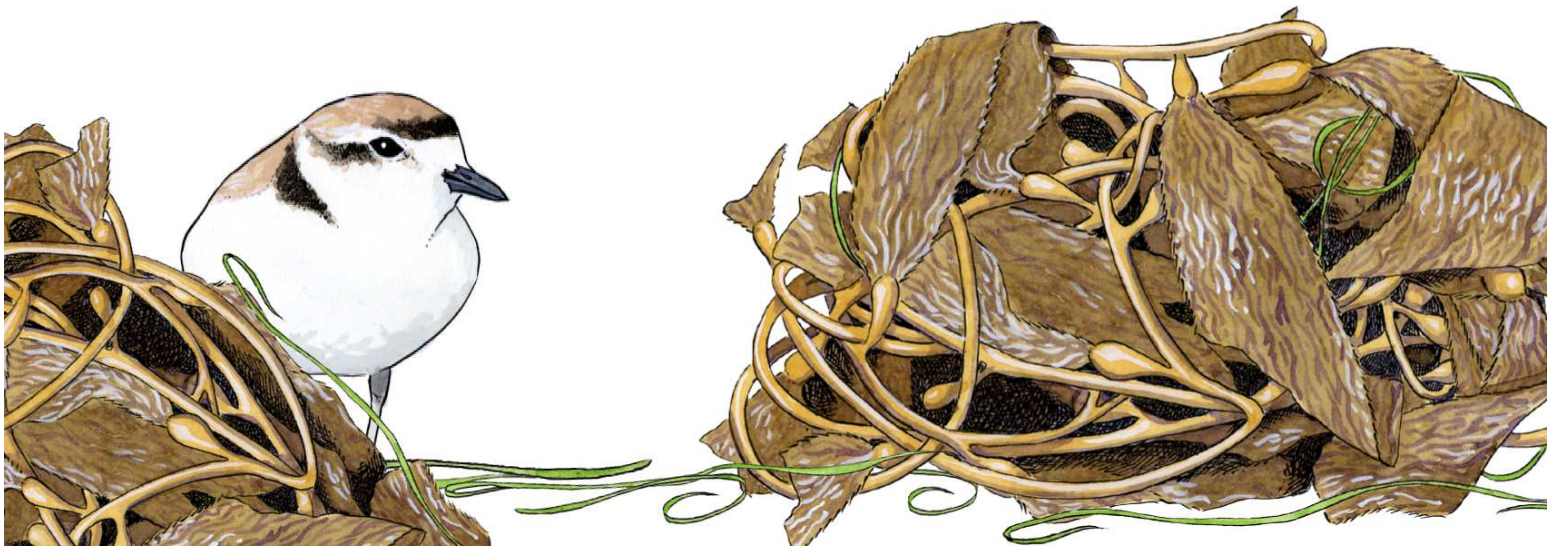
The Western Snowy Plover

In Los Angeles County, California

2008 Annual Report

Prepared for:
The California Department of Fish and Game
Office of Spill Prevention and Response

Prepared by:
Ryan Ecological Consulting
Los Angeles Audubon
Santa Monica Bay Audubon
Plegadis L.L.C.



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January 19, 2009

THE WESTERN SNOWY PLOVER IN LOS ANGELES COUNTY, CALIFORNIA: ANNUAL REPORT 2008

Prepared for:

The California Department of Fish and Game
Office of Spill Prevention and Response
1700 K Street, Suite 250
Sacramento, CA 95811
Contact: Vicki Lake

Prepared by:

Ryan Ecological Consulting
135 North Meridith Avenue
Pasadena, California 91106
Thomas Ryan

Los Angeles Audubon
7377 Santa Monica Blvd
West Hollywood California 90046-6694
www.laaudubon.org
Stacey Vigallon

Santa Monica Bay Audubon Society
533 Fourth St.
Santa Monica, California 90402-2701
http://home.att.net/~cgbraggjr/
Lucien Plauzoles

Plegadis LLC
1070 Hamilton Road, Suite A
Duarte, CA 91010
Ricardo Montijo
Shelly Magier

January 19, 2009

PROJECT PARTICIPANTS

STUDY COORDINATION

Ken Corey, U.S. Fish and Wildlife Service
Nancy Frost, California Department of Fish and Game
Garry George, Los Angeles Audubon, Executive Director
Vicki Lake, California Department of Fish and Game Office of Spill Prevention and Response
Shelly Magier, Plegadis LLC, GIS Specialist
Ron Melin, Coordinator, South Bay/Palos Verdes Audubon Society
Ricardo Montijo, Plegadis LLC, GIS Specialist
Lucien (Lu) Plauzoles, Coordinator, Santa Monica Bay Audubon Society
Thomas Ryan, Ryan Ecological Consulting, Lead Biologist
Stacey Vigallon, Los Angeles Audubon, Volunteer Coordinator and Project Biologist

VOLUNTEERS

Seventy-four volunteers contributed 569 hours to complete the twelve surveys over more than 40 miles of beaches within Los Angeles County.

Allan Kotin
Anne Laval
Aurelio Albaisa
Barbara Courtois
Candy Groat
Chris Lord
Dan Cooper
David Moody
Don Nierlich
Eleanor Osgood
Garry George
Greg Ainsworth
Hank Borenstein
Jennifer Jones
Jess Morton
Jim Jennings
Karen Martin
Laurel Jones
Lisa Fimiani
Lu Pauzoles
Marian Porter
Mary Prismon
Meighan Jackson-Dietenhofer
RC Brody
Richard Montijo
Ron Melin
Tommye Hite
Guy Commeau
Gianna Dryer
Martin Byhower
Marilyn Judson
Kiersten Lo
Larry Allen
Rocky Brown
Ken Wheelan
Chuck Almdale
Lillian Johnson Almdale
Vic Warren
Laurel Scott
Kris Ohlenkamp
Tamara Ball
Clara Cartwright
Allison Brandin
Tracy Drake
Robert Jeffers
Alma Alegria
Rosemary Virula
Judy Howell
Clea Bowdery
Calin Rusti
Kelly Su
Luis Valdovinas
Laura Salvador
Christian Alvez
Joan Haeckling
Anahit Khachateyan
April House
Robb Hamilton
Sandra Ayers
Amanda Carroll

Karen Linares
Sally Garcia
Brigette Calderon
Luis Derado
Jose Rivera
Johnny Valdovinos
Meredith Leonard
Mary Loquvam
Karin Howard
Jessica Hall
Maureen Bohler
Miguel Luna
David Fregoso
Mia Fregoso

ACKNOWLEDGEMENTS

We first wish to thank each of our volunteers who participated in this survey. This study would never have happened without the generous donation of their time and effort. We would like to thank the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game Office of Spill Prevention and Response (CDFG-OSPR) for funding this study, and the National Fish and Wildlife Foundation (NFWF) for managing these funds. We thank Dan Blankenship (CDFG), Lyann Comrack (CDFG), and Gjon Hazard (USFWS) for assisting in the study design and execution. We wish to thank the staff of Los Angeles County Beaches and Harbors, Los Angeles County Lifeguards, the Coastal Commission, California State Parks, the Cities of Santa Monica and Hermosa Beach for their hard work in helping to protect the Western Snowy Plover. We also thank all of the participants who attended the 2008 Los Angeles County Snowy Plover Working Group Meeting including Larry Allen, Kristi Birney, Dan Blankenship, Ken Corey, Chris Dellith, Jennifer Dugan, Mike Frazier, Nancy Frost, Garry George, Katy Kughen, Mary Loquvam, Karen Martin, Ron Melin, Lu Plauzoles, and Paul Westefer. We thank Ruth Salter for editing this document.

MANAGEMENT SUMMARY

Population and Distribution. In 2008. Snowy Plovers were found on twelve of the thirty-six beach segments in Los Angeles County. Most (98.5%) were observed on known plover roosting beaches: Zuma State Beach, Malibu Lagoon, Santa Monica State Beach, Dockweiler State Beach, and Hermosa Beach. Approximately 200 (winter 2007-2008) and 250 (winter 2008-2009) Snowy Plovers overwintered along the Los Angeles County coastline. Most Snowy Plovers used ten plover roosting areas, which account for approximately 3% of the Los Angeles (LA) County coastline and 10% of the available sandy beach in LA County. These were mostly the same roosting areas as documented in 2007. Notable changes in primary roosting areas were a shift from Zuma Beach North to Zuma Beach South near the lagoon, and no Snowy Plovers using a smaller roosting area on Hermosa Beach South between 3rd Street and 10th Street.

The overall winter 2007-2008 population remained stable at 200 Snowy Plovers and rose to 254 Snowy Plover during winter 2008-2009, a welcome increase after suffering a 41% decline from 2004-06 to 2007. Zuma Beach continued to support the largest group, approximately 40% of the county population. However, the population at Zuma remains in serious jeopardy; after suffering a 66% decline in 2007, over half the individuals changed roosting areas to a location south of the previous roost near the lagoon. In February and March, all the Snowy Plovers at Zuma State Beach were at this new roost.

In 2008, we conducted surveys from January to December, documenting Snowy Plovers' spring departure and summer/fall arrival. Most Snowy Plovers departed Los Angeles County in late March and early April. In 2008, at least one pair remained at Dockweiler State Beach through the nesting season. Snowy Plovers began to return to their roosting areas in late June/early July. Most returned by early September.

Nesting. Biologists and volunteers detected multiple scrapes during numerous surveys at Zuma State Beach, Malibu Lagoon, Santa Monica State Beach, and Dockweiler State Beach (north of Tower 47 and north of the Volleyball Courts). Enclosures were placed around scrapes at Malibu Lagoon and Santa Monica State Beach. However, Malibu Lagoon was over-washed by waves and the Snowy Plovers did not continue to use the enclosure at Santa Monica after a smaller area around the scrapes was completely enclosed to protect it from dogs and pedestrian traffic. These observations are the grounds for a recommendation that enclosures be a minimum of 100 x 300 ft, that symbolic fencing be used, or that sand fencing enclose the area on three sides only, with open access on the ocean side. Potential nest scrapes were found at other sites, but no eggs were detected as scrapes were removed by beach grooming activities.

Protections. The project team worked with our agency partners in 2007 and 2008 to implement recommendations made at the 2007 workshop. Accomplishments include the protection of wintering roost sites and potential nesting areas at Malibu Lagoon in spring 2008 and Dockweiler, expected in early winter 2009. We assisted the City of Santa Monica with their enclosure and learned that these enclosures should not be reduced below 100 ft x 300 ft and should not be completely enclosed if sand fencing is used. The project team also worked with County Lifeguard and LACBH staff to develop driver-training handouts to instruct beach drivers about where they may encounter Snowy Plovers and how to be extra careful around them. Our public outreach efforts were a tremendous success with the creation of a website containing information about plovers and providing agency staff with up-to-date locations of the roosts. In addition, we assisted local students in creating a documentary that has been posted on You-Tube, prepared a brochure to be handed out by our volunteer monitors and docents, and our volunteer program has grown to over 74 volunteers. We have also secured three years of funding for a docent program at the enclosure at Dockweiler State Beach and given talks at four Audubon meetings, the Recovery Unit 6 meeting, the Snowy Plover range wide meeting, Cal Coast's annual H2O Conference, and Pepperdine University. Furthermore, we have been able to expand our surveys to include the entire year and conducted nest surveys at sites were scrapes were detected.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

INTRODUCTION

WESTERN SNOWY PLOVER

The Western Snowy Plover is one of two subspecies of Snowy Plover. It breeds on the Pacific coast from southern Washington to southern Baja California, Mexico; in interior areas of the western United States; and in coastal areas of extreme southern Texas and northeastern Mexico (American Ornithologists' Union 1957). Snowy Plovers tend to be site-faithful, and thus the Pacific coast population of the Western Snowy Plover is largely distinct from Snowy Plovers breeding within the interior (USFWS, 1993a; Warriner et al. 1986). The Pacific coast population consists of approximately 1,800 breeding and 3,500 to 4,000 wintering individual Snowy Plovers, most occurring from southern San Francisco Bay to southern Baja California (Page et al. 1995a, Page and Stenzel 1981, Palacios et al. 1994, USFWS 2007, USFWS Unpublished Data). Within Recovery Unit 6, which includes Los Angeles, Orange, and San Diego Counties, there are currently approximately 200 to 300 breeding adults and 700 to 1,200 wintering birds. In Los Angeles County, there are between 260 and 334 wintering adults and no breeding birds (USFWS Unpublished Data).

For the Pacific coast population, the nesting season of the Western Snowy Plover extends from February through late September. On the California coast, where breeding tends to occur a few weeks earlier, nests usually appear by the third week of March (Page et al. 1995a). Primary nesting habitats include sand spits, dune-backed beaches, beaches at creek and river mouths, and saltpans at lagoons and estuaries (Stenzel et al. 1981). Nests generally consist of a shallow scrape lined with beach debris and typically occur in flat, open, sandy areas with little vegetation (Widrig, 1980, Stenzel et al. 1981). Driftwood, kelp, and dune plants provide cover for chicks and harbor invertebrates, an important food source (Page et al. 1995a). Nests are usually found within 100 meters (328 feet) of water, whether ocean, lagoon, or river mouth (Page and Stenzel 1981, Page et al. 1995).

