

Western Snowy Plover in Orange and Los Angeles Counties, California. 2020 Annual Report

Prepared for

California Department of Fish and Wildlife

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Introduction

Prior to 1945, the Western Snowy Plover (*Charadrius nivosus nivosus*) (snowy plover) nested on beaches throughout Los Angeles and Orange Counties (LAC and OC, respectively) (Grinnell and Miller 1944, Western Foundation for Vertebrate Zoology [WVZ] unpubl. data). However, increased human use of sandy beaches brought with it disturbance from beachgoers, lifeguards, maintenance staff, introduced predators, pets, and sand grooming, reducing the ability of plovers and terns to nest on LAC and OC beaches. Historically snowy plovers nested at Redondo, Ballona (Venice/Marina Del Rey), Los Angeles, and Malibu Beaches in LAC prior to 1949 (Allen et al. 2016); and Anaheim Landing, Sunset Beach Bay Fill, Sunset Beach, Bolsa Chica Beach, Bolsa Chica Salt Flats, Newport Beach, and Balboa Beach in OC prior to 1940 (Page and Stenzel 1981). Snowy plovers continue to nest at the Bolsa Chica Ecological Reserve and there was a single nest in the dunes at Balboa Beach in 2008, 2009, and 2013. None nested coastally in Los Angeles County until 2017 (Ryan et al. 2019). Plovers nested in both LA and OC in 2018, and OC in 2019 (Ryan 2019).

Here, we provide information on the numbers of snowy plovers using LAC and OC beaches for roosting and nesting in 2020. Maps of all roosting locations in LAC and OC as well as details of their populations from 2014-17 and 2019 are summarized in Ryan et al. (2017), and Ryan (2019). An evaluation of the habitat at these beaches and threats observed at the beaches are provided in Ryan et al. (2017).

Methods

Our program conducts three types of surveys, a county-wide survey, a roost survey, and a nesting survey. The county-wide survey is an effort at all suitable sandy beaches four times per year. The roost surveys are conducted at areas of highest concentration during the other eight months. The nest survey was done using the same methods as the roost survey but concentrating on locating scrapes and nests in years when funding was available, with more intense weekly nest searches within known roosting areas between February and April. Each type of survey is designed to provide an index of the population, allowing us to provide both an overall estimate of the population and track trends from month to month and year to year.

The Covid-19 pandemic impacted the ability of our volunteers and biologists to conduct surveys during 2020. Due to stay-at-home restrictions enacted by the State of California on March 19, Los Angeles, and Orange Counties on March 20. By March 23 most parking adjacent to LAC beaches and OC State Parks beaches was closed, although the beaches themselves remained open. LAC beaches and several OC beaches were closed completely between March 19-25, all OC beaches were closed on April 30, then reopened on May 13. This came in the middle of the March County-wide Survey and some volunteers in LAC were unable to complete their assigned surveys. Our project enacted restrictions on all volunteers on March 16 canceling trainings, no carpooling, masks and remaining 6 ft apart, then suspending all volunteer activities on March 28. Biologists were unable to survey several beaches in March and April due to restrictions or unsafe conditions created by beach goers ignoring distancing and mask orders, this occurred at Crystal Cove, and Salt Creek. May beachwide surveys were completed using some volunteers at open beaches and biologists where access continued to be restricted. In the Fall, trainings

were held online and volunteers resumed beachwide surveys in September following Covid-19 guidelines.

County-wide Surveys

County-wide plover surveys follow the Western Snowy Plover Winter Window Survey Protocol (Elliott-Smith and Haig 2006). Since 2007, volunteers participated in training sessions conducted by Ryan Ecological Consulting (REC), Los Angeles Audubon (LAAS), and Sea and Sage Audubon (SSA) staff each year. Staff and volunteers then completed county-wide surveys between January and April in 2007, and switched to January, March, May, and September from 2008 to 2021.

All Snowy Plover counts were made in a single pass. On broad beaches, surveyors walked alongside each other and/or zigzagged during surveys. Field data were collected on a datasheet, and surveyors marked the presence of plovers and the area covered on a map or aerial photograph. Data sheets were submitted to the survey coordinator. Data collected for each survey location included the number, location, and sex of all 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. Surveyors observed the birds for color bands. These were reported to Point Blue Conservation Science and, since 2019, to Travis Wooten at the San Diego Zoo, who then provided information on origin and banding date. 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 plovers and their nests were mapped from volunteer drawings and GPS locations using Google Earth.

Roost and Nest Surveys

Project biologists conducted roost and nest surveys of just the main roost sites (Figures 1 and 2) and nearby beaches in February, April, and June, July, August, October, November, and December. Nest surveys were conducted weekly at the main roost sites from March 1 to May 30 in LAC and March 1 to July 31 in OC. Counts also followed protocols described by Elliott-Smith and Haig (2006). During roost surveys, all plovers were counted, and the roosting area recorded on a handheld GPS/Phone with GPS capability. This was accomplished by walking the perimeter of the colony at a distance that did not cause disturbance to the birds (typically 20-30 ft). For nest surveys immediately after the roost survey, the biologist scanned the roost to determine if birds were sitting on the sand. Observations of potential breeding behaviors, such as calling, aggressive displays, territorial displays and male-female paired individuals, were also noted. Most surveys were completed during the morning hours and on rising tides under good conditions; surveyors were instructed not to survey during rain, heavy wind or on extremely cold mornings. The surveyed beaches were Zuma County Beach at Lifeguard Tower 9 (Zuma LT9) and Zuma Lagoon (Zuma Lagoon), Malibu Lagoon State Beach (Malibu), Santa Monica State Beach (Santa

Monica), Dockweiler State Beach Lifeguard Tower 47 (DSB LT47), Dockweiler State Beach Tower 58 (DSB LT58), and Hermosa Beach (Hermosa) in Los Angeles County; and Surfside Beach, Bolsa Chica State Beach, Huntington State Beach, Balboa Beach, Crystal Cove State Park, Salt Creek, and San Onofre State Beach (aka Trestles).

Observations were reported monthly in letter reports to California Department of Fish and Wildlife (CDFW), team members, and partners. They were then summarized in an annual report and presented at beach managers meetings sponsored by Pepperdine University. These meetings were attended by local biologists, beach managers, agency staff and other interested parties. The goal was to bring a multidisciplinary approach to solving issues facing the protection of the Snowy Plover.

Figure 1. Map of Los Angeles County Study Area.

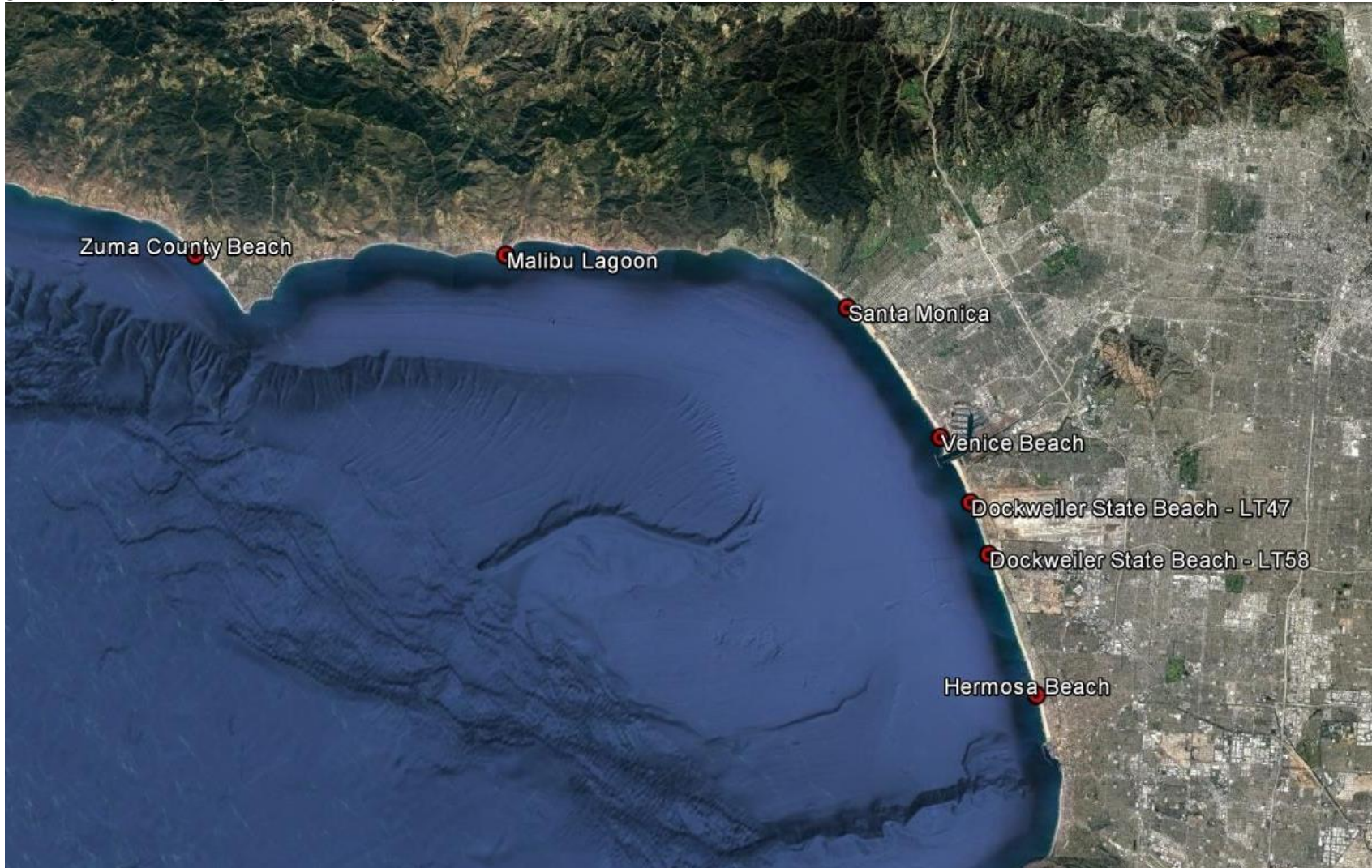
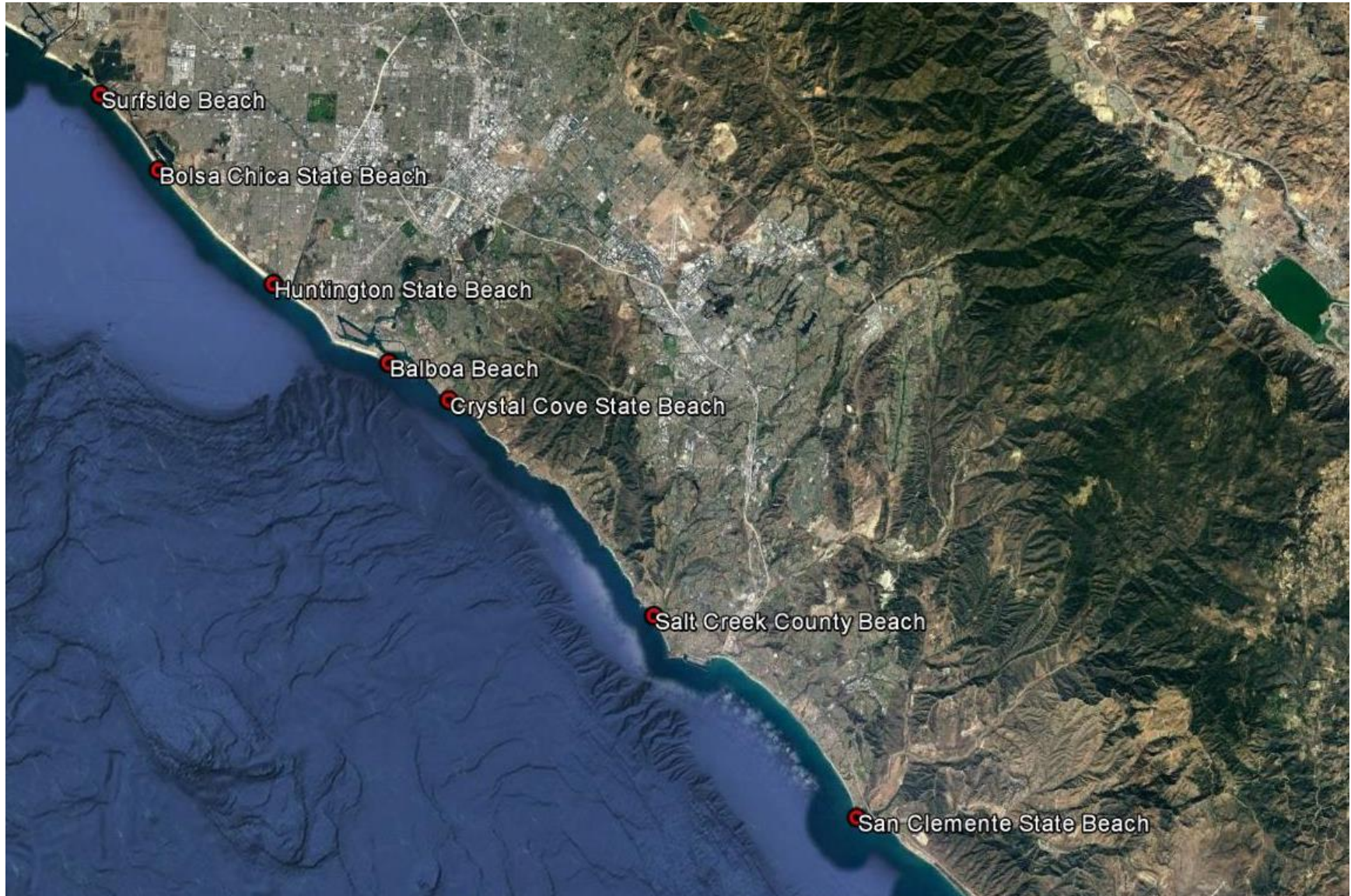


Figure 2. Map of Orange County Study Area.



Results

Annual Population Trends

Table 1. Snowy Plover Winter Window Survey Counts in Los Angeles and Orange Counties. * indicates that beaches where plovers are known to occur were missed in that year.

