

**California State Parks
Western Snowy Plover Management
2009 System-wide Summary Report**

In 1993, the coastal population of western snowy plover (WSP) in California, Washington and Oregon was listed as a threatened species under the Federal Endangered Species Act due to habitat loss and disturbance throughout its coastal breeding range. In 2001, the U.S. Fish and Wildlife (USFWS) released a draft WSP recovery plan that identified important management actions needed to restore WSP populations to sustainable levels. Since California State Parks manages about 28% of California's coastline and a significant portion of WSP nesting habitat, many of the actions called for were pertinent to state park lands. Many of the management recommendations were directed at reducing visitor impacts since visitor beach use overlaps with WSP nesting season (March to September).

In 2002, California State Parks developed a comprehensive set of WSP management guidelines for state park lands based on the information contained in the draft recovery plan. That same year a special directive was issued by State Park management mandating the implementation of the most important action items which focused on nest area protection (such as symbolic fencing), nest monitoring, and public education to increase visitor awareness and compliance to regulations that protect plover and their nesting habitat. In 2007 USFWS completed its Final Recovery Plan for the WSP; no new management implications for State Parks.

This 2009 State Parks System-wide Summary Report summarizes management actions taken during the 2009 calendar year and results from nest monitoring. This information was obtained from the individual annual area reports prepared by State Park districts offices and by the Point Reyes Bird Observatory - Conservation Science (for Monterey Bay and Oceano Dunes State Vehicular Recreation Area). An 8-year system-wide summary chart is included that summarizes nesting data from state park lands over the last 8 years by region and by system-wide total.

In this report both total nest attempts and total nests hatching at least one egg (successful nests) are summarized, along with the percentage of total successful nests. Numbers of chicks reaching fledging age (28 days) are only reported for locations where they are banded or otherwise tracked by permitted biologists. This is done in the North Coast Redwoods, Monterey, Oceano Dunes, and San Diego Coast areas, which includes a large portion of the WSP population in the State Parks system. Overall, when tracking the progress of WSP nests year to year, total successful nests is a better parameter to follow than total nest attempts since it indicates the number of nests producing chicks. Snowy plover pairs often re-nest two or three times if the adults are disturbed, if the eggs are taken by predators, or the nests are destroyed by high tides or wind. In addition, the species is not monogamous; females normally pair with more than one male in a given year. The number of additional nests initiated by a pair can vary from year to year depending on the birds' fitness or environmental variables causing nest loss.

Plovers depend on coastal beaches as much during the winter as during the breeding season. High numbers of migrating WSP arrive at California beaches from within and

outside the state, as band records have shown. Since WSP are short-lived (average life span is 3 years), each winter represents a crucial time when food reserves must be accumulated to ensure successful breeding fitness during the following spring. Winter storms detach kelp fronds or holdfasts that collect on beaches and subsequently attract thousands of invertebrates that the plovers feed on during the winter and breeding season. The importance of the winter season to plovers has been documented. Researchers have shown that much of the recorded population reduction in Pacific Coast snowy plovers has resulted from winter mortality. In terms of resource management, some of the same factors that affect plovers during the breeding season (i.e. off-leash dogs, beach grooming) are also important during the winter.

State Park lands also provide habitat for western snowy plover during the winter months. As a part of the recovery program, winter window surveys have been conducted every year since 2003 in every WSP Recovery Unit along the Pacific Coast. During a short window of time numbers of surveyors access beaches along the Pacific Coast and count the number of wintering WSP. The result is a “snap-shot” tally of the entire population. In California, including State Parks, there has been a downward trend in WSP numbers since 2003.