WESTERN SNOWY PLOVERS IN LOS ANGELES COUNTY

Prior to1945, the Western Snowy Plover (*Charadrius alexandrinus nivosus*) (Snowy Plover) nested on beaches throughout Los Angeles County (Grinnell and Miller 1944). However, increased human recreation brought introduced predators and heavy, frequent beach grooming, dramatically affecting the ability of Snowy Plovers to nest on Los Angeles County beaches. Since 1949, there have been no documented cases of a Snowy Plover nesting within Los Angeles County, although no systematic range-wide survey of all Los Angeles County beaches has been conducted since the 1970s (Gary Page pers. comm.). While several factors are believed responsible for the disappearance of nesting Snowy Plovers in Los Angeles County, the primary reasons include daily beach grooming (Photograph 1 and Photograph 2), which likely destroys nest scrapes and eggs of Snowy Plovers and discourages nesting by removing favorable nesting habitat and harming food resources (Page et al. 1995); and increased disturbance from human activities on beaches, including sunbathing, swimming, dog-walking, and sports. In addition, increased human activities require support services such as police and lifeguard patrols, water quality monitoring, erosion control, and trash pick-up, which also cause an increase in vehicles on the beach. Furthermore, human activity and local residences attract predators such as cats, dogs, and American Crows. In this report, we attempt to determine where Snowy Plovers are roosting and potentially nesting in Los Angeles County, identify threats that could represent both direct and indirect take, and make recommendations to help beach managers minimize impacts to Snowy Plovers on their beaches.

Historically, Snowy Plovers have nested at Redondo, Ballona (Venice/Marina Del Rey), Los Angeles, Bolsa, and Malibu Beaches (Los Angeles Breeding Bird Atlas Data, Unpublished). In 1949, the last active nest of a Snowy Plover on Los Angeles County beaches was reported at Manhattan Beach (Stager 1949 in Page and Stenzel 1981). Despite the lack of documentation since 1949, Snowy Plovers have continued to

overwinter on Los Angeles County beaches. Recent winter surveys conducted by the Santa Monica Bay Audubon Society (SMBAS) have detected between 260-334 wintering Snowy Plovers during winter surveys in 2003-04, 2004-05, and 2005-06 (USFWS Unpublished Data). More comprehensive surveys were conducted in January 2007 and detected 196 plovers (Ryan et al. 2007), at least a 41% decline. There have been several sightings of Snowy Plovers during their nesting season (March through September, peaking mid-April through mid-June), leading to speculation that Snowy Plovers may still be attempting to nest in Los Angeles County. Indeed, in 2007, nest scrapes were detected at Dockweiler State Beach and Hermosa Beach (Ryan et al. 2007). Both were subsequently destroyed by human activity. Unfortunately, under current conditions, all nests are likely to be destroyed by daily beach grooming prior to detection, and any Snowy Plovers that may attempt to nest are likely to abandon their efforts and nest elsewhere prior to the U.S. Fish and Wildlife Service (USFWS) breeding season window surveys held in May.

Currently, the USFWS lists five beaches in Los Angeles County as critical habitat for the Snowy Plover (USFWS 2005) (Figure 1). These beaches are protected as wintering habitat (USFWS 2005). A proposed Special Rule Pursuant to Section 4(d) of the Endangered Species Act (ESA) (USFWS 2006a) calls for a goal of zero breeding pairs of Snowy Plovers in Los Angeles County. This rule also proposed the development and implementation of management plans for all California coastal counties that would maintain existing wintering Snowy Plover populations, as well as create habitat to support summer breeding populations, while allowing for the continuation of beach maintenance and public recreation (USFWS 2006a). Los Angeles Audubon (LAA) and local biologists have raised an objection to the goal of zero nesting pairs in Los Angeles County based on a lack of suitable data regarding Snowy Plover use of beaches in Los Angeles County, particularly during the nesting season.

Study Goals. This study was designed to augment observations made in winter and spring 2007 and, for the first time, provide year-round information on the Snowy Plovers on Los Angeles County beaches in 2008 to determine (1) year-round attendance patterns at the roosting areas identified during the 2007 surveys, (2) the size and location of these roosts, (3) the overall population and distribution in LA County, (4) whether Snowy Plovers are currently attempting to nest, and (5) the status of management recommendations made in the 2007 report. The goals of this study are to continue to provide agency managers with more accurate and extensive information on the times when and locations where Snowy Plovers overwinter and possibly nest, to recommend areas to be protected for use by wintering and nesting Snowy Plovers with respect for current beach use, and to provide recommendations for management actions for each of these areas.

This report builds on information provided and recommendations made in Ryan et al. (2007). In this report, we focus only on beaches where Snowy Plovers occur, specifically on the roosting and foraging areas documented by our observers. We further refine our descriptions of those beaches and roost sites and begin using new terminology in describing roosts and beaches to help agency managers focus efforts on these sensitive areas. We then analyze the results of efforts to fulfill recommendations made in Ryan et al. (2007). Descriptions of beaches where Snowy Plovers did not occur in either year, a complete description of the listing history and critical habitat, and potential funding resources can be found in Ryan et al. (2007).

PROTECTION UNDER THE ENDANGERED SPECIES ACT

The Pacific coast population of the Western Snowy Plover was listed as Federally Threatened on March 5, 1993. A recovery plan was adopted by the USFWS 2007 (USFWS 2007). The population in Los Angeles County was designated under Recovery Unit (RU) 6, which includes the coastline from Los Angeles to San Diego Counties. The goals of the plan were: (1) maintain 3,000 breeding adults, with a goal of 500 breeding adults in Los Angeles, Orange, and San Diego Counties, combined; (2) monitor and

research site-specific threats to Snowy Plover populations in order to create site-specific management plans; (3) maintain an average of at least one fledged chick per male in the last five years prior to delisting; and (4) develop and implement mechanisms to assure long-term protection and management of breeding, wintering, and migration areas in order to maintain the subpopulation sizes and average productivity specified above (USFWS 2007). Appendix J of the proposed recovery plan (USFWS 2001) was the basis for the monitoring methods used in this project. Within RU-6, the plan states that the Snowy Plovers have lost significant habitat through development and recreational use and, as a result, their populations have dispersed. It was suggested that the management of some practices, such as beach raking, could allow for additional habitat within the unit.

Critical Habitat refers to specific areas within the greater geographic area occupied by a species, at the time it is listed in accordance with the ESA, which contain physical or biological features essential to the conservation of the species that may require special management consideration or protection. The final critical habitat designations (see Definitions) by USFWS (2005) indicated that projects or management activities that cause, induce, or increase disturbance on beaches could impact the Western Snowy Plover. Such activities include recreation, beach cleaning, and shoreline erosion control projects. Areas designated as proposed critical habitat in 2005 are shown in Figure 1, and subsequent maps of individual beaches and descriptions can be found in Ryan et al. (2007)

Section 9 of the Endangered Species Act of 1973, as amended, prohibits any person subject to the jurisdiction of the United States from taking (i.e., harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting) listed wildlife species. It is also unlawful to attempt such acts, solicit another to commit such acts, or cause such acts to be committed. Regulations implementing the Endangered Species Act (50 CFR 17.3) further define “harm” to include significant habitat modification or degradation that results in the killing or injury of wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering. “Harass,” means an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns, which include, but are not limited to, breeding, feeding, or sheltering.

There has been much discussion about current beach maintenance and recreational activities within LA County and their potential for “take” under the ESA. The Northeast Region of the USFWS created recreational guidelines for the closely related Piping Plover (http://www.fws.gov/northeast/pipingplover/recguide.html) (USFWS 1994) (guidelines). This document notes that adult and juvenile Piping Plovers have been struck and killed by vehicles on the beaches, specifically, "In Massachusetts and New York, biologists documented 14 incidents in which 18 chicks and 2 adults were killed by vehicles between 1989 and 1993” (Melvin et al. 1994 in USFWS 1994). We have also documented one vehicle kill of a Snowy Plover at Zuma in 2007 (Ryan et al. 2007). This evidence would certainly imply that vehicles on the beach have the likelihood of killing adult plovers with some regularity. Any mortality of wintering adult plovers would be considered “take” under the ESA. We suggest that there is a strong potential that vehicle strikes may occur within LA County, particularly near roosting areas.

In regards to precedent in protecting wintering populations of plovers, the Coal Oil Point Marine Reserve’s Snowy Plover Management Plan (2001) documents that the Ventura FWO acted to protect the wintering roosting plovers at Coal Oil Point in 1999 and issued a letter that determined that recreational activities were leading to “take” of plovers. They requested that the University of California, Santa Barbara apply for an incidental take permit, pursuant to Section 10(a)(1)(b) of the ESA. In lieu of this permit, UCSB agreed to develop a management plan to reduce disturbance. The goal of the plan was to “maintain an undisturbed wintering population of Snowy Plovers in perpetuity, and provide protection for four breeding adults in the summer while continuing to allow compatible public access on Sand’s Beach.”

This included fencing, restrictions on vehicle traffic and domestic animals, habitat restoration, and breeding protections. We suggest that a similar overall management plan should be created for roosting sites in Los Angeles County.

In addition, the studies presented by Jenny Dugan at the 2008 Western Snowy Plover Range-wide Meeting (January 2008) and the Los Angeles County Snowy Plover Working Group Meeting (October 2008) indicate that groomed beaches support far fewer invertebrates, on which Snowy Plovers forage, thus removing available food resources. The USFWS guidelines for Piping Plovers also address this issue, stating that, "Vehicles may also significantly degrade Piping Plover habitat or disrupt normal behavior patterns. They may harm or harass [Piping] Plovers by crushing wrack into the sand and making it unavailable as cover or a foraging substrate, by creating ruts that may trap or impede movements of chicks, and by preventing plovers from using habitat that is otherwise suitable" (MacIvor 1990, Strauss 1990, Hoopes et al. 1992, Goldin 1993 in USFWS 1994). We suggest that the outright removal of wrack also makes it unavailable to Snowy Plovers as cover or foraging substrate, potentially constituting "harm" under the ESA.

Another issue that we have been discussing is whether scrapes and territorial pairs (lacking a nest) can require protections. Here is what the USFWS guidelines (USFWS 1994) for the Piping Plover state on these issues: "On portions of beaches that receive heavy human use, areas where territorial plovers are observed should be symbolically fenced to prevent disruption of territorial displays and courtship. Since nests can be difficult to locate, especially during egg laying, this will also prevent accidental crushing of undetected nests. If nests are discovered outside fenced areas, fencing should be extended to create a sufficient buffer to prevent disturbance to incubating adults, eggs, or unfledged chicks." Given the Snowy Plover's similar status and situation, we suggest that this recommendation be extended to roosting plovers in LA County.

DEFINITIONS

Plover roosting area. Based on 2007 and 2008 observations, we have attempted to define the locations of the overall plover roost site. We used GIS to map each plover sighting and define the roosting areas as areas where groups (>2) of plovers were observed in the same general area during the majority of surveys during which plovers were observed on a given beach segment.

Buffer Zone. An area extending 100 meters from the roosting area.

Plover Roosting Beaches. Beaches containing plover roosting areas: Zuma Beach North and South; Malibu Lagoon; Santa Monica State Beach North; Dockweiler State Beach North, Central, and South; Hermosa Beach North and South.

Suitable Plover Habitat. Areas where no Snowy Plovers were observed during 2007 and 2008 surveys, but where suitable foraging, roosting, and/or nesting habitat exist.

Unsuitable Plover Habitat. Areas with rocky shoreline, harbors, sea walls, and other areas where Snowy Plovers are unlikely to occur or nest. These are areas where direct and indirect impacts to Snowy Plovers are not likely to occur from recreation and maintenance activities.

Project Team. Staff members of Ryan Ecological Consulting, Los Angeles Audubon, Santa Monica Bay Audubon Society, and South Bay/Palos Verdes Audubon Society.

METHODS

The California Department of Fish and Game Office of Spill Prevention and Response (CDFG-OSPR) funded this study. Biologists from Ryan Ecological Consulting (REC) directed this study, provided permitted biologists for training, conducted surveys, analyzed data, and co-authored this report. Santa Monica Bay Audubon Society (SMBAS) and LAA provided volunteer outreach, coordination, and materials, provided permitted biologists for training, conducted surveys, analyzed data, and co-authored this report. Plegadis LLC coordinated the grant, conducted surveys, provided GIS support, reviewed reports, and co-authored this report. Volunteers were primarily LAA and SMBAS members. SMBAS has a long history of volunteer efforts on Western Snowy Plover.

Volunteers participated in training sessions on January 5 and March 1, 2008, prior to the first surveys of the winter and breeding season. They were provided information on (1) the biology, ecology, and behavior of Snowy Plovers; (2) the identification of adult Snowy Plovers, their young, and their eggs; (3) the threats to Snowy Plovers and their habitats; (4) the survey objectives, protocols, and techniques; (5) the regulations governing the salvage of carcasses or eggs; and (6) the special conditions of the existing recovery permit. Volunteers that joined the effort mid-season were given a training session and accompanied by a biologist during their first survey.

REC, SMBAS, PV/SB, and LAA staff and volunteers completed twelve surveys of the Los Angeles County beaches between January and December 2008. Four of these surveys, conducted in January, March, May and September, were county-wide and surveyed most suitable habitat; two of these were conducted during the USFWS winter (January) and breeding (May) season survey windows. The remaining five surveys were conducted only on known plover roosting beaches in February, April, early May, July, and August.

Project staff assigned beaches to volunteers. Preferences were given first to volunteers who had completed Snowy Plover surveys on these beaches in the past, then to birders with local knowledge. To maximize Snowy Plover detection, surveys were conducted only during good weather and conditions of high visibility. Surveys at each beach were completed once during each window, preferably during the morning rising tide.

