FINAL 2022

Western Snowy Plover and California Least Tern Annual Breeding Season Monitoring Report for Hollywood Beach, Oxnard, CA

California Least Terns Courting Within Protection Fence

Submitted to:

U.S. Fish and Wildlife Service, Ventura Field Office
California Department of Fish and Wildlife,
and Ventura Audubon Society

By:

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EXECUTIVE SUMMARY

The abundance and productivity of western snowy plover (*Charadrius nivosus nivosus*) and California least tern (*Sternula antillarum browni*) were monitored at Hollywood Beach, located near Oxnard, California during the breeding season. Activities were conducted according to U.S. Fish and Wildlife Service (USFWS) protocols for nest monitoring under the Endangered Species Act (ESA) by recovery permit holder Debra Barringer (TE-89964A-1). During active nesting, monitoring occurred twice per week, more often if hatching was expected or to observe chicks.

There were 12 western snowy plover (WSP) nesting attempts recorded on Hollywood Beach in 2022 with 9 hatching at least one egg (75% hatch rate). Breeding adult WSP number was estimated to be 10, with likely a second or more nest attempts made by some pairs. Direct egg and chick losses were primarily attributed to the American crow depredation typical on this beach. The majority of nests were established far from the historically used dune area and higher safety afforded within a mesh fence, with very little food and cover resources nearby. The first verified WSP fledgling was on May 28th, and at least 5 additional chicks were observed to reach fledgling age with potentially 3 others fledging. This is a high number of known fledglings for this beach that does not include banding. The fact that some breeding birds were banded and twice-weekly surveys aided in being able to track broods and chicks.

California least terns (CLTs) returned to Hollywood Beach to attempt 26 nests. An unprecedented high tide flooded six of these nests, shortly followed by American crow depredations of the remaining active nests. No hatches of CLT nests occurred.

Mesh fencing was set up around the historically used nest area in front of the dunes again this year. In addition, symbolic fencing was erected and altered as needed in several polygons around scrapes and new nests as they appeared. Wire predator mini-exclosures were used for all WSP nests and were readily accepted by the parent present; no adults were observed to be adversely affected by exclosures. Resident American crows are the primary predators of WSP hatchlings once they leave nest exclosures and for unprotected CLT eggs and chicks. Heavy human recreational use and dogs off-leash remain a constant source of nest and chick disturbance in and outside breeding area fences. Both authorized and unauthorized ground and aerial vehicles were also used on the beach very near nest areas. Disturbances, including dogs and crows observed during surveys, were recorded.

INTRODUCTION AND SITE DESCRIPTION

Hollywood Beach is located on unincorporated land in Ventura County on the west side of the City of Oxnard (Figure 1). It is located between the City of Oxnard Beach Park on the north and the entrance to the Channel Islands Harbor and Silver Strand Beach on the south; Figure 2 depicts the nesting bird survey area in relation to these features. Hollywood Beach is administered by Ventura County, much of it is designated as County Open Space, and beach maintenance is managed by the Channel Islands Harbor Department (HD). The dunes are included as a County-designated coastal Environmentally Sensitive Habitat Area (ESHA).

Figure 1. Hollywood Beach Region

The majority of Hollywood Beach is also designated as critical habitat for the western snowy plover by the USFWS excluding the "sand trap" area on the south end that is affected by periodic dredging (Federal Register 2012). The sand trap area supports a remnant of natural vegetation and sand dunes that attracts the greatest number of WSPs and CLTs during the nesting season. The U.S. Army Corps of Engineers (ACOE) oversees dredging of the harbor and channel adjacent to Hollywood Beach, usually occurring every other year. The sand

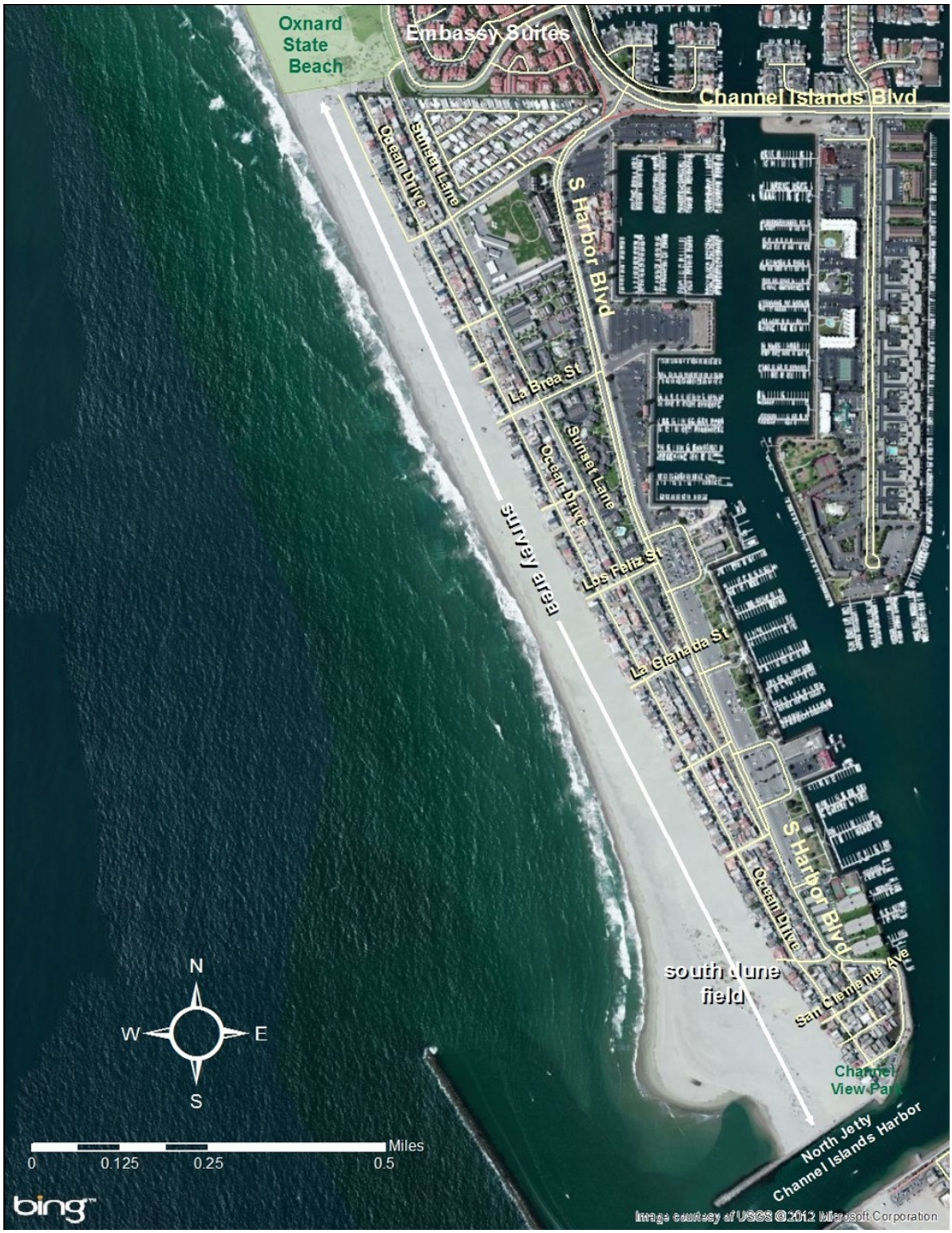

Figure 2. Survey Area Monitored at Hollywood Beach

trap was designed to capture sand before it enters the Channel Islands Harbor mouth. Prior to and during the winters of 2013 and 2014 decreased available funding reduced the dredging efforts and an unusually large amount of sand collected, forming an extra wide dune field and beach. In those two years, unprecedented increases in WSP nests (29 nests for 2013, 400% increase over average) and CLT nests (209 nests in 2013, 2,000% increase over average) were initiated. Most eggs hatched as there were virtually no predators observed during 2013. With low depredation, fledgling recruitment was high for both species but difficult to verify with no banding and all the activity. Dredging occurred fall-winter of 2014, the beach lost a majority of the vegetated foredune habitat near where most of the nests occurred, and an anticipated drop of adult presence and nesting activity for both species resulted during the 2015 breeding season and has returned to more typical low numbers since. The native vegetation and foredunes have been very slow to regrow since then and some continue to be removed during biennial dredging.

The recreating public also uses the dune area, often bringing and unleashing dogs. Posted dog regulations state that no dogs are allowed between 9 a.m. and 5 p.m. with all dogs leashed other times. Enforcement is ostensibly provided by County Animal Control, but responses to calls are rare. Lifeguard towers, a restroom building, and trash cans are provided for public use and serviced by the HD staff that drive vehicles along the beach. In spring the HD staff is trained about the beach bird nesting season and maintenance staff keeps their vehicles on established driving routes along the trash cans to reduce threats to nests. However, even monitors on foot have a very hard time seeing new nests and chicks so all vehicles are a concern.

Homeowners on the beach are allowed to hire a private sand-moving tractor to push sand away from their properties all year, even during breeding season. The company owners usually contact the monitor and discuss their routes prior to working on the beach. Of most concern are unauthorized vehicles accessing the beach including frequently observed golf carts and other all-terrain vehicles (ATVs), many times used after dark and on weekends near the dunes and nest areas. Access is easy via several openings between houses leading directly off Ocean Street to the beach.

