURAL RESERVE SYSTEM

University of California Santa Barbara
Natural Reserve System
Coal Oil Point Reserve

Beach Access Management Plan
and Snowy Plover Management Plan

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1.0 INTRODUCTION

Sands Beach is part of the UC Coal Oil Point Reserve, a publicly accessible beach located just west of Isla Vista and the University of California Santa Barbara campus. It is located at the southern end of the UCSB Coal Oil Point Reserve. The beach and its surrounding habitats provide home to several listed and rare species (including the Western Snowy Plover and California Least Tern) and also represents the transition from the Devereux Watershed to the nearshore and ocean habitat, including the State Marine Conservation Area



Sands beach in 1999, prior the implementation of the Snowy Plover Program.

(SMCA) located immediately off of Coal Oil Point. Sands Beach at Coal Oil Point Reserve is situated in the middle of an urbanized zone, with the City of Goleta and the UCSB campus being less than a 2 mile walk to the Beach. Human pressure and use on the Beach is high, and thus there is need for intensive and regular monitoring and management of public use. Without a comprehensive access management plan, this rare coastal habitat will degrade and its resident species disappear over time, similar to what we see in other recreational beaches in Southern California.

The Pacific Coast population of the Western Snowy Plover was listed as “threatened” under the Endangered Species Act in 1993 due to population declines. The stretch of beach between Isla Vista and Ellwood (including Sands Beach) was federally designated as “Critical Habitat” in December of 1999. At the time of the critical habitat listing, the population was estimated at less than 1,500 individuals along the US Pacific coast. Sands Beach, near the Devereux Slough mouth, is a wintering site for approximately 200 Western Snowy Plovers. After a successful program to manage beach access was implemented in 2001, a breeding population of Western Snowy Plovers

returned to nest at Sands Beach and now includes approximately 35 breeding adults. California Least Terns, a federally endangered species, occasionally nest on the beach at the Reserve.

UC Santa Barbara's Coal Oil Point Reserve is part of the University of California system-wide Natural Reserve System (UC NRS) and includes 170 acres of coastal habitat, including the beach to the mean high tide. The mission of the UC NRS is to contribute to the understanding and wise management of the Earth and its natural systems by supporting university-level teaching, research and public service at protected natural areas throughout California. A resident Director lives on the reserve to oversee day-to-day operations. Two non-resident staff assist with maintenance, education, conservation, and restoration programs. The Reserve provides a unique opportunity for long-term data collection and development of local expertise in support of land management and stewardship.

At this time, we propose to continue the same management plan as identified in the 2008 Snowy Plover Management Plan but we identify new challenges created by beach use. Two key issues about managing public access at the Reserve include the need to: (1) enforce appropriate types of public use, and (2) determine and maintain the appropriate amount of public use. The recommendations put forth in this beach access management plan have used an assessment of quantitative beach use data (collected between 1998 and 2018), field observations taken by Coal Oil Point Reserve docents and staff at Sands Beach, and monitoring data of Western Snowy Plover populations at Sands Beach (collected between 1998 and 2019).

1.1 ENVIRONMENTAL SETTING

1.1.1 Regional Setting

Coal Oil Point Reserve is a part of the UC Santa Barbara campus which is located approximately 10 miles west of downtown Santa Barbara in an unincorporated area of Santa Barbara County (County) (Figure 1). This general area is locally referred to as the South Coast region of the County and is comprised of a coastal plain about 3 miles wide between the ocean and the foothills of the Santa Ynez Mountains. The South Coast region is bisected by United States (US) Highway 101,

which provides connections to the Los Angeles Basin to the south, and to Santa Maria and San Luis Obispo to the north.

1.1.2 Local Setting

The UC Santa Barbara campus is located along the coast in a portion of the South Coast region known as the Goleta Valley (Figure 2). The campus lies along a mesa overlooking the Pacific Ocean with views of the Channel Islands to the south and the mountains to the north. Goleta Slough and the Santa Barbara Municipal Airport are to the east. The community of Isla Vista, which houses the majority of the university's student population, is to the west of the Main Campus, and immediately East of the Reserve. A mix of industrial uses, the Ellwood residential community, and faculty and student housing are to the northwest.

UC Santa Barbara is comprised of four land areas known as the Main Campus, Storke Campus, West Campus, and North Campus. The campuses border the unincorporated community of Isla Vista. The Main Campus contains most of the academic and support facilities. The Storke Campus contains student housing, playing fields, and natural areas. The West Campus contains family student and faculty housing to the north, the Coal Oil Point Reserve and the West Campus Open Space to the south. The 174-acre North Campus area is comprised of approximately 130 acres of permanent open space (North Campus Open Space) and recent new faculty and student housing with approximately 2,300 student beds.

1.1.3 Environmental Setting and Surrounding Uses

UC Santa Barbara is situated along the coast with several public access points to the beach between Goleta Beach in the County of Santa Barbara on the east and Ellwood Mesa in the City of Goleta on the west. Current beach access points at UCSB are located at UC Santa Barbara's Parking Lot 6, Campus Point, Manzanita Village Housing, Camino Majorca Road (in Isla Vista), and Coal Oil Point Reserve.

The 170-acre Coal Oil Point Reserve is part of the University of California Natural Reserve System. The Reserve is located on the North and West Campuses (Figure 3). Developed areas to the east of the Reserve include the West Campus Faculty Housing, and the high density community of Isla Vista. To the North is the City of Goleta's residential neighborhoods, Girsh Park, Calle Real shopping center, and the new student housing, Sierra Madre, San Joaquin, and San Clemente Villages.

Open space surrounds the Reserve to the north (North Campus Open Space), to the east (West Campus Bluffs) and to the west (Ellwood Mesa). The abandoned Ellwood Marine Terminal is located on 17 acres on the northwest side of the Reserve. The Pacific Ocean is to the south (Figure 2). At the Reserve, three beach access points intersect the Western Snowy Plover critical habitat area, 1) the entrance to Sands Beach at Coal Oil Point, 2) the Dune Pond Trail through the Reserve, and 3) access D on the western boundary of Reserve and Ellwood Bluffs (Figures 2 and 3).

The Reserve is a protected coastal ecosystem and supports research, university level education and public service. The diversity of habitats and wildlife at the Reserve is high and some of the species and ecosystem types found in the Reserve are now rare along the coast. For example, the Reserve's beach provides breeding habitat for Pacific Coast populations of the threatened Western Snowy Plover and the endangered California Least Tern, and the Belding Savanna Sparrow breeds on the pickleweed habitat located within the Reserve at Devereux Slough (Figure 4). Rare invertebrates such as the Globose Dune Beetle, the Dune Spider, and the Sand Tiger Beetle also live on the beach and dunes of the Reserve. The Reserve has one of the most pristine remnants of Coastal Dune Scrub in Santa Barbara County, and contains a number of rare plant species. Over 1,000 species have been identified at the Reserve and several types of wetlands such as vernal pool, dune swale, salt flat and salt marsh are also present. These rare habitat types comprise a component of the remaining coastal wetland in California, which today is estimated to be only 5% of its pre-human development range.

Upland habitats of the Reserve were used in the early 1900's for ranching. Most native vegetation was removed except in steep slopes and dunes. The beach was open to the public after the

university purchased the land from the Devereux Foundation in 1967. In 1970, the Reserve was established in an area of approximately 50 acres encompassing the Devereux Slough. Today the Reserve is 170 acres including the beach, dunes, and upland habitats and much of the degraded habitats have been restored.