All volunteers used a consistent survey method adapted from the *Western Snowy Plover Winter Window Survey Protocol* (Elliott-Smith and Haig 2006). All Snowy Plover counts were made in a single pass. On broad beaches, surveyors walked alongside each other and/or zigzagged during surveys. Surveyors observed the birds for color bands. Field data were collected on a datasheet, and surveyors marked the presence of Snowy Plovers and the area covered on a map or aerial photograph. Data sheets were submitted to the survey coordinators. Data collected for each survey location included the number, location, and sex of all Snowy Plovers, color band combinations, the time and weather conditions of each survey, and a general and specific habitat description of each beach and Snowy Plover sighting. Surveyors also observed and recorded the level of human activity at each beach, such as presence of walkers, joggers, and individuals engaged in other recreational activities, the presence of on- and off-leash dogs, as well as the presence of vehicles and beach grooming equipment. In addition, surveyors recorded the presence of potential predators such as Common Ravens and raptors. During the breeding season surveys, volunteers noted breeding behaviors such as copulation, nest construction, incubation, or signs of agitation such as a broken wing display. All detections of Snowy Plovers and their nests were mapped from volunteer drawings and GPS locations using ArcView and overlaid on aerial photographs of the beaches.

On October 21, 2008, representatives of local, state, and federal agencies, beach managers, lifeguards, independent consultants, biologists and the Project Team met at the Los Angeles County Museum of Natural History in Los Angeles to discuss a) the draft version of this (2008) report as provided in a working draft document and in a PowerPoint presentation, b) recommendations made in Ryan et al. (2007), and c) presentations made on beach ecology by Dr. Karen Martin and Jennifer Dugan. Here we review those recommendations, describing what the project team and our partners accomplished, any observed impact on the plovers, an assessment of the action to-date, and provide on-going recommendations for 2009.

RESULTS, DISCUSSION, AND RECOMMENDATIONS

We detected Snowy Plovers on 12 beaches within Los Angeles County in 2008, down from 15 in 2007 (Table 1, Figures 2-10). Eight beaches accounted for 98.5% percent of all detections (Table 1). We will focus much of our report on these beaches, which are Zuma Beach North, Zuma Beach South, Malibu Lagoon, Santa Monica State Beach North, Dockweiler State Beach North, Dockweiler State Beach South, Hermosa Beach North, and Hermosa Beach South. These will be referred to as "plover roosting beaches." The four beaches where fewer plovers were detected are Will Rogers State Beach South, Dockweiler State Beach Central, El Segundo & Manhattan Beach, and Cabrillo Beach.

Snowy Plovers were surveyed for, but not detected at nineteen beaches where suitable habitat appears to be present. These beaches are Beach 1: Leo Carrillo State Beach/Nicholas Cyn County Beach; Beach 2: El Sol, El Pescador, La Piedra State Beach; Beach 3: El Matador, Lechuza Beach; Beach 6: Dume Cove, Paradise Cove, Escondido Beach; Beach 7: Dan Blocker CB, Puerco Beach; Beach 8: Malibu Bluffs State Park, Amarillo Beach, Malibu Beach; Beach 10: La Costa Beach, Las Flores Beach, Big Rock Beach; Beach 11: Las Tunas County Beach, Topanga County Beach; Beach 12: Castle Rock Beach; Beach 13: Will Rogers SB North; Beach 16: Santa Monica State Beach South; Beach 17: Venice City Beach North; Beach 18: Venice City Beach South; Beach 25: Redondo County Beach North; Beach 26: Redondo County Beach South, Torrance County Beach; Beach 30: Portuguese Bend; Beach 35: Alamitos & Junipero Beach; and Beach 36: Belmont Shore, Peninsula Beach (Figure 1). Surveys were not conducted at six beaches with unsuitable Snowy Plover habitat including Beaches 27–29 and 31 on the Palos Verdes Peninsula, and Beaches 33–34 within the Los Angeles and Long Beach Harbors (Figure 1). These beach segments will not be discussed further.

In subsequent Figures 2-10, sightings of Snowy Plovers by project staff and volunteers are represented by small circles. They are color-coded and described in the legend. The number of birds reported at that location is provided within the dot. A green background represents the approximate location of critical habitat (USFWS 2005). Areas designated as "plover roosting areas" are represented with a red circle surrounded by a 100 m buffer zone represented by a yellow circle. These plover roosting areas represent approximately 4000 linear meters of beach, approximately 3.7% of the length of the Los Angeles County Coastline and 8.3% of the suitable sandy beach habitat (as identified in the Recovery Plan (USFWS 2007). Areas that may be included within these circles but that are not sandy beach or dune habitats do not represent potential roosting, nesting or foraging areas. However, work activities conducted within these areas should be reviewed by a qualified biologist to determine whether they may harm plovers nearby.

We also briefly examined the human use data provided by surveyors. Our data form allows for quantification of a variety of human activities during the course of the survey. However, because volunteers reported their observations in a variety of ways and did not consistently provide us with this data, we had to restrict our examination to the following categories: (1) surveyor observed humans on foot (this includes walkers, joggers, people fishing, playing sports, or any other activity where they were

present on foot); (2) surveyor observed dogs on- or off-leash; (3) surveyor observed vehicles and/or equipment. These categories represent three of the main disturbances to plovers in Los Angeles County and allowed us to best analyze the information volunteers provided. Of the 30 beaches where human activity was recorded during countywide surveys throughout 2008, volunteers noted the presence of humans on foot at 29 beaches during at least one survey, the presence of dogs at 20 beaches during at least one survey, and the presence of vehicles or equipment at 22 beaches during at least one survey. There were 14 beaches where volunteers observed humans on foot during all four countywide surveys, 8 beaches where dogs were observed during two or more surveys, and 15 beaches where vehicles/equipment were observed during two or more surveys. Although this level of human use comes as no surprise, our quantification serves to underscore the fact that plovers face frequent disturbance from a range of human activities on a year-round basis in Los Angeles County. More details about human use can be found below within the sections devoted to specific plover roosting beaches.

Table 1. Snowy Plover sightings at Los Angeles County beaches 2008.

Beach No.	Beach Name(s)	Jan	Feb	Mar	Apr	May I	May II	July	Aug	Sept	Oct	Nov	Dec	Total	Avg	Freq
1	Leo Carillo State Beach/Nicholas Cyn CB	0	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns			
2	El Sol, El Pescador, La Piedra SB	0	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns			
3	El Matador, Lechuza Beach	0	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns			
4	Zuma Beach	32	1	0	14	0	0	11	32	42	81	86	81	380	31.7	9
5	Zuma Beach (morning view to pt dume)	48	73	64	0	0	0	0	0	1	0	a[2]	0	186	16.9	5
6	Dume Cove, Paradise Cove, Escondido B.	0	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns			
7	Dan Blocker CB, Puerco Beach	0	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns			
8	Malibu Bluffs SP, Amarillo B, Malibu B.	0	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns			
9	Malibu Lagoon, Carbon Beach	37	35	21	a[1]	0	0	0	20	26	26	26	63	254	23.1	8
10	La Costa B., Las Flores B., Big Rock B.	0	ns	0	ns	ns	0	ns	ns	ns	ns	ns	ns			
11	Las Tunas CB, Topanga CB	0	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns			
12	Castle Rock B	0	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns			
13	Will Rogers SB North	0	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns			
14	Will Rogers SB South	0	ns	0	ns	ns	0	ns	ns	1	ns	ns	ns	1	0.3	1
15	Santa Monica State Beach North	30	28	28	5	0	0	3	14	28	39	38	42	255	21.3	10
16	Santa Monica State Beach South	0	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns			
17	Venice City Beach North	0	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns			
18	Venice City Beach South	0	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns			
19	Dockweiler Beach North	10	12	5	4	0	2	8	14	14	12	15	30	126	10.5	11
20	Dockweiler Beach Central	0	2	1	0	2	0	0	0	ns	0	a[3]	0	5	0.5	3
21	Dockweiler Beach South	11	11	13	9	0	0	5	8	15	2	26	3	103	8.6	10
22	El Segundo & Manhatten Beach	3	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns	3	0.8	1
23	Hermosa Beach North	29	29	23	8	ns	0	0	25	51	39	44	31	279	25.4	9
24	Hermosa Beach South & King Harbor	0	ns	2	0	ns	0	0	0	0	0	0	4	6	0.6	2
25	Redondo County Beach North	0	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns			
26	Redondo CB South & Torrance CB	0	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns			
30	Portuguese Bend	0	ns	0	ns	ns	ns	ns	ns	ns	ns	ns	ns			
32	Point Fermin & Cabrillo Beach	0	ns	4	ns	ns	0	ns	ns	5	ns	ns	ns	9	2.3	2
35	Alamitos & Junipero Beach	ns	ns	0	ns	ns	ns	ns	ns	0	ns	ns	ns			
36	Belmont Shore & Peninsula Beach	0	ns	0	ns	ns	0	ns	ns	0	ns	ns	ns			
	Total Observed	200	191	161	40	2	2	27	113	183	199	235	254	1607	133.9	12
	No. of Beaches	8	8	9	5	1	1	4	6	9	9	7	9	12	6.3	6.7

ns – no survey was conducted (Beach 6 had limited access, we were only able to complete one survey)

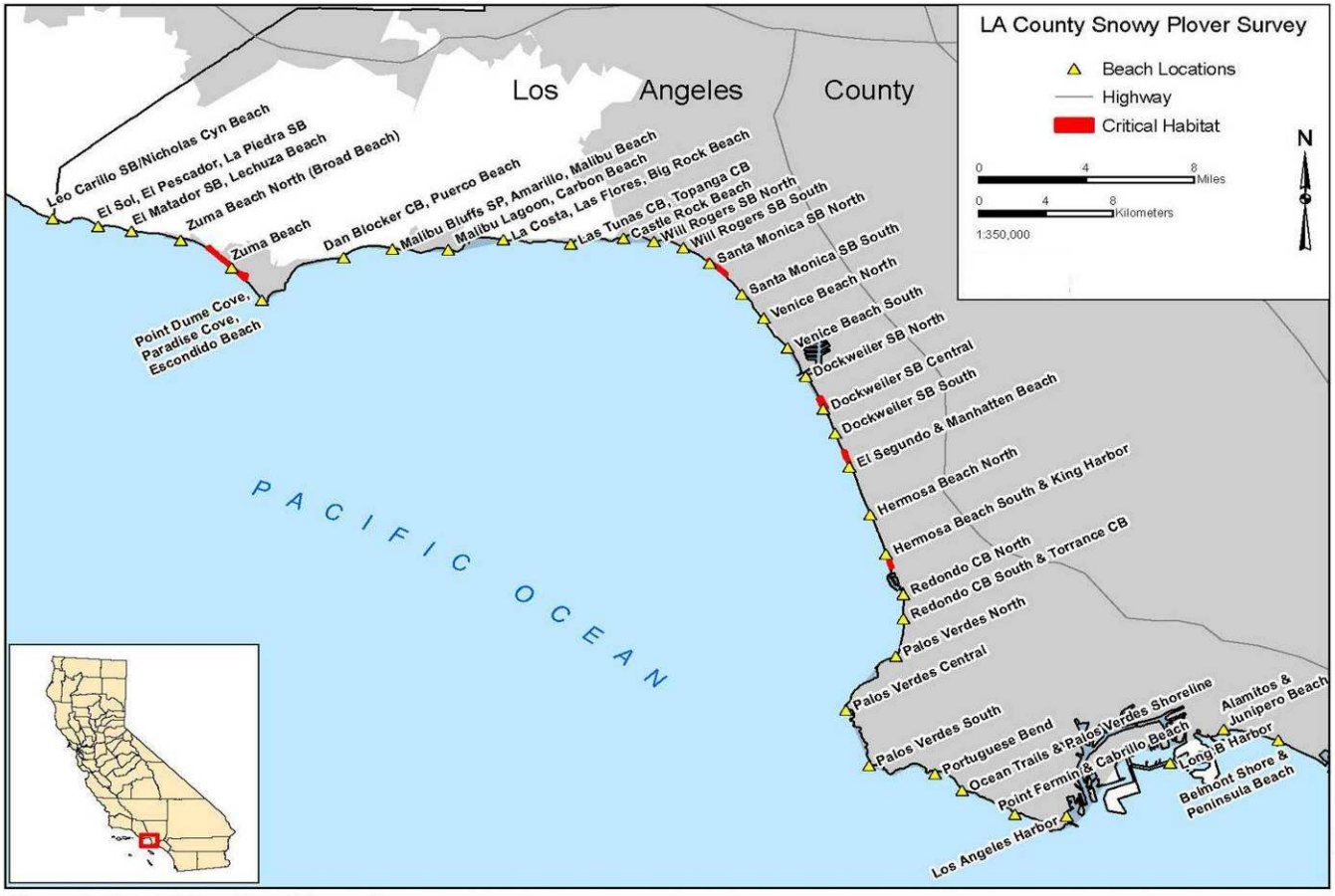


Figure 1. Project Location

PLOVER ROOSTING BEACHES

Beaches 4 & 5: Zuma Beach North and South

Zuma Beach North (aka Broad Beach) (Beach 4) and South (Beach 5) (Figures 2 and 3) supported the largest population of Snowy Plovers in Los Angeles County; approximately 40% of the county's population (Table 1). They moved between roosting areas used in 2007 on Zuma Beach North and a new area near the mouth of Zuma Creek on Zuma Beach South. None was observed on Zuma Beach South in 2007. During the winter surveys, they were nearly evenly divided between both beaches (Table 1). By February, most had moved to Zuma Beach South, where they were also found in March. The last report of plovers on Zuma Beach South in March was 55 on March 22. None was observed in May, but they returned to Zuma Beach North in July and increased to 81-86 individuals between October and December (winter 2008-09). We excluded a count of 69 Snowy Plovers made on November 17, 2008 on Zuma Beach South because these birds were most likely among the 86 plovers counted on Zuma Beach North on November 15, 2008, and we wished to avoid double counting. These plovers are included in Figure 3, and were observed within designated critical habitat CA-20 (USFWS 2005). On February 23, at least two scrapes were observed on Zuma Beach South.