The south end of the beach is generally wider, but varies year to year due to dredging, and supports an approximately 9-acre dune field (Figure 2). Some of the backdunes have grown quite high due to sand build-up caused by the presence of deep-rooted, nonnative, European beachgrass (*Ammophila arenaria*). Both WSPs and CLTs avoid placing nests near the tallest dunes and tall vegetation, primarily using the beach side of the dunes in the sand trap when available. Continued spread of the beachgrass may reduce availability of suitable nesting habitat.

Western Snowy Plover

The Pacific coast population of the WSP breeds along the coast of the Pacific Ocean in California, Oregon, and Washington, U.S. and in Mexico (Page et al. 1991). Loss, development, and disturbance of habitat, predation pressures from a wide variety of animals, and other human disturbances of breeding birds have caused the decline of the coastal population of WSP that led to federal listing as threatened under the ESA on March 5, 1993 (Federal Register 1993). Hollywood Beach is part of Recovery Unit 5 and is Recovery Site CA-97. The Recovery Plan management potential breeding bird number for this beach is 4, based on data prior to 2005 when nesting was sparse (USFWS 2007).

California Least Tern

The California population of the least tern nests on the beaches of central to southern California. CLTs use beaches with wide expanses of relatively flat, undisturbed, and partially vegetated sand for their nesting colonies. Much of their historical breeding habitat has been altered and developed resulting in reduction of nesting to a few beaches. The California subspecies was federally listed as an endangered species under ESA in 1970 and as endangered under the California Endangered Species Act in 1980. Recovery Plan goals are to prevent extinction and return the population to a stable status (USFWS 1985).

METHODS

The breeding season survey area covers approximately 1.5 linear miles along the beach and includes the USFWS critical habitat areas. Population counts are collected all year on Hollywood Beach and WSPs continue to occupy the beach year-round, in high numbers during the winter, and with an average of between 3 and 6 breeding pairs during the nesting season. When time and funding allow, surveys occur twice per week during the breeding season, more often when chicks are present. Banded bird data is also recorded and submitted to the list server. When assistance is available, a 4-foot mesh fencing is installed around the historically used nesting area seaward of the dunes. This used to encompass two areas however, this space has become narrower due to dredging and pre-fencing isn't even possible some years. Mesh fencing helps keep beach visitors and their dogs a distance away from actively used areas, allowing birds (all species) to rest and roost, and WSPs and CLTs to hide nests and chicks with fewer disturbances when they choose sites within the fences.

A thorough population count of all WSPs and CLTs observed is conducted weekly and all numbers recorded (see Table A-1 in Appendix A). In addition, number of dogs observed on- and off-leash and potential predators, primarily crows, are also recorded. Once WSP pairs have formed, behavior is watched closely to determine if they are considering a nesting site and when they begin making scrapes. Each located nest is marked with an inconspicuous numbered wooden tongue depressor placed about 5 feet seaward of nests. All nests are recorded by date found, egg count, parent attendance, and its location using GPS. The incubating parent is only disturbed when it's necessary to check on additional eggs laid or near hatching dates.

For those nests not located within the mesh fence, the monitor places symbolic wood stakes and rope, including for nest scrapes, and they are adjusted and expanded as needed. Symbolic fence placement includes paying attention to flush distance for the adult. Individually-fenced incubating plovers sometimes flush off nests with people/dogs walking a few feet from the fence, however, they grow accustomed to people keeping outside symbolic fences. Educational signs in English and Spanish, some drawn by kids, are added. Monitor activities and protection supplies have been largely funded by grants obtained by the Ventura Audubon Society (VAS). When nests are established in an area with little or no cover, beach driftwood, wrack debris, and palm leaves are added inside fences when opportunities allow to not disturb the adult.

Mini-exclosures (most 3 ft x 3 ft wire, some 2.5 ft) are placed over WSP nests and anchored with landscape pins to reduce both the wind moving them and incidences of predation as well as human-caused disturbance. Once the exclosure is placed, the nest is always watched to make sure the parent bird returns to it. In addition, several "decoy" exclosures over no nests are placed on the beach because exclosures can attract the attention of crows. Using decoy exclosures eliminates the positive reward that the crows get landing on active

nest exclosures and flushing adults from nests (but not getting access to eggs). This is an attempt at behavior modification to contrast using no exclosures where corvids can flush adults from unprotected nests and receive egg/chick depredation as a reward. In addition, plastic, non-sharp bird spikes were added to the tops of selected exclosures to further discourage birds landing on them. It has been observed that crows have landed on exclosures less since these tactics were begun. Raptor presence, which can be a threat to adults, on this beach is very rare.

Nest hatching not directly observed is determined by locating either egg pip shells within the empty scrape, observing displaying/calling behaviors from adults in the vicinity of the nest, by locating half eggshells further away, and/or by observing chicks. A nest is determined to be successful if at least one of the above signs is observed. When a nest is found missing eggs and none of the above signs is observed, evidence of depredation is investigated. Evidence of predators includes animal tracks, eggshell fragments and/or egg yolk in the scrape or within 2 meters, and the physical presence of an animal predator in the vicinity. Where possible the species of predator is determined or at a minimum whether it was mammal or avian. Egg non-viability and/or abandonment is determined by a combination of not seeing an adult bird on/near the nest or their tracks over at least two weeks, checking the nest for a minimum of the incubation time period (4 weeks for WSP, 3 weeks for CLT), and placing one egg on end in the scrape to see if it is repositioned by a parent by the next survey. If the egg has not been moved and no adult activity noted over several weeks, the egg/nest is considered abandoned.

Total breeding WSP adult number is estimated by adding the highest number of simultaneously active nests and the number of active broods sighted on the same survey date. One breeding male and female were attributed to each active nest and one breeding male was attributed to each active brood. Observed chick age-week was estimated and associated with a nest number when possible. It can be assumed that some adult WSPs breed and nest more than once, especially following nest, egg, or chick losses.

Vegetation and other ground cover components observed at WSP nests and within 1 meter of nest sites were recorded as per the Section 6 grant requirements.

Adult CLTs both on the beach and observed flying over were also counted and included on the California Department of Fish and Wildlife (CDFW) nesting data reporting spreadsheet. If present, CLT nests located are also documented and marked with tongue depressors a distance from the scrape. Monitors also respond to phone calls from the HD or the public regarding possible nest sightings.

RESULTS

WSPs - Population Abundance

WSP Adults

All adult, juvenile and chick WSPs observed during surveys were recorded by gender and/or age category when possible (Table A-1). Table A-1 includes numbers of males, females and active nests by date, egg counts, chicks observed, and predators noted as well as other notes.

The average number of adult WSPs observed during May over time that data have been collected is compared in Figure 3. This reflects the population better than the 1-day snapshots collected during the spring Window Survey because this beach often becomes active later than other beaches. May was chosen as the month least affected by presence of non-breeding birds. The May average adult count (6.6) was similar to that determined in recent years and lower than the period of 2007 to 2014. One thought on this reduction is that depredation was very low until the record breeding year of 2013, after which crows took up permanent residency and continue to regularly forage on the beach. Breeding reached a peak July 4 – 10 this year.