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Figure 1: Regional Setting



Figure 2: Local Setting

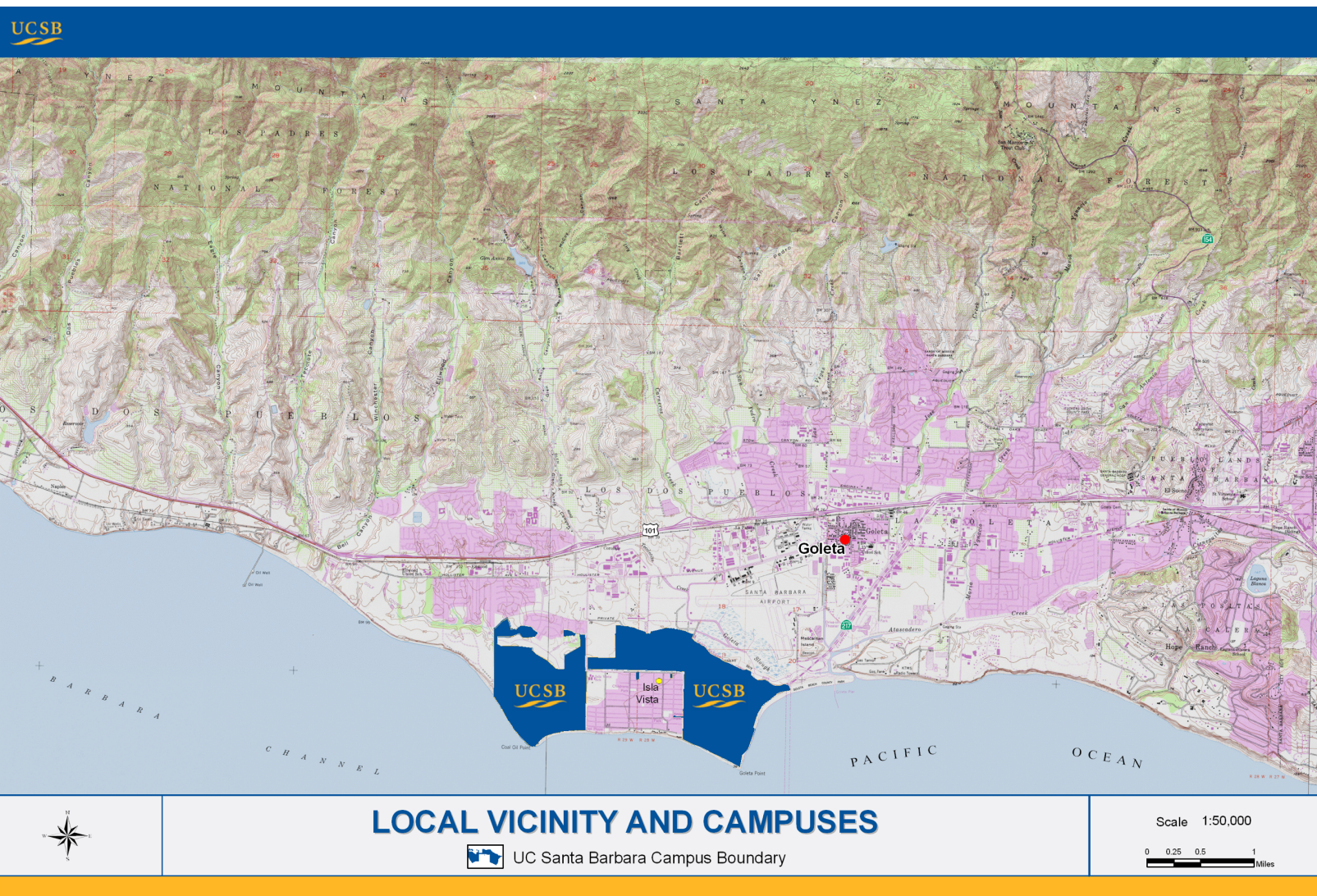


Figure 3: Coal Oil Point Reserve

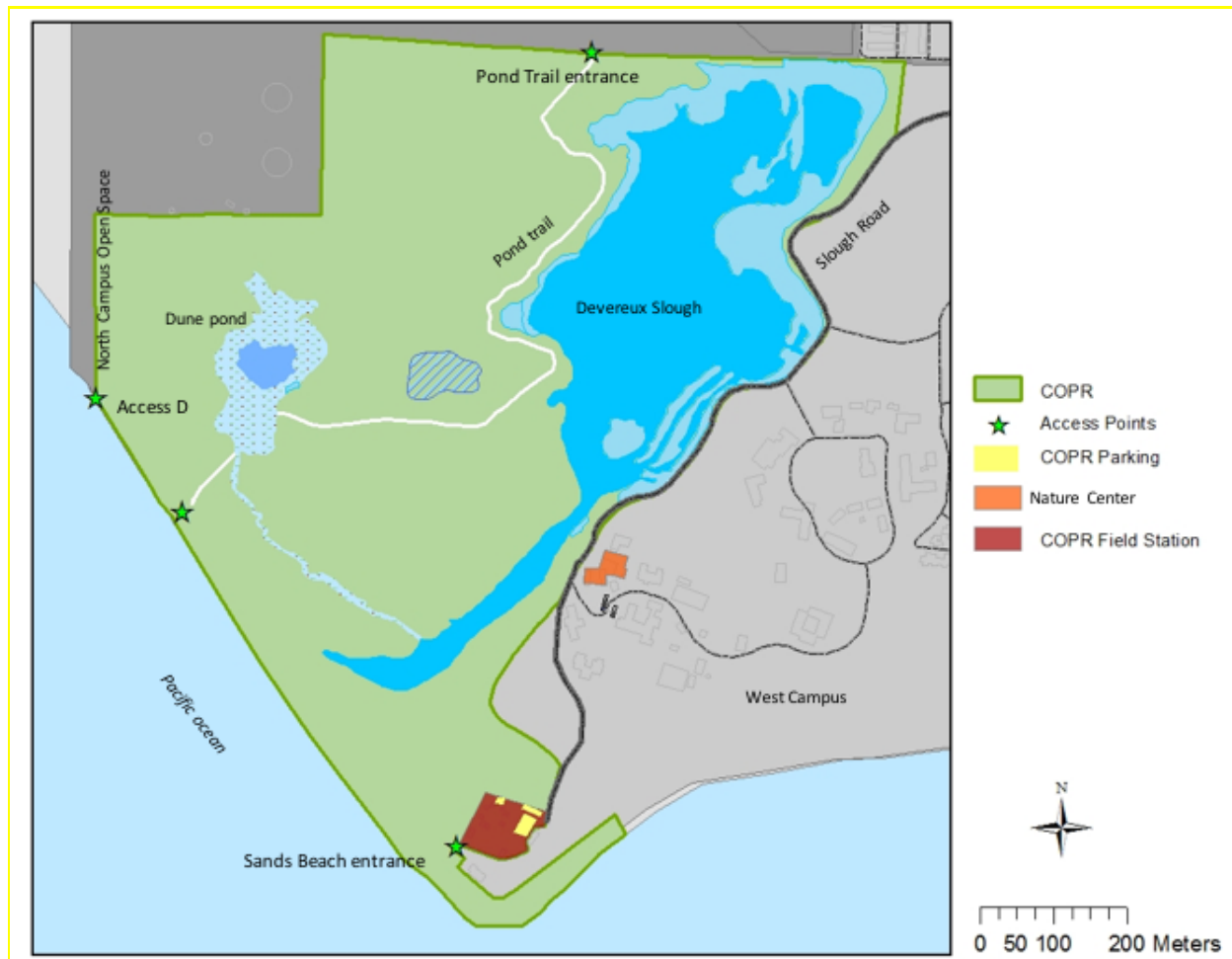
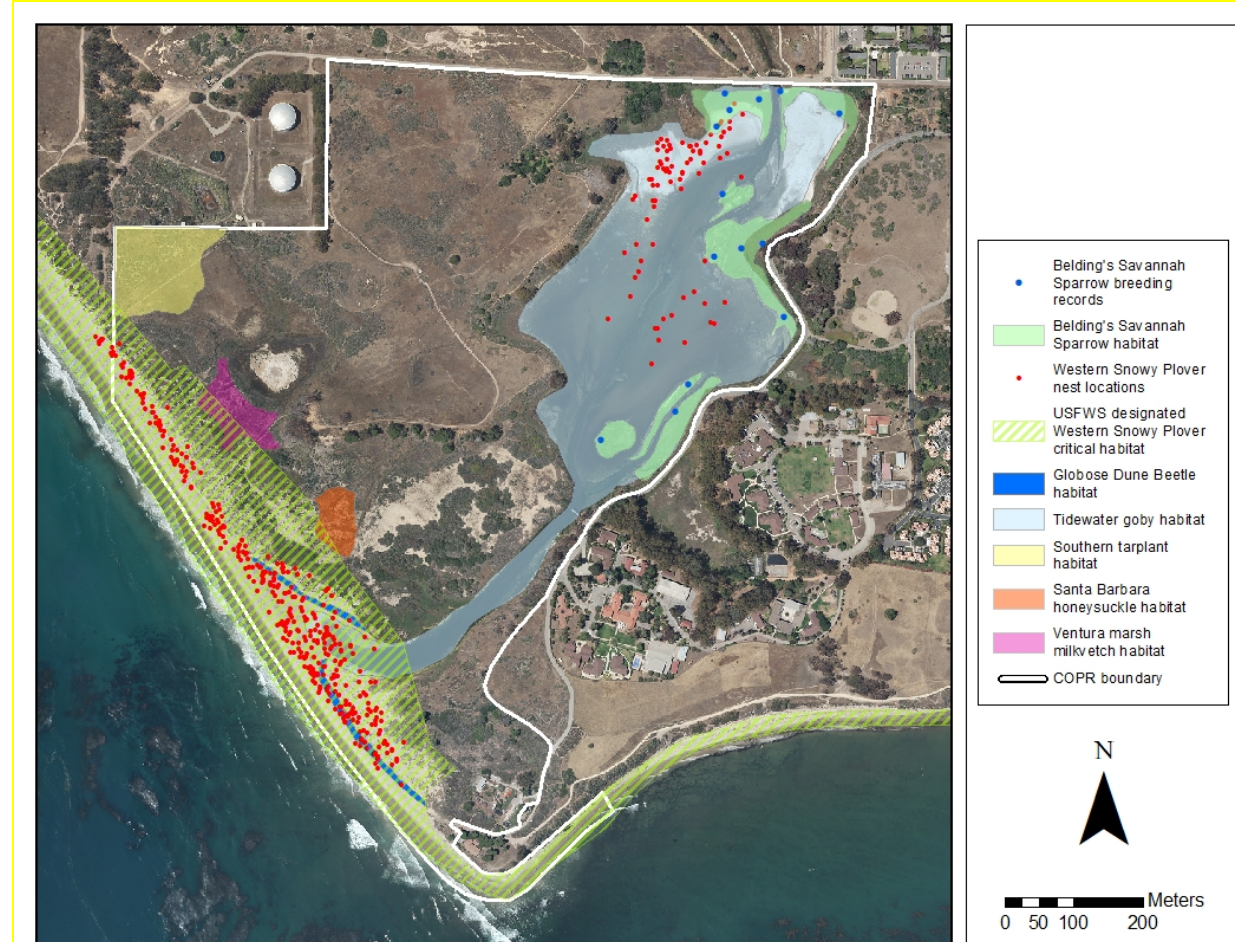