Management Activities:

- **Public Education.** Districts distributed the western snowy plover (WSP) brochures, revised in 2007 by the Natural Resources Division, providing better information on WSP natural history and their threatened status, and on what the Department is doing to help recover the species. The brochures also explain how visitors can help protect habitat and nesting plovers and the importance of complying with park regulations. The Mendocino District continued its collaboration with Mendocino Coast Audubon Society, which in the past two years has secured nearly \$30,000 in grants to fund “Save Our Shorebirds” project. The goal of this project is to increase the abundance of shorebirds on Mendocino area beaches and to educate the public concerning the snowy plover and other shorebirds. Twenty volunteers provided 615 hours to this project, which included help with monitoring snowy plovers. In addition, a book about snowy plovers, “The Life and Times of Pink Lady,” was created for distribution to school children. The Channel Coast District used a campground host as a public contact person to inform visitors about snowy plover management and to lead occasional “bird walks.” The San Luis Obispo Coast District installed two new interpretive panels in Montaña de Oro State Park to educate the public about the snowy plover. On July 4th, a WSP informational booth was set up at Morro Strand State Beach, and State Parks staff increased their presence on the beach to answer questions and to encourage the public to comply with park regulations concerning fireworks.
- **Training.** Many districts used trained volunteers to help with plover monitoring. Park employees and concessionaires also had formal training in WSP natural history and stewardship responsibilities, such as the importance of driving parks vehicles slowly in the wet sand zone, away from breeding and foraging plovers. The Mendocino District provided their staff with required WSR training given by a

WSP expert. San Luis Obispo Coast District presented one-hour training to all staff in the southern coastal sector, as well as WSP training to city staff, harbor patrol staff, and police. San Diego District also had a trained docent program for more public outreach.

- **Enforcement.** Public compliance with the dog leash rule continues to be an enforcement issue in each district. Both San Luis Obispo Coast and Mendocino Districts have offered the public a solution by designating certain beaches known to be unused by plovers as “dog walking” beaches, while continuing to enforce dog leash rules and dogs prohibited rules at nesting beaches. However, monitors in some districts continued to note many dogs off leash, as has been the case nearly every year. In addition, there were continued problems with some park visitors crossing the symbolic fence and destroying plover nests or vandalizing fences, signs, or exclosures. In some cases visitor contact by monitors did nothing to increase compliance. Some districts, such as San Luis Obispo Coast, reported a number of citations given for dogs off leash or for trespassing in areas closed for plover nesting, but enforcement has also been reported as low in other districts. Regular enforcement of state park regulations is essential in increasing the success of the WSP.
- **Beach Restoration.** Restoration efforts, most notably the removal of the exotic European beach grass, continued in several districts along the coast, including Mendocino, Santa Cruz, San Luis Obispo Coast, Oceano Dunes, and Channel Coast Districts. Methods utilized included controlled burning followed by herbicides, dune reformation with heavy equipment, or broadcasting of native plant seed. At Oceano Dunes SVRA some habitat enhancement (broadcasting wood debris and beach wrack) in nesting areas has resulted in higher nesting rates at those locations.
- **Predator Control.** Predation of nests and chicks continues to be the top limiting factor in WSP reproductive success. Many districts had contracts with permitted predator control specialists (usually USDA Wildlife Services) to monitor and remove predators where they posed a special threat to WSP reproduction. For example, the San Obispo Coast District reported red fox, ground squirrel, coyote, skunk, raccoon, feral cat, and crow removal during the 2009 breeding season. Monterey District also had a sharp increase in the removal of predator species. Of the identified predators, avian predators were recorded more often than ground predators. Most districts were more judicious this year in use of wire nest exclosures using them in special cases but also trying to avoid attracting avian predators which tend to cue on the exclosures. Oceano Dunes practiced trapping and relocation of some raptor species in their unit in addition to lethal predator removal.
- **Field Management and Monitoring.** Management effort continued to focus on nest area protection and nest monitoring. Actions included installing temporary symbolic fencing and signage, providing for public education, enforcing of State Park regulations, restoring habitat and monitoring all nesting areas. Signs affixed to symbolic fence cables or posts indicate to the public that the snowy plover is

federally protected and that the fenced nesting area is closed during the nesting season. Nest monitoring was performed in many areas up to 5 times per week in order to record the number of nests initiated, and the number of chicks hatched and their fate. Intensive nest monitoring allowed for early detection of nest disturbance and predation, and provided information necessary to take appropriate corrective management actions, such as setting up exclosures. System-wide information collected each year represents thousands of hours of nest monitoring. WSP nest monitoring activities were again achieved in cooperation between State Parks, Point Reyes Bird Observatory, U. S. Fish & Wildlife, and other conservation organizations. Many volunteers continued to help State Parks protect WSP nest sites. The Department also participated in range-wide WSP summer and winter population surveys.