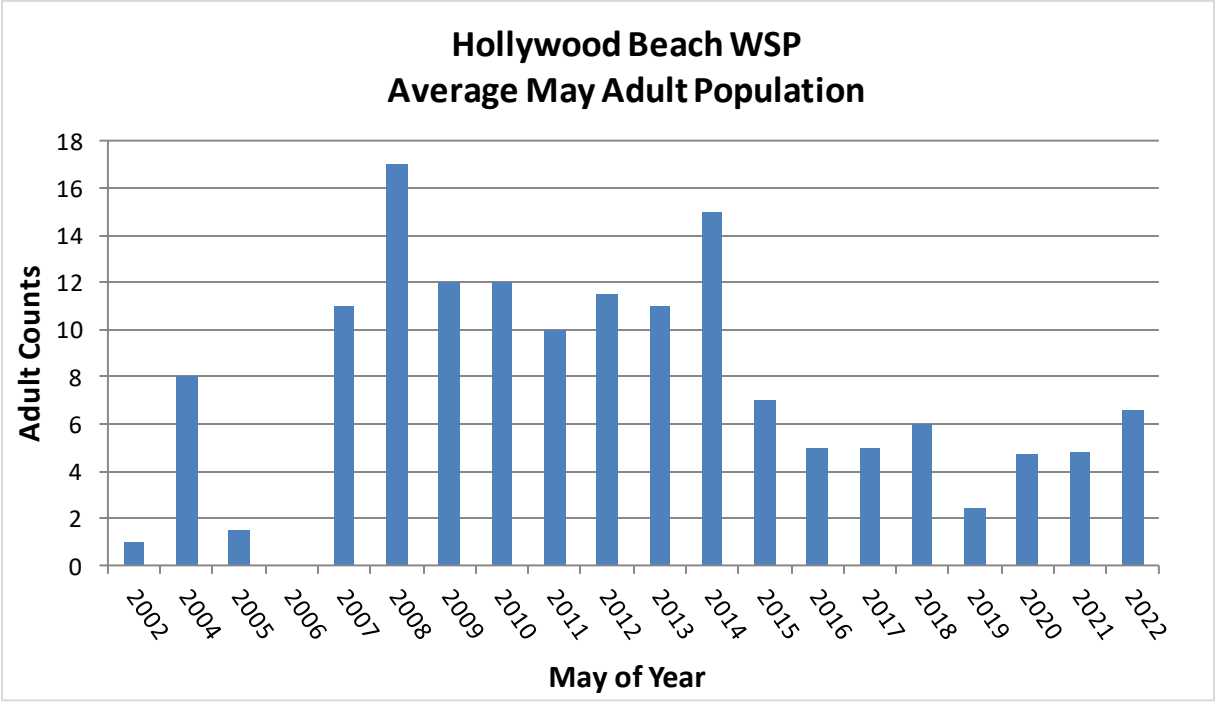

Figure 3. Hollywood Beach Average Adult WSP Population as Recorded During May

WSP Non-breeding/Winter Season

Hollywood Beach supports a fluctuating but consistent WSP population throughout the year. Non-breeding season WSPs have been counted and recorded most weeks through the winter (non-breeding) season since 2012. Especially when Hollywood Beach has experienced reduced nesting season success, it is essential to show data that depict this beach's overall importance for migrating, foraging, resting and winter roosting WSP populations. The amount of kelp and other fresh seaweed wrack that washes up is often substantial, especially in the sand trap area, providing a reliable food resource for WSPs. Their winter locations usually spread along the center, open areas of the beach. In addition to the large numbers of WSPs migrating through and stopping at Hollywood Beach beginning in late July and August, high fall-winter counts further support the reason a majority of this beach was designated as critical habitat by the USFWS. Figure 4 depicts WSP counts taken during surveys conducted from July 2021 to February 2022. These counts reflect lower than normal winter populations for unknown reasons. As can be seen in Appendix Table A-1, numbers were much higher this late summer into fall (2022).

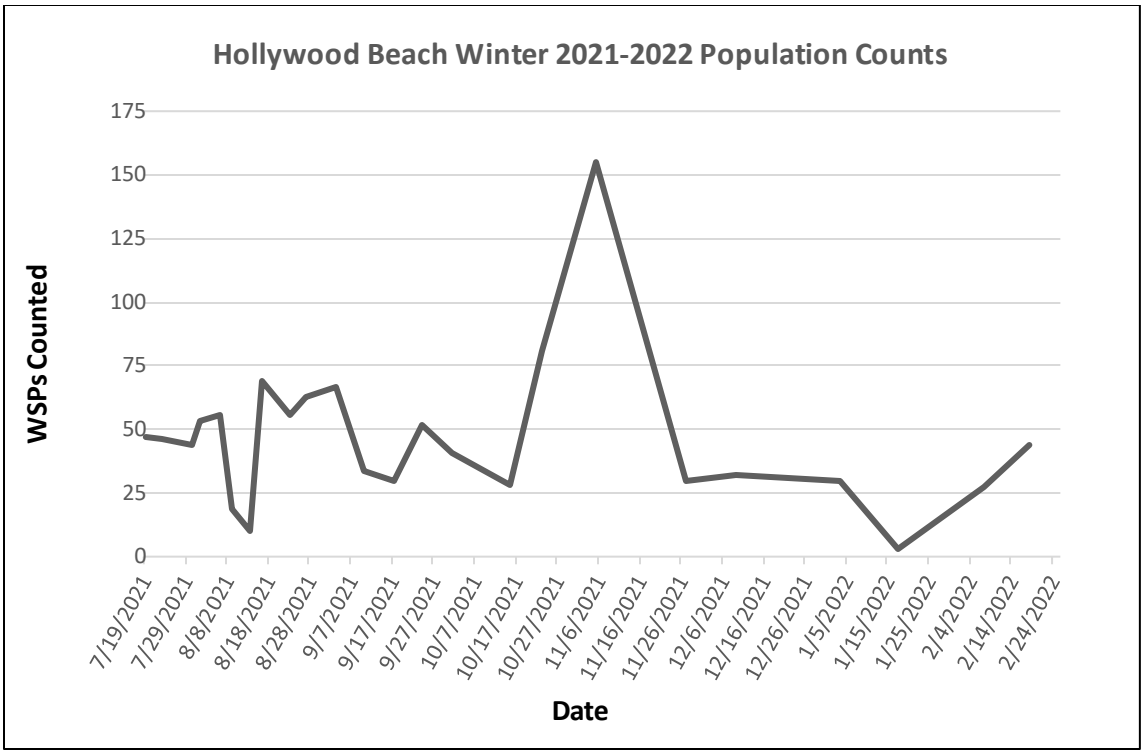

Figure 4. Hollywood Beach WSP Populations Recorded During Winter Season

WSP Banded Birds

During surveys birds were examined for leg bands through binoculars. Leg band information collected mostly during the winter season provides researchers information on birds' movements. All band combinations were seen on WSPs and are reported to the Snowy Plover listserve. Very few WSP bands have been typically observed during the nesting season on this beach until 2022, when several were recorded. CLTs were also monitored for bands and/or transmitters but none were observed.

Bands observed on Hollywood Beach in recent years were traced primarily to locations to the north including: Moss Landing Salt Ponds (Monterey County), Oceano Dunes State Vehicle Recreation Area (SVRA), Vandenberg Air Force Base (VAFB), Salinas State Beach and National Wildlife Refuge (Monterey County), Marina State Beach (Monterey Bay), Fort Ord State Beach (Monterey County), Humboldt County, CA, and Oregon. WSPs observed banded from southern locations including Naval Base Coronado (San Diego County), Bolsa Chica Ecological Reserve (Orange County), and Marine Base Camp Pendleton.

WSP Nest Activity

During the 2022 nesting season, 12 WSP nests were initiated on Hollywood Beach, with an estimated number of breeding adults at 10 determined using largest concurrent nest count (5) plus active broods on that same

day (0). Figure 5 depicts all of the WSP nest locations for 2022 compared to 2020 and 2021. Table 1 contains a brief summary of breeding information requested by the CDFW.

Table 1. Summary of Hollywood Beach WSP Breeding Activity During 2021

First Observed WSP Nest Initiation Date	27-Mar-22 (last year was 15-Apr-21)
First Observed Hatch Date	27-Apr-22 (last year was 3-June-21)
First Observed Fledge Date	28-May-22 (actually saw it fly on 9 June)
Period of Peak Nesting (the 1-week period with maximum number of active nests + broods)	July 4-10
Last Observed Nest Initiation Date	18-Jul-22
Last Observed Hatch Date	19-Aug-22
Last Observed Fledge Date	29-Aug-22
Length of Breeding Period (Total # days from first observed nest initiation to last observed fledging)	155 days

Seven of 12 total nests were placed on the open sand north of the dunes with very little in the way of natural cover or nearby food resources (Figure 5). This has been a trend from recent to place a majority of WSP nests a distance from the dunes, as opposed to primarily seaward of dunes in years prior. Nest placement relates to the amount and width of open sand available in front of the dunes after dredge cycles as well as height of tides. The nesting birds usually gauge the high tides pretty well but had an unusual event this year. Chicks hatched in the open area were predominantly led south to the cover and better food resources of the dunes and vegetation by their parents. This trip was often long and perilous, including encounters with visitors and dogs and predators flying over. Mini exclosures were used over each nest and a large symbolic fence was built for each nest or groups of nests. Some nests occurred near already-hatched or failed nests and it is suspected when a pair loses a nest or brood, they often rebuild near the old nest. The two nests at the edge of the dunes this year occurred during high CLT nesting activity and were surrounded by CLT nests. It is fairly easy to assume the WSPs are aware of the extra protection provided by active CLT colonies.

Table 2 lists the vegetation observed at each nest site and within 1 meter.

WSP Nest Fates

Of the 12 nests initiated in 2022, 9 nests hatched a total of 24 eggs (75% nest hatch rate, 71% egg hatch rate; compared to last year's unusually low hatch results of 43% nest hatch rate, 47% egg hatch rate). This is consistent with the hatch rate average of 72% determined over 19 years of data collected. A pie chart summarizing nest fates is presented in Figure 6 and uses individual egg fates because fates varied within a single nest.

Figure 5. WSP 2022 Nest Locations on Hollywood Beach with the boundaries of the mesh fence around historically used nest area shown. All nests were surrounded with symbolic fencing. Beach/shoreline geomorphology in photo does not necessarily reflect what was present during 2022 nesting.

Table 2. 2022 Ground Cover Estimates for Hollywood Beach WSP Nest Sites and 1 Meter Surrounding

Nest	% Slope	Total % Cover	Veg Types*	% Veg Cover	% Other Cover
Nest HB01	0	3	N/A	0	97 bare sand, 3 wrack
Nest HB02	0	7	N/A	0	93 bare sand, 7 wrack
Nest HB03	0	4	SR	1	96 bare sand, 3 wood
Nest HB04	0	4	N/A	0	96 bare sand, 4 wood
Nest HB05	0	2	N/A	0	98 bare sand, 2 litter
Nest HB06	0	5	N/A	0	95 bare sand, 5 wood
Nest HB07	5	8	BB, SR	6	92 bare sand, 2 wrack
Nest HB08	0	7	N/A	0	93 bare sand, 7 wood
Nest HB09	0	2	N/A	0	98 bare sand, 2 wood
Nest HB10	2	4	SR	1	96 bare sand, 3 wood
Nest HB11	1	2	N/A	0	98 bare sand, 2 wood
Nest HB12	0	5	N/A	0	95 bare sand, 5 wrack

*Notes: SR = sea rocket (*Cakile maritima),* SB = saltbush (*Atriplex leucophylla*), BB = beach bur (*Ambrosia chamissonis*), RSV = red sand verbena (*Abronia maritima*), litter consists of driftwood, dead arundo stalks, and dried kelp. This beach has very little trash.