Figure 4: Observations of sensitive species and their habitats at Coal Oil Point Reserve.

The records of nests of Western Snowy Plover include all nests present from 2001-2005 and 2013-2017. Between 2006 and 2012, GPS data on the location of nests were not taken. The breeding records for Belding's Savannah Sparrow were opportunistic and obtained from eBird. The Santa Barbara honeysuckle habitat represents the original natural population and does not include planted populations which are a part of ongoing restoration projects. The Ventura Marsh Milkvetch is an endangered plant introduced to the reserve for the purpose of research and recovery. Milkvetch habitat in the map shows the most likely area that a population of this milkvetch could be established based on a field assessment by Mary Meyer, DFG biologist.



1.2 PROJECT HISTORY

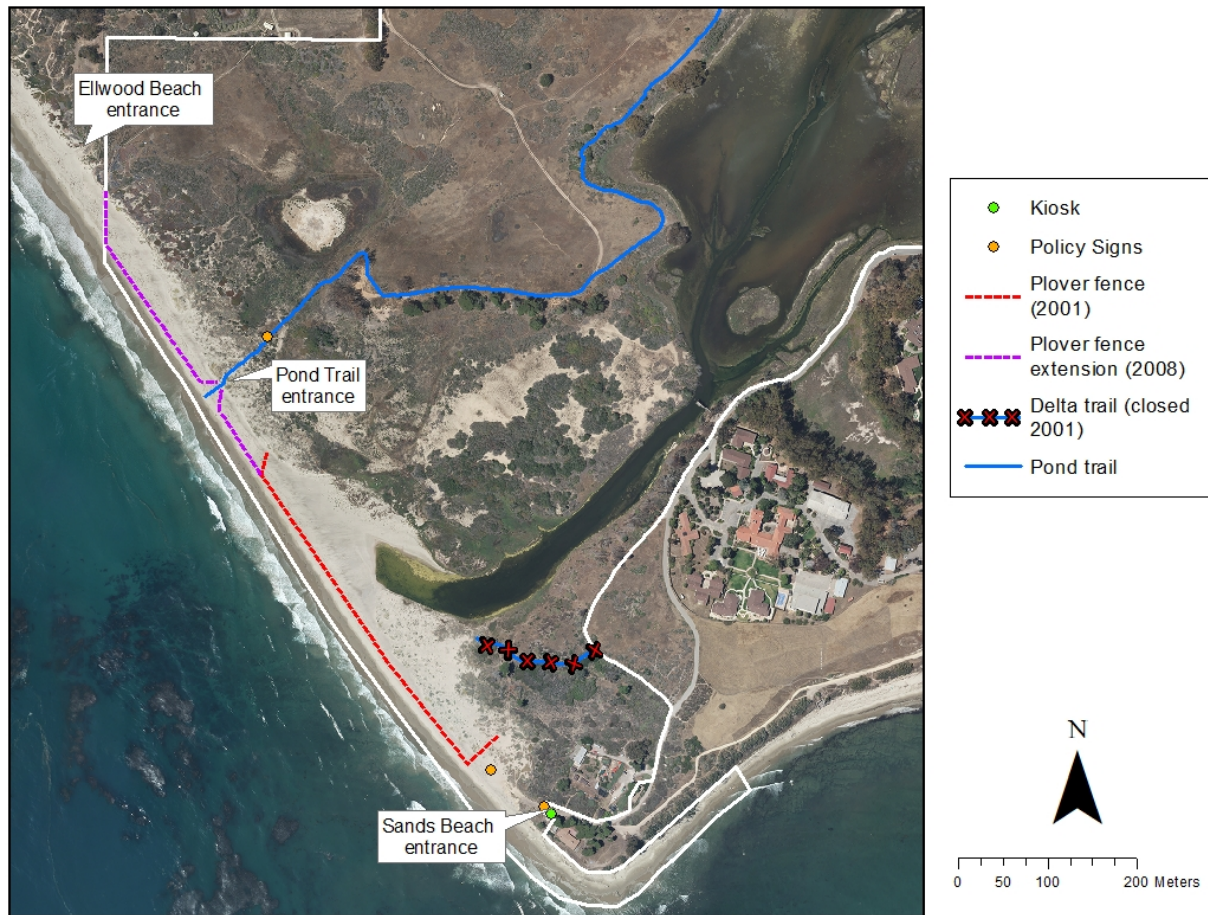
Sands Beach was formerly a breeding ground for the Western Snowy Plovers until UCSB opened the beach to recreation in 1967. Uncontrolled beach access created disturbances that caused the Western Snowy Plover abandonment of Sands Beach as a nesting area. The last Snowy Plover nest was seen in the 1980's and was destroyed by a vehicle. In 1970, Sands Beach was included as part of a new 50-acre reserve, the Coal Oil Point Reserve. It was not until 2000 that the Reserve was

staffed with a land manager, when UCSB created the first paid position of a resident Reserve Director to oversee and manage the property in service of the UCNRS mission.

On November 16, 2001, the first Snowy Plover Management Plan (SPMP) was approved by the California Coastal Commission for a two-year period. The goal of the 2001 SPMP was to reduce disturbance of wintering Plovers. No breeding of Snowy Plovers occurred at the Reserve at that time. The 2001 SPMP included the following actions intended to protect Snowy Plovers from human caused disturbance at Sands Beach (Figure 5): (1) installation of educational and regulatory signs on a kiosk, fences and trails, (2) closure of the Delta path that terminated in the Plover roost area, (3) installation of a post and rope fence along a 400 meter stretch of beach above the mean high tide where Plovers roost in winter, (4) creation of a program to enlist docents to monitor Plovers on the beach and educate the public about Plovers, and (5) implementation of actions to reduce disturbance by official Reserve users, the public (e.g. direct public activities away from the roost area), domestic animals (e.g. increase compliance with leash rules and ordinances), and predators (e.g. reduce crow activity by cleaning up trash). In 2004, UCSB supported two new staff employees to implement the Snowy Plover plan in part via management of the Snowy Plover docent program and to maintain the Reserve's infrastructure.

After the first year of the implementation of the SPMP, the Snowy Plovers successfully bred on the beach. As such, subsequent revisions of the SPMP (2008 SPMP) included an extension of the symbolic fence to the western most boundary of the Reserve to protect all Plover nests on the Reserve. The Snowy Plovers also started nesting on the mudflats of the Devereux Slough but this area was already managed to prohibit human intrusion, so no additional actions were needed other than predator control.

Figure 5: Location of fences and signs to protect sensitive species at Coal Oil Point Reserve.