Year	LAC January Count	OC January Count
2004	266	ns
2005	285	110
2006	334	161*
2007	196	58
2008	200	88*
2009	233	116
2010	244	119*
2011	302	164*
2012	326	189*
2013	277	172*
2014	251	229
2015	151	204
2016	140	141
2017	174	208
2018	249	229
2019	236	215
2020	256	172
2021	177	172
Average	240.4	196.3
SD	59.2	29.9
N	17	8

In January 2020, the non-breeding roosting population in LAC had risen to its highest number since the 2011-12 peak (326 in 2012) (Table 1, Figure 3). It was higher than the monthly average for January, but within the range of the standard deviation (Table 1). In January 2021, the population declined 177 plovers, lower than the annual average and lower than the range of the standard deviation (Table 1). As demonstrated in Figure 3, the non-breeding snowy plover population in LAC fluctuates in a somewhat cyclical pattern with peaks and valleys alternating on a 6–7-year cycle (Figure 3), and expected peaks would have been 2018-19, with an expected decline to follow. This appears to be what we are observing. While cyclical, there is an overall declining trend to both the peaks and valleys of this cycle in LAC. Regression analyses show it to be declining, however there is poor fit and is not significant at a p-value of less than 0.05 ($R^2 = 0.175$, $p = 0.084$).

In OC the counts in both 2020 and 2021 were of 172 plovers. This is lower than the average, but within the standard deviation (Table 1). Since 2014, there is a declining trend in OC. However, is also not significant when analyzed using a regression analysis ($R^2 = 0.086$, $p = 0.48$).

Figure 3. Annual Population Trends of Snowy Plovers in LAC and OC 2004-2021 using Winter Window Survey Results.

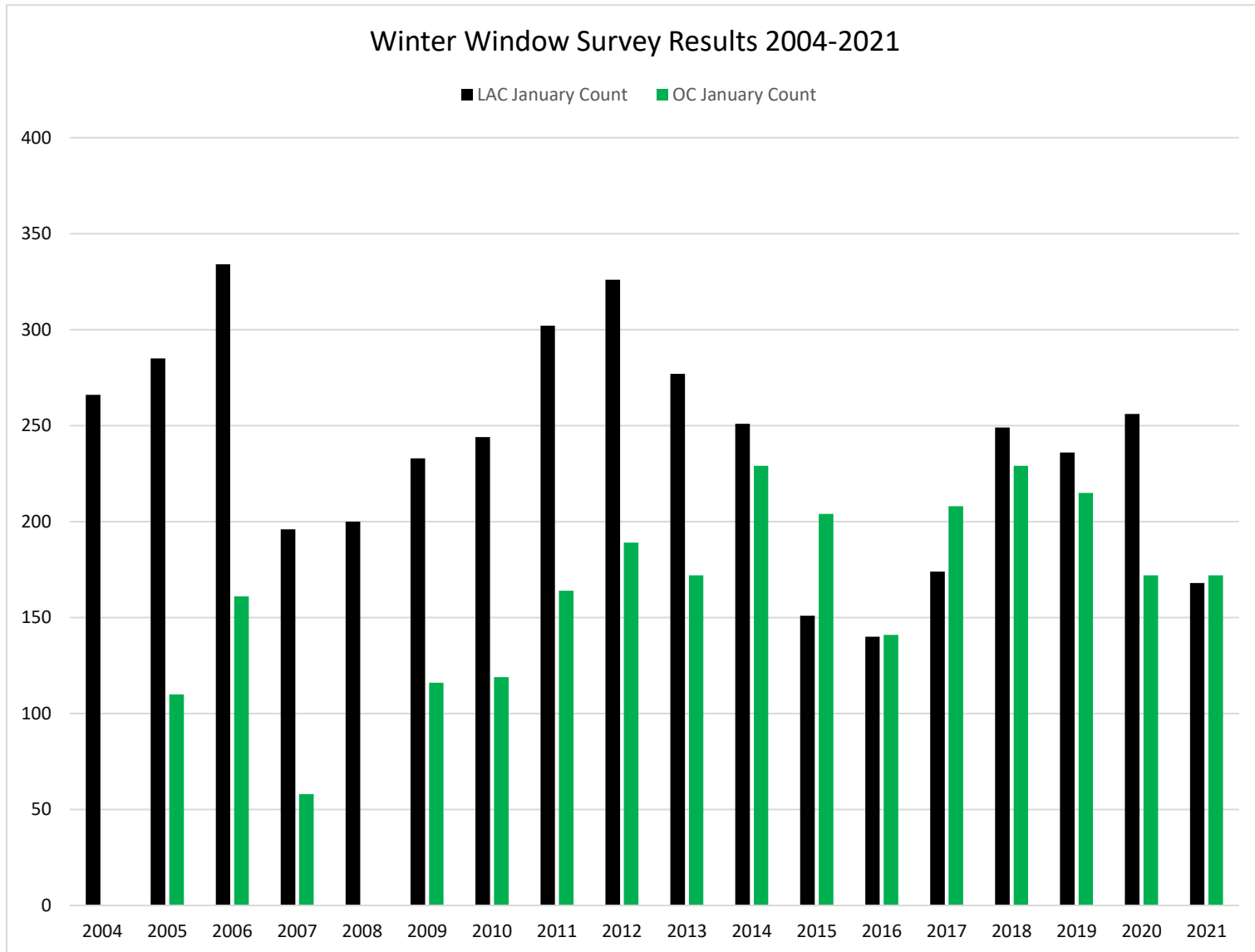


Figure 4. Monthly Population Trends of Snowy Plovers in LAC 2007-2020 using Roost Surveys.

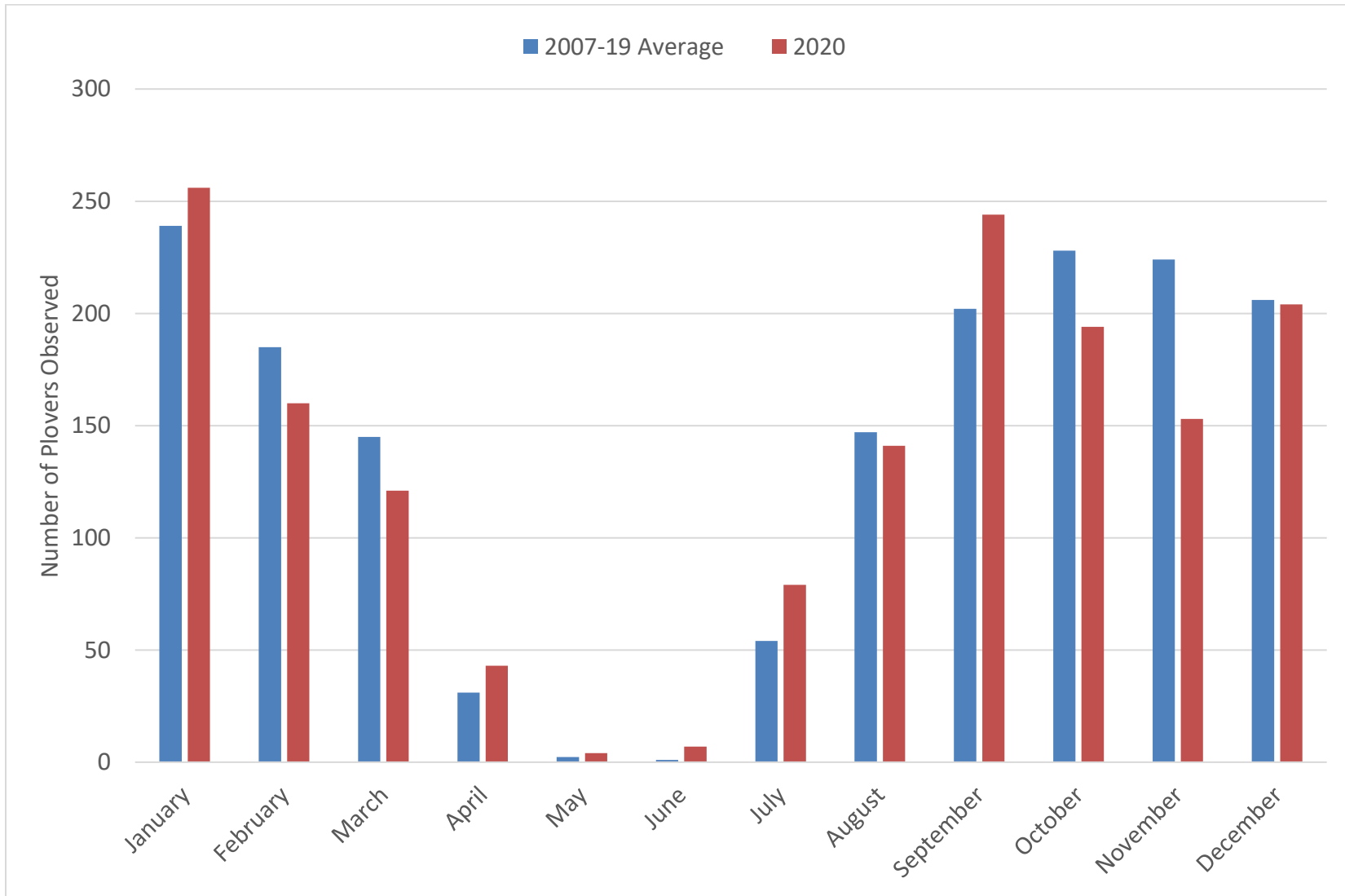
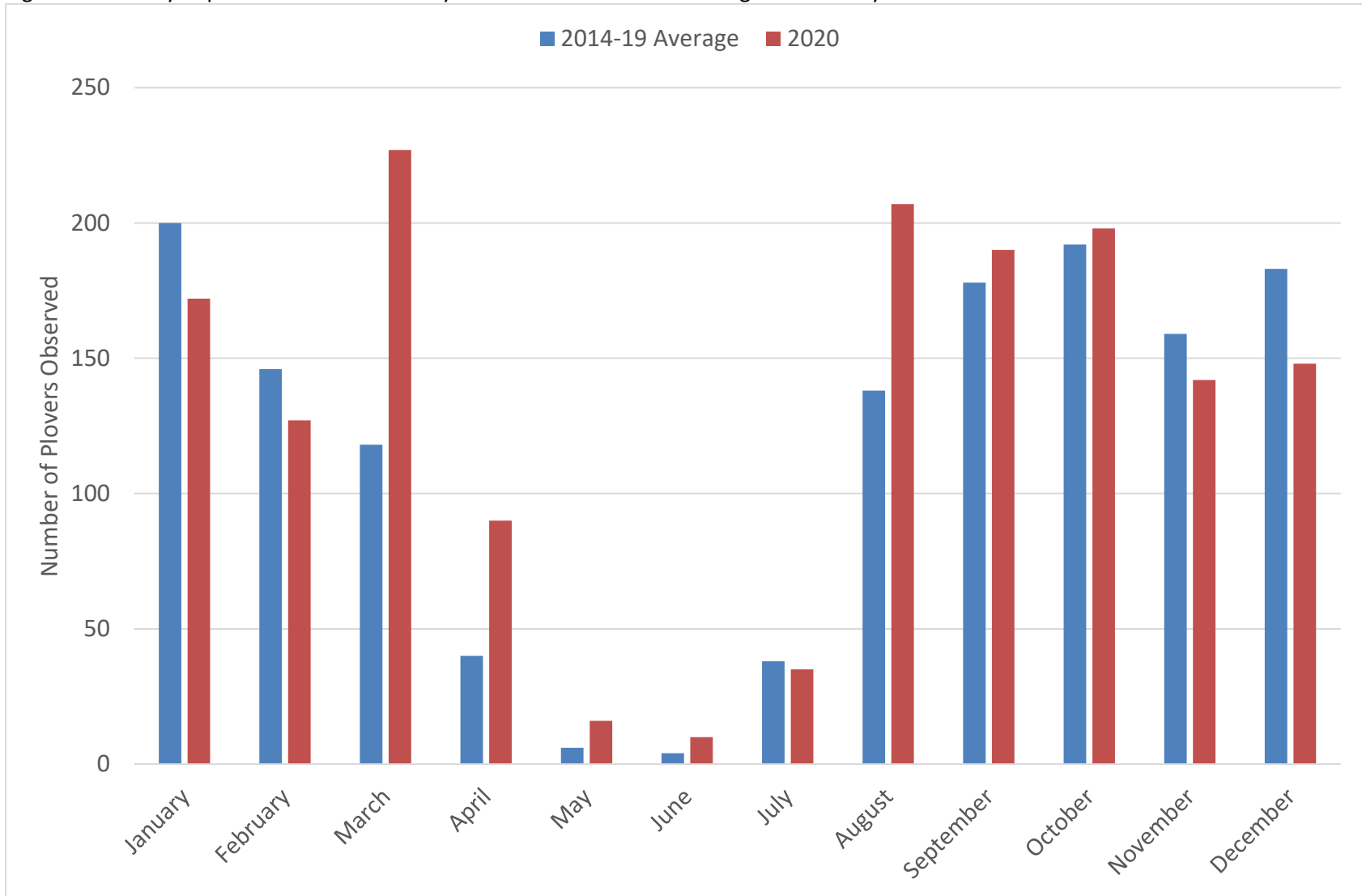


Figure 5. Monthly Population Trends of Snowy Plovers in OC 2014-2020 using Roost Surveys.



Monthly Population Trends

Snowy Plovers are found in both LAC and OC during all months (Tables 2 and 3, Figures 4 and 5). The highest populations occur here between August and March. Most depart for nesting areas between March and April and most return from nesting areas between July and August. The “wintering” or “non-breeding” population is relatively stable between August and February. In LAC, populations averaged between 149 and 253 individuals between 2007 and 2019, peaking at 240 in January (Table 2). In OC, populations averaged between 128 and 201 individuals between 2014 and 2019, peaking at 201 in December (Table 3).

The finding that most plovers return by August and most roosts are occupied by July indicates that protective measures need to be considered, even during the busy summer tourist season when recreational use, beach driving, and beach grooming activities are all at their peak. This supports findings made in Ryan et al. (2010, 2017).

Table 2. Counts of Snowy Plovers at Sandy Beaches in Los Angeles County in 2020.