Major Breeding Results:

Western snowy plover nesting was reported in 17 units managed by the Department, up from 10 units in 2008. Of 651 nest attempts reported on State Park lands, a total of 402 nests were reported to have successfully hatched a clutch (62% success rate), 242 nests were known to fail, and the fate of seven were unknown. This is a 30% increase in the number of successful nests compared to 2008; the third highest number of nest attempts in the past 8 years and second highest number of successful nests (see Figure 1).

Causes of nest loss were varied, but 56% of system-wide losses were directly attributed to predation, with avian predators reported much more than mammal predators. Wind and tide inundation were the next highest cause of nest loss (20%), with abandonment the third in importance (12%). Nest abandonment is commonly caused by disturbance of the breeding pair during the process of egg laying and incubation. Suspected human caused nest loss increased compared to the previous year (2.5% vs. 1.2%) representing the loss of six nests.

Of a system-wide total of 744 monitored chicks, 289 (39%) of those were reported to have reached fledging age (28 days from hatching) and 336 chicks were of unknown status. This is an increase from a 31% fledging rate for the chicks in 2008 and a 33% increase in total number of chicks.

The following is a brief overview of the 2009 nest monitoring data that is reported in detail in the individual area reports and entered into the Department's WSP data base. A summary of this information and comparison with previous years is shown in the 8-Year Annual Summary Chart (Figure 1).

- Del Norte and Humboldt Coast units (North Coast Redwoods District) reported one successful nesting attempt located at Humboldt Lagoons State Park. Three chicks hatched and later fledged. This is the second recorded nest at Humboldt Lagoons State Park since regular nest monitoring began. Snowy plovers previously nested in this district in somewhat higher numbers (e.g. in 2002 ten nests were recorded) but more recently been severely reduced in number. Nesting distribution in the Del Norte / Humboldt area has historically

- been denser outside of State Park property. The highest regular numbers have occurred at gravel bars along the Eel River and at Clam Beach, a county park located adjacent to Little River State Beach. Despite the record of a successful WSP nest in a State Park unit, overall the WSP breeding population dropped dramatically in the Del Norte / Humboldt Coast area compared to previous years. All district management activities are continuing, such as beach restoration, public outreach, and predator surveys. Snowy plover continue to be recorded on some of the district beaches during the winter window survey, with the highest numbers at Little River State Beach (6-year average = 37).
- Mendocino District units reported no nesting attempts along their coast. The district continues to maintain its management program, which includes beach restoration and education programs coordinated with the local Audubon Society chapter. Snowy plovers have only bred one time in this district in the past seven years. Numbers of wintering WSP have been substantial and consistent at both MacKerricher and Manchester State Parks since 2003 (6-year average = 22).
 - Sonoma Coast area units had no nest attempts this year at Salmon Creek. Salmon Creek and the beach south is part of Sonoma Coast State Park. There are current plans to restore a 300 acre area of dune habitat south of Salmon Creek. If successful, the future potential for suitable snowy plover habitat will increase at the unit since it is also located in an area of lower human disturbance. The recent establishment of a no-take state marine reserve offshore will also end foot traffic from shore anglers. Moderate numbers of wintering WSP have been recorded at Salmon Creek beach over the past six years (6-year average = 17).
 - San Mateo and Northern Santa Cruz area units (Santa Cruz District) reported one nesting attempt at Half Moon Bay State Beach in 2009, which was successful in hatching two chicks. The chicks did not survive to fledge. This unit has had good numbers of WSP in the past, but recently has had little reproduction, regardless of regular efforts to manage the beach for their success. In 2004 there were 25 nest attempts at Half Moon Bay State Beach. However, snowy plovers continue to use this beach during the winter, and have been recorded consistently in relatively high numbers since 2003 (6-year average = 47).
 - Santa Cruz and Monterey Bay area units include both Santa Cruz and Monterey Districts, stretching from Manresa State Beach to Monterey State Beach. These districts reported 128 nests successful in hatching at least one egg (61% of 210 nest attempts). The previous year had 211 nest attempts and 109 successful nests (52% of total nests). Predator-caused nest loss comprises 55% of all nest failures in 2009, wind and tide 22%, and abandonment about 2%. Nest loss due to avian predators was again higher than those due to ground predators (29 nests compared to 11 nests). The Monterey District attributes much of the increased nest and chick success to effective predator control in 2009. Winter WSP surveys since 2003 show that