2.0 CURRENT SNOWY PLOVER AND BEACH ACCESS MANAGEMENT ACTIONS

Western Snowy Plover Management actions at Coal Oil Point Reserve as set forth in the 2008 SPMP are still being implemented today. These include the following fourteen items:

1. Public education. Volunteer docents and student interns are stationed at Sands beach most daylight hours, seven days a week, to communicate reserve policies and natural history to beach visitors. The Reserve also provide tours, presentations to interested groups, information for the press, informational signs, and opportunities to view shorebirds.

2. Fence the main plover roost throughout the year. The Reserve will continue to protect the plover roost area with a post-and-rope fence. The fence starts 95 meters east of the entrance gate to Sand's Beach, and extends 400 meters to the west, which takes it just beyond the slough mouth (Figure 5). Signs printed with "No Trespassing, Plover Habitat" are posted along the entire fence line. The fence allows pedestrians to pass between the roost area and the ocean.

Experience has indicated that the exact location of the roost fence will vary depending on the beach profile, storm conditions, and whether the slough mouth is open to the ocean. During stormy months, the beach erodes, high surf knocks down the fence, and it must be moved shoreward and away from the slough mouth. Under these conditions, plover distribution also contracts and shifts eastward. The fence is shortened during these periods and sometimes, it is removed entirely.

3. Maintain fence during breeding season (March 15 – September 15) to protect nesting snowy plovers. The fence to protect breeding plovers (Figure 10b) extends from the entrance to Sands beach until the western end of the reserve, with a break at the terminus of the Pond Trail. Beach access to the Reserve's interpretive Dune Pond trail is maintained during plover breeding season. A corridor between the fence and the ocean is maintained for pedestrians to move along the ocean's edge. This is also the feeding habitat for plovers and their chicks and the most challenging area to protect because beach goers like to sunbathe and play ball there. Most of the docent's job focuses on asking people to move away from this area.
4. Keep the Delta path closed. This path ended in the center of the plover roost, which is highly-used by nesting plovers. The path was closed and revegetated in 2002 and will remain closed.
5. Change beach entrance of Pond trail. The 2001 plan proposed to move the beach entrance of the Pond trail to the western boundary of the Reserve to reduce disturbance to wintering plovers. However, the beach entrance to the Pond trail was not changed because re-routing the trail to the west would have caused significant negative impacts to native coastal dune scrub.

6. Reduce impacts from domestic animals. The docents ask dog owners to leash their dogs, but compliance with the leash law is low. After January 1st 2020, the docents will communicate with dog owners about the new policy prohibiting dogs on Sands beach. The reserve staff is working with UCSB police on a strategy to enforce the reserve policies.
7. Reduce impact from official Reserve users. To avoid disturbance to plovers from students and researchers, the Reserve screens applications and prohibits use in the protected plover area. The Reserve no longer accepts applications for classes below 8th grade because it was difficult to control the students from this age group.
8. Night patrol of the beach area. In the 2001 SPMP, the Reserve proposed closing the beach to the public at night. This has not been implemented because the beach has many access points and it would be difficult to enforce it. Night disturbances from student parties continue to be a problem and the reserve may consider other strategies to close the beach at night.
9. Reduce alcohol on beach. There is currently no ordinance for prohibiting alcohol use on the beach by persons of legal drinking age. To reduce problems with intoxicated persons on Sands Beach in front of the plover roost, the campus police will be called to deal with underage drinking and public intoxication.
10. Post beach rules. To improve compliance and facilitate enforcement, the Reserve maintain signs with beach rules.
11. Reduce disturbance by crows and predators. The Reserve will continue its program to remove trash from the beach and surrounding area that has helped reduce the number of crows in the plover area. Also, trash receptacles at the Reserve will be kept closed to prevent access by crows. The Reserve will remove individual crows that persistently threaten plovers. The staff will be preparing a tree removal plan because large trees near the plover habitat attract perching crows and birds of prey which have been the main cause of nest and chick predation.

12. Restore dune habitat near roost. The Reserve removed exotic shrubs and iceplant on the dunes to reduce cover for predatory mammals.
13. Monitor effectiveness of actions. The Reserve will continue the Snowy Plover Monitoring Plan to measure plover population status and trends, plover spatial and temporal distribution, breeding activity, patterns of use by people and pets, and levels of disturbance.
14. Monitor compliance. The USFWS requested that the reserve monitor compliance with restrictions. The docents record the number of trespassers and leashed and unleashed dogs during the day. The Reserve will continue to evaluate whether compliance is sufficient to achieve the programmatic goals. If not, the Reserve will increase education and request additional enforcement if needed.

Over the years, COPR Reserve staff continues to improve the Snowy Plover program and this program is now a model for Snowy Plover protection at other beaches in Los Angeles and Monterey counties. The Reserve's Snowy Plover program has received awards from federal (United States Fish and Wildlife Services) and local (Santa Barbara Independent) organizations, and has appeared in Audubon, the magazine of the National Audubon Society. The success of COPR's Snowy Plover program is due in part to adaptive management strategies informed by scientific information. Monitoring data and other observations collected by Reserve staff and affiliated scientists allow for intimate knowledge of Snowy Plover population dynamics and the ability to carefully manage these populations according to the collected information. Adequate management of Snowy Plover, and all wildlife and ecosystems, requires understanding of how the rapidly and ever-changing environment, particularly those changes occurring due to anthropogenic modifications or actions, impacts plovers directly or indirectly.

In the last few years, new pressures to the Reserve caused by increased urbanization and use of the local area have created management challenges for the Reserve. Increased visitation due to new city and university housing developments, new nearby activities, such as the City of Goleta fireworks displays at Girsh Park, self-organized events (Floatopia, Fiesta bike ride), as well as vandalism, trespassing and thefts have posed new and unwanted impacts to the Reserve that need

to be addressed. High levels of human recreation and associated disturbance on Sands Beach have resulted in reduced Snowy Plover foraging rates, increased disturbance to brooding behaviors, higher risk of predation by dogs, and increased occurrence of disruption of nests by people and dogs, including vandalism of plover nests (Nielsen et al. 2017). Further, indirect anthropogenic threats such as beach erosion from sea level rise and nuisance predators (e.g., crows, skunks) continue to pressure Snowy Plover populations. This revised plan proposes new actions to monitor and control these new activities associated with beach access.

3.0 MONITORING OF THE SNOWY PLOVERS

The US Fish and Wildlife Service (USFWS) Western Snowy Plover Recovery Plan recommends that Snowy Plovers be monitored and managed to increase the production of chicks each year (USFWS 2007). A minimum of 1 fledged chick produced per male per year is required to maintain the Pacific population and prevent it from declining (USFWS 2007).

Since 2001, Reserve staff have counted Snowy Plovers once a week during the wintering season (October – March) and 3 times per week during the breeding season (March – September) using focal observations with binoculars along the entire beach and the Delta (Slough mudflats) (Figure 5). During the breeding season, each nest is mapped and followed until the eggs hatch (28 days) and the chicks fledge (30 days). The Reserve staff investigates the cause of mortality of eggs and chicks, such as the type of predator, washed up by tide, or buried by wind, or to inform future management decisions. Egg mortality can be characterized by identification of a predator's tracks left on the sand. Characterizing chick mortality is often more difficult to determine than egg mortality because chicks are mobile within their territory. The staff looks for predator footprints, or the lack of footprints (indicating an avian predator) and occasionally is able to observe predation events. A report on the status of the Snowy Plover population at the Reserve is submitted to the USFWS each year. Further, the Reserve staff attends the regional and Pacific Coast Annual Recovery meetings.

No successful breeding was observed at COPR from 1970's to 2001. In 2001, a breeding pair with 2 chicks was observed the year following the dune restoration. A symbolic fence was installed year around and the breeding population quickly grew. The breeding population of Snowy Plovers

at the Reserve is now about 35 breeding adults (Figure 6) producing 35 fledged chicks on average (this average was calculated from data collected from 2003 to 2019; Figure 7). The number of fledged chicks is the main measurement of nesting success used by monitors throughout the U.S. Pacific Coast and also at the Reserve.

An important lesson learned from the COPR population is that disturbances caused by human recreation and their pets can inhibit Snowy Plover nesting. Once a suitable beach area at the Reserve was protected from human use, the plovers started nesting. Some anthropogenic causes of mortality of Snowy Plovers still occur (Table 1), and are considered unlawful under the Endangered Species Act (ESA). Specifically, the ESA makes it unlawful for a person to “take” a federally listed species without a permit. Take is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.” Through regulations, the term “harm” is defined as “an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.” The management of Sands Beach, and of any lands upon which a federally listed species occurs aim, to prevent unlawful “take”.