Beach Name(s)	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Leo Carillo State Beach/Nicholas Cyn CB	0	ns	0	ns	0	ns	ns	ns	0	ns	ns	ns
El Sol, El Pescador, La Piedra SB	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
El Matador, Lechuza Beach	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
Zuma Beach	67	57	39	ns*	0	0	2	2	29	34	54	45
Zuma Beach (morning view to Pt. Dume)	0	ns	0	ns	0	ns	ns	ns	0	ns	ns	ns
Dume Cove, Paradise Cove, Escondido B.	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
Dan Blocker CB, Puerco Beach	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
Malibu Bluffs SP, Amarillo B, Malibu B.	0	ns	ns*	ns	ns*	ns	ns	ns	0	ns	ns	ns
Malibu Lagoon, Carbon Beach	41	25	1	0	0	0	6	24	30	42	28	34
La Costa B., Las Flores B., Big Rock B.	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
Las Tunas CB, Topanga CB	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
Castle Rock B	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
Will Rogers SB North	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
Will Rogers SB South	0	ns	0	ns	ns*	ns	ns	ns	31	0	ns	ns
Santa Monica State Beach N	25	25	26	16	0	0	0	0	16	36	34	30
Santa Monica State Beach S	0	ns	ns*	ns	ns*	ns	ns	ns	0	ns	ns	ns
Venice City Beach North	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
Venice City Beach South	11	ns		ns	0	ns	ns	5	18	0	0	8
Dockweiler Beach North	46	2	2	2	2	5	50	74	60	14	0	2
Dockweiler Beach Central	13	ns	1	ns	0	ns	ns	ns	0	ns	ns	28
Dockweiler Beach South	1	ns	21	ns	2	ns	0	0	0	5	0	5
El Segundo & Manhattan B	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
Hermosa Beach North	52	51	26	25	0	2	21	36	59	56	37	52

Beach Name(s)	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Hermosa Beach South & King Harbor	0	ns	5	ns	0	ns	ns	ns	0	ns	ns	ns
Redondo County Beach N	0	ns	0	ns	ns*	ns	ns	ns	1	ns	ns	ns
Redondo CB South & Torrance CB	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
Portuguese Bend	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
Point Fermin & Cabrillo Beach	0	ns	0	ns	ns*	ns	ns	ns	0	7	ns	ns
Alamitos & Junipero B.	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
Belmont Shore & Peninsula Beach	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
Total Observed	256	160	121	43	4	7	79	141	244	194	153	204
Average	240	185	145	31	2.3	0.9	54	147	202	228	224	206
SD	59	61.9	51.3	33.7	2.3	1.4	31.3	46.2	39.7	45.3	67.6	58.3
N	17	12	17	14	12	8	10	10	12	11	11	11

Los Angeles County Roost Summaries

Zuma County Beach

Zuma (Appendix A, Figure 1) was previously the largest roost and supported 41% of the LAC population from 2004-2009, but 29% from 2004-2017 (Ryan et al. 2017), and currently 26% (Table 2). This roost has no enclosure and is not marked. This beach is groomed daily, and wrack is removed above the high-tide line. The roost is disturbed regularly during daylight hours by both vehicles and foot traffic. As with other beaches, off-leash dog use of this beach appears to have increased following the covid-19 stay-at-home orders. Additionally, in 2014 LACBH installed volleyball courts near the former roosting area. The agency annually builds a berm in front of the restroom facility at the south end of the Special Protection Zone (SPZ).

In 2020 the winter roost ranged from 57-67 individuals, fall from 45-54 individuals. None were observed during the nesting season and no nests were detected. Most observations were within the existing recommended SPZ (Appendix A, Figure 1)

We recommend: 1) non-essential beach driving vehicles use the road and parking lot instead of sandy beach to transit the area, 2) an enclosure be set up at the main roosting area, 3) cones or signage be installed indicating the location of the special protection zone, 4) beach grooming be suspended or reduced to only following large deposition events within the SPZ, 5) surf camps operate outside the SPZ 6) moving the volleyball court outside of the SPZ; and 7) only creating berms at locations where they were placed in previous years, using data provided in this and previous reports to determine potential Snowy Plover roosting areas and avoiding them, as well as the use of monitors and best management practices to avoid harassing the plovers during the installation and removal of these berms.

Malibu Lagoon State Park

Malibu (Appendix A, Figure 2) is the fourth largest roost and supported 16% of the LAC population from 2004 to 2017, and supported 16% of the population in 2020 (Table 2). Plovers nested here in 2017, with

two nests producing four eggs, three hatched, and one fledged. In 2018 five nests were detected at Malibu Lagoon by 2-3 pairs producing 12 eggs, four hatched and three fledged. In 2019, pairs were observed, and scrapes detected; however, the sand bar was lower in elevation and the highest tides in April, May and June washed over most of the bar. In 2020 there were regular off-leash dogs walked on the narrow bar, particularly in the morning and evenings. 2020 was the first year since 2008 that no enclosure was constructed due to the overwashing and the frequently changing configuration of the sand bar. Biologists and volunteers also observed photographers actively pursuing and getting within 20-30 feet of roosting plovers.

In 2020, between 28-42 plovers occurred both in winter and fall. None were detected in the nesting season. Most observations were within the existing recommended SPZ (Appendix A, Figure 2)

We recommend: 1) that there be increased enforcement of dog regulations; and 2) increased outreach by State Parks staff and rangers to keep people out of the enclosures, particularly those who set up informal camps within the enclosure as well as wildlife photographers who chose to pursue roosting plovers.

Santa Monica Beach

The roost at Santa Monica (Appendix A, Figure 3) previously supported about 8% of the countywide wintering population of plovers and increased to 18% of the population by 2017 (Ryan et al. 2017). In 2020, it hosted 10% of the non-breeding population. There are two enclosed protected areas on this beach, the northern one is operated by the Bay Foundation as a dune restoration area, and the southern by the City of Santa Monica. Plovers occurred within both but were only detected in the Bay Foundation enclosure in March, at the beginning of the nesting season. Plovers nested there in 2017, but no nests have been detected since and no nesting occurred here in 2020.

In 2020, 25-26 plovers were observed in winter and 30-36 in fall. Most observations were within the existing recommended SPZ (Appendix A, Figure 3), except for the observations at the Bay Foundation Enclosure in March. Outside of the two enclosures, this beach is groomed daily, and wrack is removed above the high-tide line. As with other beaches, off-leash dog use of this beach appears to have increased following the covid-19 stay-at-home orders, including within the two enclosures. At the southern enclosure there have been surf camps that have set up operation immediately adjacent to the enclosure fence. Large numbers of children attend these camps and are often observed hanging things on the fence, adjacent and in front of the enclosure fence. Additionally, vehicle tracks were observed in front of and within the enclosed areas.

We recommend: 1) non-essential beach driving vehicles use Pacific Coast Highway instead of the sandy beach to transit the area, 2) cones or signage be installed indicating the location of the SPZ, 3) beach grooming be suspended or reduced to only following large deposition events within the SPZ, 4) surf camps operate outside the SPZ or a minimum of 150 feet from the enclosures, and 5) beach drivers be reminded not to drive in front of or within the enclosures in non-emergency situations.

Venice Beach

Low numbers of plovers have been detected at Venice Beach since 2007 (Ryan et al. 2017) (Appendix A, Figure 4). In 2020, 5-18 plovers were detected on this beach. This beach has heavy use with off-leash dogs, sand grooming, and regular lifeguard and police patrols through the area supporting the plover roosting area.

We recommend that 1) a SPZ be created for this site between Privateer and the Least Tern Colony, 2) that dog regulations be enforced on this beach south of Privateer, 3) non-essential beach driving vehicles use adjacent roads instead of the sandy beach to transit the area, 4) cones or signage be installed indicating the location of the SPZ, 5) beach grooming be suspended or reduced to only following large deposition events within the SPZ.

Dockweiler State Beach

Dockweiler State Beach is surveyed in three segments: Dockweiler State Beach North (DSB North), Central (DSB Central), and South (DSB South) (Appendix A, Figures 5-7). There are two primary roosting areas: one on DSB North near Lifeguard Tower 47 (DSB LT47), and one on DSB South between the RV Park and the volleyball courts north of Lifeguard Tower 58 (DSB LT58). These roosts supported 3% and 2% of the Snowy Plover Population in LAC respectively between 2004 and 2009 (Ryan et al. 2010) increasing to 18% and 5% of the LAC population by 2017 (Ryan et al. 2017). However, the roost at DSB LT58 has been only occasionally used since 2012.

In 2020, it was 23%, with 50-74 plovers present near the northern enclosure from July to September. However, most plovers departed the northern enclosure (DSB LT47) in September. Some relocated to a roost on DSB Central (Appendix A, Figure 6), others to DSB LT58 on DSB South (Appendix A, Figure 7). A pair of plovers nested successfully within the enclosure at DSB LT47 in 2020 (Table 4). There were unique challenges here in 2020. As with other beaches, dog use increased. Additionally, beachgoers used the wood slats of the enclosure fence for illegal beach fires. We also observed vehicle tracks in front of the enclosed area, likely from police patrols of the beach.

The fenced enclosure on DSB North has been the site of successful nest attempts in recent years. In 2017 two nests were detected, each containing three eggs; three chicks hatched from one nest and were then depredated; three chicks hatched from the second nest and one fledged. In 2018 we detected one nest containing three eggs; three chicks hatched and two fledged. In 2020, a 2-egg nest was detected by Stacey Vigallon on 1 May 2020. Stacey Vigallon placed a mini-exclosure (ME) over the nest on that same day, and on 8 May the nest contained 3 eggs. Numerous crow tracks and human tracks were observed within the enclosure, but the nest and ME remained intact. The adult plovers associated with the nest were observed foraging nearby, and on 21 May an adult was observed incubating. One adult associated with the nest was banded as either tan/orange or tan/red on the left and yellow/orange on the right: this bird was marked at Vandenberg AFB, date and year unknown. Another adult seen nearby that may be associated with the nest was banded yellow/tan:red/orange (yn:ro): this bird was marked at Bolsa Chica ER as a captive-reared bird in 2018. The nest at this site was successful, with three eggs hatching. On 28 May a volunteer reported observing one adult with three chicks inside the enclosure, and on 29 May Stacey Vigallon observed on adult with two chicks in the enclosure area. Two to three chicks were observed with an adult in the area through 4 June. Between 6-11 June volunteers and biologists observed an adult with a single chick. On 13 and June an adult with no

chicks was observed in the area, and on 17 and 25 June no plovers were observed in the area. The fate of the chicks was not observed, and it is unknown if the remaining chick fledged.

We recommend 1) increased education of beach drivers, particularly local police regarding not driving in front of the enclosure, 2) increased enforcement of dog regulations, 3) modification of the enclosure to use post—and-rope instead of wood slat fencing, 4) increased signage in the SPZ and at the enclosure.

Hermosa Beach

Hermosa Beach (Appendix A, Figure 8) supported 8% of the Snowy Plover population in LAC from 2004-2009 (Ryan et al. 2010), and 15% of the population by 2017 (Ryan et al. 2017). Historically, there were two distinct clusters of activity, one between 18th to 22nd Streets, and another between 26th and 28th Streets represented by the two SPZs (Figure 8).

In 2020, this roost supported 20% of the roosting population, with 51-52 present in the winter and 37-59 in fall 2020 (Table 2). The southern roosting area between 18th to 22nd Streets was most frequently occupied. When found outside of that SPZ, it was just to the north between 23rd and 25th Streets, none were detected at the former roosting area between 26th and 28th Streets (Appendix A, Figure 8). This roost currently has no protection and, like Zuma Beach, is frequently driven through, groomed, and disturbed by pedestrian traffic.

We recommend: 1) non-essential beach driving vehicles use the adjacent roads instead of sandy beach to transit the area, 2) an enclosure be set up at the main roosting area, 3) cones or signage be installed indicating the location of the special protection zones, 4) beach grooming be suspended or reduced to only following large deposition events within the SPZ, 5) surf camps operate outside the SPZ, and 6) enforcing existing dog regulations.

Orange County Roost Summaries

Surfside/Sunset Beach

Surfside and Sunset Beaches (Appendix B, Figures 1 and 2) normally supports a small roost of 1-22 plovers or 4.5% of plovers in Orange County (Ryan et al. 2017). In 2020, few plovers were present in winter, but between 19-22 were present in October and November. This roost tends to move frequently and in 2020 most were found north of the SPZ (Ryan et al. 2017). A pair nested on Sunset Beach in April (Table 4, Appendix B Figure 2). The nest was protected by an ME and an enclosure put up by the City of Huntington Beach. We estimate one chick fledged. Surfside is not formally groomed, but homeowners remove kelp. Sunset Beach is groomed by the City of Huntington Beach. Protective berms are erected on both beaches. This beach has a large number of off leash dogs.

We recommend: 1) non-essential beach driving vehicles use the adjacent roads instead of sandy beach to transit the area, 2) cones or signage be installed indicating the location of the special protection zones, 3) beach grooming be suspended or reduced to only following large deposition events within the SPZ, 4) enforcing existing dog regulations.

Bolsa Chica State Beach

Bolsa Chica SB (Appendix B, Figures 3-5) typically supports the third largest roost of between 6-60 plovers (12.5%) in OC (Ryan et al. 2017) and is immediately adjacent to the main nesting area in OC, the Bolsa Chica Ecological Reserve. In 2020, it supported 16% of roosting plovers, with the population peaking at 102 in March prior to the nesting season and returning to 101 in August following the nesting season. These were the largest roosts detected in OC in 2020 and likely pre-nesting and post-nesting staging areas. Seven nests were detected at Bolsa Chica State Beach between 20 April and 22 July in 2020 (Table 4, Appendix B, Figures 3-5). Two were within the SPZ, four were at or near the dunes near the main entrance/headquarters building, and one was in Lot 23 on asphalt. Six of the seven nests hatched chicks. One chick was captured by a member of the public and brought to a lifeguard and subsequently returned. Another chick was struck by a vehicle. We estimate that 7-14 chicks fledged.

We continue to recommend that 1) temporary enclosures be used to protect groups of roosting plovers, 2) that the SPZ recommended in Ryan et al. (2017) be expanded to include areas used in 2020 (Appendix B, Figure 5), 3) A second SPZ be established near the dunes by the main entrance, 4) that State Parks initiate a nest detection and protection plan to ensure that nests in the future are detected and protected, and 5) enforcing existing dog regulations.