High counts of 80 (January, winter 2007-08) and 86 (November, winter 2008-09) were made at both beaches. This number remains stable from 2007 (peak of 75 in early March 2007 at Zuma Beach North), yet represents a 34-44% decline in the population from the 2004-06 winter window surveys of 130 to 152 individuals. If only Zuma Beach North, the plovers' traditional roosting site, is counted, this beach has seen a decline of 76-79%. None was observed during the May 2008 breeding season survey window.

A broad, linear sandy beach characterizes the northern end of Zuma Beach North and South with a small creek mouth at the far north end and a lagoon at the southern end. It is backed by Pacific Coast Highway (PCH), parking lots and buildings and has a high level of human activity including walkers, runners, bikers, surfers, anglers, and beach patrol vehicles. Surveyors noted the presence of humans on foot during each of the 12 surveys conducted here; dogs were observed during 8 surveys, and vehicles/equipment during 11 of the 12 surveys. All three types of disturbance were observed occurring simultaneously during 8 of the 12 surveys. The beach is regularly groomed from the high tide line to the parking lot for its entire length. Recently, mosquito eradication efforts at the lagoon have included vegetation removal and helicopter spraying. Potential predators include off-leash dogs, American Crows, and Common Ravens. Potential threats to wintering Snowy Plovers include vehicle use, beach grooming, and off-leash dogs. Nesting plovers would face nest trampling by beach goers as well as predation by off-leash dogs and other local wildlife attracted to trash such as feral cats, raccoons, and corvids. A vehicle strike that killed a Snowy Plover was recorded here in 2007 (Ryan et al. 2007).

Recommendations. With LACBH and USFWS, the Project Team has identified this beach as the beach most in need of a protective enclosure, although there are no current plans for one. The Project Team recommends that enclosures be installed as soon as practicable following the Labor Day Holiday in the plover roosting areas (Figures 2 and 3) and remain until March 15 or two weeks after the last wintering Snowy Plover has departed. If plovers remain after March 15, the enclosures should be inspected for signs of nesting. Nests should be immediately protected with an exclosure (Photograph 5) and additional boundary fencing. The enclosures should be constructed of sand fencing or symbolic fencing (description below, Beach 9) and no vehicles or beach maintenance equipment should be allowed inside the enclosures while plovers are present without a monitor present to check for nests (February – August) and to ensure that none are crushed (year-round). These enclosures should be open on the ocean side and be a minimum of 100 x 300 ft (larger if possible). We also recommend increased enforcement of dog-related regulations, a vehicle non-emergency speed limit of 10 mph within known plover roosting areas, and a public outreach program including docents to explain the need for the enclosures to the public.

Figure 2: Zuma Beach North (Beach 4)

Figure 3: Zuma Beach (Beach 5)

Beach 9: Malibu Lagoon

The second highest numbers of Snowy Plovers were observed at Malibu Lagoon/Surfrider Beach (Figure 4). During the January survey (winter 2007-08), 37 plovers were observed roosting on the dry sand at the mouth of the estuary (Table 1). In December (winter 2008-09) a remarkable 62 individuals were counted, nearly double the usual number. We are unsure if this is a lasting increase or a temporary increase in response to food or by migratory birds. Continuing surveys in winter 2008-09 will help resolve this question. Excepting this recent unusually large count, their population has remained relatively stable from 2007, when 34 plovers were counted in January. Numbers were similar to the 2004-2006 winter window surveys when 12 to 33 individuals were counted. In 2008, plovers were observed here between January and May, and then none was observed from mid-May until the August survey (Table 1). Biologists and volunteers observed between two and four potential nest scrapes between February 17 and February 23 and 9 scrapes were observed immediately prior to the installation of the enclosure on March 16.

On March 16, 2008, an enclosure was installed around the main roost area between the lagoon and the Pacific Ocean (Photograph 7). This enclosure was open and did not obstruct views. The fence consisted of posts placed approximately 10 feet apart and driven down approximately 3-4 feet into the sand by hand held post drivers. Cotton rope was looped through the posts to establish a symbolic fence. Florescent tape was also placed around the posts and on the rope in mid-span to add visibility and four signs were posted on the corners of the enclosure. During most subsequent nest monitoring visits, plovers were observed within the enclosure; large numbers remained until between March 28 and April 18, after which one pair remained until at least May 10. The enclosure was removed after plovers were not observed for several weeks in May. The public responded well to the enclosure: it was not vandalized, there were numerous positive comments from beachgoers, and judging by footprints detected during nest monitoring visits, most people respected the boundary.

One of the last confirmed nesting sites for Snowy Plovers in Los Angeles County in 1947, (with unconfirmed reports into the 1960s), Malibu Lagoon is characterized by broad sandy beach that curves around the outlet to Malibu Lagoon. At higher flows, the lagoon breaks through the sand; other times it is contained behind the sand. A portion of Malibu Lagoon is a California State Park and is part of a major restoration effort that began in 2008. Surveyors observed moderate human activity including walkers, runners, bikers, and patrol vehicles. Potential predators include off-leash dogs and American Crows.

Potential threats to wintering Snowy Plovers at Malibu Lagoon include vehicle strikes, off-leash dogs, and construction impacts from park renovation. Surveyors noted the presence of humans on foot during 9 of the 12 surveys conducted here; dogs were observed twice, and vehicles/equipment during 6 surveys. All three types of disturbance occurred simultaneously during 1 of the 12 surveys. Nesting birds would also face threats from nest trampling by beach goers (e.g. sunbathers and swimmers) as well as predation by off-leash dogs and local wildlife attracted to trash such as feral cats, raccoons, and corvids. Part of the problem is that the relatively narrow sand spit where the plovers occur is also the main access point for the beach. This sand spit changes width considerably during the year and can be over-washed by waves.

Recommendations. We recommend that symbolic fencing be installed after the Labor Day Holiday but the width of the spit and location of the breach must be taken into account when deciding an exact date and location for installing the enclosure. Knowledgeable State Parks staff should make these decisions. We recommend increased enforcement of dog-related regulations and a non-emergency speed limit within the plover roosting area. We also suggest that access to the north beach be made from the adjacent community, not by driving the length of the sand spit. We recommend continuing the volunteer monitoring program. Due to the relatively high public use of this site throughout the year, a docent program should be initiated at this beach so the schoolchildren who regularly visit this beach as part of outdoor classroom programs can be educated about the Snowy Plover.

Figure 4: Malibu Lagoon, Carbon Beach (Beach 9)

Beach 15: Santa Monica State Beach North

Santa Monica State Beach North (Figure 5) also supports a large population of Snowy Plovers. It has an existing winter enclosure that was initiated by Santa Monica's Environmental Programs Division in 2005. This enclosure is maintained by City of Santa Monica Open Space Management and monitored by volunteers from the SMBAS. Most Snowy Plover sightings were within this protected enclosure. During the January survey, 30 Snowy Plovers were observed running and roosting in the wet sand near the water. In winter 2008-09 (Oct – Dec.) their numbers increased to 38-42 individuals, a substantial increase from the 16 observed in 2007 (Ryan et al. 2007). This number is similar to the populations observed during the 2004-06 winter window surveys when 32-42 individuals were counted. Their population remained stable through the March survey, declining to five individuals in April. The plovers were absent in May and June, returned in July, and increased to 28 individuals in September and 39 in October. This beach is among the most important wintering beaches in Los Angeles County and the Snowy Plovers remain here into the nesting season, also making it one of the beaches where Snowy Plovers are more likely to nest.

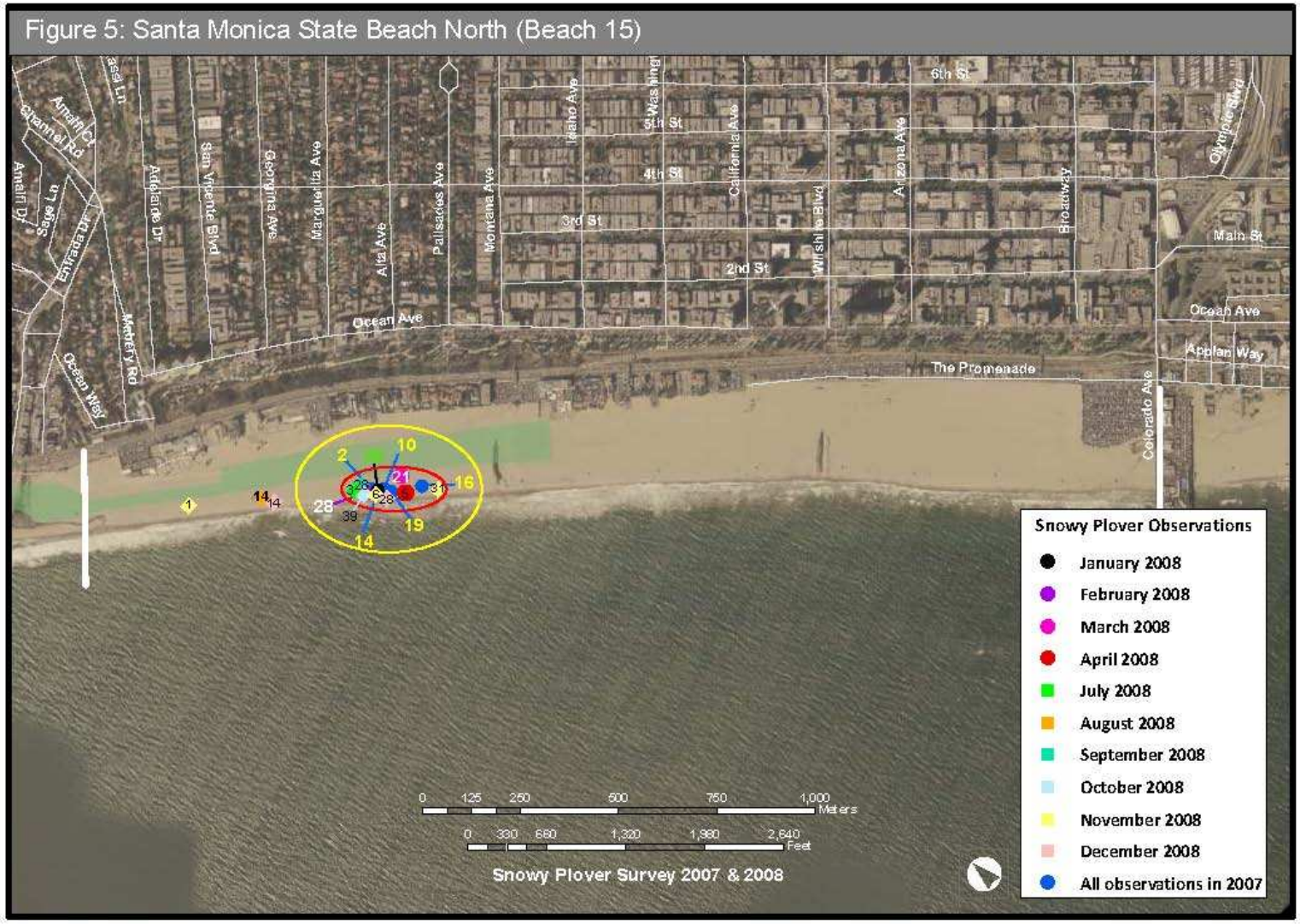
Possible nesting scrapes were observed during surveys on February 10, March 7, March 11, and March 28 (during each visit between February 10 and March 28). Following their discovery by a volunteer, project biologists documented 18 scrapes in four clusters within the enclosure on February 10. Seven scrapes were detected on March 11. Later in the week of March 10, the City of Santa Monica fully enclosed the protective enclosure to protect it from dogs and pedestrian traffic. No new scrapes were found during a survey on March 18.

The City of Santa Monica wanted to minimize the fully enclosed area to include only the portion of the enclosure containing scrapes; approximately 50 ft x 150 ft was fully enclosed (Photograph 8). The plovers reacted negatively to the new dimensions and complete enclosure. During surveys conducted after the enclosure was installed, they were mostly observed roosting outside the completely enclosed area and no additional scrapes were encountered during weekly surveys. We conclude that the plovers were negatively affected by the complete enclosure on four sides and/or the reduction in the size of the enclosure and recommend that the enclosure remain at least 100 x 300 ft and if additional protection is needed that symbolic fencing (Photograph 7) be used on the ocean side.

Portions of this beach are within Critical Habitat Subunit CA 21A (USFWS 2005). This beach is characterized by very broad linear sandy beach habitat. Surveyors observed high levels of activity here including numerous walkers and joggers, volleyball players, anglers, lifeguard vehicles, regular beach grooming outside of the enclosure, and both on- and off-leash dogs. Potential threats to wintering Snowy Plovers at Santa Monica State Beach North include vehicle strikes and predation by off-leash dogs, American Crows, and Common Ravens. If nesting occurred, plovers would also face threats from trampling of nests by beach goers and predation by off-leash dogs and local wildlife attracted to trash such as feral cats, raccoons, American Crows, and Common Ravens.

Recommendations. We recommend that winter fencing be installed as soon as practicable once the plovers have returned to the area in the late summer/early fall at the current fenced site, possibly expanding it to include more of the buffer zone around the plover roosting area. It should be left in place until March 15 or two weeks after the last wintering Snowy Plover has departed. Additionally, we recommend an increased enforcement of dog-related regulations and a vehicle non-emergency speed limit within the plover roosting area and buffer zone. We recommend a docent program to assist with interpretation, possibly based in the nearby community center, and predator control measures if nesting occurs. Further, we strongly recommend against any additional reduction of the enclosed area, or closing it off on all four sides. If the beach side needs additional fencing, we recommend using symbolic fencing.