As mentioned above, an unusual high tide event washed away a 3-egg WSP nest this year. The other of two active WSP nests at the time was placed on high enough ground to avoid the flood event on June 14th. The wave-washed 3-egg nest was in its 11th day. It was interesting that the latter was placed in the historically used nest area seaward of the dunes that hasn't received a tide this high in the previous 11 breeding seasons this monitor has been observing.

The presence of CLT nesting this year probably attracted more attention from American crows who can easily depredate unprotected CLT eggs when not enough adults are present. However, the use of predator exclosures on WSP nests continued to protect active WSP nests even when adjacent to depredated CLT nests. A late WSP nest likely had a newly hatched chick depredated by a western gull as soon as it left the exclosure. More gulls than usual were attracted to the beach during two incidences of high marine mammal strandings this year.

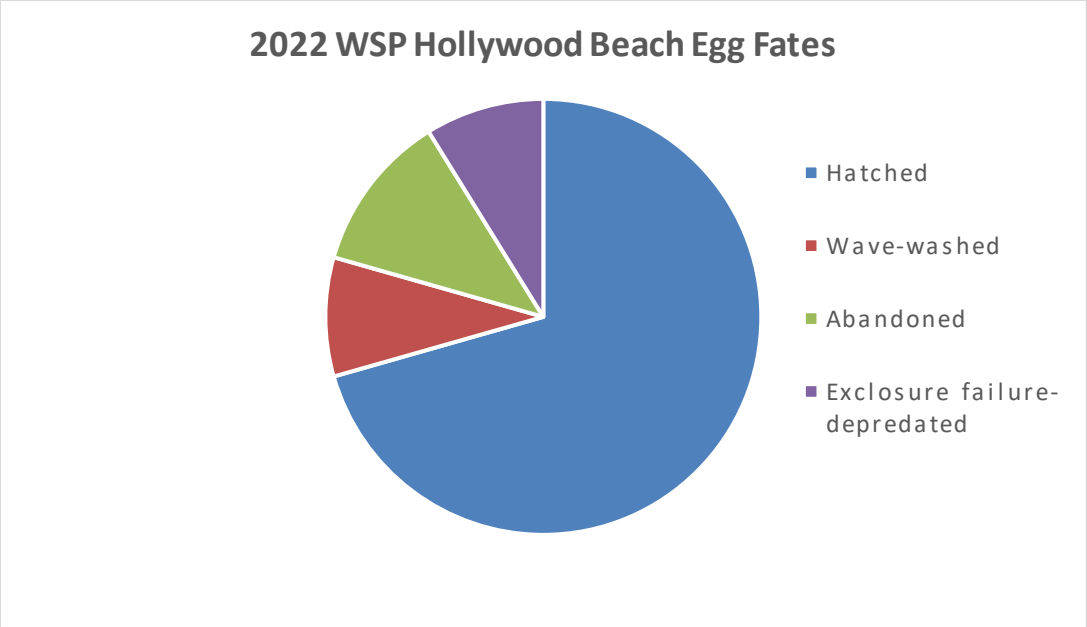

Figure 6. Individual Egg Fates for Hollywood Beach in 2022

The exclosure failure noted in Figure 6 was one that had only about 1/3 of the top covered in wire rather than the entire top. This left two, approximately 6-inch gaps that apparently allowed a crow to enter and consume the eggs. Egg abandonment numbers were typically low again this year after last year's high number of 13, some of which were buried by sand during wind events that year. This year's abandonment case was unusual in that it was a first-time nesting female from Oceano Dunes State Beach identifiable by bands, and she abandoned immediately after laying the second egg. The eggs were collected and taken to the permitted Santa Barbara Zoo for rearing and determined to be fertile, only to not subsequently hatch.

Table 3 summarizes nest, egg, and chick details with dates. Many of the Hollywood Beach chicks were still growing when unbanded fledglings from other beaches arrived and it became more difficult to track resident broods. At least 6 and potentially 9 chicks made it to fledge, the highest number recorded on this beach.

Unusual behaviors that affected nest/egg/chick fates and contribute to lessons learned are highlighted in text to follow.

Serial Black Widow, Again, Plus Hike

The first nest of the season, HB01, was established the furthest away from the safety of the vegetated dunes (>1,980 ft). The incubating female was observed to defend this nest near hatch date. Three eggs hatched on April 27th and due to its distance from resources for the chicks, the monitor and 2 volunteers were present for the inevitable long walk to adequate cover. For the third year in a row, a female WSP was present on hatching day and led the chicks away alone. The VAS Volunteer Coordinator was fairly certain that a male WSP approached the nest during hatching, as they typically are present, and was subsequently chased away by the female. This is very unusual. No male was observed near the chicks again.

Table 3. Hollywood Beach 2022 Western Snowy Plover Nest Fate Summary

Nest #	Date Found	Eggs Laid	Date of Hatch/Other	Eggs Hatched	Oldest Chick # & Age Observed (in days)	Comments
HB-01	3/27	3	4/27	3	1(38)	Raised by single female, 1 fledged.
HB-02	4/23	3	5/20	3	3(1)	Laid within the safety of the large fenced enclosure, hatching occurred when many gulls appeared on the beach due to many stranded sea lions.
HB-03	4/25	2	4/27	0	N/A	Female bb:ag abandoned after 2 days, she was hatched at Oceano Dunes SVRA in 2020. Eggs taken to SB Zoo. Determined viable but did not hatch.
HB-04	5/6	3	6/6	3	2(1)	Crow tracks near nest exclosure. Male was ly:wr, saw him with 2 chicks. Believe he tried one or more nest attempts.
HB-05	6/3	3	6/16	0	N/A	Even in safety of large fence, highest tide I've seen in 12 years flooded this and several CLT nests.
HB-06	6/11	3	7/11	3	N/A	No sign of predation at nest. Wasn't able to positively ID chicks.
HB-07	6/15	3	7/16	3	3(42)	Banded male nw:rv; 3 fledged.
HB-08	6/24	3	6/27	0	N/A	Flaw in mini exclosure, not a complete caged top and crows entered. Repaired for next use.
HB-09	6/24	3	7/23	3	2(28)	Certain 3 made it to 24 days, but not certain these 2 are from the same brood. May have also fledged.
HB-10	7/1	3	8/1	3	2(29)	Two chicks first seen at 8 days, have to assume these fledged.
HB-11	7/4	2	8/1	1	1(22)	One egg broken about 15 ft from exclosure. This sighting could also have been 1 surviving chick from HB10 (same hatch date).
HB-12	7/18	3	8/19	2	1(1)	One chick likely depredated by gull right after hatch (tracks), western gull observed attempting to catch another chick with male. Third egg didn't hatch/ abandoned.
Totals		**34**		**24**		**9 of 12 nests hatched at least one egg; 75% nest hatch rate, 71% egg hatch rate**

Staying about 25 feet away and slightly behind the three chicks and female, we accompanied the group on the walk to the sand trap wrack where they were able to safely forage and had the cover of debris. Being an early nest and the only chicks for a month, the monitor was able to track them well, document when 2 of the chicks were lost, and saw that one chick made it to fledging stage. Figure 7 shows when that single chick remained with its mother. This is the fourth nest (2 last year, 1 the year before) that has had only the female parent present at hatching day and on following days when there usually are both parents or only the male to raise chicks.

WSP nest hatch success at this beach since 2003 is compared in Figure 8.

Figure 7. Single mom with chick (photo by Alecia Smith)