Huntington State Beach

Huntington State Beach (Appendix B, Figures 6) was formerly the second largest roost in OC (20.8%), this roost only supported 7% of non-breeding plovers in 2014-15, and 11% in 2015-16 (Ryan et al. 2017). In 2020, it supported 9% of non-breeding plovers. However, numbers increased from 15 in January to 34 in March and numbers of plovers were higher (26-35) again following the nesting season (Table 3). Seven nests were detected between 19 April and 29 May at Huntington State Beach in 2020 (Table 4, Appendix B, Figures 3-5). Five of the seven nests hatched chicks (Table 4). Four nests had ME's and protective enclosures vandalized. Two of these went on to product chicks. One chick was captured by a member of the public and brought to a lifeguard and subsequently returned. Another chick was depredated by a gull.

Since the 2017 report State Parks has moved the site for large events north of the SPZ. We recommend that 1) temporary enclosures be used to protect groups of roosting plovers, 2) that the SPZ recommended in Ryan et al. (2017) be expanded to include areas used in 2020 (Appendix B, Figure 6), 3) that State Parks initiate a nest detection and protection plan to ensure that nests in the future are detected and protected, and 4) enforcing existing dog regulations.

Balboa Beach

Historically Balboa Beach (Appendix B, Figures 7-8), supported the largest roost in OC (34.7%) (Ryan et al. 2017). Currently, it supports about 30%, however, the roost was largely abandoned in 2020 supporting 0-12 plovers most of the year, with a post breeding surge of 65 and 44 plovers in August and September. No nesting occurred here in 2020. The construction of walkways, lack of protection and off-leash dogs have all likely had negative effects on this roost.

We recommend: 1) non-essential beach driving vehicles use the adjacent roads instead of sandy beach to transit the area, 2) an enclosure be set up at the main roosting area, 3) cones or signage be installed indicating the location of the special protection zones, and 4) enforcing existing dog regulations.

Crystal Cove State Park

Crystal Cove State Park (Appendix B, Figure 9) has supported 9% of the OC nonbreeding population (Ryan et al. 2017). In 2020 just one plover was detected during the January 2020 survey and the roost was ephemeral, with highs of 18 in March, 12 in October and 20 in December 2020 (Table 3). This is a very narrow beach and can become completely overwashed during extreme tidal events. There is no grooming, but it is subject to wave erosion and there are maintenance and lifeguard vehicles that patrol it.

We recommend: 1) an enclosure be set up at the main roosting area, 2) cones or signage be installed indicating the location of the special protection zones, and 3) enforcing existing dog regulations.

Salt Creek

Salt Creek (Appendix B, Figure 10) typically is the 5th largest roost in OC (10.7%), with 15-18 plovers present but in 2015-16, it was the second largest, with 23% of the OC population of plovers (Ryan et al. 2017). In 2020 it supported 24% of roosting plovers. No nests were detected here in 2020. This beach is somewhat unique, the City of Dana Point and the Monarch Beach Resort hire a falconer to drive gulls away from a small lagoon that is adjacent to the plover roosting site. The falconer is not allowed to fly the hawk, and it does not appear to have any impact on the plover roost other than them appearing to adjust the roost northward. In 2020 several roost checks were skipped due to Covid restrictions and a lack of mask-wearing by the public on the access trail to the site.

We recommend: 1) an enclosure be set up at the main roosting area, 2) cones or signage be installed indicating the location of the special protection zones, and 3) enforcing existing dog regulations.

San Onofre State Beach/Trestles

The plover roost at San Onofre State Beach/Trestles (Appendix B, Figure 11), is the 4th largest roost in OC and in 2015-16, was the second largest roost, representing 25% of the OC population. In 2020 it supported 16% (Table 3). This is a popular surfing beach. State Parks has established a post-rope fenced area in the dunes behind the beach, but it does not protect the area where the plovers usually roost (Appendix B, Figure 11). No nesting was detected here in 2020.

We recommend: 1) extending the enclosure to include the main roosting area, 2) enforcing existing dog regulations, and 3) ensuring that all lifeguards drive slowly through this beach as the plovers can be found roosting throughout the southern end of the beach.

Table 3. Counts of Snowy Plovers at Sandy Beaches in Orange County in 2020.

Beach Name(s)	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Seal Beach	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
Surfside	1	0	1	0	ns*	ns*	3	9	13	19	22	6
Sunset Beach	0	ns	11	7	2	0	ns	ns	9	ns	ns	ns
Bolsa Chica SB 1	2	11	4	4	0	ns	3	0	0	0	ns	ns
Bolsa Chica SB 2	26	48	98	56	3	4	3	101	58	89	48	63
Huntington CB 1	0	ns	ns*	ns	ns*	ns	ns	ns	0	ns	ns	ns
Huntington CB 2	0	ns	0	ns	ns*	ns	ns	ns	0	ns	ns	ns
Huntington CB 3	0	ns	ns*	ns	ns*	ns	ns	ns	0	ns	ns	ns
Huntington SB	15	12	34	18	11	6	22	28	35	26	9	1
Newport Beach 1	0	ns	8	ns	ns*	ns	ns	ns	0	ns	ns	ns
Newport Beach 2	0	ns	ns*	ns	ns*	ns	ns	ns	0	ns	ns	ns
Balboa Beach 1	30	ns	0	ns	0	ns	ns	ns	0	ns	ns	ns
Balboa Beach 2	23	1	0	5	0	0	3	65	44	5	12	11
Corona Del Mar	ns	ns	ns	ns	ns*	ns	ns	ns	0	ns	ns	ns
Crystal Cove SB 1	1	0	18	0	0	0	0	0	0	12	2	20
Crystal Cove SB 2	0	ns	ns*	ns	0	ns	ns	ns	0	ns	ns	ns
Laguna Beach 1	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Laguna Beach 2	0	ns	ns*	ns	ns*	ns	ns	ns	0	ns	ns	ns
Laguna Beach 3		ns	ns*	ns	ns*	ns	ns	ns	0	ns	ns	ns
Laguna Beach 4	ns	ns	ns	ns	0	ns	ns	ns	ns	ns	ns	ns
Salt Creek	42	34	35	ns*	0	0	1	2	29	15	28	20
Doheny SB	4	ns	ns*	ns	0	ns	ns	ns	2	12	ns	ns
Capistrano Beach 1	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Capistrano Beach 2	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
San Clemente Beach 1	ns	ns	ns*	ns	ns*	ns	ns	ns	ns	ns	ns	ns
San Clemente Beach 2	ns	ns	ns*	ns	ns*	ns	ns	ns	0	ns	ns	ns
San Onofre SB	28	21	18	0	0	0	0	2	0	20	21	27
Total Observed	172	127	227	90	16	10	35	207	190	198	142	148
Average	196	146	118	40	6	4	38	138	178	192	159	183
SD	29.9	45.4	59.6	18.6	5.3	3.5	33.5	30.6	35.7	26.9	59.8	62.8
N	8	8	13	10	6	7	7	7	8	8	8	8

2020 Beach Nesting

Table 4. Summary of Beach Nesting Snowy Plovers in Los Angeles and Orange County in 2020

Location	Detected	Eggs	Chicks	Fledglings	Notes
Los Angeles County					
Dockweiler State Beach Enclosure	1 May	3	3	1-3	ME placed 1 May, hatched 21-22 May; 28 May 3 chicks; 29 May 2 chicks; 6-11 June 1 chick
Orange County					
Sunset Beach	11 April	3	1	0-1	ME placed 11 April; protective fencing 13 April; 1 chick hatched 13 May; remaining eggs abandoned 14 May

THE WESTERN SNOWY PLOVER IN LOS ANGELES AND ORANGE COUNTIES, CALIFORNIA

Location	Detected	Eggs	Chicks	Fledglings	Notes
Bolsa Chica State Beach, Nest A	20 April	3	3	2-3	ME & fencing placed 20 April; 3 chicks observed 13 May; 2 banded chicks observed 23 May.
Bolsa Chica State Beach, Nest B	20 April	3	1	1	ME & fencing placed 20 April; 1 chick hatched 21 May; remaining eggs did not hatch.
Bolsa Chica State Beach, Nest C	20 April	3	2	2	ME & fencing placed 20 April; 2 chicks observed 11-20 May; 3 rd egg abandoned.
Bolsa Chica State Beach, Nest D	6 May	3	0	0	Parking lot, no ME, protective fencing 6 May; 20 May two eggs found cracked; 3 rd egg abandoned.
Bolsa Chica State Beach, Nest E	15 May	3	3	0-3	ME & fencing placed 15 May; 3 chicks hatched 10 June; 3 chicks banded 14 June, one resighted 18 June.
Bolsa Chica State Beach, Nest F	24 June	3	3	1-3	ME & fencing placed 24 June; 3 chicks hatched on 24 July; one chick removed by public, brought to lifeguard, rehab on 28 July, and released on 29 July with a male
Bolsa Chica State Beach, Nest G	22 July	3	3	1-2	ME & fencing placed 22 July; 3 chicks hatched 1 August, one found dead on 8/2 due to vehicle strike
Huntington SB, Nest 1	19 April	3	3	1-3	ME & fencing placed 19 April; 3 chicks hatched 10 June; 3 chicks banded; one observed through 7 June.
Huntington SB, Nest 2	23 April	3	3	3	ME & fencing placed 23 April; 3 chicks hatched 25 April; 3 chicks banded; one observed through 7 June.
Huntington SB, Nest 3	24 April	3	3	1-3	ME & fencing placed 24 April; 3 chicks hatched 25 May; 3 chicks banded; one chick observed through 8 June.
Huntington SB, Nest 4	26 April	3	0	0	ME & fencing placed 26 April; ME was vandalized and eggs removed and smashed on 28 May.
Huntington SB, Nest 5	7 May	3	1	0	ME & fencing placed 7 May; on 17 May nest was vandalized, one egg was removed; one chick hatched 23 May; the chick was likely depredated by a gull.
Huntington SB, Nest 6	13 May	3	2	0-2	ME & fencing placed 13 May; nest vandalized, one egg missing; 2 chicks hatched 7 June; one chick captured then returned to adult
Huntington SB, Nest 7	21 May	3	0	0	ME & fencing placed 21 May; the ME was vandalized and all three eggs destroyed on 28 May.
TOTAL		48	31	13-29	

After not nesting on coastal sandy beaching in LAC in 46 years plovers have nested successfully in 2017, 2018 (Ryan et al. 2019) and 2020. The nest within the enclosure at Dockweiler was detected, protected, and hatched three (100%) chicks, between 1 and 3 fledged (33-100%).

Even greater success was observed in OC in 2020. After four plover nests were detected at Huntington SB with three others on Navy property at Seal Beach in 2019. In 2020, 15 nests were detected on coastal sandy beaches, one at Sunset Beach, seven at Bolsa Chica SB, and seven at Huntington SB. A total of 45 eggs were laid, 28 hatched (62%), and between 12 and 26 chicks fledged (27-93%). Of the eggs that did not hatch, seven were from nests that were vandalized by humans (see above), two were found cracked by an unknown source, and the rest were abandoned by adults. Two chick mortalities were observed, one chick was eaten by a gull and another struck by a vehicle. Fledging estimates provided are not reliable because efforts mostly focused on nest detection and then protection. Once chicks hatched, they quickly dispersed, and no attempt was made to specifically track and count them. Biologists and volunteers reported observations as part of nest detection and protection activities. The actual number of fledglings likely is somewhere between 12 and 26.

We suspect that the Covid-19 closures of the campground at Bolsa Chica SB and parking lots at and near Sunset, Bolsa Chica SB, and Huntington SB and then hard closures just prior to the nesting in April led to an increase in the total number of plovers nesting on the sandy beaches in OC. In addition, in OC there has been both a gradual recent increase in plovers nesting on sandy beaches and high numbers of chicks fledging from nearby Bolsa Chica ER that likely increased the number of plovers present on these beaches to take advantage of the closures.

ME's were used on all nests in LA and OC, no adult depredation was observed associated with the ME's and no raptors or corvids were observed focusing on them. The main potential nest predators on these beaches are pet dogs being illegally walked on-leash and running off-leash and American Crows, with lesser numbers of Common Raven and raptors. Without the ME's we suspect that many of these nests would be depredated by dogs and crows. The ME's are likely a vital element in their success.

However, the ME's did attract vandals. Both State Parks and State and Federal Wardens were made aware of each incident and patrols by law enforcement were increased. With these being public beaches, it is impossible to protect the ME's continuously. We recommend that patrols continue to be increased near nests and cameras with motion detectors be used to remotely monitor nests and human activities within the buffers. We recommend additional signage both educating the public and including the applicable codes law enforcement may need for prosecution of individuals found vandalizing nests.

The only nest in LAC occurred within the protective enclosure at Dockweiler SB. Plovers were observed at both the Bay Foundation Enclosure at Santa Monica and Malibu Lagoon. Scrapes were observed at Malibu Lagoon. However, at Malibu Lagoon the beach was over washed during both the April and May high tides due to the lower configuration of the sand bar. At Santa Monica dog tracks were regularly found within the Bay Foundation Enclosure and homeless made encampments at its border. While there are similar broad, sandy beaches in LAC that were also closed, beach grooming continued at these beaches during closures. This likely prevented additional increased nesting as was seen in OC.

Color band Combinations Read in LA and OC

Table 5. Color Band Combinations Read in LA and OC in 2020.