Figure 5: Santa Monica State Beach North (Beach 15)



Beaches 19, 20 and 21: Dockweiler State Beach

Dockweiler State Beach was surveyed in three segments: Dockweiler State Beach North (DSB North), Central (DSB Central), and South (DSB South) (Figures 6-8). In 2007, there were four primary roosting areas on DSB North: near Tower 47 (Tower 47), on DSB South between the RV Park and the volleyball courts (Volleyball), between Towers 59 and 60 (Towers 59/60) and on the far southern end near the Chevron Refinery/Tower 61 (Tower 61). In 2008, Snowy Plovers used both the Tower 47 and Volleyball plover roosting areas regularly. However, only one group of plovers was observed at the Towers 59/60 plover roosting area in March, and none was observed at the Tower 61 plover roosting area in 2008.

In 2007, we observed 13 plovers here during the January survey; numbers peaked at 22 during the February survey (Ryan et al. 2007). In 2008, 21 plovers were observed during the January survey; in February there were 25. The highest count was in November when 41 Snowy Plovers were observed. This compares favorably with surveys conducted in 2004-06 when 25-34 individuals were counted (USFWS unpublished data). Snowy Plovers were observed in 2008 at DSB North and South from January to April, at DSB North from late May to December, and at DSB South from July to December. Interestingly, they were also observed at DSB Central in February, March, and early May. The pair observed at DSB Central in early May and DSB South in late May were the only plovers observed in the survey area during those surveys (Table 1).

Observers noted scrapes at the roosts near Tower 47 and Volleyball plover roosting areas between February and April 29. However, volunteers noted that these scrapes were all destroyed by beach grooming activities between their surveys and none lasted more than a week.

Throughout 2008, members of the Project Team met with representative of the USFWS, Coastal Commission, and LACBH regarding protections for plovers on these beaches. During meetings in August, it was decided that a 100 x 300 ft enclosure, similar to the one in Santa Monica, would be installed in the fall of 2008 within the Tower 47 plover nesting area. We are currently working on the final details and anticipate installing the enclosure in early winter.

Construction work began on a new education center near the existing restaurant on DSB South, approximately 250 m south of the Volleyball plover roosting area and 350 m north of the Towers 59/60 plover roosting area. It is not within a Critical Habitat area, but to our knowledge, no monitors were present during construction and no measures were taken to avoid impacts to plovers. All such projects near plover roosts should have additional protections in the future.

Portions of DSB North are within Critical Habitat Subunit 21B, and portions of DSB South are within Critical Habitat Subunit 21C (USFWS 2005). Dockweiler State Beach is characterized by linear sandy beach habitat. Surveyors observed high levels of human activity at the northern half of Beach 19 and near the parking lots on Beach 20 and 21. Areas with lower levels of human activity include the area between the southern portions of Beach 19 to the parking lots on Beach 20 as well as Beach 21 away from the parking lots, particularly the southern end near the Chevron Refinery. Activities observed include walkers, joggers, anglers, bikers, lifeguard vehicles, heavy equipment, and regular beach grooming. At Beach 19, surveyors observed humans on foot during each of the 12 surveys conducted here; dogs were observed during 6 of these surveys, and vehicles/equipment during 8 of the 12 surveys. All three types of disturbance were observed to occur simultaneously during 5 of the 12 surveys. At Beach 21, surveyors noted the presence of humans on foot during 11 of the 12 surveys conducted here; dogs were observed during 2 of these surveys, and vehicles/equipment during 10 of the 12 surveys. All three types of disturbance were observed to occur simultaneously during 2 of the 12 surveys. Potential Snowy Plover predators included off-leash dogs, Red-tailed Hawks, and numerous American Crows. Potential threats to wintering Snowy Plovers at DSB North include vehicle strikes, beach grooming, off-leash dogs, and

human-influenced predators. If nesting occurred, nesting Snowy Plovers would also face threats from trampling of nests by beach goers, and predation by off-leash dogs and local wildlife attracted to trash such as feral cats, raccoons, American Crows, and Common Ravens.

Recommendations. Dockweiler State Beach North is below the flight pattern for Los Angeles International Airport and receives less use by the public than similar beaches north and south. A relatively small portion of the beach was used by Snowy Plovers. This beach is a good candidate for the use of enclosures with minimal impact to public use. We recommend that enclosures be installed as soon as practicable following the Labor Day Holiday around the Tower 47 and Volleyball plover roosting areas and be left in place until March 15, or two weeks after the last wintering Snowy Plover has departed. Additional measures will be needed if nesting occurs. Despite the success of having an enclosure installed near Tower 47, more needs to be done. The removal of wrack and grooming of scrapes at other roosts should be addressed fully in the coming year. Additionally, we recommend an increased enforcement of dog-related regulations and a vehicle non-emergency speed limit within the plover roosting areas and buffer zones. Given the relatively low public use during the winter months, we also suggest that a general reduction in beach grooming away from high public use areas would benefit the plovers by reducing the destruction and removal of kelp. A volunteer docent program should be established in conjunction with the enclosure. If nesting occurs, predator control measures should be implemented as well.

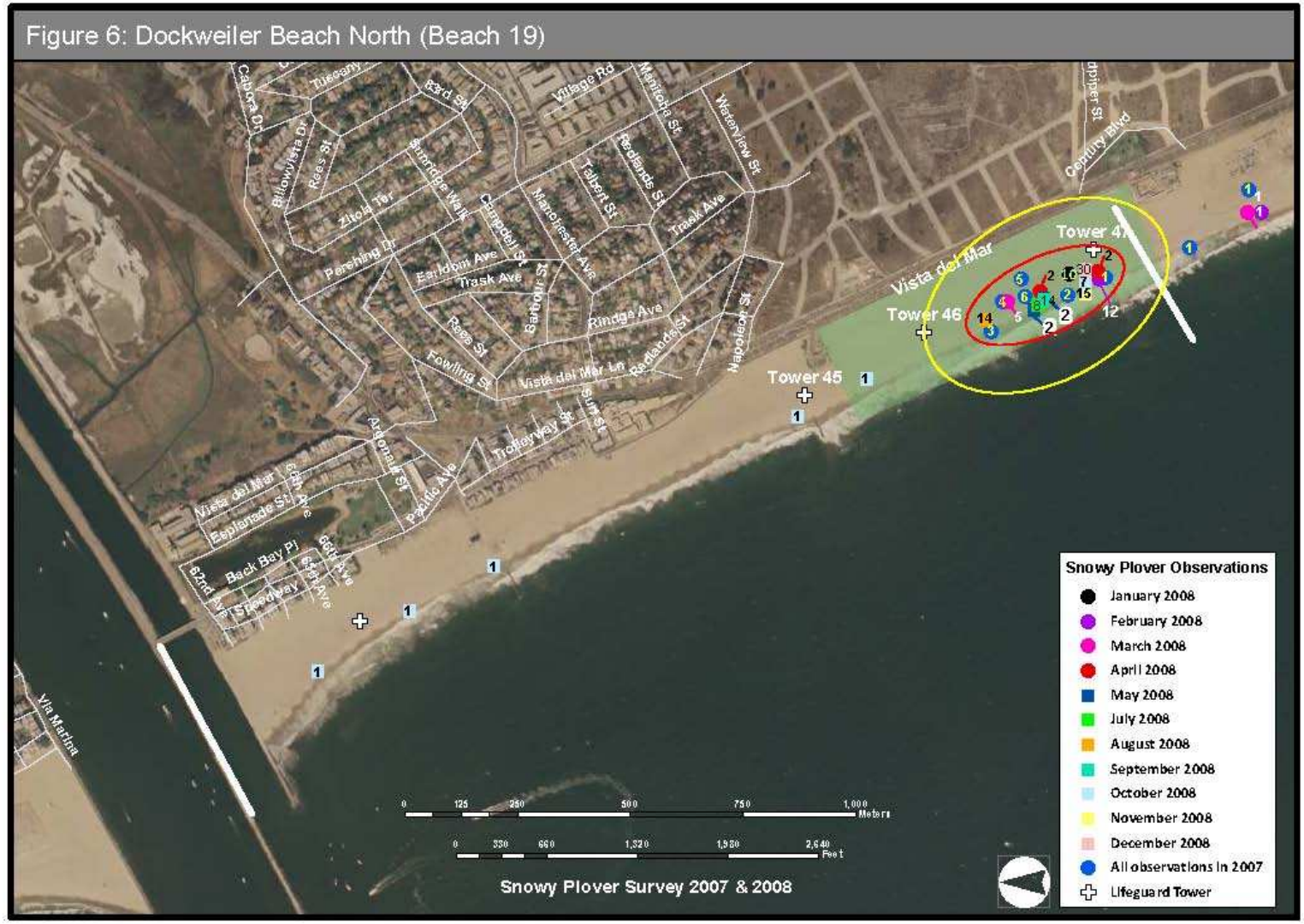
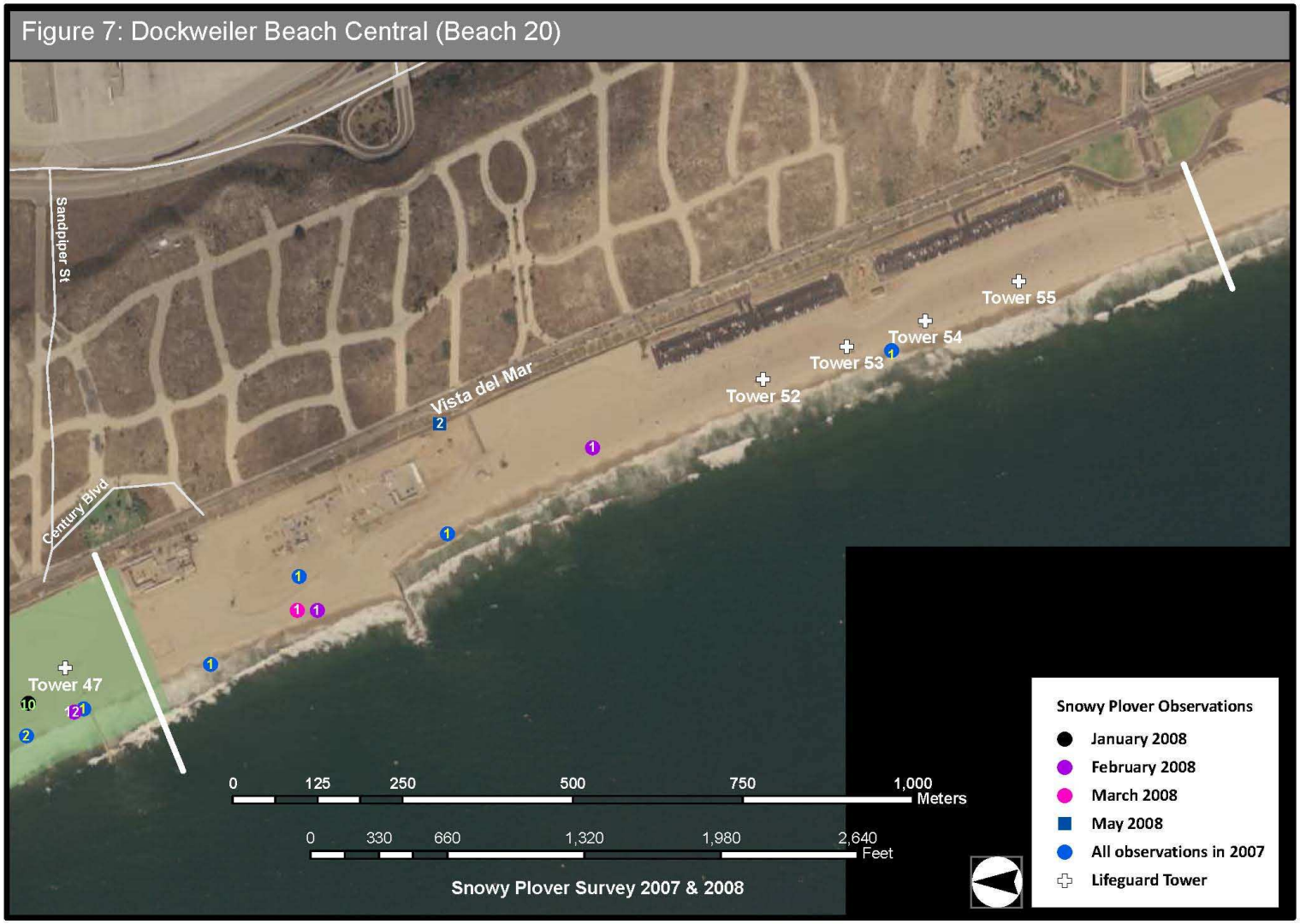


Figure 6: Dockweiler Beach North (Beach 19)
Tower 47
Tower 46
Tower 45
Vista del Mar
Snowy Plover Observations
January 2008
February 2008
March 2008
April 2008
May 2008
July 2008
August 2008
September 2008
October 2008
November 2008
December 2008
All observations in 2007
Lifeguard Tower
Meters
Feet
Snowy Plover Survey 2007 & 2008

Figure 7: Dockweiler Beach Central (Beach 20)