The number of fledged chicks at the Reserve has varied over the years (Figure 7). Often, is difficult to observe the cause of mortality of Snowy Plover chicks because of their mobility, however the few instances where cause of death was observed included tar-related mortality, and predation or damage by dogs, owls, and Red-Tailed Hawks (Nielsen et al. 2016). Camera traps have shown promise to help detect predation events, and Reserve staff are planning to use them in the future.

Table 1. Total nests, number of eggs hatched and causes of nest failure as egg mortality of Snowy Plovers at Coal Oil Point Reserve.

Causes of egg mortality herein include: (1) Hatched: a nest that hatched at least one chick; (2) Skunk, crow, raccoon, whimbrel, gull, opossum, dog (breaking egg): a nest eaten or destroyed by one of these predators; (3) Dog: a nest whose eggs cracked after being stepped on by a dog; (4) Wind: a nest buried by wind; (5) Tide: a nest washed away by high tide; (6) Abandoned: a nest whose parents stopped incubating. The cause of the abandonment is not known; (7) Unknown cause: a nest that failed to hatch but the cause is not known; (8) Human: a nest vandalized by a person; (9) Unknown predator: a nest whose eggs were eaten by a predator but the type of predator was not identified; (10) Unknown fate: a nest that was found but it is not known if it hatched or

failed; (11) Egg replacement: nests whose eggs were replaced by wood egg decoys until the day before the expected hatching date. The real eggs were returned to the nest at that point, (12) Abandoned owl: a nest whose parents stopped incubating because an owl ate the parents; (13) Flooded: a nest that was on the slough delta and was washed away due to rain runoff.

*Coal Oil Point Reserve
Beach Access and Snowy Plover Management Plan*

Year 20-XX	'02	'03	'04	'05	'06 *	'07 **	'08 **	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19 *
Total nests	13	24	52	64	43	66	57	65	75	84	73	65	77	62	43	52	81	97
Hatched	6	16	20	16	22	20	3	39	42	35	34	34	21	34	29	34	61	28
Skunk	0	0	9	18	2	19	18	10	0	0	0	4	10	15	6	4	3	9
Crow	2	4	8	3	0	0	0	1	1	0	0	0	0	0	0	0	0	32
Abandoned	0	1	1	9	3	1	0	2	3	5	3	4	9	1	2	1	3	2
Abandoned /Owl	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Replacement	0	0	0	0	0	11	23	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
Whimbrel	0	0	1	0	0	0	0	0	0	1	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
Opossum	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dog	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Unknown Cause	0	0	0	0	0	0	0	0	17	8	4	0	21	0	0	0	0	0
Human	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Unknown Predator	0	0	0	1	1	0	0	4	0	10	3	15	9	3	0	2	3	1
Wind	1	2	2	6	1	2	2	5	2	10	2	0	0	1	0	3	1	3
Flooded/ Tide	0	0	4	5	2	1	6	2	5	12	16	6	3	5	2	8	6	17
Flooded/ delta	0	0	0	3	0	0	0	0	4	3	0	0	0	0	0	0	0	3

**In 2006, predator exclosure cages were used in some nests to prevent crow predation and these nests are not included in the table.*

***In 2007 and 2008 some nests were collected, incubated in the nursery, and replaced prior to hatching because of intense skunk predation. Numbers of hatched nests and of fledged chicks for these years only include nests that hatched and fledged in the wild without intervention, and exclude those that hatched and fledged in the nursery.*

Figure 6: Number of adult Plovers at Coal Oil Point Reserve, 2001 - 2019.

A-Number of adult Snowy Plovers counted during the breeding window survey (usually in May) at Coal Oil Point Reserve, 2001 – 2019.

B- Number of adult Snowy Plovers counted during the wintering window survey (usually in January) at Coal Oil Point Reserve, 2001 – 2019.

This data collection is part of an annual USFWS coordinated “Breeding Window Survey” which is conducted across all Western Snowy Plover breeding sites in the Western Pacific United States.

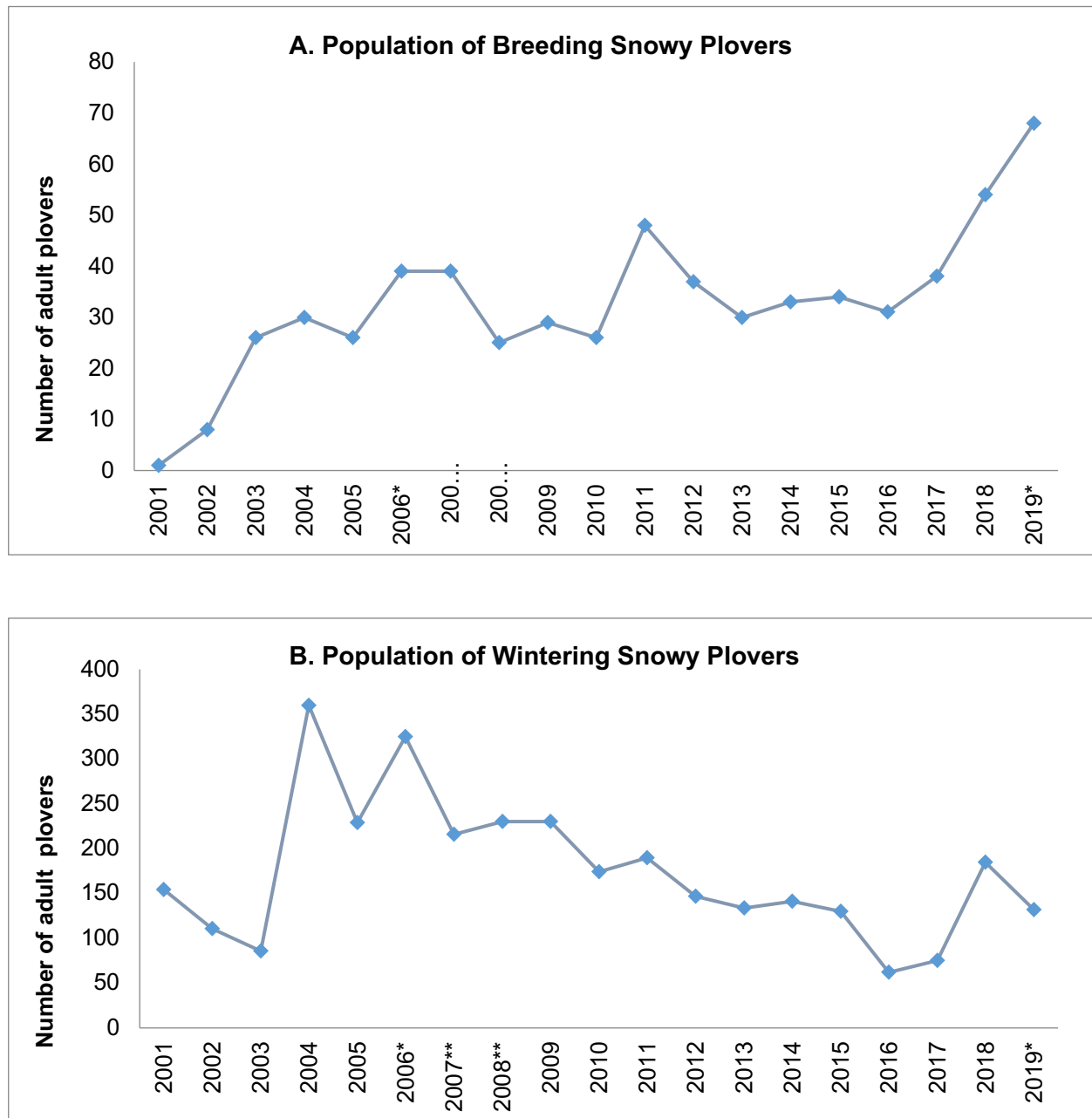
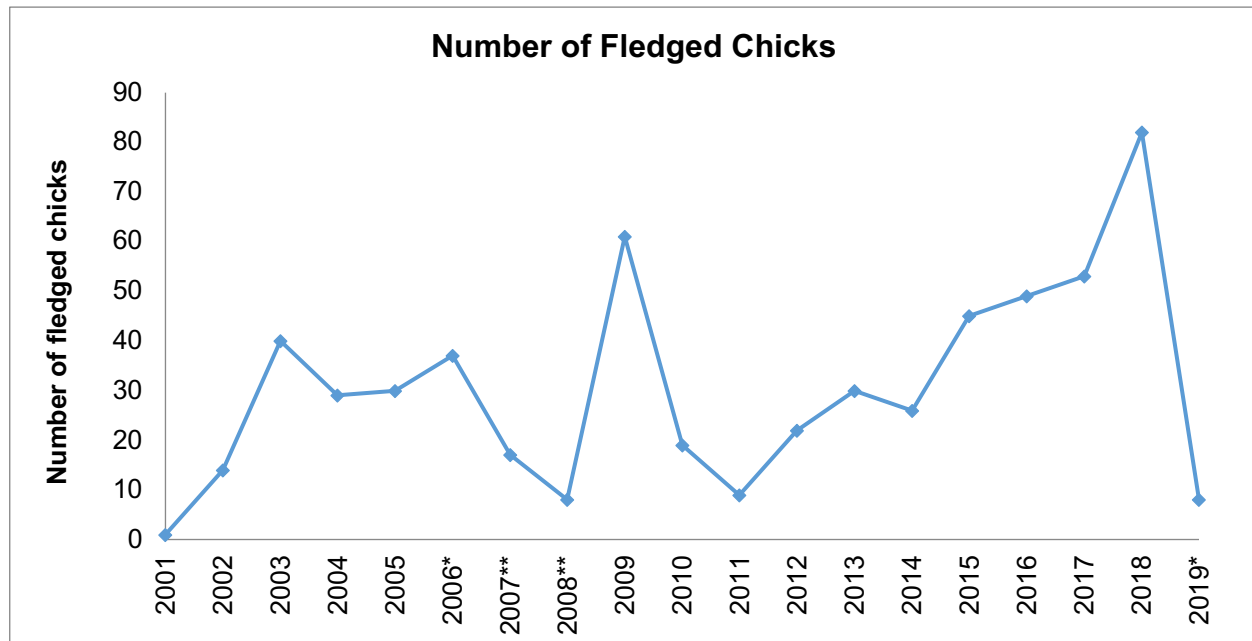