Band Combo	Observed 2020	Natal/Banding Site
Los Angeles County		
bb:pa	Zuma Beach	Oceano Dunes SVRA
Yy:ob	Zuma Beach	Monterey Bay
vv:yv	Zuma Beach	Oceano Dunes SVRA
y:pb	Zuma Beach	Unknown
g:yg	Malibu State Beach	Unknown
gv:b?	Santa Monica Beach	Unknown
nr:bo	Santa Monica Beach	Vandenberg Air Force Base
?O:YO	Santa Monica Beach	Unknown
BG:BA	Santa Monica Beach	Monterey Bay
yn:ro;	Dockweiler SB	Bolsa Chica ER/Wetlands and Wildlife Care Center
no/nr:yo	Dockweiler SB	Vandenberg Air Force Base
ga:ay	Hermosa Beach	Oceano Dunes SVRA
Orange County		
y?:bg	Bolsa Chica SB	Unknown
wa:or	Bolsa Chica SB	Monterey Bay
kr:po	Bolsa Chica SB	Naval Base Coronado
wp:gb	Bolsa Chica SB	Bolsa Chica SB
yn:ro	Bolsa Chica SB	Bolsa Chica ER/Wetlands and Wildlife Care Center
kr:yg	Bolsa Chica SB	Naval Base Coronado
kr:ya	Bolsa Chica SB	Naval Base Coronado
yn:ag	Bolsa Chica SB	Bolsa Chica ER/Wetlands and Wildlife Care Center
O:Fg(BA)	Bolsa Chica SB, Trestles	Huntington State Beach
wk:pl	Bolsa Chica SB	Unknown
yn:oy	Huntington SB	Bolsa Chica ER/Wetlands and Wildlife Care Center
Kp:yp	Huntington SB	Marine Corps Base Camp Pendleton
Maroon flag S6	Huntington SB	Ensenada
yn:oy	Huntington SB	Bolsa Chica ER/Wetlands and Wildlife Care Center
yn:gw	Salt Creek	Bolsa Chica ER/Wetlands and Wildlife Care Center
O:Fg(A7)	Salt Creek	Marine Corps Base Camp Pendleton
yn:x	Salt Creek	Bolsa Chica ER/Wetlands and Wildlife Care Center
Oy:gg	Trestles	Marine Corps Base Camp Pendleton
Ol:aa	Trestles	Marine Corps Base Camp Pendleton
Po:pg	Trestles	Marine Corps Base Camp Pendleton

In 2020, most color banded plovers in LAC originated from colonies north of LAC in central California. This is similar to findings reported in (Ryan et al. 2010). Most color banded plovers in OC originated in either OC at the Bolsa Chica ER or from San Diego County, south of OC.

Recommendations

We strongly support recommendations made by the USFWS's January 2016 letter to State Parks (attached). This would include the establishment of Special Protection Zones (SPZs) 500 ft from the center points of all existing snowy plover roosts in LAC and OC (Appendix A and B, Ryan et al. 2017). Within the SPZs there are recommendations for restrictions on mechanical beach raking, beach driving, increase off-leash dog enforcement, and limit large-scale recreational activities. It would also provide for protected areas, using fencing to protect sections of beach where the plovers regularly roost and may nest. These protections would likely encourage an increase in dune creation, dune vegetation and increased accumulation of kelp wrack. These would all be beneficial to roosting and nesting snowy plovers. We recommend continued monitoring of these sites during the breeding season for additional nesting events and protecting those events when they occur.

Protective Measures for Western Snowy Plover

USFWS acknowledged: a) the importance of overwintering habitat by including such areas in critical habitat designated; b) that beach grooming decreases wrack-associated invertebrates, removes nesting habitat; and likely destroys nest scrapes and eggs; and c) that other activities that could lead to disturbance of plovers include recreational use, vehicular traffic, domestic animals, and predators attracted to human refuse.

They recommended that, "efforts to protect wintering western snowy plovers on Los Angeles County Beaches should be implemented within 500 feet of the central roost location (see roost maps, Appendix A). The following measures should be implemented from the arrival of the first returning western snowy plovers in July until they depart in April to May each year. At beaches where nesting has occurred, these measures should be implemented year-round for the entirety of California Department of Parks and Recreation (State Parks) property. For all beaches in LAC and OC, these areas should be referred to as "Special Protection Zones" and managed and maintained differently from adjacent areas of beaches without roosting western snowy plovers.

Routine Operation of Vehicles and Heavy Machinery

All drivers of vehicles and machinery that are operated on sections of beach where western snowy plovers occur should receive annual training per a Service approved program to avoid western snowy plovers. Training logs should be kept for all staff. State Parks staff should have successfully completed the Beach Driving Operations Training Course and annual refresher courses.

Vehicles should avoid operating within SPZs, with the exception of activities such as essential patrols, trash pick-up and other activities agreed to by Wildlife Agencies as being essential. Vehicles simply transiting between points should not be allowed within these areas. This is especially true for beaches with access roads and parking lots immediately inland. For Surfrider Beach specifically, the following measures should be implemented: 1) all beach vehicle operation will be limited to emergency response activities (e.g., Code "R" responses; rescue preventions, including boat warnings; urgent law enforcement issues; and emergency medical service calls); and 2) if heavy equipment is needed onsite for emergency activities (boat rescue, structure protection) or other projects consistent with State Park's mission, State Parks resource staff will be contacted for approval prior to accessing the site, and as needed, to provide monitoring for vehicles at all times when onsite.

Visible markers, possibly with signage should be placed within 100 feet of the top of the beach slope and at the inland comers of the Special Protection Zones to remind vehicle operators of their presence (this is not applicable at State Park's section of Surfrider Beach because the entire area is within a SPZ).

When essential activities must occur, vehicles should remain below a maximum 10 miles per hour speed limit and if western snowy plovers are encountered, the driver should back up at least 50 feet and/or alter their route to avoid flushing plovers.

Beach Maintenance and Clean-up

Regular sand grooming should be discontinued within SPZs. This activity both flushes the birds and removes important foraging resources (e.g. surf-cast kelp). These small areas should be cleaned by hand crews, trained in western snowy plover avoidance. If mechanical clean-up is necessary, it should be done in the presence of a qualified western snowy plover monitor who will locate the roosting plovers and ensure that machinery does not flush or disturb them.

For Surfrider Beach, as agreed to by State Parks and Los Angeles County, sand grooming is not permitted at Surfrider Beach on State Park's property. Wrack is to be left in place and trash removed by hand. Similarly, sand grooming is not done on OC State Parks beaches.

Recreational Activities

"Refuge Areas" should be created using symbolic fencing or another barrier deemed suitable for this use during periods of high beach use at popular beaches beginning in July at roost beaches and year-round at nesting beaches. These should be erected in a 300-foot diameter (or other configuration suitable for the beach, but roughly 300 feet long) around the traditional center of the plover's roosting areas. Signage should be placed on the barrier such as has been done at Surfrider Beach in Malibu (which used signs made by local school children).

Large-scale recreational activities such as triathlons, surf camps, beach volleyball camps, concerts, etc. should not be permitted within the SPZs. Docents should visit camps adjacent to the SPZs to talk to participants about western snowy plovers. Enforcement of existing regulations for off-leash dogs should be increased within the SPZs.

Western Snowy Plover Awareness Training

Any staff personnel that operate motorized vehicles on LAC or OC beaches should be required to attend annual training to increase their awareness of western snowy plovers. This training should include a short instructional tutorial that describes the biology of the western snowy plover, its habitat and life history, its legal status, and the consequences of violating the Act. The tutorial slide show (e.g., power point type presentation) or informational hand-out would be developed by the FWS with input from respective agencies, CDFW, and the LAAS. In addition to the tutorial, staff should view a video provided by the FWS that demonstrates safe driving techniques on beaches with sensitive wildlife. Staff members should be required to sign a statement acknowledging they have viewed and understand the tutorial and video. The signed statement would be kept on file with the respective agencies in the employee's record.

Habitat Conservation Plan

Although these measures should help reduce the potential for take of western snowy plovers, take, as defined earlier, is still likely to occur. And any take of listed species that would result from activities on beaches would require either (a) exemption from the prohibitions against take in section 9 of the Act pursuant to section 7 or (b) take authorization pursuant to section 10(a)(1)(B) of the Act. Unless a Federal nexus exists that could cover the entire action area under an interagency consultation pursuant to section 7, we recommend that beach management agencies seek an incidental take permit through the habitat conservation planning process, pursuant to section 10(a)(1)(B) of the Act.

Task 1.a. Volunteer Training and Coordination.

In Los Angeles County, we offered in-person training opportunities in January 2020. However, covid-19 restrictions precluded in-person training from March through December 2020. We offered on-line training opportunities through Zoom on 24 July, 28 July, 29 August, and 13 September. The 29 August and 13 September sessions were conducted collaboratively with Sea & Sage Audubon, and a collaborative zoom-based training was scheduled for 9 January 2021.

We were able to coordinate volunteers for the January, March, and September county-wide surveys. Beach closures prevented access to survey routes during the May window, and volunteers were not coordinated for the May survey. Volunteers submitted anecdotal observation between survey windows, and these observations were included in monthly reports. In September In Los Angeles County, the volunteer coordinator offered three in-person opportunities for new volunteers to participate in a survey in order to gain supervised experience. Groups were capped at under 10 individuals, with masks and social distancing required and enforced by the volunteer coordinator. Overall in Los Angeles County, 61 volunteers contributed over 230 hours to plover monitoring during the January, March, and September surveys.

In Orange County we offered on-line Zoom training opportunities on 29 August and 13 September. These sessions, and one scheduled for 9 January 2021, were conducted collaboratively with Los Angeles Audubon. Recruitment was conducted through chapter newsletter, website and social media. Seventeen new volunteers completed the on-line training in 2020.

We were able to coordinate volunteers for the January, March and September surveys, however Covid restrictions prevented volunteers from completing the March survey. In addition, the May beach wide survey was cancelled for volunteers. All surveys conducted March 2020 and after were completed under advisement to follow local Health Department COVID-19 Pandemic response orders and safety precautions.

Overall, in Orange County 45 volunteers contributed 254 hours to plover monitoring during the 2020 surveys. Sea and Sage Audubon volunteers contributed 160 volunteer hours on other tasks related to the surveys, such as, training, social media, website and newsletters notices, Volunteer Certificates of Appreciation and Zoom training facilitation.

Task 2. Seasonal Enclosure Coordination and Maintenance

Los Angeles Audubon staff continued to maintain the wooden drift fencing enclosure at Dockweiler Beach. Access to this site was challenging in April and May because of beach closures and because the RV park near the main entrance is being used as a staging area for Covid- 19 response activities. However, LACo Beaches & Harbors provided us with an access permit during beach closure period at this site. On 21 May, LA Audubon staff coordinated with LACo Beaches & Harbors to set up a post-and-rope buffer 100 feet north and south of the existing wooden fencing, in order to provide greater protection to nesting plovers. LACo Beaches & Harbors worked with USFWS to acquire supplies, and Los Angeles Audubon provided the labor for set-up. On 24 September Los Angeles Audubon staff removed the post-and-rope buffer area surrounding the wooden drift fence and replaced damaged posts and rope along the open side of the enclosure. Throughout the summer and fall months, beachgoers frequently removed wooden slats from the drift fence for use in illegal beach fires. On 12 November, Los Angeles Audubon staff replaced and repaired damaged wooden drift fencing at this site.

In 2020 at Malibu Lagoon, the narrow, over-washed beach configuration, as well as beach closures, prevented the usual coordination with California State Parks and volunteers to set up post-and-rope fencing to provide a protected area for plovers and terns. [see Appendix E for photos]

Task 3.a. Los Angeles County Community Outreach/Education

Covid-19 restrictions drastically impacted our outreach efforts during 2020. Prior to restrictions, we completed a beach ecology sketch-and-walk at the Annenberg Community Beach House attended by 24 participants on January 19, 2020. We also completed nine in-school presentations and seven public school field trips to Dockweiler Beach. However, once school and beach closures were implemented, all remaining in-person scheduled field trips for the 2019-2020 school year were cancelled. We began to adapt field trip programming to an online format [see Appendix F]. On 22 May, we provided a presentation to Dr. Alison Lipman's EEB154 class at the UCLA Dept. of Ecology & Evolutionary Biology (20 students). In July, we created educational content for the Housing Authority of the City of Los Angeles's (HACLA) Summer Youth Employment Program, and plover and tern conservation and stewardship was included as part of the content, with the potential to reach hundreds of high school age youth when HACLA implements their program. During the fall semester of the 2020-2021 school year, we completed 26 in-class Zoom sessions at schools, reaching eight Los Angeles Unified School District (LAUSD) schools, two after-school programs, and a Cal Poly Pomona upper division science course. These activities will continue through the Spring 2021 semester.

Task 3.b. Orange County Community Outreach/Education

Youth Presentations: Youth programs were scheduled for June and July 2020 at Coastal and Marsh Camps at the San Joaquin Wildlife Sanctuary in Irvine (where in 2019 we had given the program to two groups of a total of 40 youths aged 9 to 12 years and one group of youths aged 13 to 17 years. In 2020, these camps were cancelled due to Covid restrictions.

Adult Presentations: On February 27, 2020, 48 volunteers of the Irvine Ranch Conservancy attended our program on Snowy Plovers on Orange County Beaches and information on the OC Surveys. The program included a comparison with the Least Tern, another beach nester. On March 12 we presented a Snowy Plover talk to 26 members at a lunch meeting of a local coastal women's club. The program included information on the Least Tern and other birds on the beach. The club members asked how to become involved in the survey and how to sign up for the field trip scheduled for the next week.

Snowy Plover Field Trips: Due to Covid restrictions we had to cancel the March 2020 Sunset Beach field trip and were not able to resume in-person field trips later in the year. We hope it will be possible to find a way to conduct some field trips in 2021, perhaps in very small groups or at viewing stations.

Task 4. Project Administration and Meetings

Stacey Vigallon attended the Recovery Unit 5 meeting on 3 December, and Tom Ryan attended the Recovery Unit 6 meeting on 8 December. In January 2021, we plan to attend the Snowy Plover Range-

wide meeting, the Beach Ecology Coalition winter meeting, and we have scheduled a workshop with LACoBH, wildlife agencies, and other stakeholders. Cheryl Egger attended the Snowy Plover Range-wide meeting on 8-9 January 2020 and planned to attend the Recovery Unit 6 meeting on 8 December 2020. Cheryl plans to attend the Range-wide meeting 11-12 January 2021. Cheryl Egger and Susan Sheakley plan to attend the Spring Beach Ecology Coalition meeting.

Task 5. Reporting Monthly & Annual Reports

Reports were submitted to CDFW and partners each month in 2020. This annual report has been prepared and submitted.