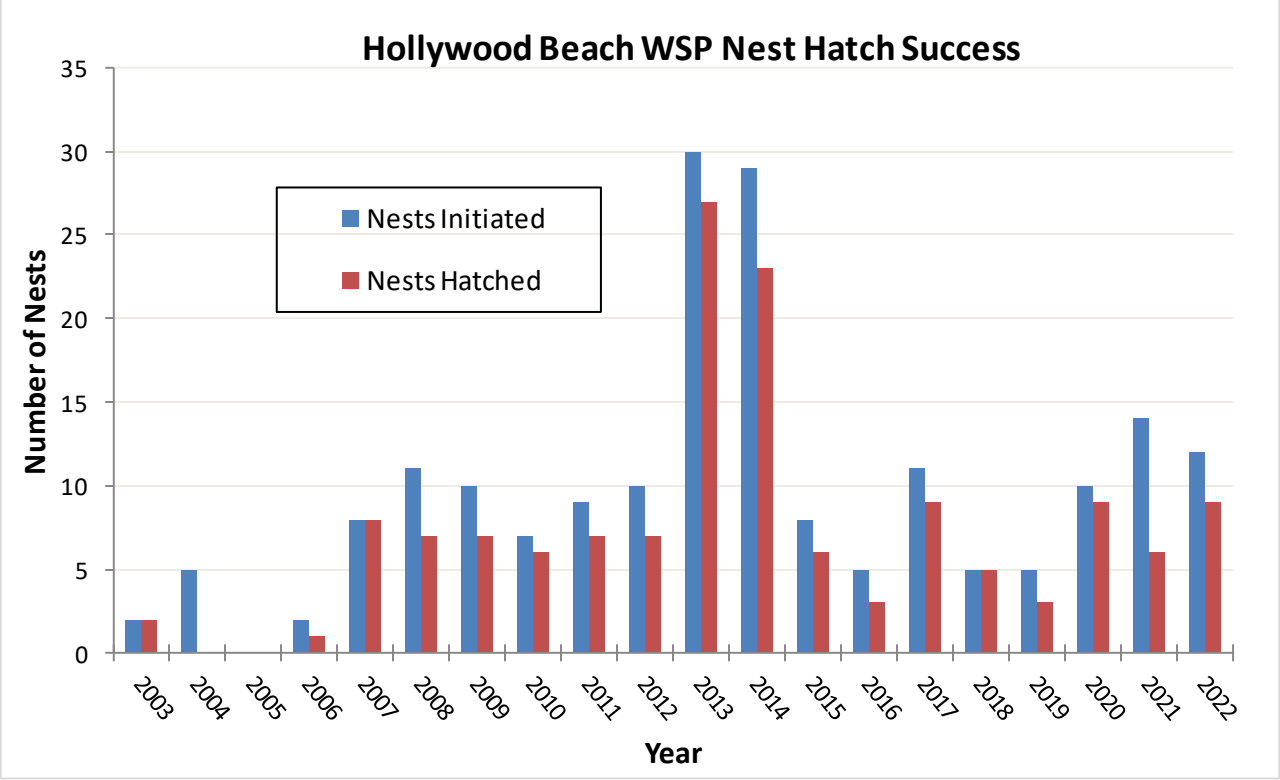

Figure 8. Hollywood Beach Nest Hatch Success Since 2003

CLTs - Population Abundance

CLT Adults and Nest Activity

Adult CLTs were counted during surveys, with adult flyovers first observed on May 13. Numbers observed and recorded combine those seen in the air and on the ground as best as possible. All breeding activity observations are included in the CLTE Data Reporting Spreadsheet submitted electronically each year to CDFW. The number of breeding adults (26) was the same as for 2020, estimated from the highest number of active nests that occurred consecutively and is compared with historical data in Figure 9. Nest locations are depicted in Figure 10.

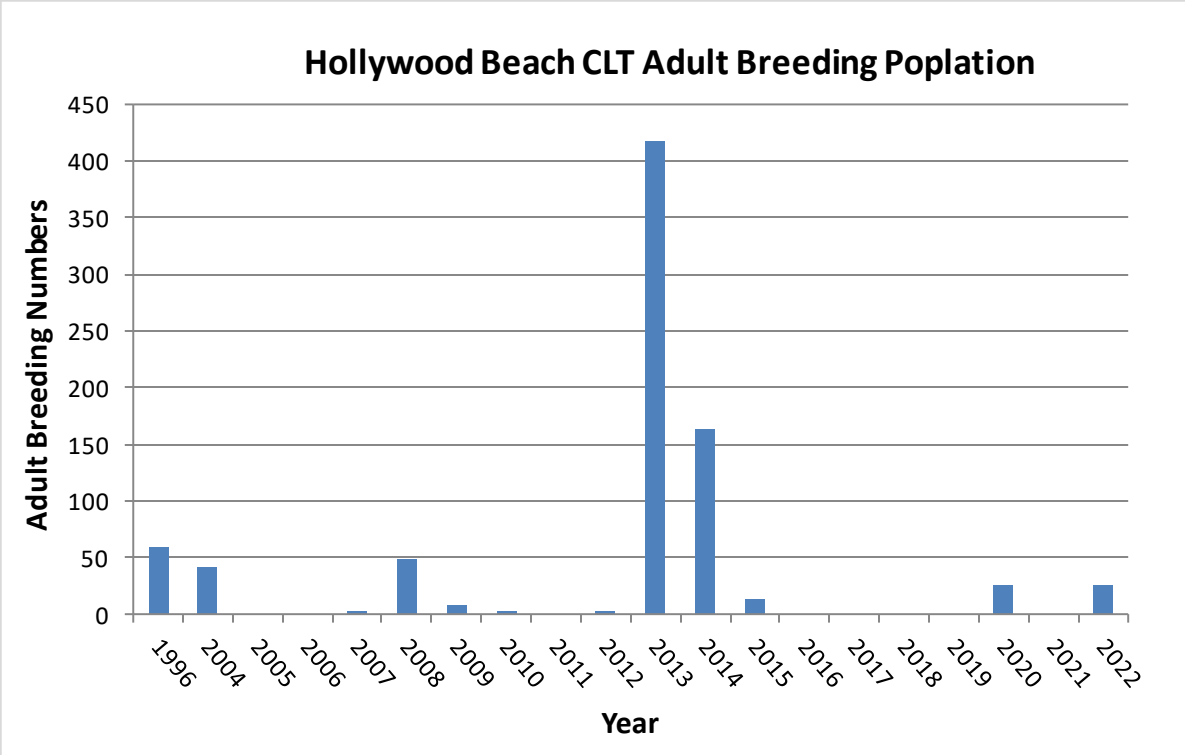

Figure 9. CLT Estimated Adult Breeding Populations

Monitors located 26 CLT nests on Hollywood Beach in 2022 beginning with the first nest on June 6. No CLT nests survived to hatching. The unusually high tide on June 14th flooded 6 nests and crow depredation affected the rest, beginning soon after CLT nest initiation began and as flooded nests were replaced. A volunteer was present on June 19th when at least three crows were systematically picking their way through the CLT colony, walking from nest to nest and depredating eggs. CLTs sometimes renest, but some of these may have already been on their second attempt from earlier depredations on this beach or from other beaches. By June 20th, there were no active nests and no adult CLTs were observed by the monitor. One nest far removed from the main colony was found abandoned while removing fences in August.

Figure 10. CLT Nest Locations on Hollywood Beach in 2022. As for WSP nests, all CLT nests are included in symbolic fencing as they appear. Beach/shoreline geomorphology in photo does not necessarily reflect what was present during 2022 nesting.

Crows have established permanent, local residency since 2014 and their presence is noted on most survey days. In addition, their tracks are often observed near empty nests. Occasional broken shells are found , but primarily they don't tend to consume the eggs on site. This may indicate eggs are a prime source of food brought back to their nests. Crows get the best opportunities to raid unprotected nests when the number of CLTs present is small enough that, if attempted, nest defense diving efforts are unsuccessful. Nest attendance has much to do with distance CLTs must travel to find adequate food resources; the more distance, the longer they are gone or even both parents have to forage at the same time. Adult CLT nests attendance has been low during the last three years breeding has occurred, 2015, 2020, and 2022, even though nest numbers eventually totaled over 20 each year. Rarely are 20 nests active at the same time.

A summary of current year observed CLT breeding activity is given in Table 4

Table 4. Hollywood Beach California Least Tern Breeding Summary 2022

CLT BREEDING DETAILS	
Date terns first seen	13-May (flyover)
Date terns last seen	29-Jul
Maximum number of adults observed	26
Date of first nest	6-Jun
Date last nest found	17-Jun
Date of first hatch	N/A
Date of last hatch	N/A
Date of first fledgling	N/A
Maximum number of active nests	13
Date of maximum active nests	13-Jun
Estimated number of pairs	13
Total number of nests	26
Total number of eggs	40
Clutch size:	
1 egg	15
2 egg	10
Other	1
Average clutch size	1.54
No. of nests hatching young	0
Total number of eggs hatched	0
Estimated minimum number of fledglings	0
No. of nests with unknown fate	0
No. of eggs with unknown fate	0
DOCUMENTED MORTALITY	
Preyed Upon:	
Nests	18
Eggs	22
Chicks	0
Fledglings	0
Adults	
Human Disturbance:	
Nests	1
Eggs	0
Chicks	0
Fledglings	0
Adults	0

CLT BREEDING DETAILS	
Other Causes:	
Nests:	
Abandoned (pre-term)	1
Damaged	0
Flooded	6
Eggs:	
Abandoned (pre-term)	2
Failed to hatch (incubated to term)	0
Died hatching	0
Damaged	0
Flooded	9
Other Mortalities:	
Chicks	0
Fledglings	0
Adults	0

Foster CLT Parents

An unusual event occurred to result in establishment of a 4-egg CLT nest. A beach human visitor found a CLT egg in an unknown/unmarked/unprotected nest while the monitor was on the beach on June 7. She approached the monitor with it. The monitor asked her to specify where she found the egg and they tried to retrace her steps back to the scrape. No adult CLTs were present at the time. After placing the egg where the woman thought she found it, the monitor watched from a distance for approximately 30 minutes while no adult CLTs returned to the area. The monitor made the decision to add the egg to the only active CLT nest (03), which was nearby and contained 1 egg. The nest was watched and adults returned twice and incubated as normal. Two days later, this nest had 3 eggs; the next day the nest contained 4 eggs and adults were incubating as normal (see Figure 11). One theory is that the parents of the human-displaced egg (02) found the foster nest (03) and added their second egg to it. The 03 parents must have also continued to lay their second egg in the nest. Apparently, due to infrequent nest attendance, there wasn't a struggle or

Figure 11. Four-egg CLT nest that had a 'foster' egg placed in it when it contained one egg

disagreement among four adults observed to disrupt regular incubating activities at least for a few days and while monitors were present. Three days later on June 13th, the nest was down to one egg, likely due to crow depredation, but was still being incubated. The unusual high tide on June 14th missed this nest by 5 feet. However, two days later the nest was empty as crows continued to find and depredate nests.