Figure 7: Number of fledged Western Snowy Plover chicks at COPR per year, 2001 – 2019.



Fireworks Displays

The environmental impacts of fireworks displays have been widely studied elsewhere and include impacts to wildlife, domesticated animals, native habitats, and humans through excessive light, sound, or chemical effects¹. In particular, shorebirds and other avian wildlife have been found to be adversely affected by fireworks displays and, in a number of locations across the U.S., 4th of July fireworks shows have been relocated or cancelled in response^{2,3,4}.

Since 2005, the Goleta Valley Rotary Club has hosted the annual Independence Day fireworks displays at Girsh Park in Goleta, CA. In order to understand the potential impacts of fireworks displays to Snowy Plovers and other wildlife at COPR, biological monitoring during the July 4th, and at other fireworks displays, commenced in 2007 and continued through 2019.

¹ Shamoun-Baranes et al. 2011. *Behavioral Ecology* 22(6): 1173-1177.

² East Hampton Village, NY cancels fireworks display due to impacts to Federally Threatened Piping Plover <http://www.nytimes.com/2005/06/23/nyregion/those-little-birds-on-the-beach-mean-no-fireworks-in-the-sky.html>

³ Depoe Bay, OR cancels fireworks display due to impacts to Federally listed Seabirds http://www.oregonlive.com/pacific-northwest-news/index.ssf/2012/07/fireworks_show_canceled_amid_c.html

⁴ St. Pete Beach, FL Commission Relocates fireworks display due to disturbance of Black Skimmer Nests on beach <http://www.tampabay.com/news/st-pete-beach-fireworks-to-be-moved-away-from-nesting-skimmers/2232427>

4.0 MONITORING OF BEACH USE AND COMPLIANCE

Description of Public Access

Sands Beach is open to the public all year and pedestrians can visit the beach from three upland access points (Sands Beach entrance, Pond Trail, and Access D (between Ellwood and the Reserve) and from the Ellwood and Devereux beaches (Figure 3). Public beach parking is available on West Campus, at the end of Slough Road. There is no public parking at Coal Oil Point Reserve.

Approximately 800 ft. of the dry sandy beach is cordoned off with a post and cable fence to protect the Snowy Plovers during the nesting season (March 15th-September 15th) (Figure 5) and a smaller section of the beach is protected during the Fall and Winter. The fence is considered “symbolic” because it acts to demarcate the area but it cannot prevent people or dogs from jumping over or walking under the rope.

Passive recreation such as jogging, sunbathing, bird watching, and surfing is permitted at Sands Beach. Active recreation, such as ball playing, Frisbee throwing, biking, commercial activities, surf contests, bonfires, camping, and horse riding is not allowed in the Reserve including at Sands Beach. The reason for these restrictions is that these activities are more likely to cause accidental injury to Snowy Plover chicks or nests. Dogs (leashed or unleashed) are not permitted at Coal Oil Point Reserve’s beach and Pond Trail.

Monitoring of public access

Docents who are recruited and trained by COPR Reserve staff provide friendly education concerning Plovers to beach goers at Sands Beach. Docents are on duty during daylight hours most days of the year. Docent availability is often reduced during holidays or other off-periods, and the public outreach cannot be successfully implemented during those times. Despite these gaps in docent presence, there has been an average of 2,600 hours of docent coverage per year.

Docents count the number of people on the beach and in the ocean at the beginning of each 2-hour shift. The docents interact with beach users and request their compliance with the Reserve’s policies. Busier beach days are observed on warm temperature days, on weekends and when the

surfing conditions are desirable. The docents have noticed that when the number of people on the beach at a given time exceeds 50, it becomes difficult for them to control where and what they do at the beach. The docents ask beach users to not lay towels along the “corridor” (feeding area between fence and ocean), to refrain from active recreation (e.g., Frisbee or ball throwing), and to leash dogs. These interactions take time and are often not successful during high volume days. The number of days when the beach has exceeded use by 50 people increased around 2012 and again in 2017 (Figure 8). Docents also record the number of leashed and unleashed dogs on the beach and the number of trespassers (Figure 9) who go beyond the symbolic fence.

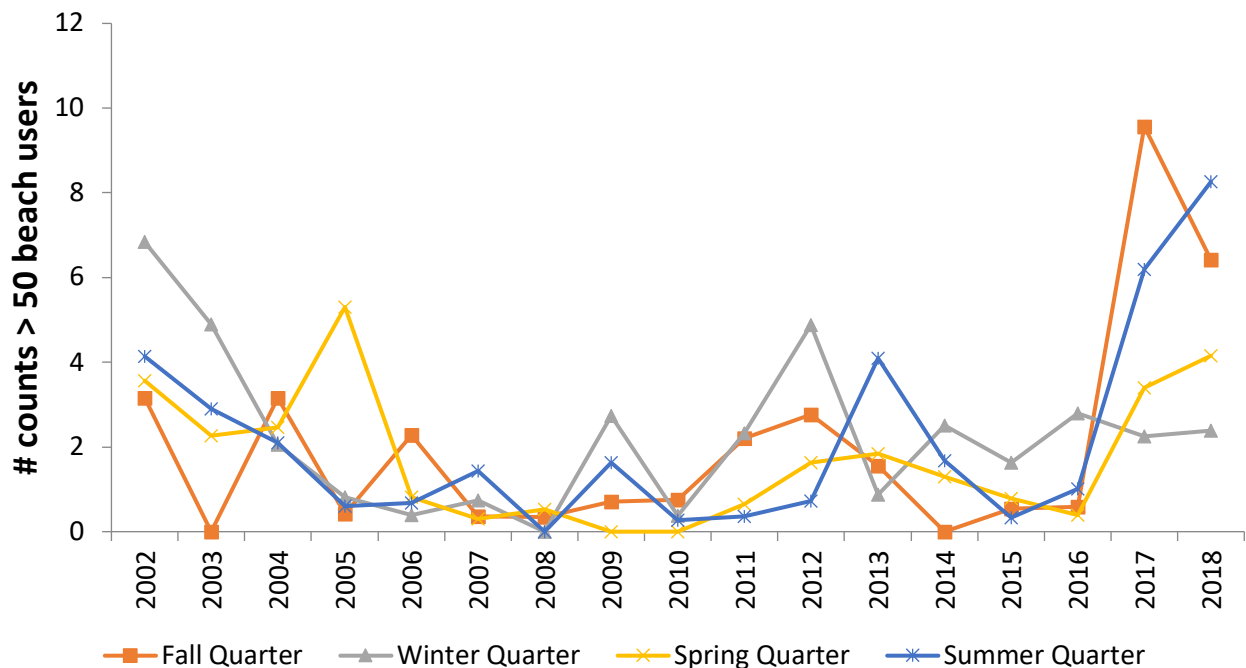
A limitation of these data is that they are only snapshot counts representative of a docent’s count at the initiation of his/her shift, but do not provide information on the total number of people that use Sands Beach per day. Thus, these data represent surveys of beach use trends, but not exact total visitations per day. This would require increased monitoring efforts, such as installing automated pedestrian counters at each entrance to Sands Beach, or other methods.