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Appendix A: Los Angeles County Roost Maps with Special Protection Zones

Figure 1. Zuma Beach



Figure 2. Malibu Lagoon



Figure 3. Santa Monica



Figure 4. Venice Beach

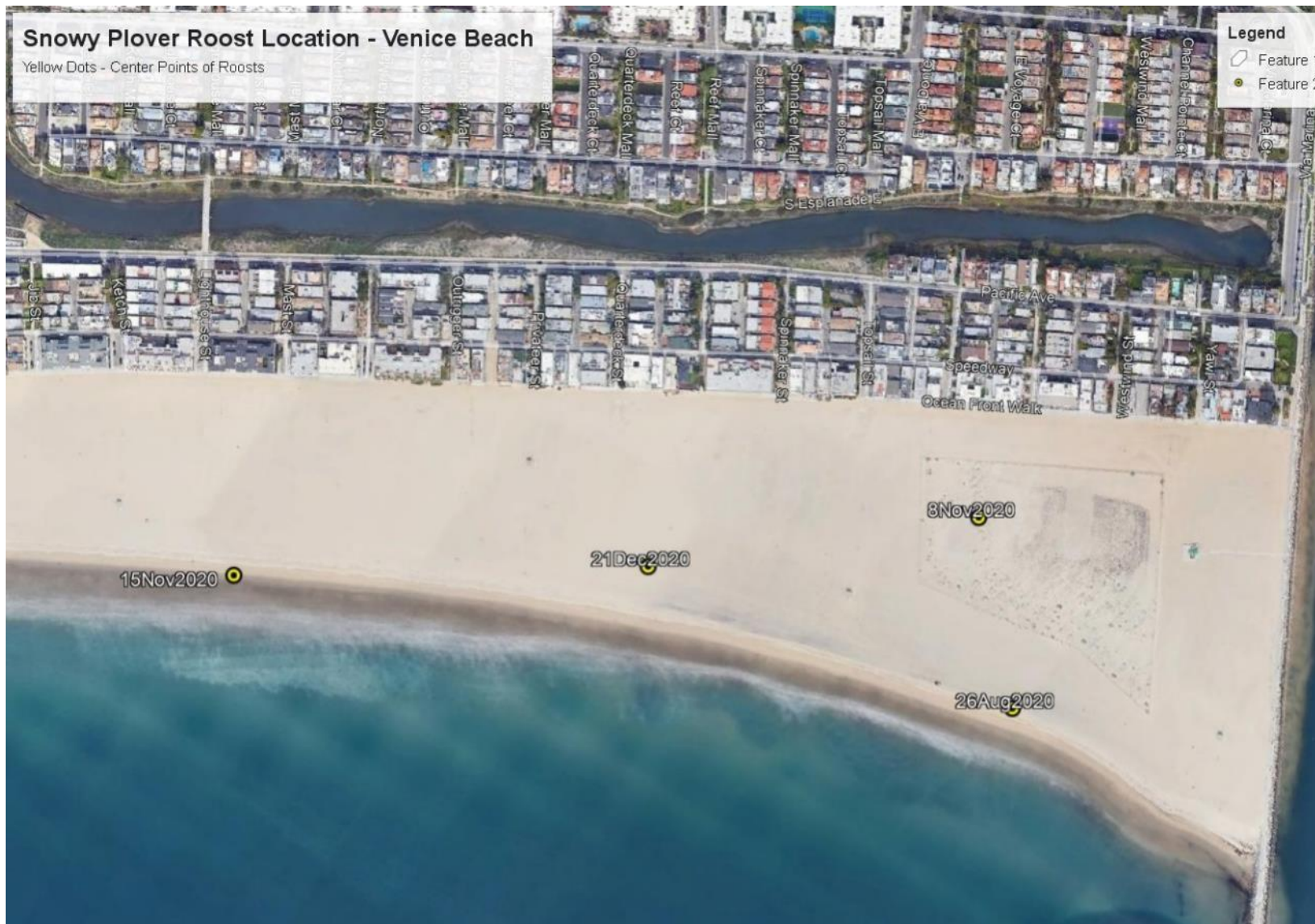


Figure 5. Dockweiler North



Figure 6. Dockweiler Central

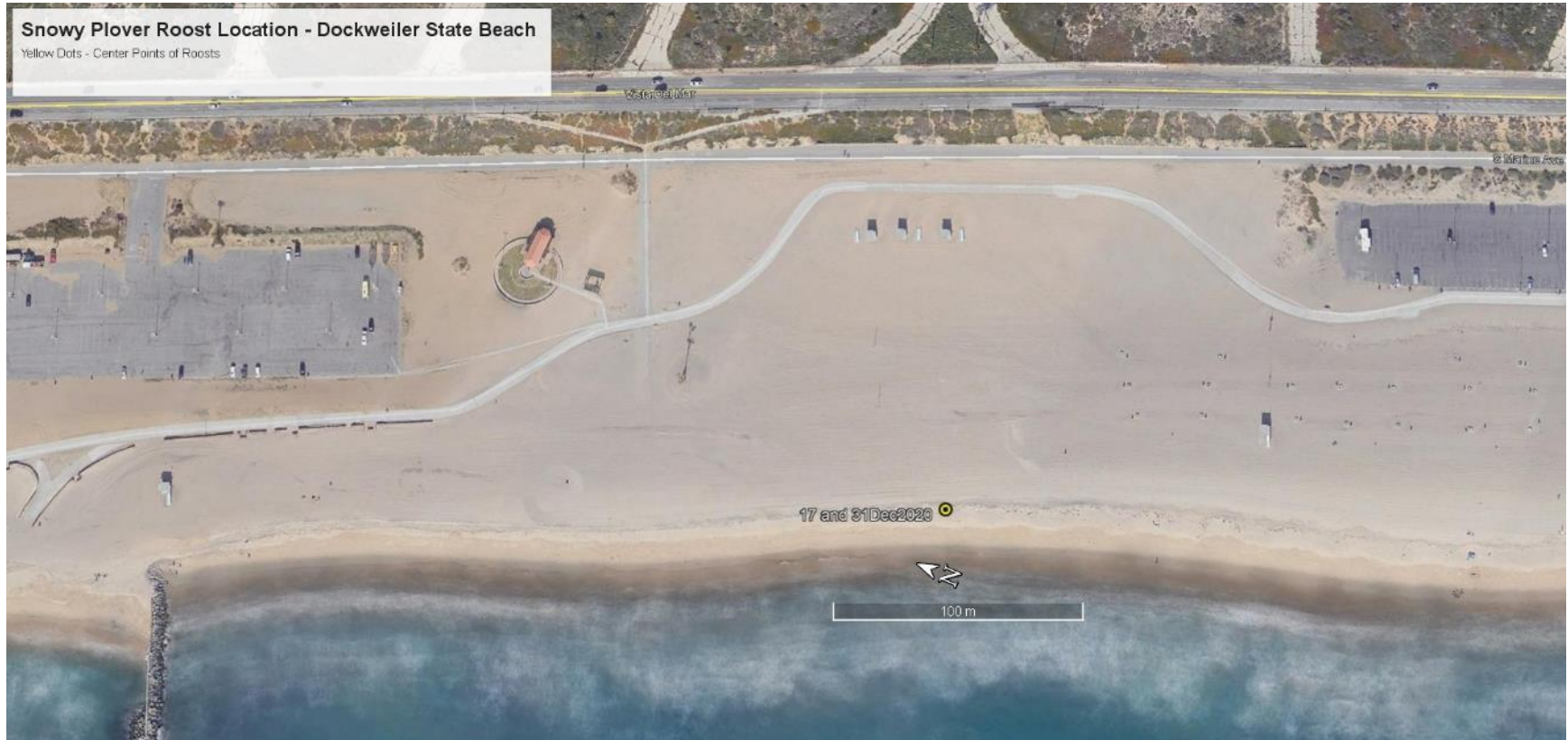


Figure 7. Dockweiler South



Figure 8. Hermosa Beach



Appendix B: Orange County Roost Maps with Special Protection Zones

Figure 1. Surfside Beach



Figure 2. Sunset Beach

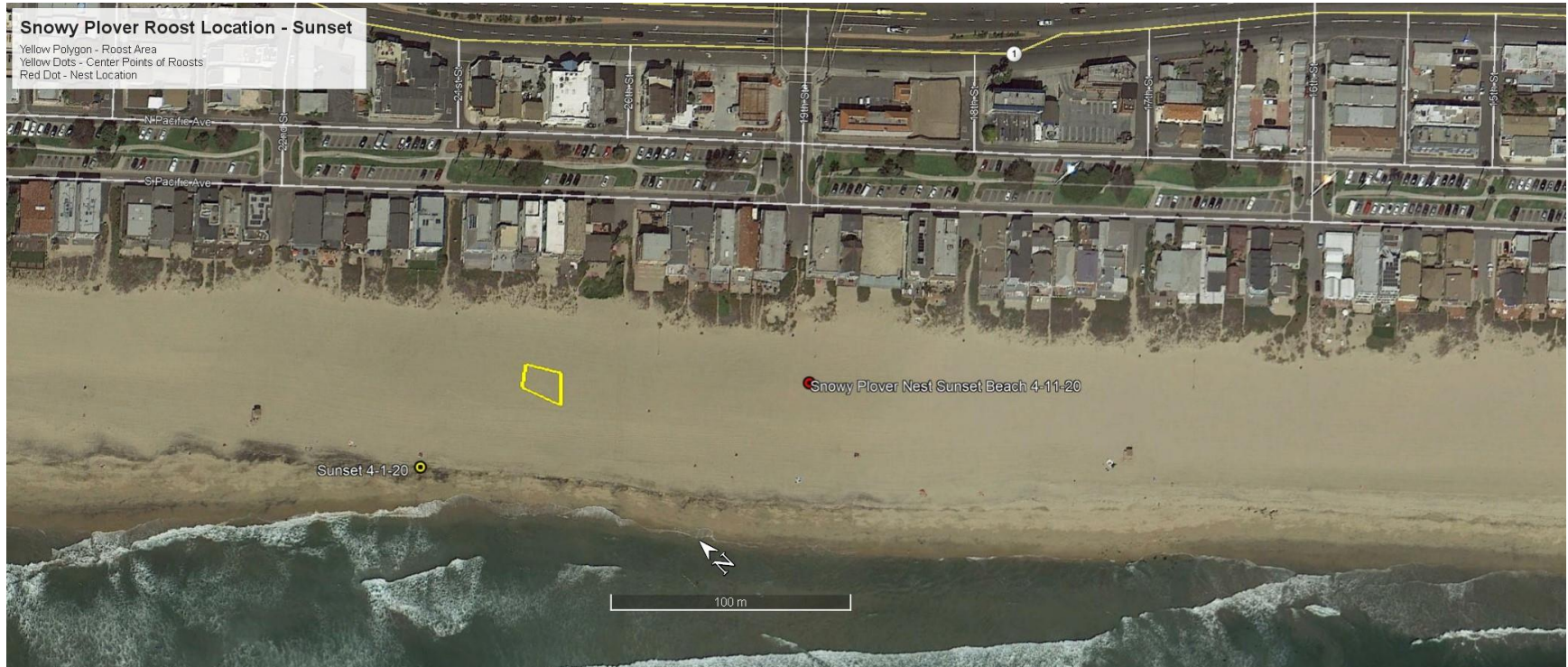


Figure 3. Bolsa Chica State Beach North

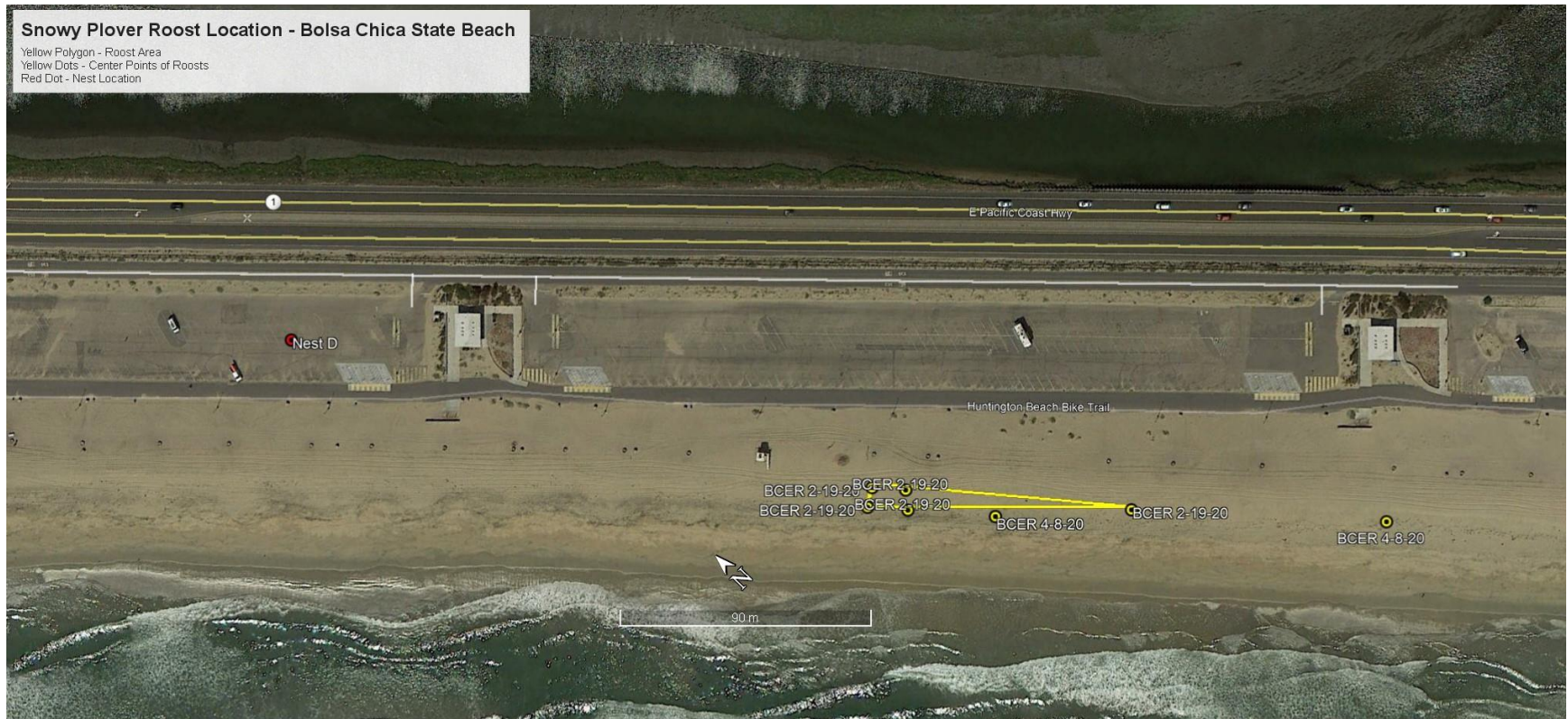


Figure 4. Bolsa Chica State Beach Central



Figure 5. Bolsa Chica State Beach South



Figure 6. Huntington State Beach



Figure 7. Balboa Beach North/West

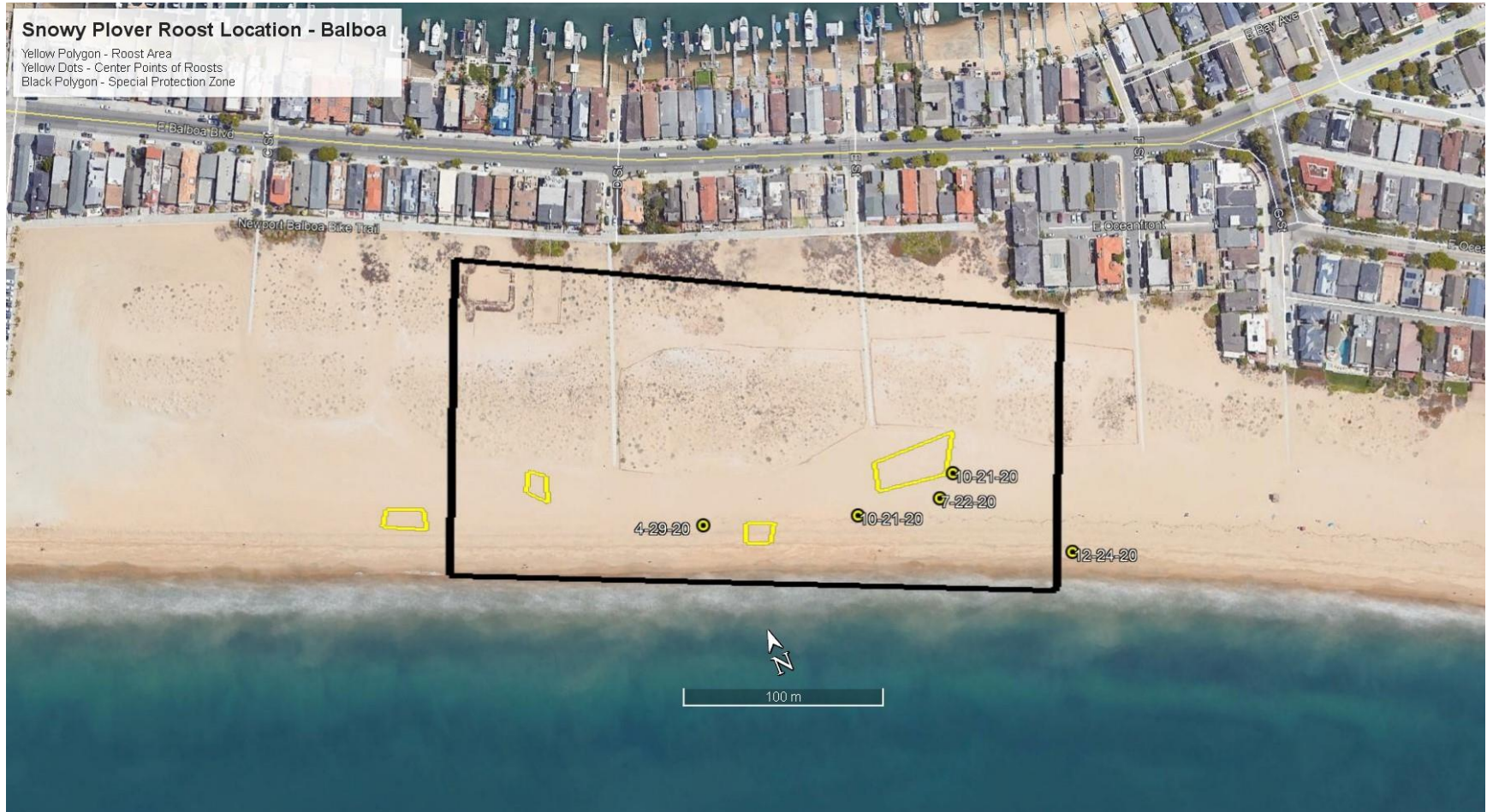


Figure 8. Balboa Beach South/East

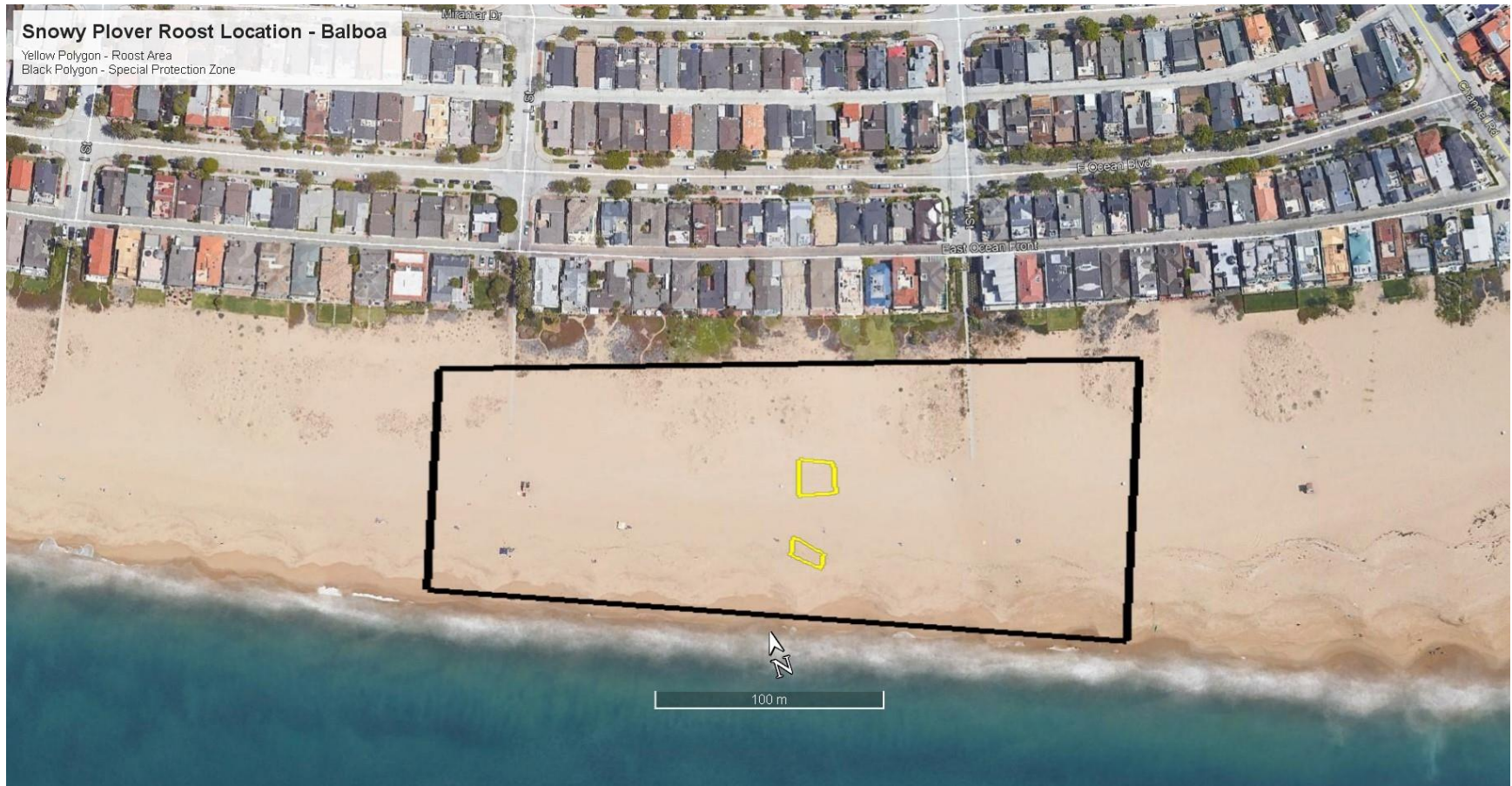


Figure 9. Crystal Cove State Beach



Figure 10. Salt Creek Beach



Figure 11. San Onofre State Beach/Trestles



Appendix C: USFWS January 19, 2016 Letter



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003



IN REPLY REFER TO:
08EVEN00-2015-CPA-0067

January 19, 2016

Jamie King, Environmental Scientist
California Department of Parks and Recreation, Angeles District
1925 Las Virgenes Road
Calabasas, California 91302

Subject: Protective Measures for Western Snowy Plovers on Beaches in Los Angeles County, California

Dear Ms. King:

We, the U.S. Fish and Wildlife Service (Service), are contacting you and other beach administrators and stakeholders who have an interest in western snowy plovers (*Charadrius nivosus nivosus*), recreation, management, and operations on beaches in Los Angeles County. Western snowy plovers are known to winter on beaches in Los Angeles County and have attempted to nest at Surfrider Beach in Malibu. After a series of discussions, meetings, and electronic mail exchanges with beach administrators, stakeholders, and western snowy plover experts, we have developed some measures we recommend to help protect this species on beaches in Los Angeles County and not interfere with continued recreation activities, and beach management operations.

The Service's responsibilities include administering the Endangered Species Act of 1973, as amended (Act), including sections 7, 9, and 10. Section 9 of the Act and its implementing regulations prohibit the taking of any federally listed endangered or threatened species. Section 3(19) of the Act defines take to mean to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Service regulations (50 CFR 17.3) define harm to include significant habitat modification or degradation which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. Harassment is defined by the Service as an intentional or negligent action 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. Exemptions to the prohibitions against take in the Act may be obtained through coordination with the Service in two ways. If a project is to be funded, authorized, or carried out by a Federal agency and may affect a listed species, the Federal agency must consult with the Service, pursuant to section 7(a)(2) of the Act. If the proposed project does not involve a Federal agency, but may result in the take of a listed animal species, the project proponent should apply to the Service for an incidental take permit, pursuant to section 10(a)(1)(B) of the Act. To

qualify for the permit, a project proponent would need to submit an application to the Service together with a habitat conservation plan (HCP) that describes, among other things, how the impacts of the proposed taking of federally listed species would be minimized and mitigated and how the plan would be funded. A complete description of the requirements for a HCP can be found at 50 CFR 17.32 or our website (<http://www.fws.gov/ventura>).

The Pacific coast population of the western snowy plover was listed as threatened on March 5, 1993 (58 Federal Register (FR) 12864) under the authorities of the Act. Critical habitat for the species, which includes Zuma Beach (Unit CA 43), Malibu Beach (Unit CA 44), Santa Monica Beach (Subunit CA 45A), Dockweiler North (Subunit CA 45B), Dockweiler South (Subunit CA 45C), and Hermosa State Beach (Subunit 45D), was designated on June 19, 2012 (77 FR 36728).