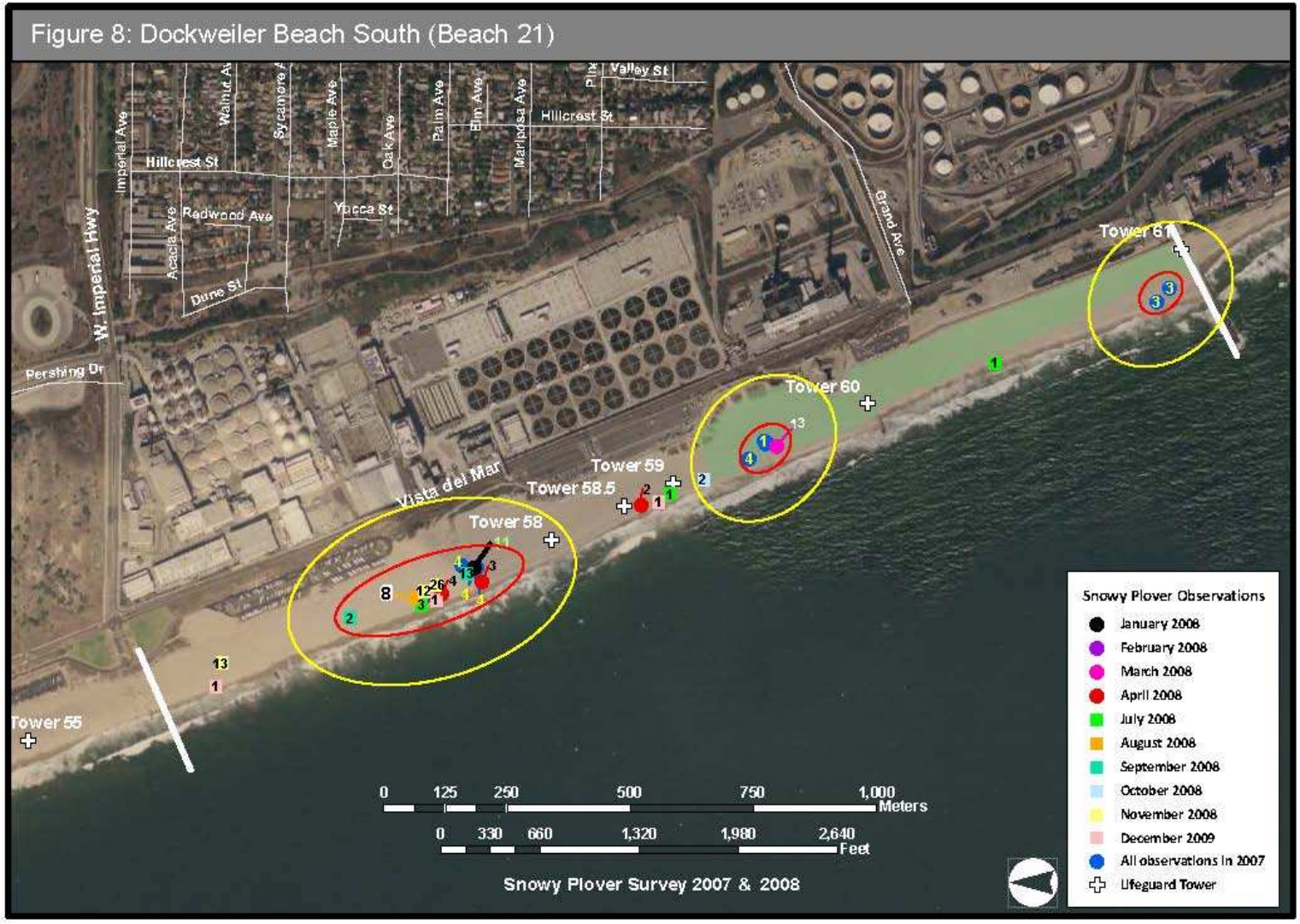


Figure 8: Dockweiler Beach South (Beach 21)
Valley St
Hillcrest St
Imperial Ave
Walnut Ave
Sycamore Ave
Maple Ave
Oak Ave
Palm Ave
Elm Ave
Maripdsa Ave
Redwood Ave
Yucca St
Acacia Ave
Dune St
W. Imperial Hwy
Pershing Dr
Grand Ave
Tower 61
Tower 60
Tower 59
Tower 58.5
Tower 58
Vista del Mar
Tower 55
0 125 250 500 750 1,000 Meters
0 330 660 1,320 1,980 2,640 Feet
Snowy Plover Survey 2007 & 2008
Snowy Plover Observations
January 2008
February 2008
March 2008
April 2008
July 2008
August 2008
September 2008
October 2008
November 2008
December 2009
All observations in 2007
Lifeguard Tower

Beaches 23 and 24: Hermosa Beach North and South

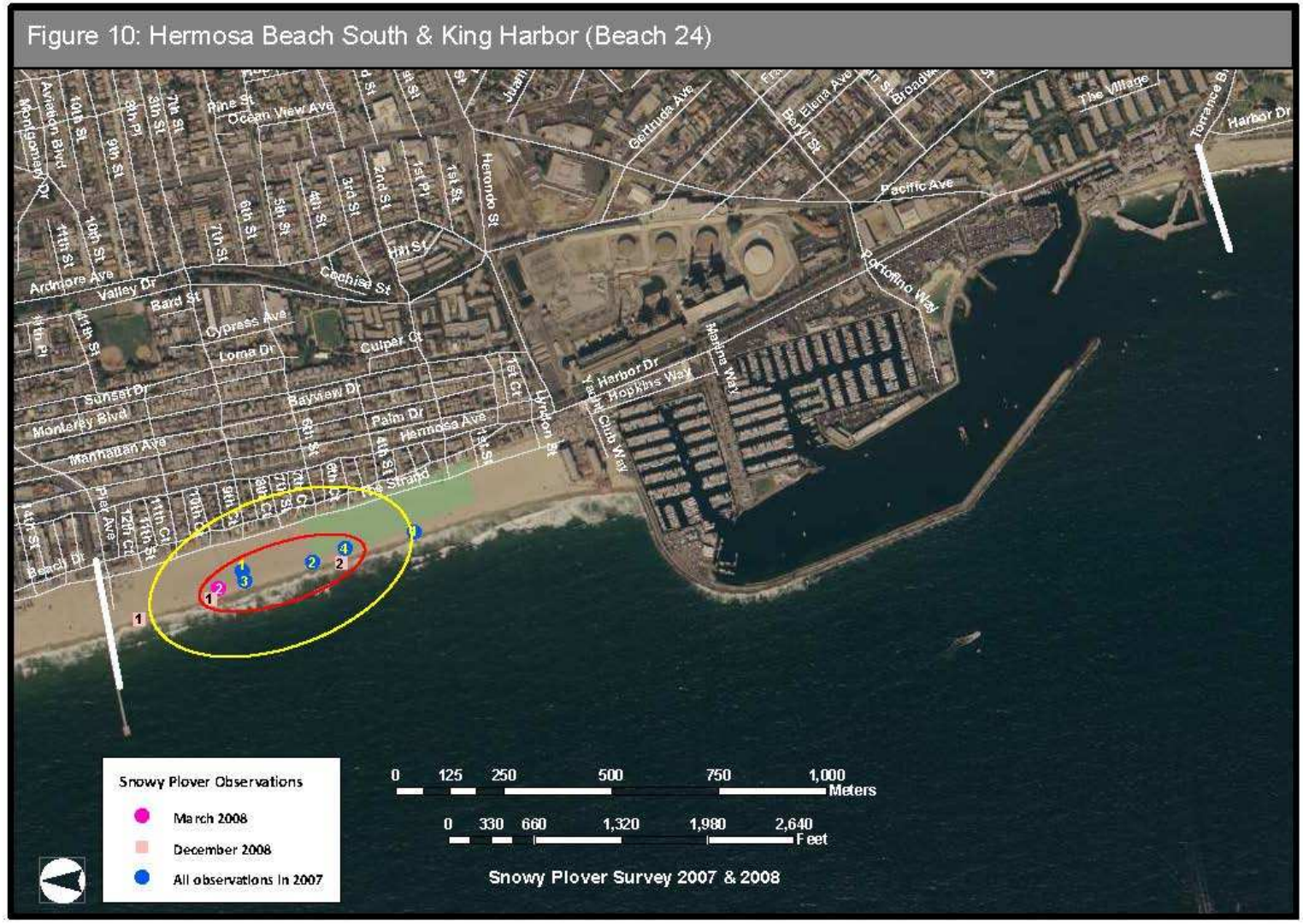
Snowy Plovers were observed at Hermosa Beach North between January and April and again between August and December (Figure 9). In January, 29 plovers were observed, similar to the 23 observed in 2007 and to those numbers detected in 2004-06 surveys (33-41). Interestingly, observers noted 51 plovers during the September survey, but their numbers declined to 31 by December. Given the time of year, some of these were likely migrants. In 2008, plovers mostly occurred on Hermosa Beach North (Beach 23) (Table 1) and fewer were observed on Hermosa Beach South than in 2007 (Ryan et al. 2007). In both 2007 and 2008, plovers concentrated around three plover roosting areas: between 26th Street and 28th Street (27th St.), between 18th Street and 23rd Street (21st St.), and between 3rd Street and 10th Street (Figures 9 and 10).

Portions of Hermosa Beach South are within Critical Habitat Subunit 21D (USFWS 2005). Hermosa Beach is a broad linear sandy beach. Surveyors observed high levels of human activity here including numerous walkers, runners, swimmers, sunbathers, volleyball players, lifeguard vehicles, and regular beach grooming. Potential Snowy Plover predators included numerous American Crows. This beach has among the highest human use of any beach in Los Angeles County. Despite this, the Snowy Plovers showed a strong attraction to the beach well into the spring, and it was one of last places that they were confirmed nesting. Potential threats to wintering plovers at Hermosa Beach North include vehicle strikes, beach grooming, off-leash dogs, and human-influenced predators. If nesting occurred, nesting Snowy Plovers would also face threats from trampling of nests by beach goers and predation by off-leash dogs and local wildlife attracted to trash such as feral cats, raccoons, American Crows, and Common Ravens.

Recommendations. We recommend that from Labor Day weekend to March 15, enclosures be installed around the two more populated roosts at 27th Street and 21st Street. These should be located to minimize impacts to recreation and required maintenance activities, including avoiding volleyball courts and storm water outfalls. We recommend placing signage on any enclosures and that a community docent program be implemented to inform the public and provide recreational wildlife watching opportunities. If nesting occurs, additional protective measures such as exclosures and predator control may need to be implemented as well. Additionally, there should be increased enforcement of dog-related regulations and a vehicle non-emergency speed limit within all three plover roosting areas.

Figure 9: Hermosa Beach North (Beach 23)

Figure 10: Hermosa Beach South & King Harbor (Beach 24)



Beach 32: Cabrillo Beach

Western Snowy Plovers were only observed at Cabrillo Beach during the March and September surveys (Table 1). They were observed here in low numbers through the nesting season in 2007. Cabrillo Beach is characterized by a linear beach habitat at the base of a peninsula. Surveyors observed high levels of human activity, including evidence of vehicles. Potential Snowy Plover predators include feral cats and numerous American Crows. Cabrillo Beach is a popular site for collecting grunion during their annual spawning.

Recommendations. Prior to periods where large numbers of people are engaged in grunion collection during the nesting season, the beach should be surveyed for nesting Snowy Plovers.

Figure 12: Point Fermin & Cabrillo Beach (Beach 32)

IMPLEMENTATION OF 2007 RECOMMENDATIONS

Public outreach and education.

Docent program & displays

The project team has secured funding to develop an on-site docent program over the next three years. Brochures aimed at the general public have been created, classroom materials are in progress, and we have started to recruit volunteers to serve as docents.

School outreach program

Public school outreach will be a component of the docent program. In addition, the project team has also conducted outreach to colleges and universities: students from UCLA, Pepperdine University, Pomona College, Loyola Marymount, California State University Dominguez Hills, and Los Angeles Valley College have begun to participate in the monitoring program and will be encouraged to participate in the docent program as well.

Creation of public displays

As a first step toward public outreach in 2008, Los Angeles Audubon worked with the Dorsey High School Film Production Program to create public service announcement videos in both English and Spanish that addressed Snowy Plover conservation issues in Los Angeles County. These videos are on view to the public at Los Angeles Audubon's YouTube non-profit site (www.youtube.com/losangelesaudubon). In addition to being available online, the English-language version of the video was screened in July 2008 at an Audubon Film Fridays event in Debs Park. As a next step, the project team hopes to work with parks, businesses, and public aquariums in the future to create public displays.

Creation and maintenance of a website

Los Angeles Audubon currently hosts a Snowy Plover website within its general website (laaudubon.org). Volunteer materials, annual reports, updates, and maps of plover locations from volunteer observations are available to the public and management agencies.

Volunteer monitoring program.

The project team continued to recruit more volunteers to participate in the Snowy Plover Monitoring Program. We increased participation from 35 volunteers in 2007 to 74 in 2008.

Create and implement a beach driver-training program.

The project team created an informational handout (Appendix 2) to be provided to all lifeguards and included in their training program. It covers information about identifying, detecting and avoiding Snowy Plovers and provides maps to the plover roosting areas. This was also provided to LACBH for inclusion in their training program. The project team has offered to provide presentations to both groups upon request.

Communication among the Project Team and beach agencies regarding Snowy Plover locations.

The project team held several meetings with officials from LACBH, County Lifeguards, Coastal Commission, and the Santa Monica Resource Conservation District. They also presented the results of the 2007 surveys at the Recovery Unit 6 meeting at the USFWS office in Carlsbad and at the Range-wide

Snowy Plover Meeting at the San Diego Zoo in San Diego. Furthermore, presentations were given to the South Bay Audubon, Los Angeles Audubon, and Pasadena Audubon chapters.

In addition, summary reports were written and maps were updated for each of the surveys. Reports were regularly sent to the project team and local agencies. The reports and maps were posted on the LA Audubon website.

Continued monitoring of Snowy Plovers.

The project team organized monthly surveys at the plover roosting beaches and four beach-wide surveys, two of which were coordinated with the USFWS winter and breeding season survey windows.

Nest searching and protection.

The project biologists conducted searches of roosting areas where scrapes were reported between February and April. These included surveys at Zuma, Malibu, Santa Monica, Dockweiler, and Hermosa Beaches.

Schedule field visits for beach managers.