Docent interacting with surfer at Coal Oil Point Reserve

Figure 8: Percent of docent counts of Sands Beach users that exceeded 50 people.

The number of beach users was counted at the beach on snapshot surveys. These data do not include people surfing. 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 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, and (H) 2017 Opening of Santa Catalina renovations, 1,500 students.



Unwanted impacts at Coal Oil Point Reserve due to urbanization

Coal Oil Point Reserve is an ecologically and aesthetically rich location in the region. It offers many opportunities for visitors to increase their knowledge and experience of coastal habitats and wildlife. Urbanization is one of the leading causes of species endangerment in the United States (Czech and Krausman, 1997). With increasing urbanization in the area, pressures due to crowding, overuse, and unlawful use of the Reserve have led to unwanted impacts to the habitat and wildlife at Coal Oil Point Reserve. The following sections describe some of the observed unwanted impacts associated with increased urbanization and human use of COPR.

Increased urbanization and disturbance of breeding Plovers

Disturbance from humans and pets to shorebirds are well documented. Human disturbance degrades habitat and alters shorebird behavior. These alterations in shorebird behavior may reduce foraging efficiency and opportunities for rest (Burger 1986; Brown et al. 2000; Lafferty 2001). Chronic, cumulative disturbances could reduce shorebird reproduction and survivorship in part because short flights and other fleeing mechanisms are energetically costly for small birds (Nudds and Bryant 2000). Shorebirds unsuccessful in gaining necessary fat reserves have shown very low survival rates (Brown et al. 2000; Lafferty 2001). In a study conducted at Coal Oil Point Reserve, interactions between birds and people often caused birds to move or fly away, particularly when people were within 20 m. During a short observation period, 10% of humans and 39% of dogs disturbed birds, and more than 70% of birds flew away when disturbed (Lafferty 2001). As the number of visitors at COPR has recently increased (Figure 9), there is a need to manage the amount and nature of access in order to protect Western Snowy Plovers and other sensitive habitat and wildlife.

Snowy Plover mortalities due to unleashed dogs

In 2003, and again in 2015, there have been 2 documented cases of Western Snowy Plover chick mortality due to unleashed dogs (defined as a “take” under the Endangered Species Act). Further, in 2015 an unleashed dog entered the Plover area at COPR and stepped on a nest, causing the egg to crack and fail (Table 1). Despite intense efforts by Reserve staff and docents to educate dog owners, leashed dog compliance remains at 50% at COPR.



Plover chick killed by an unleashed dog at Sands beach on May 17 2003

Garbage and Nuisance Predators

Increases in incidences of littering and accumulations of garbage are correlated with increased use and visitation of all areas, including Coal Oil Point Reserve. Not only does this garbage have unwanted impacts to the natural environment through potential contamination of sediments, ingestion by wildlife or



Garbage pile up at Coal Oil Point Reserve after a busy holiday weekend.

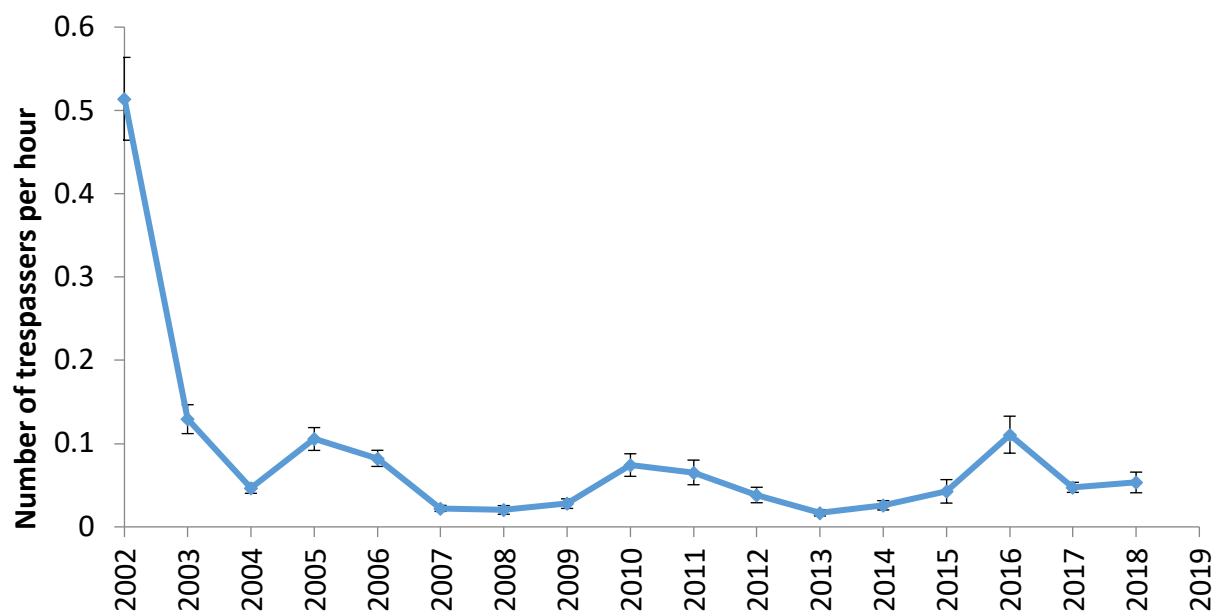
other modes of integration into the habitat, but it is also unsightly and alters the human experience in a location. Of greater consequence, particularly concerning shorebirds and Western Snowy Plovers, garbage and food waste attracts nuisance predators including crows, racoons, rats and other small mammals that prey upon Plover eggs. These nuisance predators are the highest source of Plover egg mortality at COPR (Table 1).

Trespassing

Within 4 years after the 2002 installation of the symbolic fence and the docent presence at the beach, the number of trespassers in the Snowy Plover nesting area decreased dramatically (Figure 9). Despite this effect, docents still record approximately 1 trespasser per day. In 2017, a trespasser entered the nesting area and stole 2 eggs from a Plover nest. This type of vandalism is considered a “take” under the Endangered Species Act, and was reported to the USFWS. Trespassing into the nesting area during the breeding season causes nesting birds to leave the nest and chicks to separate from their parents, making them vulnerable to predators. In addition, when trespassers walk in the nesting areas, the Plovers flee and enter each other’s territory, altering breeding behavior. Even after the trespasser leaves the area, the impact continues for hours because the Plovers fight with each other to re-establish their territories. During these territorial fights, the Plovers can kill each other’s chicks (Sandoval, personal observation).

The docents record the time and number of trespassers observed during their shift. The number of trespassers per docent hour was averaged for the year. The standard error was calculated by the standard deviation of the number of trespassers per hour divided by the square root of the sample size (the mean, SD, and sample size are based on the total number of docent hours per year).

Figure 9. Yearly average and standard error of the number of people trespassing per hour into the Snowy Plover nesting area at COPR.



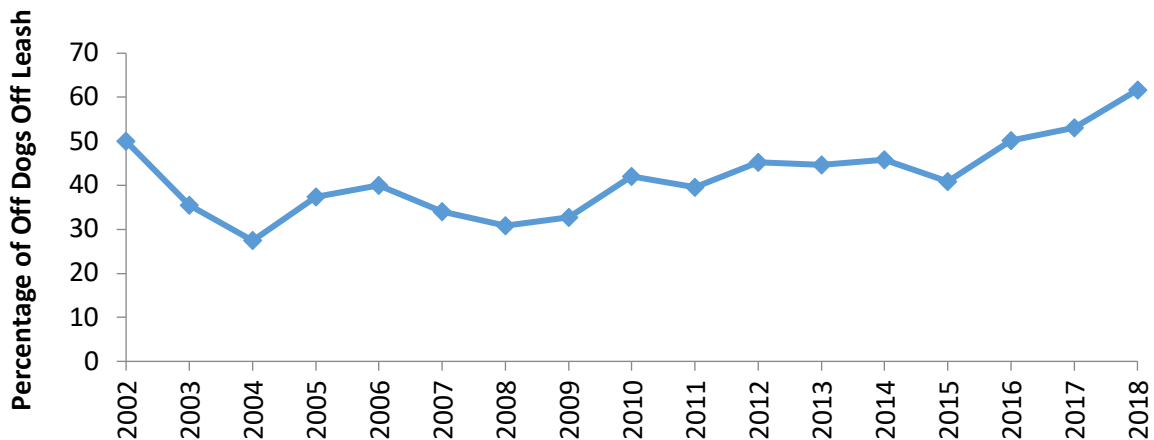
5.0 ENFORCEMENT

Use of the Beach by Equestrians and Dogs

Unleashed dogs are not allowed in public places in Santa Barbara County, except in designated places. At COPR, the docents inform dog owners of the need to leash their dogs but the compliance to the leash law has remained at only 50% (Figure 10).