Ryan et al. (2014) determined that western snowy plovers in Los Angeles County overwinter at seven primary spots. These overwintering sites are within critical habitat for the subspecies and include locations at Zuma Beach (near Lifeguard Tower 9 and Zuma Lagoon), Malibu Lagoon (Surfrider Beach), Santa Monica Beach, Dockweiler State Beach (near Lifeguard Tower 58), Hermosa Beach, and Cabrillo Beach. Ryan et al. (2014) also reported that western snowy plovers occasionally overwinter at sites at Leo Carrillo State Beach, Paradise Cove, Dan Blocker County Beach, Big Rock Beach, Will Rogers State Beach, Venice Beach, central Dockweiler State Beach, El Segundo Beach, Manhattan Beach, Redondo Beach, and Terminal 400 in Los Angeles Harbor.

Western snowy plovers exhibit strong fidelity to overwintering sites, returning to the same beaches every year after nesting elsewhere and migrating. Overwintering habitat is important for western snowy plovers and other migratory shorebirds because the time spent at these sites is when these birds build fat reserves for spring migration and the upcoming breeding season. Overwintering sites also provide connectivity for dispersal between breeding sites. Furthermore, with appropriate management, sites that currently support only wintering western snowy plovers have the potential to attract new nesting western snowy plovers with appropriate management. This has been demonstrated at Coal Oil Point, Santa Barbara County, and Hollywood Beach, Ventura County. Western snowy plovers also made a nesting attempt at Surfrider Beach, Malibu, Los Angeles County, after overwintering there. The importance of overwintering beaches to the western snowy plover tends to be overlooked and discounted when it comes to conservation of the subspecies, with more attention being given to known breeding locations. However, the Service acknowledged the importance of overwintering habitat for the western snowy plover by including such areas in the critical habitat designated for the subspecies in June 19, 2012 (77 FR 36728).

We understand that beaches in Los Angeles County, including the seven aforementioned overwintering sites, experience disturbance from mechanical raking (i.e., beach grooming) for removal of garbage, kelp, and other debris. Dugan et al. (2003) reports that over 160 kilometers of southern California sandy beaches are groomed regularly and that grooming decreases the species richness, abundance, and biomass of wrack-associated invertebrates that are likely important western snowy plover prey resources. Beach grooming also removes favorable nesting habitats and likely destroys nest scrapes and eggs.

Other activities occurring on Los Angeles County beaches that could lead to the disturbance of overwintering western snowy plovers include recreational use, vehicular traffic (e.g., lifeguard patrols), domestic animals (i.e., dogs), and predators attracted to human refuse (i.e., trash). Recreational activities such as sunbathing, swimming, dog walking, and sports, require support services such as police and lifeguard patrols, water quality monitoring, erosion control, and trash pick-up, which increase the presence of vehicles on the beach. Vehicles driven on the beach have struck and killed western snowy plovers, as well as other shorebirds, in Los Angeles County. For example, on January 9, 2007, a western snowy plover was found dead by volunteer monitors on Zuma Beach in a fresh tire track due to a vehicle strike. The only vehicle observed on the beach that morning was a Lifeguard truck conducting routine patrols. On, August 19, 2013, a California State Park monitor witnessed another western snowy plover being struck by a Lifeguard vehicle during routine patrols. In this particular case, the western snowy plover initially survived the strike with a crushed head and was transported to a rehab center in Los Angeles; however, the plover died from the injury. Other instances have also been documented of black-bellied plovers (*Pluvialis squatarola*) being struck by vehicles at Dockweiler State Beach on March 17, 2009, and November 24, 2009.