several beaches in the Santa Cruz and Monterey districts are used by substantial numbers of plovers (6-year average = 40).

Area nests in 2009 produced 347 chicks, an increase over the number of chicks hatched the previous year (289). Of these chicks, 187 were reported to have successfully fledged, a 53% fledging rate (compared to 27% in 2008) and more than double the number of fledged chicks in 2008. The units containing the highest chick numbers were Salinas River, Zmudowski, and Moss Landing State Beaches (106, 100, and 48 chicks respectively), and the heaviest predation was experienced in the same units; especially Zmudowski State Beach.

The Santa Cruz/Monterey Bay area has the longest record of plover monitoring and protection in the state, dating back to efforts in the mid-1980s led by the PRBO. Since then, State Parks and USFWS have become increasingly involved in cooperative monitoring and management activities in the larger study area, which includes State Park System units, other state lands, federal property, and private lands. PRBO prepares and publishes annual reports on nesting activities for the study area which stretches from Waddell Creek to the City of Monterey and includes lands other than State Parks. Since the recent expansion of Wilder Ranch State Park to include coast to the north, the results for the Laguna Creek beach are now included in the annual report, though no nesting occurred this year.

- San Luis Obispo Coast District units reported 109 nests successfully hatching at least one egg (52% of a total of 210 nesting attempts). This was an improvement over the previous year (40% success rate out of 180 nesting attempts).

At Montaña de Oro State Park (Sandspit area), 89 nests were successful at hatching at least one egg (62% of 144 nesting attempts). Most of the identified nest loss at the Sandspit was due to coyote predation (22 nests of 53 failed- 42%). Nest loss caused by wind or tidal inundation was nearly as high (21 nests lost- 41%). Other park units in this region with nesting reported in 2009 included the Estero Bay/Villa Creek Beach unit with a total of 36 nesting attempts of known fate and 6 successful nests (17% hatching success). Of the 30 failed nests, 25 nests (83%) failed due to predators. Morro Strand State Beach had 14 successful nests, 54% of the 26 recorded nesting attempts- this was an improvement over 2008. The renamed Hearst San Simeon State Park had 2 failed nests out of a total of 2 nests initiated. The nests were located at Sydney's Lagoon, part of the recently acquired land in an 18-mile strip of coastline; no nesting occurred at San Simeon Beach. Nesting in this part of the district has been variable over the years and never in high numbers. Determination of an accurate chick count and fledging rate for San Luis Obispo Coast District was not possible due to the lack of a banding program, however it was determined that 308 eggs were laid during the season. Of this total 252 chicks hatched at the Sandspit, though fledge rates were not determined due to a lack of banding program.

Predation has always been the chief cause of clutch loss in this district. At the Sandspit, nest loss predation was mainly caused by coyote. Coyotes have been a major source of predation since 2004. Since the Sandspit is a peninsula, once a coyote passes into the area, it is forced to return the way it came and can cause multiple nest loss as a result.