When the Snowy Plover Management Plan was approved by the California Coastal Commission in 2001 (Notice of Impending Development NOID 1-01), dogs and horses were prohibited on the Reserve as a condition of approval of the plan. The prohibition of dogs was not implemented or enforced. Instead, dog owners were asked by docents to put their dogs on a leash when they entered the beach.

Figure 10. Percent of unleashed dogs per hour into the Snowy Plover Nesting Area at COPR



In November 2006 when the California Coastal Commission approved UC Santa Barbara's North Campus Development, policy 30240(b).27 was added to the UC Santa Barbara Long Range Development Plan (LRDP). Specifically, policy 30220(b).27 §C states "Horses and dogs shall not be allowed at beach and trail areas with active nesting or over wintering populations of snowy Plover, including but not limited to Sands and Ellwood beaches, as well as spur trails leading from

Coal Oil Point and the Coastal Trail to these beaches. Future use of these areas by horses and dogs may be allowed pursuant to approval of the Beach Access and Sensitive Species Management Plan or other plan that protects populations of Snowy Plover and other sensitive bird species.”

In 2008, UCSB submitted a Beach Access Management Plan to the California Coastal Commission as required by the NOID 1-06 (BAMP 2008). Reserve staff proposed a plan to allow access for leashed dogs. The plan proposed to increase enforcement around equestrian and leashed dog requirements through the addition of an average of 50 hrs. per month (600 hours per year) of UCSB Police enforcement at Sands Beach with a goal to increase leash law compliance to 80% (BAMP 2008, CCC Staff Report 2008). The BAMP and the 2008 CCC staff report indicated that “Should any take of Plovers by a dog occur, additional protective measures would be considered, including a ban of all dogs on Sands Beach within COPR during the Ploverbreeding season.” The Ploverbreeding season is from March 15 – September 15.

In response to these cases of “take” and to a failure on improving the leash law compliance, in 2017, the California Coastal Commission approved policy LRDP LU-33-h in which dogs (leashed or unleashed) are not permitted at Coal Oil Point Reserve. COPR staff are currently developing strategies to inform Sands Beach users of this policy, which will include installation of new signs at the Reserve, increased communications with Reserve docents and staff to the public, and collaboration with University departments to implement needed informational and enforcement strategies.

Unlawful and prohibited activities at Coal Oil Point Reserve

The University is committed to providing and maintaining an environment in which all members of the UCSB community are able to work without fear of uncivil behavior or violence (www.police.ucsb.edu). The relationship between urban green spaces and crime have shown that, in some scenarios, green spaces in urban areas are tied to increased crime or violence, and that the nature and level of crime incidents are related to characteristics of the space and management strategies (Bogar and Beyer 2015).

Owing in part to its location relative to a highly urbanized area, Coal Oil Point Reserve has been the site of more unlawful activity than any of UCSB's other Natural Reserves. The nature of these unlawful or uncivil activities at Coal Oil Point Reserve ranges from trespassing, theft of research equipment, illegal fires, illegal fireworks, vandalism, illegal drug use, harassment of wildlife, harassment of people including COPR staff and docents, breaking and entering, public drunkenness and littering.

Sands Beach is one of the most sensitive areas of the Reserve because of the year around population of Snowy Plovers and other shorebirds. This is also the location where most of the impacts, such as various forms of "take" to the Snowy Plovers that utilize the nearshore zone, from prohibited activities occur. The prohibited activities that impact Snowy Plovers and other shorebirds include, but are not limited to bonfires, illegal fireworks, trespassing into restricted areas, vandalism of the fences, and ball playing.

At Coal Oil Point Reserve, visitors are sometimes aggressive towards the Reserve staff and docents who request that the visitor alters behaviors that may be impacting the wildlife or habitat at the Reserve. This includes aggressive responses to requests from staff or docents to leash dogs, move away from a plover nest, or refrain from impactful areas in restricted areas. The frequency of these conflicts between Reserve visitors and staff/docents is correlated with high-visitation days at Sands Beach, such as weekends, holidays or days with warm weather.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Beach access management at Coal Oil Point Reserve has always relied on information collected onsite to inform, develop, and update strategies that are aimed at serving the mission of the UC Natural Reserve System as well as facilitating the co-existence of sensitive ecological communities and public access and use. These efforts have resulted in the successful stewardship of Coal Oil Point Reserve and have allowed for tens of thousands of research, and university level user days, as well as stewardship and protection of coastal Californian ecosystems, a docent and intern program that has extended training and outreach opportunities to multiple communities, and protection of federal and state listed species and continued visitation by the public to this region.

While management successes at Coal Oil Point Reserve have had a number of positive outcomes, recent observations of long-term data collected at COPR have indicated that increasing beach use is causing unwanted impacts and pressures on the natural resources at the Reserve. These include unwanted impacts from increased use of Reserve beaches which often results in harmful impacts to Snowy Plover breeding behaviors, egg viability (due to destructive activities associated with trespassing), Snowy Plover mortalities (due to unleashed dogs), predation upon Snowy Plovers by urban nuisance species (e.g., raccoons, skunks) and vandalism to Reserve signage and scientific instrumentation. Further, university level classes and research projects at the beach and intertidal zones have been negatively impacted by the excessive recreational use of the beach (UCSB faculty, personal communication). In light of these unwanted impacts and recent amendments to the Campus LRDP policies, we recommend the following actions in order to carry out effective stewardship of the natural resources at Coal Oil Point Reserve and the continued ability to facilitate public access at the Reserve beaches:

1) Continue to maintain measures that were successful in protecting the Snowy Plovers including the docent program, symbolic fence and signage.

The docent program will continue to inform beach users of the restricted activities and point out natural resources and conservation strategies to protect them. The symbolic fence delineating the roost and nesting areas will continue to be maintained, to clearly mark the no-trespassing areas. The no-trespassing signs along the symbolic fence will continue to be

posted, and additional educational signs will be installed as needed. More details about these actions can be found in the Snowy Plover Management Plan.

2) Develop an education campaign at the community level to improve understanding of the purpose of the COPR and its policies.

The docents have played an important role in informing the beach users about the natural resources of Sand's beach. Yet, unleashed dogs, trespassers, trash, and vandalism still occur. Novel and effective ways to communicate with beach users need to be explored. Some potential steps to achieve this include: (1) increased signage at Coal Oil Point Reserve to inform a great number of users visiting Sands Beach and other areas, (2) increased use of social media, and (3) a coordinated effort between UCSB, the City of Goleta, and the Natural Reserve System to guide the university and local community to utilize Ellwood and Goleta beaches for active recreation and avoid the environmentally sensitive beach at COPR.

3) Enforcement of the no dog policy at Sands Beach

Previous efforts to prohibit unleashed dog occurrences at COPR have not been very successful. Despite on-the-ground educational efforts by Reserve staff and docents, the percentage of dogs illegally off-leash remained around 50% and, since 2001, unleashed dogs have killed 2 chicks and crushed 2 eggs. A 2017 amendment to the LRDP resulted in the prohibition of dogs at COPR, including Sands Beach. In order to gradually prepare and collaborate with beach users, a plan to enforce this new policy will require a multi-stage approach. Potential strategies include new signage, public education, working closely with UCSB Police Department or other local agencies to increase awareness and enforcement in the area, and continued monitoring of the successes or failures associated with these efforts.

4) Continue to collect information and reduce unwanted impacts associated with urban disturbances

In close collaboration with the City of Goleta, the U.S. Fish and Wildlife Service and other stakeholders of the Coal Oil Point Reserve, we will continue to collect information, monitor and assess the impact to Snowy Plovers, wildlife and habitats that are impacted by various urban disturbances. These disturbances include but are not limited to: alterations to Snowy

Plover breeding and foraging behavior due to sound, light and chemical fall outs associated with nearby fireworks displays, excessive beach use and visitation, dogs (leashed or unleashed), vandalism, trespassing and climate change.

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