The mere presence of dogs on the beach is harmful to western snowy plovers, causing them to flush frequently, unnecessarily expending energy reserves, as well as spending less time foraging (Lafferty 2001). In addition to expending more energy evading dogs and spending less time foraging, there are instances when dogs actually capture and kill or injure western snowy plovers. For example, at Surfside Beach, Orange County, California, a western snowy plover was captured by a dog in September 2009, but was recovered, rehabilitated and released (Ryan and Hamilton 2009). Also at Coal Oil Point, Santa Barbara County, California, one western snowy plover chick was killed by an unleashed dog (Lafferty et al. 2006).

Because monitoring of overwintering western snowy plovers is extremely limited at some locations, if it occurs at all, we believe the impacts to western snowy plovers from beach grooming, recreational activities, vehicular traffic, dogs, and predators attracted to food and trash to beaches is much greater than what we observe. Furthermore, the discovery of a dead or injured western snowy plover is unlikely because the bodies of these birds are taken by scavengers or removed by the daily beach grooming activities.

Efforts to protect wintering western snowy plovers on Los Angeles County Beaches should be implemented within 500 feet of the central roost location. The following measures should be implemented from the arrival of the first returning western snowy plovers in July until they depart in April to May each year. Specifically, at Surfrider Beach in Malibu these measures should be implemented year-round for the entirety of California Department of Parks and Recreation (State Parks) property. For all beaches in Los Angeles County, these areas should be referred to as "Special Protection Zones" and managed and maintained differently from adjacent areas of beaches without roosting western snowy plovers.

Recommendations for Special Protection Zones.

Routine Operation of Vehicles and Heavy Machinery

- All drivers of vehicles and machinery that are operated on sections of beach where western snowy plovers occur should receive annual training per a Service approved program to avoid western snowy plovers. Training logs should be kept for all staff. State Parks staff should have successfully completed the Beach Driving Operations Training Course and annual refresher courses.
- Vehicles should avoid operating within Special Protection Zones, with the exception of activities such as essential patrols, trash pick-up and other activities agreed to by wildlife agencies as being essential. Vehicles simply transiting between points should not be allowed within these areas. For Surfrider Beach specifically, the following measures should be implemented: 1) All beach vehicle operation will be limited to emergency response activities (e.g., Code “R” responses; rescue preventions, including boat warnings; urgent law enforcement issues; and emergency medical service calls); and 2) If heavy equipment is needed onsite for emergency activities (boat rescue, structure protection) or other projects consistent with State Park’s mission, State Parks resource staff will be contacted for approval prior to accessing the site, and as needed, to provide monitoring for vehicles at all times when onsite.
- Visible markers, possibly with signage should be placed within 100 feet of the top of the beach slope and at the inland corners of the Special Protection Zones to remind vehicle operators of their presence. (This is not applicable at State Park’s section of Surfrider Beach because the entire area is within a Special Protection Zone).
- When essential activities must occur, vehicles should remain below a maximum 10 miles per hour speed limit and if western snowy plovers are encountered, the driver should back up at least 50 feet and/or alter their route to avoid flushing plovers.

Beach Maintenance and Clean up

- Regular sand grooming should be discontinued within Special Protection Zones. This activity both flushes the birds and removes important foraging resources (e.g. surf-cast kelp). These small areas should be cleaned by hand crews, trained in western snowy plover avoidance. If mechanical clean-up is necessary, it should be done in the presence of a qualified western snowy plover monitor who will locate the roosting plovers and ensure that machinery does not flush or disturb them.
- For Surfrider Beach, as agreed to by State Parks and Los Angeles County, sand grooming is not permitted at Surfrider Beach on State Park’s property. Wrack is to be left in place and trash removed by hand.

Recreational Activities

- “Refuge Areas” should be created using symbolic fencing or another barrier deemed suitable for this use during periods of high beach use at popular beaches in July, August, and September. These should be erected in a 300-foot diameter (or other configuration suitable for the beach, but roughly 300 feet long) around the traditional center of the plover’s roosting

areas on popular beaches such as Zuma, Dockweiler State Beach 58, and Hermosa Beach. Signage should be placed on the barrier such as has been done at Surfrider Beach in Malibu (which used signs made by local school children).

- Large-scale recreational activities such as triathlons, surf camps, beach volleyball camps, etc. should not be permitted within the Special Protection Zones. Docents should visit camps adjacent to the Special Protection Zones to talk to participants about western snowy plovers.
- Enforcement of existing regulations for off-leash dogs should be increased within the Zones.

Western Snowy Plover Awareness Training

Any staff personnel that operate motorized vehicles on Los Angeles County beaches should be required to attend annual training to increase their awareness of western snowy plovers. This training should include a short instructional tutorial that describes the biology of the western snowy plover, its habitat and life history, its legal status, and the consequences of violating the Act. The tutorial slide show (e.g., power point type presentation) or informational hand-out would be developed by the Service with input from your respective agencies, California Department of Fish and Wildlife, and the Los Angeles Audubon Society. In addition to the tutorial, staff should view a video provided by the Service that demonstrates safe driving techniques on beaches with sensitive wildlife. Staff members should be required to sign a statement acknowledging they have viewed and understand the tutorial and video. The signed statement would be kept on file with the respective agencies in the employee's record.

Although these measures should help reduce the potential for take of western snowy plovers, take, as defined earlier, is still likely to occur. And any take of listed species that would result from activities on your beaches would require either (a) exemption from the prohibitions against take in section 9 of the Act pursuant to section 7 or (b) take authorization pursuant to section 10(a)(1)(B) of the Act. Unless a Federal nexus exists that could cover the entire action area under an interagency consultation pursuant to section 7, we recommend that you seek an incidental take permit through the habitat conservation planning process, pursuant to section 10(a)(1)(B) of the Act.

With your cooperation, we can help conserve the western snowy plover on public beaches while still providing recreational opportunities for tourists and the people of Los Angeles County. We suggest revisiting these recommended measures at least annually to ensure they continue to benefit the western snowy plover on public beaches in Los Angeles County while minimizing the impact on residents and beachgoers; however, we are available any time to discuss this program.

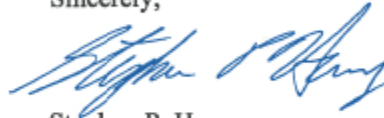
As a reminder, this implementation of these recommended avoidance measures do not constitute authorization from us to take federally listed species in any manner. In the event that federally listed species are detected anywhere where activities could result in take, you should contact us to assess any potential effects to listed species and the possible need for other avoidance measures.

Jamie King

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If you have any questions regarding the western snowy plover or other federally listed species on public beaches in Los Angeles County, please contact Chris Dellith or Bill Standley of my staff at (805) 644-1766, extensions 227 or 315, respectively.

Sincerely,



Stephen P. Henry
Field Supervisor

Identical Letter to:

Fernando Boiteux, Los Angeles County Fire Department
Charlotte Miyamoto, Los Angeles County Beaches and Harbors
Ioannice Lee, City of Los Angeles
Dean Kubani, City of Santa Monica

cc:

Jim Watkins, U.S. Fish and Wildlife Service, Arcata Office
Jonathan Snyder, U.S. Fish and Wildlife Service, Carlsbad Office
Erin Dean, U.S. Fish and Wildlife Service, Law Enforcement Office
Dan Swenson, U.S. Army Corps of Engineers
Nancy Frost, California Department of Fish and Wildlife
Stacey Vigallon, Los Angeles Audubon Society

Appendix D: Recommended Best Management Practices for Construction and Maintenance Activities within Special Protection Zones or near Roosting Plovers.

In Appendix C, the USFWS recommends that vehicles should avoid operating within the plover roost Special Protection Zones (see maps in Appendix A), with the exception of activities such as essential patrols, trash pick-up, and other activities agreed to by Wildlife Agencies as being essential. Additionally, there are projects that occur to protect infrastructure such as building berms, opening channels, sand replenishment, coastal armoring, and mechanical removal of large amounts of trash and non-naturally occurring debris following large storm events or when otherwise deemed necessary. For these types of activities, we recommend that the following Best Management Practices (BMP's) be implemented prior to and during their execution.

1. **Pre-project Identification and Protections of Snowy Plover Nesting, Roosting and Foraging Areas.** Agencies that perform the work, as part of their planning should contact the LAAS Snowy Plover Project representative to obtain the latest information on the plover roost(s) that are potentially impacted by their project. They should contact this person to determine where annual Snowy Plovers roosts and nesting areas occur on a particular beach. If possible, a qualified biologist should then survey the proposed work area within 72 hours to determine up-to-date locations of plovers. This should include mapping the extent of the beach used by the Snowy Plovers. Both the results of the current season's survey (August – April) and the preconstruction survey should be combined to map the area that may be used by the plovers during the project's activity.

The biologist should prepare a map of the roosting/nesting areas that the project staff can then use to determine which project activities may conflict with these sensitive areas. The project staff and the biologist should then create a plan for avoiding sensitive areas. This should include routing materials, storage areas, staging areas, vehicle transit routes, and other project activities (work areas) that must occur on a daily basis around sensitive areas. Sensitive areas should then be marked using symbolic fencing, wood drift fencing, or road cones so that crews and other beach goers avoid these areas.

All staff that will be working on the beach should then be briefed on the identification and habits of the Snowy Plover. They should be instructed to maintain a speed limit of no more than 10 mph while on the beach, including transit routes, and to remain vigilant, especially when driving in existing vehicle tracks. If a Snowy Plover is found in a work area, the biological monitor should be contacted and cones or other markers placed in that area to prevent harassment of the Snowy Plover(s) until the bird(s) depart or the biological monitor can recommend other protective measures.

2. **Protections during Project Activities.** In cases where sensitive areas can be identified and protected prior to project activities commencing, biological monitoring can be reduced to daily visits to ensure that protective measures are in place, that the Snowy Plovers have not shifted roosting areas, and that the crews are following these directions. Biological monitors would need to be present at all times if crews are working within sensitive areas.

On days when crews need to work in sensitive areas, biological monitors should be present and positioned so that they can observe both the plovers and the crews. They should arrive a half-hour prior to the beginning of planned work activities, if this is prior to sunrise, then work activities should be delayed to allow the monitors time to accomplish their tasks. The monitors should survey

the proposed work area, and then discuss the planned activities with the supervisor and crews. They should create a plan for accomplishing the work without harassing the plovers. Monitors should then be present during work activities to ensure that the Snowy Plovers are not harassed. In cases where Snowy Plovers are roosting within or move to within 100 ft of active work areas, and all other options have been exhausted, the biological monitors should be allowed to slowly approach the roost and herd the Snowy Plovers out of the proposed work area and into areas that have been previously identified as plover roosts or marked sensitive areas. We propose that, given the amount of harassment that occurs daily on most beaches by dogs, pedestrians, and vehicles, a single flushing by a person on foot would not create any significant added level of harassment. Further, the actions taken to protect the roost would have already significantly reduced the daily level of harassment, offsetting the few occasions that the monitor may need to herd them. Once plovers are clear of the work area, work can begin again.

Appendix E: Malibu Lagoon Beach Dynamics in 2020

Malibu Lagoon State Beach is a highly dynamic site. In 2020 the combination of beach dynamics and beach closures prevented the installation of the post-and-rope fence for protection of plovers and terns. The photos below demonstrate the wide range of beach configurations that can occur at the site (photos taken by Grace Murayama and Larry Loeher).



Malibu Lagoon State Beach on 28 Feb 2020: large sandbar temporarily exposed seaward of lagoon.



Malibu Lagoon State Beach on 15 Dec 2020: lagoon breached and entire beach over-washed by king tide events.

Appendix F: Online Presentations Used in 2020

In the fall of 2020, Los Angeles Audubon adapted their field trip program to an online learning context. The images below are representative of the online presentation used during the guided virtual field trip.

The presentation consists of 12 slides, each with a number below it:

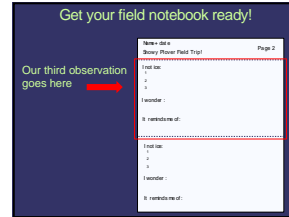
- Slide 1:** "Welcome to your Snowy Plover Virtual Field Trip!" with a photo of a group of people on a beach.
- Slide 2:** "You need paper and a pen/pencil for this activity! Take a minute to go grab them if you don't have them in front of you." with a photo of a notebook and pen.
- Slide 3:** A collage of photos showing people participating in the virtual field trip.
- Slide 4:** "Let's set up our field notebook!" showing a template for a field notebook with sections for "I will see:", "I wonder:", and "It reminds me of:".
- Slide 5:** A photo of a beach with waves crashing on the shore.
- Slide 6:** A close-up photo of sand with many small tracks.
- Slide 7:** "Birds! Everywhere! Doing things!" with a photo of many birds on a beach.
- Slide 8:** "Get your field notebook ready!" with a field notebook template and a red arrow pointing to the "I will see:" section, labeled "Our first observation goes here".
- Slide 9:** "I not ice:" with a list (1, 2, 3) and photos of different bird species. "I wonder:" and "It reminds me of:" sections are also present.
- Slide 10:** "Wait a minute –" with a photo of two Snowy Plovers on the sand.
- Slide 11:** "Wait a minute – is that a Snowy Plover?" with a red circle around one of the birds in the previous photo.
- Slide 12:** "No – it's A LOT of Snowy Plovers! How many do you see?" with a wide shot of a beach covered in many birds.
- Slide 13:** "Get your field notebook ready!" with a field notebook template and a red arrow pointing to the "I will see:" section, labeled "Our second observation goes here".
- Slide 14:** "I not ice:" with a list (1, 2, 3) and photos of different bird species. "I wonder:" and "It reminds me of:" sections are also present.



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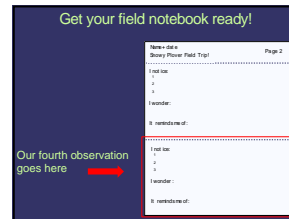
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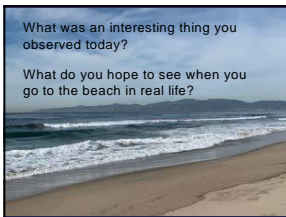
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