The project team organized and conducted field visits for officials from LACBH, USFWS, CDFG, and Coastal Commission.

Annual meeting between the project team and beach managers.

See below for a detailed summary.

Garbage cans and trash pick-up.

No activity was conducted on this recommendation, other than recommendations made in the 2007 report.

Enforce existing dog regulations.

To the best of our knowledge, no activity was conducted on this recommendation, other than recommendations made in the 2007 report.

Reduce and/or enforce existing vehicle speed limits in non-emergency situations.

Volunteers were trained in methods for estimating the speed of a moving vehicle. Using instructions from the U.S. Military, volunteers were trained to estimate whether a vehicle was moving greater than 10 miles per hour by watching a fixed object on the beach, then counting from the moment the vehicle began passing the object until it was past the object. If more than ½ of the vehicle passed the object in a count of one second (one-one thousand), the vehicle was going faster than 10 mph and the time of day and a description of the vehicle was recorded.

Install and maintain winter and breeding season fencing.

The project team assisted in the planning, placement and construction of fencing at Malibu Lagoon on March 16. We maintained contact with officials at State Parks and coordinated its removal on May 29, lessening the impact on summer recreational activities at this beach. This enclosure was constructed of symbolic fencing and was approximately 260 x 100 ft.

We also assisted in aiding the City of Santa Monica in the timing of setting up and removing the fencing at Santa Monica State Beach. In addition, following the discovery of nest scrapes, we assisted the City of

Santa Monica with providing additional protections for the plovers by fully enclosing a portion of the overall enclosure (50 x 150 ft) to prevent trampling by beachgoers and predation by dogs.

Unfortunately, this attempt was unsuccessful. We suggest that this was due to the relatively small size of the smaller enclosure and/or having a substantial structure (sand fencing) blocking the view between the enclosure and the ocean.

Based on this information, we preliminarily recommend that enclosures be at least 100 x 300 ft and open at the front (or enclosed on the front with symbolic fencing when sand fencing is used). There may be more flexibility in the size and configuration when using symbolic fencing, but this needs further study.

Create signage for the winter and breeding season fencing.

The project team has secured funding for the creation of signage for the enclosure at Dockweiler North, signs have been printed, and we hope to install them in early 2009.

Predator management.

No nesting occurred, so none was required in 2008.

SUMMARY OF RECOMMENDATIONS MADE AT 2008 LOS ANGELES COUNTY SNOWY PLOVER WORKING GROUP MEETING

The 2008 Los Angeles County Snowy Plover Working Group Meeting was held at the Los Angeles County Museum of Natural History on October 21, 2008. Representatives of the U.S. Fish and Wildlife Service (Ventura and Carlsbad FWO), California Department of Fish and Game (San Diego and Ventura Offices), Los Angeles County Lifeguards, California State Parks, Los Angeles Audubon, Santa Monica Bay Audubon, South Bay Audubon, Audubon California, Southern California Wetlands Recovery Project, Pepperdine University, University of Southern California, Santa Barbara, Ryan Ecological Consulting, and Plegadis L.L.C. were in attendance. Presentations were made by Thomas Ryan of Ryan Ecological Consulting (Status and Distribution of Snowy Plovers in Los Angeles County 2007-2008), Karen Martin of Pepperdine University (California Beach Ecology and Grunion), and Jennifer Dugan of University of Southern California, Santa Barbara (Hopping with life: beach wrack as a coastal resource). Afterwards the group discussed the information presented and provided recommendations for 2009. Below is a summary of these recommendations.

Creation of a Los Angeles County Snowy Plover Management Plan

There was strong support for the creation of a Los Angeles County Snowy Plover Management Plan as indicated by a non-binding vote taken at the end of the meeting with all positive and no negative votes. As a general outline, the plan would provide for protections for wintering and potential breeding Snowy Plovers along Los Angeles County Beaches. It would provide a) beach managers with detailed information on the location of plover roosts and nests, b) general recommendations for avoiding harming or taking Snowy Plovers, their nests, eggs, or chicks, c) specific Best Management Procedures (BMP's) for regular maintenance and patrol activities near each roost/nesting areas, d) the outline for an ongoing monitoring and management program for the roosting and nesting Snowy Plovers, and e) specific goals for the recovery of the Snowy Plover in the Los Angeles County portion of Recovery Unit 6.

It was suggested that management efforts be coordinated by the Ventura FWO, with participation by all members of the Los Angeles County Snowy Plover Working Group. The project team will provide information on the status and distribution of the Snowy Plover as well as initial recommendations for protection and BMP's, and will also continue to provide monitoring and management services in 2009. It was suggested that beach managers provide information on essential activities that need to take place on

the beaches near the Snowy Plover roosts, both describing the types of activities and when they need to occur. The group would then work together in a series of meetings to resolve issues, allowing the beach management agencies to continue their important work activities while protecting the Snowy Plover.

It was suggested that we investigate other management plans including the one being prepared for the Oceano Dunes State Park/State Vehicular Recreation Area and Vandenberg Air Force Base.

Docent and Outreach Programs

The continuation and expansion of existing outreach programs was among the most popular and most discussed ideas. It was also deemed essential that outreach programs be implemented before and during management activities such as the placement of protective enclosures. Suggestions included:

- Create a questionnaire for beachgoers at sites in need of additional protections. Questionnaires should be provided to both local residents and tourists during both the winter "off season" and "peak use" summer months. The questionnaire should ask about feelings on sharing the beach with plovers, types of beach use, what part of the beach is used by the public and when (time of day and time of year), and preferences for different types and placement of protections for the plover. The answers gathered should then be considered in the design and placement of protective measures, including enclosures. It was suggested that we approach sociology students at local universities to design and implement the survey, particularly students from the Bren School at U.C. Santa Barbara. An additional idea was to conduct the surveys before and after implementation of a docent program at a plover roost site.
- Integrate the existing outreach and docent program with the Los Angeles County Lifeguards & Surfrider Foundation "Beachology" educational program. LA Audubon should contact this program and provide it with resources and offer to assist in providing outreach opportunities for learning about Snowy Plovers.
- Participate in State Parks campfire programs at beach campgrounds and in their roving "fireside chat" mobile programs.
- Approach the new Santa Monica Beach Club about creating docent programs and displays on the Snowy Plover.
- Place docents at each of the three enclosures, especially when they are first installed and during busy weekends.
- Continue to improve signage and place signage near enclosures and plover roost sites. This is needed to inform the public about the enclosures and why protecting the Snowy Plover is important. The signage should include accurate drawings/photos of the plover to avoid confusion with the similar Sanderling.
- Create additional media outreach using videos (distribute with DVD's/internet) about the plover; meet with media outlets including local newspapers, radio and television and invite Huell Howser to visit the plovers.
- Use live webcams viewable at a website to show activity at regular Snowy Plover roosts and nest sites.

Monitoring Restoration and Management Programs

The existing monitoring, restoration, and management program provides the working group with information on the status and distribution of the Snowy Plover. The group identified ways that the program could be improved or expanded to better serve beach managers.

- Continue the existing monitoring effort for a third year to provide additional information about the location and variability of roost sites.

- Visit each regular roost site at least 5 times between January and March, September and December to GPS the boundaries of each roost, providing even more accurate information about its exact size, location and variability.
- Begin investigations into creating the most favorable conditions possible within the new enclosures. Little is known about winter habitat preferences on the Los Angeles County Beaches. Begin investigations into sand fence vs. symbolic fence, whether some foot traffic may be beneficial by providing depressions in the sand, proper enclosure size, inoculating enclosures with kelp and/or non-flying beach invertebrates (a genetically appropriate source population), presence of vegetation, and disturbance distance and effects.
- Investigate existing arthropod populations near the plover roost sites and at the California Least Tern colony at Venice Beach. Incorporate this study into the volunteer monitoring program.
- Provide LA County Beaches and Harbors with BMP's for clean-up at enclosures during periods of heavy deposition of trash following storm events.
- Continue to evaluate and investigate the 41 miles of non-groomed beaches in Los Angeles County.
- Evaluate the need for beach grooming at Snowy Plover roosting beaches. Examine how it could be minimized and what alternatives could be used to accomplish the current goals of the beach grooming program.
- Evaluate the sanitation goals for the beach grooming program.
- Improve enforcement of dog regulations. Recommendations include providing volunteers with contact numbers of enforcement agencies and providing outreach materials to the public. All activities involving volunteers should be non-confrontational.
- Consider creating additional dog parks (this idea received mixed reactions among working group teams).
- Investigate predator control options prior to needing them at active nests. Project biologists and state and federal agencies should discuss options and create a plan for implementing those options if needed.
- Implement non-species-specific monitoring in 2009. This would require additional training for some volunteers and revision of the volunteer manual and data sheets to provide volunteers with a protocol for recording the species and numbers of individuals encountered. Also train volunteers to photo-document and collect beachcast marine birds and mammals and provide the remains to the Los Angeles County Museum of Natural History.
- Review beach driving programs at each of the local agencies and create a standard set of recommendations.
- Increase survey frequency during the nesting season at known roost sites.
- Create an on-line data entry interface for the volunteers.

Other Ideas

- Use information collected by the monitoring program to promote ecotourism to Los Angeles County beaches. This would include reporting rare and unique species quickly to local listservs and rare bird reports as well as documenting areas where many shorebird and seabird species congregate. Hopefully this information would attract more local and travelling birdwatchers. Birding is a 38 billion dollar industry in the United States with an estimated 46 million birdwatchers.

CONCLUSIONS AND RECOMMENDATIONS FOR IMPLEMENTATION

DISTRIBUTION AND POPULATION TRENDS

In the winters of 2007-08 and 2008-09, the Snowy Plovers in Los Angeles County returned to most of the roosting areas documented in winter 2006-07. Notable exceptions were at Zuma Beach North/South and Dockweiler South. During the January survey, the flock that roosted at Zuma Beach North in 2007 was split between the previous plover roosting area at Zuma Beach North and a new area at Zuma Beach South. In February and March, the entire flock was located within this new area. As they returned in August and September, they appeared to be using the roosting area at Zuma Beach North again. This is significant as this group represents about 40% of the wintering population within LA County. We have no explanation for the shift at this time. In winter 2008-09 the flock has again returned to Zuma Beach North and we strongly recommend that this roost be better protected.

Plovers did not use the roosting area at Dockweiler South near Tower 61 near the Chevron Facility in 2008. Again, we have no explanation for their absence, although only a few individuals used this area in 2007 and overall the population at Dockweiler State Beach remained stable. It is likely that these individuals used other roosts nearby.

Following the large declines observed between the 2004-06 surveys and the 2007 survey, the wintering Snowy Plover population in Los Angeles County has remained stable at approximately 200 individuals in winter 2007-08 and 254 individuals in winter 2008-09. The numbers of individuals present in 2008 followed a pattern similar to that of the period from January to June 2007: the population remained high until March, and then declined through April. However, at least two individuals were detected during surveys conducted in May. In 2007, none was detected after April 28. In 2008, surveys continued through the summer, with 27 plovers returning in July, building to 113 in August, returning nearly to their winter peak numbers (183) in September, and continuing to increase through December (Table 1).

NESTING

In 2007, biologists found one confirmed nesting scrape at Hermosa Beach and a possible scrape at Dockweiler State Beach (Ryan et al. 2007). In 2008, we observed potential nesting scrapes at Zuma Beach South (2), Malibu Lagoon (9), Santa Monica (18), and Dockweiler near the roosts at Tower 47 and the Volleyball Courts. Scrapes were observed between February 10 and March 28. Scrapes at Zuma and Dockweiler were removed shortly following their discovery by beach grooming equipment. A vehicle left tracks on either side of one nest detected at Dockweiler SB, but the nest had not been directly struck (Photograph 9). Scrapes at Malibu Lagoon were over washed during high tide. Scrapes at Santa Monica were abandoned following the placement of a small enclosure around them. No other nests were detected despite regular surveys at Malibu Lagoon and Santa Monica and nest surveys following detection of nest scrapes by volunteers at Zuma and Dockweiler State Beaches.

GENERAL RECOMMENDATIONS

This section of this draft is intended to provide guidance for discussion at the annual Snowy Plover Beach Manager Workshop. It is very preliminary and will be completed following the workshop and published within the annual report.

Creation of a Snowy Plover Management Plan for Los Angeles County. Both we and the Working Group recommend that the USFWS begin discussion with the Project Team and beach management agencies to create a Los Angeles County Snowy Plover Management Plan. This plan should contain elements to protect existing winter roosting areas, including adjacent foraging resources, as well as make provisions for potential nesting. It should provide a) beach managers with detailed information on the

location of plover roosts and nests; b) general recommendations for avoiding harming or taking snowy plovers, their nests, eggs, or chicks; c) specific Best Management Procedures (BMP's) for regular maintenance and patrol activities near each roost/nesting areas; d) outline an ongoing monitoring and management program for the roosting and nesting snowy plovers; and e) provide specific goals for the recovery of the Snowy Plover in the Los Angeles County portion of Recovery Unit 6. As part of this process, on-going beach maintenance activities in suitable plover habitat should be reviewed and alternatives investigated; additional protections for the plover should also be reviewed. In addition, the Plan should also provide for protections from incidental take by maintenance and recreational activities. We recommend that interested elements meet as soon as possible to begin outlining this plan.

Public outreach and education. For 2009, we recommend the continued development of a docent program, outreach to public schools as well as the general public, and the development of materials for potential display at local businesses and aquariums. We propose integrating the bulleted items discussed in the summary of the LACSP Working Group Meeting (see above).

Volunteer monitoring program. For 2009, we recommend continued volunteer recruitment from a range of demographics. In addition to recruiting volunteers from the birding community, high school students could be encouraged to participate in volunteer monitoring programs as a way to fulfill community service hours required for graduation. We also recommend continued recruitment of college and university students, as they are often seeking opportunities to gain field biology experience and internships with an organization outside of their school.