This district has consistently recorded high numbers of wintering WSPs since 2003 (6-year average = 59), in addition to producing substantial numbers of chicks.

- Oceano Dunes State Vehicular Recreation Area reported a total of 94 nests hatching eggs successfully (64% of the 147 nesting attempts) in 2009. Over 60% of nest loss at Oceano Dunes SVRA was due to predation, with avian predators being the highest number of known cause. The next highest cause of nest loss was abandonment. Abandonment is caused many times by disturbance of the breeding adults during the onset of nesting.

Oceano Dunes SVRA experienced an increase in nest attempts and successful nests, with 2009 having the highest number recorded since 2004. With the exception of 2003, hatching success at Oceano Dunes SVRA has been more consistent and higher than in most other regions over the past eight years. Nests this year produced 245 chicks and fledged 81 young (33% fledging success), with a recorded fledge rate of 1.23 young per male WSP.

Habitat enhancement continued in three large exclosures of the breeding area. Driftwood, wood chips, and kelp collected from the beach were spread in small areas throughout the enclosure to provide disruptive cover, and these areas were used by plovers for nesting. Some of the kelp wrack was inoculated with invertebrates. Plovers were also observed utilizing areas that had been planted in sea rocket and beach-bur, using the plants for cover. Nest success proved to be much higher in these areas than in areas without this substrate added.

Predator management included both day and night surveys of predator activity, along with use of exclosures, padded leg traps, and removal of known habitual predators. This included relocation of raptorial predators. Observed predator species included coyote, raven, raptors, opossum, and skunk.

Oceano Dunes SVRA also consistently records high numbers of wintering plovers compared to other park units (6-year average = 60).

- Santa Barbara and Ventura area units (Channel Coast District) reported 18 nests being successful on State Park lands, 75% of the 24 nesting attempts. This is the highest number of both nest attempts and successful nests since records were kept.

In 2008, 23 nesting attempts were on McGrath State Beach and 1 nesting attempt on Mandalay State Beach, State Park property operated by Ventura

County. At McGrath State Beach, 18 nests hatched 28 eggs successfully and at Mandalay State Beach one nest was lost to predation. Reliable information on fledgling success was not obtained because chicks were not banded. The district reported four cases of nest loss due to human disturbance at McGrath State Beach. Removed mini-exclosures, removed or crushed eggs and human footprints within the fenced nesting area were in violation of the district Superintendent's Closure Order, though violators have not been identified.

In addition to the snowy plover nesting population at McGrath SB, there were 85 California least tern nests (a State and Federal endangered species), 69 of which hatched young and fledged 40 terns. The presence of least terns might be one reason that McGrath had a high hatching success rate; least terns actively harass avian predators in the area.

Wintering plovers have been recorded in good numbers (6-year average = 44) at San Buenaventura, McGrath, and Mandalay State Beaches.

- San Diego Coast District reported a total of 51 successful nests (76% of the 55 nesting attempts), the highest number of nest attempts and successful nests reported since 2002. An estimated total of 19 chicks fledged out of 147 hatched (13% fledge rate).

At Silver Stand State Beach, 24 of the 25 reported nests were successful in hatching chicks (96%), and approximately 15 of the 68 chicks produced fledged (22%). The number of fledged chicks, though not all based on banding, was the second highest number since records started in 2002. Unleashed dogs were still reported to be a problem at this beach, higher numbers compared to the previous year. Predation of nests or chicks was not a problem at Silver Strand SB, due in part to the use of mini-exclosures and other predator management measures.

At Border Field SP, 27 of the 30 nests attempted were reported successful in hatching (90%). Counts of chicks reported 79 hatched and approximately 4 fledging (only 5%). Nest loss in 2009 was attributed to nest abandonment and an unknown predator. Gull-billed tern (a California species of concern) has been identified as one of the main predators of WSP chicks at this location, although it is unknown if this species is the major cause for such a poor fledging rate this year.

Numbers of wintering plovers in the San Diego coast area are relatively low compared to other coastal districts (6-year average = 12).