CLT breeding activities and hatch success, when applicable, has been observed and recorded on Hollywood Beach beginning in 1996, and continuously since 2004. The summary data for hatch success during these years is given in Figure 12.

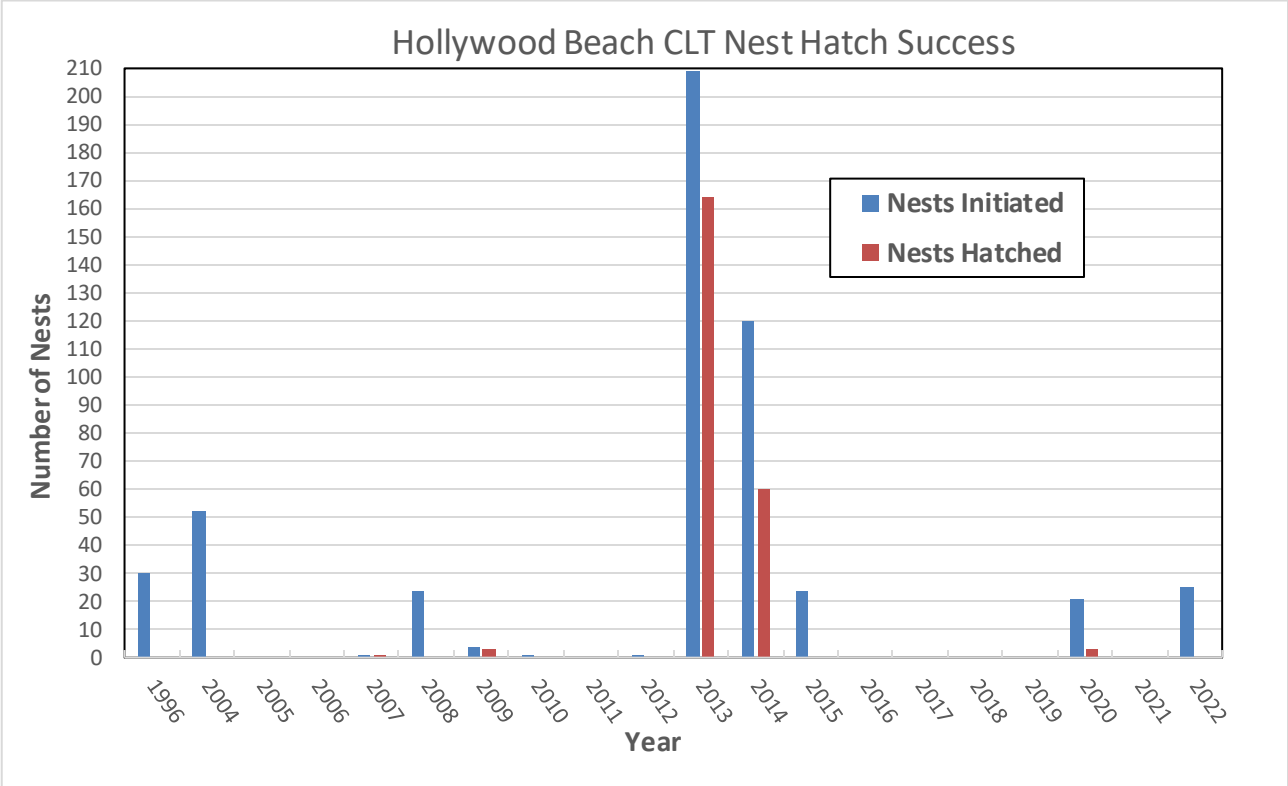

Figure 12. Hollywood Beach CLT Nest Hatch Success Since 1996

DISCUSSION

Breeding and Nest Fates

High WSP chick survival to fledging was more trackable this year with banded birds, especially males, breeding. In one case, a banded male chose to use the 4-foot mesh fencing to primarily raise his 3 chicks, greatly reducing their interactions with people and dogs on the beach. Enough debris and stranded animals had washed into the fence from the high tide to allow them to obtain forage resources and have adequate cover there. In addition, having the funding from the USFWS/CDFW Section 6 grant allowed the monitor to visit the beach at least twice per week, which allows better tracking of chick fates. Having more banded WSPs is a positive result of efforts on other beaches and greatly helps us to verify specific broods and chick ages obtained. With high beach fidelity, the hope is that these and additional banded birds return to breed to enable more successful tracking.

Nest abandonment decreased substantially this year to more typical numbers compared with last year's unusual high number (13 out of 34 eggs last year vs. 4 of 34 eggs this year). Unpredictable human disturbances that are difficult to track 24/7 and last year's extreme wind events are likely the cause of many of those abandonments. Flooding is also not typical on this beach protected by a breakwater and with a wide geomorphology. However, this year there was an unusually high tide on June 14th that flooded a 3-egg WSP nest as well as 6 CLT nests (9 eggs).

The primary loss of chicks on Hollywood Beach has historically been and continues to be due to depredation by American crows. It is suspected that two breeding pairs of crows remain dominant on the southern end of the beach. They forage in dunes and along the wrack line and opportunistically depredate chicks when they recognize hatching occurring and chicks leaving exclosures or an adult plover guarding a brood. Even though they weren't observed as often or in numbers as in past years, crow tracks after one hatching implicated depredation of one WSP chick. Another unusual event occurred where a predator exclosure had wire covering approximately a 1/3 of the top (rather than the usual 100%). Even with only about 6-inch openings and sharp wires present, it was likely a crow was able to enter the exclosure with an active nest and take the three eggs (obviously more than one trip!) The exclosure was repaired immediately afterwards. A lesson learned was that even the smallest opening is no match for the brilliant mind of a resourceful crow. It is difficult to imagine any wildlife species that would not be uncomfortable entering an almost enclosed cage, but that is also seen when cowbird traps are used. It shows how high on the preference list bird eggs are for crows.

The thin, very high tide wrack debris line approximately halfway from shoreline to houses persisted this year and many WSPS used it for roosting and several used it for nest sites again (Figure 13). This demonstrates the disproportionate importance of even the smallest debris presence on this mostly-barren beach for this species. After requests from Ventura Audubon members, the HD continues to avoid areas east of Las Palmas for winter beach grooming and the private sand-mover primarily stays on the inland half of the beach, all of which preserves some of this wrack and valuable habitat.

This year had an unusual amount of gull activity concentrated near the tideline. Many gulls were attracted to the beach by two sea lion mortality events this year: white shark kills (observed by severe head trauma and head loss) earlier and domoic acid mortalities later in the season. Gulls may have been responsible for some WSP chick loss, which is not typical on this beach. Indeed, WSPs don't show adequate fear near gulls as they

Figure 13. Looking along the faint, old high tideline wrack used by WSPs for roosting and several nests. Nest fences, a predator exclosure, and the difference between groomed and ungroomed sand are visible.

have not been a substantial threat on this beach. A male WSP was seen leading three newly hatched chicks close enough to gulls to have to fly to avert their attention from his brood. Gull tracks and an individual western gull was observed near a hatching nest and chick. When chased by the monitor, it retuned to a large gull group totally focused on feeding on a sea lion carcass. This demonstrates gull individual behavior and ability to learn how to and preference for finding and depredating chicks, and that not all gulls have this tendency.

CLT low hatch success was attributed to the breeding colony of approximately 26 adults not being large enough or present often enough to defend the colony from crow attack. Nest attendance was noted to be low. This has been explained in past years to be related to distance required for adults to travel to find adequate fish resources. Further distances keep them away from the colony for longer periods, affording easier depredation. The unusual high tide taking 6 nests was a setback but many CLTs may have immediately re-nested; it was difficult to know for certain. Some nests were mere feet from the high tide, showing perhaps a bit of their knowledge about choosing a slightly higher elevation for a nest.

Habitat

Dredging activities have begun for the winter 2022-2023 season. The amount of funding received directly affects how much sand is removed from nearshore waters, which in turn affects how far the beach shoreline recedes. This causes beach narrowing in the preferred breeding area that always affects where WSPs and CLTS chose to place nests the following season. Nests further from the dunes have hatched and chicks have made it to fledge, but the parenting efforts are increased and chances of survival reduced with what can be a

long, perilous journey to find cover and/or food resources from hatched nests. Chicks are vulnerable in the wide open during these long walks.

Monitors continued the practice of adding driftwood and wrack debris around barren nest sites to increase post-hatch cover options within the symbolic fences. It was observed again this year that WSPs stood on top of beach debris on higher temperature days, attributed to the higher heat of the sand on those occasions. Monitors also leave symbolic fencing up long after nests within hatch to provide protection for native plants, growing dunes, and any birds that use the space with reduced disturbances.

Ongoing Threats

Human use of the beach remains popular and may even be growing. With essentially no dog regulation enforcement, it has become a frequent destination for dog walkers and during nesting, this continues to be a source of stress primarily for incubating and brooding plovers.