Docent program & displays. For 2009, we recommend the continued development of a docent program and signage at plover enclosures in order to alert the public to plover conservation issues. Volunteer recruitment should be aimed at a range of demographics. In addition to recruiting docents from the birding community, especially individuals who have participated in the monitoring program, high school students could be encouraged to participate as volunteers for the docent programs as a way to fulfill community service hours required for graduation. We also recommend continued recruitment of college and university students, as they are often seeking opportunities for professional experience and internships with an organization outside of their school.

School outreach program. For 2009, we recommend outreach to local and inner-city public schools by providing classroom materials as well as inviting teachers and students to visit plover sites.

Creation of public displays. For 2009, we recommend establishing partnerships with local businesses and aquariums to develop displays addressing plover conservation and volunteer opportunities.

Creation and maintenance of a website. For 2009, we recommend that Los Angeles Audubon continue to host and maintain a Snowy Plover website with general information as well as information specifically for participating volunteers and interested management agencies.

Beach driver-training program. During the winter of 2008-09, we recommend that all agencies whose employees drive on LA County Beaches provide their drivers with the driver education sheet (Appendix B) and include this information within their standard drivers' training program. We also recommend posting the driver education sheet and locations of plover roosting areas on a bulletin board near motor pools and other areas where drivers meet

Communication between the Project Team and beach management agencies regarding Snowy Plover locations. During the winter of 2008-09, we recommend on-going meetings with officials with LACBH on the status of the new enclosure at Dockweiler and additional protections for the plover roosting areas at Zuma as well as other unenclosed plover roosting areas. The project team should be notified of any major construction or sand moving operation and allowed to comment on the potential for these activities to harm plovers. The Project Team should continue to provide beach agencies with locations of concentrations of Snowy Plovers.

Continued monitoring of Snowy Plovers. For 2009, we recommend conducting four countywide surveys and monthly surveys of plover roosting beaches using volunteers and project biologists. In addition, we recommend weekly surveys of enclosed areas between February 1 and the plover's departure from the enclosure by volunteers and project biologists in order to detect the presence of nests. In addition, we propose integrating the bulleted items discussed in the summary of the LACSP Working Group Meeting (see above).

Nest searching and protection. We recommend that permitted biologists search areas where Snowy Plovers are detected during countywide surveys in February - May for signs of nesting Snowy Plovers. If detected, nests should be monitored weekly and, if needed, additional protective fencing should be provided under the supervision of CDFG and USFWS. The permitted biologists should work closely with beach managers and agency staff to protect and monitor nests. If a nest is discovered in an area where disturbance or predation are a problem, a nest exclosure consisting of 2-inch x 4-inch welded wire mesh, forming a cube 20 inches on a side (Photograph 6), may be anchored over the nest and left in place until the eggs hatch and young depart the nest (Fancher et al. 2005).

Schedule field visits for beach managers. We recommend scheduling a field visit to Coal Oil Point so that beach managers can observe the successful implementation of Snowy Plover protections on a public beach. The Project Team is available to schedule visits to the local enclosures and roosting areas as well if requested by area beach managers.

Annual meeting between the project team and beach managers. The project team will schedule the meeting as well as prepare an annual report and a presentation for the meeting in fall of 2009.

Garbage cans and trash pick-up. LACBH should investigate with the Los Angeles County Department of Sanitation whether afternoon trash pick-ups are feasible, especially of cans near plover roosting areas. Afternoon pick-ups would decrease the amount of trash on beaches overnight which attracts scavenging predators. They should also continue to maintain lids on all beach garbage cans.

Enforce existing dog regulations. Off-leash dogs disturb and flush Snowy Plovers and may occasionally result in direct take by harassing and/or causing mortality; eggs and pre-fledge chicks are especially vulnerable. Currently, dogs are not allowed on most beaches where Snowy Plovers occur, yet were often reported, many off-leash, by our volunteers. We recommend that enforcement personnel increase enforcement of existing dog regulations on beaches and dog-related regulations within plover roosting areas and buffer zones while Snowy Plovers are present. Enforcement personnel should be requested to be especially attentive to dogs within enclosures. Areas designated for off-leash dogs should only be considered in locations as far from plover roosting areas as possible or in areas unsuitable for Snowy Plovers.

Reduce and/or enforce existing vehicle speed limits in non-emergency situations. Vehicle strikes are known to result in Snowy Plover mortality (Ryan et al. 2007). Snowy Plovers tend to sit within existing tracks, where many beach drivers prefer to drive for better traction and increased safety, thus increasing the chance of collision. Limiting vehicle speeds to 10 mph in non-emergency situations would reduce the

risk of collisions with Snowy Plovers. LACBH and other beach-driving agencies should request that staff members who are authorized to drive on the beach attend Snowy Plover training or receive a driver-training sheet. Enforcement personnel should be asked to enforce these rules, and project staff and volunteers will be requested to report speeding drivers to the appropriate agency.

Protective enclosures. To reduce the threat of mortality, habitat degradation, and disturbance from vehicle strikes, beach grooming, erosion control, off-leash dogs and recreation, we recommend that protective enclosures be placed within each of the plover roosting areas (Figure 2-11). Enclosures have been installed or will soon be installed at Malibu Lagoon, Santa Monica State Beach, and Dockweiler State Beach north of Tower 47.

In 2008-09, we recommend that additional consideration of protective measures at roosting areas on Zuma Beach North and South, Dockweiler State Beach near the Volleyball Courts and between Towers 59-60, and Hermosa Beach near 27th Street and 21st Street. Zuma State Beach is the most urgent given recent population declines and documentation of mortality from vehicle strikes.

We recommend that protective enclosures consist of either sand fencing on three sides or symbolic fencing surrounding the entire area. Based on information discussed in Ryan et al. (2007) and trials conducted in 2008, we recommend that the enclosed areas be a minimum of 100 ft x 300 ft, preferably larger. The ocean side of the enclosure should remain unfenced or fenced with symbolic fencing only. The fencing may be constructed with a variety of readily available materials, such as symbolic fencing (Photograph 7) or drift fencing (Photograph 3). In areas with high human use, we suggest the use of signage with reflectors (for vehicle operators) and a highly visible, reflective material strung between the posts. Moreover, signs should be posted discouraging vehicle traffic, informing people about the presence of the Snowy Plovers, and requesting that they avoid approaching roosting plovers.

Vehicle use should be minimized and vehicles should be prohibited from entering roosting areas except for emergencies or any situation affecting public health and safety. Additionally, fencing should generally be placed within 100 m of the high-tide line (Page and Stenzel 1981), but allowing sufficient space for lifeguard vehicles to pass between the enclosure and the water without needing to drive on the beach slope.

Fencing should be installed as soon as practicable following the Labor Day Holiday and left in place until two weeks after the last wintering Snowy Plover has departed. The project team should intensively survey these areas after February 1 and if nesting is detected, additional protections may be needed. Placing fencing in and near high public use areas and locations that may restrict beach access should be avoided to the extent practicable. Organized sports activities should avoid enclosed areas, and facilities such as volleyball nets should not be placed within enclosed areas, although adjacent areas are acceptable for these activities.

Nest exclosures. If a nest or nest scrape is detected, permitted biologists should work with the appropriate agency to place a dog-proof barrier around the nest, and, if deemed necessary, place a small nest exclosure around the nest for additional protection. The NE should be similar to those used at the nearby Bolsa Chica Ecological Reserve (Photograph 6) (Fancher et al. 2005). Dog-related regulations should be strictly enforced in the vicinity. Beach grooming and other vehicle use should be reduced to the absolute minimum necessary within 300 m of the fenced area if a nest is detected, and a monitor should be present for all work activities or vehicle access once young are present.

Reduce beach grooming and sand manipulation. Snowy Plovers feed on arthropods attracted to decaying kelp (Photograph 5) (Page et al. 1995). Beach grooming removes this kelp and has the potential to remove nests and eggs placed on the beach. A reduction in beach grooming would likely lead to greater

foraging resources for the Snowy Plovers in winter and would be beneficial to nesting birds as well. We recommend that beach grooming be reduced in plover roosting areas when they are present. In addition, we recommend eliminating or reducing beach grooming to the extent practicable in plover roosting areas from Labor Day through Memorial Day or two weeks after the last Snowy Plover is observed. We also recommend avoiding grooming within 100 m (300 feet) of winter and breeding season enclosures year round. As recommended during the Working Group meeting, we suggest that beach managers reevaluate the extent and frequency of their grooming operations and look for alternative ways to accomplish their goals near the snowy plover roosting areas.

Create signage for the winter and breeding season fencing. Signage should be created using existing templates provided by the CDFG and USFWS. They should be provided by CDFG or USFWS to LACBH and attached to poles by LACBH staff.

Predator control measures. We recommend that the responsible agency contract with either the CDFG or the USDA to provide predator control at sites where nesting by Snowy Plovers has been confirmed. Predator control personnel should remove or discourage predators within the enclosures and assist the nest monitors with the placement of additional protective devices at plover nest sites.

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Appendix A:
Photographs

Photograph 1. Beach Grooming

Photograph 2. Groomed Beach.

Photograph 3. Example of Winter Fencing from Santa Monica State Beach.

Photograph 4. Snowy Plover standing in vehicle track.

Photograph 5. Beachcast kelp and sand flies.

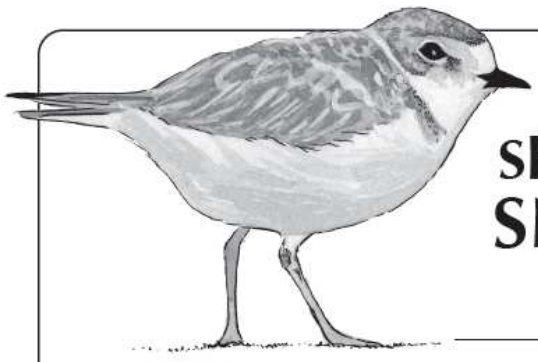
Photograph 6. Nest exclosure design used at Bolsa Chica Reserve (Photo credit: Jack Fancher).

Photograph 7. Nest enclosure using symbolic fencing at Malibu Lagoon.

Photograph 8. Complete Enclosure of the Scrapes at Santa Monica.

Photograph 9. Nest scrape between tire tracks at Dockweiler (Volleyball Court Roost) on April 29, 2008.

Appendix B:
Beach Driver Training Handout



Sharing the Beach with SNOWY PLOVERS

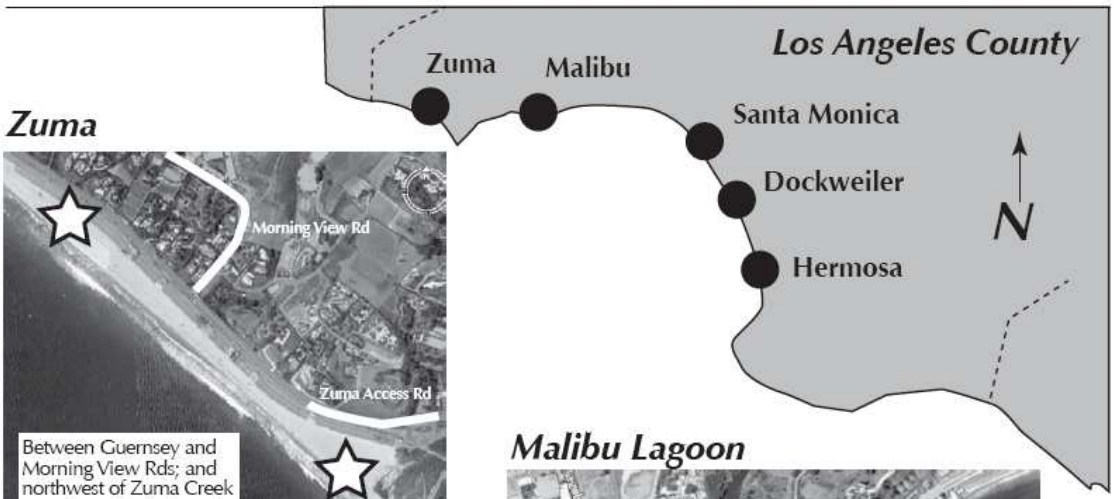
Tips for Beach Drivers

Snowy Plovers are a Federally Threatened species of shorebird live on the Los Angeles County Beaches. The largest numbers are here in the fall and winter months. There are several roosting areas where they are most likely to be found. Following a few simple guidelines will help reduce the chance of disturbing or striking a roosting snowy plover. When safe to do so, the following measures can help avoid collisions with plovers:

- Maintain a speed of no more than 10 mph. Plovers are sometimes slow to move, and lower speeds reduce the risk of a strike.
- Minimize vehicle use at night or in low-light conditions near known plover roosts.
- When driving in the tracks of other vehicles maintain a low speed and watch for plovers that often roost within those tracks.

- If possible, avoid driving on the berm-line because this is where plovers feed.
- If possible, drive around known roosting areas (*see maps on reverse*).

Snowy Plover Roosting Areas

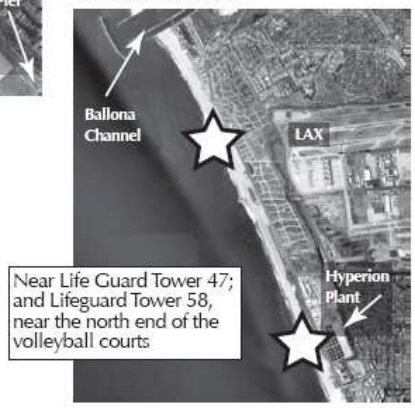


Zuma

Malibu Lagoon

Santa Monica

Dockweiler



Hermosa