Low-flying aircraft including helicopters, ultra-lights, motorized paragliders, and drones that fly over the dunes and nesting areas also cause disturbances to incubating birds on nests. The loud, motorized paragliders often park at and launch from Oxnard Beach Park and fly low over fenced and signed active nest areas. It may be helpful if USFWS will take up the practice again of sending a letter to local airports to alert them of nesting season and of airspace restrictions over known nesting areas. It is not certain if these glider pilots have a relationship with airports or even a license – no numbers are visible on their aircraft. Ground-nesting birds perceive aerial objects as similar to their avian predators and often flush from nests when flown over.

If the loud and bright July 4th fireworks return to a nearby launch point next year during peak nesting and attract typical large crowds, it will be an additional cause of distress.

The documented largest loss of chicks is the continuation of the crow pairs and their apparent sharp-eyed knowledge of hatching day and when young chicks leave the exclosure and before they reach adequate cover. This was observed with crow tracks around mini-exclosures the day of or day after hatching. Other plover beaches have seen that removal of one or more resident predators can result in additional new pairs moving in so that does not seem to be the obvious solution. The local crow pairs have at least in recent years stopped harassing breeding birds during nest incubation, which they did in the past.

It remains common to see unauthorized vehicle tracks in and around the dunes during the breeding season and may be increasing in frequency and numbers (Figure 14). Whether this is occurring during the day or even more dangerously, after dark, the threats to new and unmarked nests, defending adults, and flightless chicks is very large. Monitors have asked the County about adding gates or signs to the 13 available access points from Ocean Street between homes along the beach. So far, there has been no consensus or progress towards resolution for these requests. As a result, people in golf carts, ATVs, motorized wagons, and other off-road vehicles can easily enter the beach and claim they saw no signs prohibiting entry. The HD also gets pressure from the public to “clean up” dead marine mammals. They are to be commended that they contact the monitor and get accompaniment before these tractor trips along the wrack line, but it is still concerning to have heavy equipment present when tiny chicks are very difficult to locate and can’t get out of the way as fast as flying adults.

Figure 14. (Left) Small chick near tire tracks and (right) multiple tracks where most chicks were raised.

A good relationship and interactions continue with the sand-moving tractor operator hired by residents. She calls the monitor before jobs near nesting areas and usually has avoided working near active nesting/hatching areas. The operator struggles with being able to spread all sand on the inland half of the beach, as VAS has requested to reduce threats to nests. The fact that residents are allowed to hire her to move sand during the breeding season will always be problematic and a threat to unknown and unseen nests and chicks. With nests more frequently appearing in the open sand areas and halfway up the beach in recent years, continuing to allow year-round sand-moving is of concern as monitors are only present for short periods and don't always find new nests and hatching chicks immediately.

The Junior Lifeguards program continues to set up large gatherings of kids and vehicles at the wrack line near the dunes, which are high-quality WSP foraging areas especially for flightless chicks. Classes are 5 hours per day for 2 four-week sessions each summer. This effectively blocks access to wrack resources during the days of this accelerated human activity.

All of these place stress on adults and threaten survival of chicks. Threats and disturbances can only be observed during twice-weekly, 1 to 2-hour surveys; it can be assumed similar events occur with regular frequency all day long and cause numerous incidences of disturbance to breeding birds that are never observed or documented. During every survey the number of dogs observed on- and off-leash is recorded. People bring dogs after the 9 a.m. restriction time (posted on signs) and allow them to run off-leash on a daily basis. A usual number for a 2-hour survey is 3-5 dogs on a week day; numbers are higher on weekends, during holidays, and on all hot days. Even when dogs don't notice WSPs or CLTS, dogs are perceived by nesting plovers and terns as a predator, causing them to leave nests, split from chicks to use distraction displays, and expend extra energy trying to lead/distract the dog away as their only defense. Ultimately, County Animal Control is responsible for enforcement. Every year the monitor phones Animal Control during especially egregious activities and enforcement or even an officer's presence has never been observe d to occur. Also, the presence of American crows is noted on many surveys. The constant crow presence and human/dog disturbance together magnify threats to chick survival on this beach. Monitors have observed chicks being displaced from hiding places and separated from adults by off-leash dogs and then crows waiting nearby flying

in to depredate. So whereas having either dogs or crows may be a nuisance, having both has been observed to be disproportionately adverse to chick survival once they leave the exclosures.

CONCLUSIONS

The 12 WSP nest attempts on Hollywood Beach this year were above the average (7) based on the history of data gathered (Figure 8). Depredation by crows and gulls was responsible for some of the reduced WSP breeding success this year. These were exacerbated by the historically preferred beach nest area remaining narrower than in the past, likely driving both WSP and CLT nests to the less-protected north barren sand. This area lacks adequate cover for both species or food resources for WSP newly hatched chicks. For WSPs, this forces parents to lead chicks long distances to the established dunes immediately after hatch. The unusual high tide on June 14th was very unfortunate and wiped out several CLT and one WSP nest.

Depredation by crows, natural phenomena, and human-caused disturbances continue to reduce WSP and CLT breeding success on Hollywood Beach. With 34 WSP eggs laid, there was a 75% nest hatch rate using mini exclosures, with 71% of eggs hatching. Verified chick survival to fledging was higher than in past years. The presence of banded WSPs aided in chick tracking and contributed to the largest, verified fledgling count to date (at least 6, perhaps 9 fledglings). WSPs also made use of protective fencing and patches of sea rocket to raise and hide their chicks.

CLTs returned to establish 26 nests. However, CLTs did not have a large enough breeding colony to adequately defend their nests from resident crows. CLTs may have had to travel farther out to sea (and leave nests unprotected) to find adequate small fish. Observations seemed to be that there were more times with unattended CLT nests than a healthy colony should have. They are most successful when colonies are larger and fish more abundant nearby. Coupled with an unusual high tide, the depredation pressure resulted in total loss of all CLT eggs prior to hatch.

Disturbance events including visitation with off-leash dogs remain high and enforcement of leash use and no-dog times low to zero. VAS Volunteer Naturalists have been speaking to more visitors every year and are raising awareness of the nesting birds and threats they face. People driving the beach with golf carts and ATVs seem to be emboldened with lack of enforcement and easy access as well.

Winter WSP population counts remain high and wrack amount landing on the beach is fairly consistent with its function as a sand trap.

Funding for monitoring this beach has run out and the monitor will not be able to spend as much time there or respond to issues as in the past with less funding. Plover beach fidelity seems strong despite failures. The preferred nest habitat seaward of the dunes may be shrinking with not only increased amount of sand removed during dredging years but with sea level rise as well.

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APPENDIX A

Table A-1. 2022 Hollywood Beach Western Snowy Plover Nesting Season Survey Data

Date	Total[1]	Fe-males	Males	Unk/ Hatch Years	Active Nests	No. of Eggs	Chicks/ Fledglings (age in days)	Potential Preda-tors	Notes[2]
04-Mar	21	5	4	12				CAFA5, AMCR4	windy
11-Mar	8	1	2	5				CAFA4	windy
18-Mar	2	1	1					CAFA3	pair making scrapes
25-Mar	15	7	4	4				CAFA4, AMCR1	Pair north of LGT 1; on 3/23 Alecia had counted 31 WSPs
27-Mar					1	2		CAFA5	New HB01 north of LGT 1, darkly-marked female, off nest a long time
29-Mar					1	3			Female on nest following rainstorms.
4-Apr	7	3	4		1	3		CAFA5	
8-Apr	4	3	1		1	3		CAFA5	
11-Apr	6	3	3		1	3		CAFA3	
15-Apr	6	4	2		1	3		CAFA3	Two pairs, 1 in mesh fence scraping; other has banded female (bb:ag)
18-Apr	6	2	4		1	3		CAFA3	bb:ag seems to be in a pair
22-Apr	7	5	2		1	3			Following .25" rain, HB01 still attended and likely new nest in fence.
23-Apr					2	6		CAFA1	Both nests incubated after fierce winds.
25-Apr	5	3	2		3	8		CAFA7	New HB03 with 2E laid by bb:ag. Not seen again near nest after this date.
27-Apr					2	5	3(<1)	CAFA12	HB01 hatched 3E, we accom-panied F + 3C to sand trap wrack. F may have chased M away after hatch! HB03, no recent sign of adult, POE'd 1E.
28-Apr					1	3			Transferred 2E from HB03 to SB Zoo to be raised.
29-Apr	10	3	1	3	1	3	3(3)	CAFA3	New male on beach ly:wr may be in a pair near HB03 nest site.
2-May	6	3	1		1	3	2(6)	CAFA8, AMCR2	Crow near chicks – likely pred-ator. Also tractor traversed sand trap area; band: ly:wr still present.
3-May							1(7)	AMCR2	Alecia reported, crows nearby.
6-May	6	4	1		2	5	1(10)	CAFA11, AMCR3	New nest HB04, suspect ly:wr is male. Also saw ww:wa
9-May	7	3	3		2	6	1(13)	CAFA1	Windy, saw ly:wr again
13-May	6	3	2		2	6	1(17)	CAFA1, AMCR1	Starting to see headless sea lions – suspect a juv. white shark. Saw ly:wr. First CLTs observed.
16-May	5	4			2	6	1(20)	CAFA2	

Date	Total[1]	Fe-males	Males	Unk/ Hatch Years	Active Nests	No. of Eggs	Chicks/ Fledglings (age in days)	Potential Preda-tors	Notes[2]
20-May	7	1	2		1	3	1(24) 3(1)	CAFA4, AMCR1	HB02 3H saw 3 chicks with M. AMCR disturbed HB04. 17 CLTs obs. Sea lions piling up and attracting gulls.
21-May							1(25)	CAFA4	Quick chick check. Heard a M calling, single mom aggressive towards HB04 F chased a M away.
23-May	11	6	4		1	3	1(27)	CAFA16	Window Survey, 2 potential new pairs, bands: nw:rv, Op:kg
28-May	7	3	3		1	3	1(32)	CAFA7 WEGU1	Could not flush chick to confirm flight. Band ly:wr with female
30-May	4	2	1		1	3	1(34)	CAFA8	Op:kg (M), more dead sea lions
3-Jun	7	4	2		2	6	1(38)	CAFA1, AMCR3	New nest HB05. CLTs arriving. Bands: vv:go (M), nw:rv (M). Tide within 15' of nest fence. More dead sea lions.
6-Jun	8	3	3		1	3	2(2) with ly:wr	CAFA1	HB04 3H, crow tracks near but saw male with 2 Cs. Male scraping. More CLTs arriving, hanging on beach, exchanging fish – found depredated nest. Bands: Op:kg with lg:pv; ly:wr with Cs-strayed close to gulls.
9-Jun	4	2	1	1	1	3	1(fledgling)		Focus had to move to CLT nests so less full beach WSP counts. HB01 C finally observed flying! Band: Op:kg
11-Jun					2	5		CAFA2, AMCR1	New HB06 nest. Up to 14 CLT nests with some predations. Bands: lg:pv, Op:kg, gy:wo
13-Jun	5	2	1	1	2	6			Up to CLT nest #19.
14-Jun	Unusually high tides submerged entire large fenced area and flooded 3 WSP eggs on HB05, and some CLT nests.								
16-Jun	9	4	3	2	2	4		CAFA2, AMCR1	New nest HB07 (dunes) w-1E, nest in mesh fence wave-washed along with 6 CLT nests. Up to CLT nest #22. Band:nw:rv
17-Jun	4	3	1		2	5		CAFA1, AMCR1	To #25 CLT nests.
20-Jun	4	3	1		2	6		CAFA2, AMCR1	Total CLT colony depredation, volunteer had seen crows days before. Band ly:wr with F but no Cs seen.
24-Jun	8	5	1	2	4	12		CAFA8	Two new nests, HB08 and 09. Bands: Op:kg & lg:pv potential pair.
27-Jun	12	6	5	1	3	9		CAFA6	Crows got into partially covered exclosure – will add more wire. Bands: ly:wr with F, nw:rv, Op:kg
1-July	10	5	4	1	4	10		CAFA3, AMCR3	New HB10 – pair looks young, inside failed CLT colony fence. ly:wr near HB06 F (about to hatch).
4-July	7	5	0	2	5	13		CAFA10	New nest HB11.

Date	Total[1]	Fe-males	Males	Unk/ Hatch Years	Active Nests	No. of Eggs	Chicks/ Fledglings (age in days)	Potential Preda-tors	Notes[2]
9-July	12	6	5	1	5	14		CAFA7	Op:wa (male)
11-July	14	5	6	3	4	11		CAFA2, AMCR3	HB06 3H. Op:kg, nw:rv (male), vv:bo
15-July	50	11	15	24	4	11		CAFA3	Many bands on arriving HYs. Many other shorebird species arriving.
16-July					4	9	1(1)	CAFA8	HB07 hatching, 2E & 1C still on scrape.
18-July	64	5	18	36	4	9	3(3)	CAFA5	New HB12-Op:kg potentially the M. HY with bands injured: py:pg
23-July	70	13	20	34	3	8	3(1)	CAFA10	HB09 3H. Many HYs with bands.
25-July	122	3	27	92	3	8		CAFA3	Hundreds of sanderlings and 40 LBCUs.
29-July	165	**3**		162	3	8		CAFA2	Many shorebirds and banded WSPs.
1-Aug	181	1	5	172	1	3	3(10)	CAFA5	Cs with unbanded M, HB09. HB10 had 3H. HB11 had 1H and 1 broken E.
5-Aug	205				1	3	3(21)	CAFA3	
7-Aug					1	3	3(23)		Volunteer report
8-Aug	77				1	3	3(24) 2(8)	CAFA2	M banded HB07 - nw:rv 2Cs with unbanded M (HB10)
12-Aug	235				1	3	3(28) 2(12)		Banded M (HB07) Unbanded M (HB10)
15-Aug	202				1	3	3(31) 3(24) 2(15)	CAFA2	M banded nw:rv with 3 Cs with developed wing feathers (HB07). Other Cs with 2 unbanded Ms (HB09, HB10).
19-Aug	67				1	1	2(28) 1(19) 1(1)	CAFA2 WEGU30 (probably only a few depredate)	Last WSP nest hatch(ing), 1 E in scrape, gull tracks at nest. WEGU observed chasing M with 1C. Adult +1C from HB11; M+2C from HB09 (lost 1C).
22-Aug	113				1	1	3(38) 1(22) 2(22)	CAFA4	3 with banded M nw:rv (HB07) Unbanded M (HB11) Unbanded M (HB10)
26-Aug	114				0	0	3 (fledglings)	CAFA3	From HB07
29-Aug	115				0	0	2 (29, fledge age)	CAFA8	Unbanded M (HB10, that makes 6 total fledges)
3-Sep	134				0	0	3 (fledglings)	CAFA5	Saw M nw:rv integrated into larger flock with fledges.
5-Sep	143				0	0		CAFA6	80 º, many WSPs up on debris due to high sand temps. Many shorebirds arriving.
9-Sept	153				0	0		CAFA4	90º, more dead sea lions
16-Sep	126				0	0		CAFA2	High shorebird counts continue. Monitored while HD removed sea lion carcasses.
19-Sep	120				0	0		CAFA1	Removed symbolic fences.
26-Sep	111				0	0		CAFA4	Removed mesh fence with volunteers this week.

Notes: [1] Not a daily count, observations during a typical 2-hour survey. CAFA =*Canis familiaris* (domestic dog), AMCR =American crow, WEGU =western gull.
[2] Abbreviations: C = chick, E = egg, H = hatch, HY = hatch year chick, inc. = incubating, M = male, F = female, HB## = nest number.

APPENDIX B: Issues and Recommendations

1. Resident Crow Depredation

Issue: Corvids are considered a human-subsidized native species and are increasing where people leave trash and feed birds. Crow depredation of least tern eggs and of newly hatched snowy plover chicks, as well as flushing adults off nests and chasing have been observed on this beach.

Partial Solutions: Continue the use of "decoy" empty exclosures to re-enforce non-rewards when crows investigate. Monitors also continue to use Bird-B-Gone plastic spikes on exclosures to discourage landing on them. Volunteer naturalists can remind people not to feed birds or leave trash behind.

Crow near active nest in exclosure

2. Unenforced Dog Regulations

Issue: Posted dog rules are: dogs allowed on leash before 9:00 a.m. and after 5 p.m. and not allowed between those times. However, people bring dogs all day long and most commonly let them off leash on the beach. On- and off-leash dogs will always be perceived as a threat by beach-nesting birds and cause stress, adults to leave nests and to use energy to distract, separation of broods from adults, and perhaps nest/chick abandonment or losses. Monitors observed two incidences in 2016 of newly hatched WSP chick broods separated from adults by off-leash dogs.

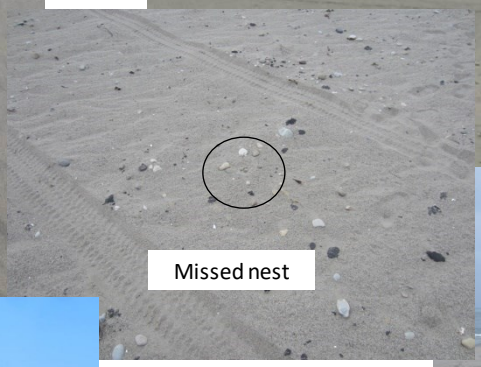
Solutions: The agency responsible for enforcement is Ventura County Animal Control. If they could perform 1 or 2 visits per week, talk to dog owners and perhaps give citations, it would decrease scofflaws and at a minimum get leashes used more consistently. Perhaps the hours allowed for on-leash dogs could be adjusted/increased if 100 percent leash use was obtained and enforced, especially during non-breeding season. VAS volunteer naturalists during the breeding season are helping with education.

3. Vehicle Access

Issue: Illegal and uninformed authorized vehicle access onto the sand by golf carts, ATVs, and full-sized vehicles through openings off Ocean Street is especially dangerous during nesting season, threatening unfenced nests, flightless chicks, and all beach roosting birds, especially after dark when some joy-riding is suspected.

Solutions: There are no barriers or posted signs at the many side street access points (e.g., San Clemente St) that only authorized vehicles are allowed on beach, which would at least clarify the rules. There seems to be confusion about who enforces illegal access. Ventura Audubon Society provided HD with a training video to enhance their knowledge of potential vehicle effects to nesting birds that they show to staff each spring.

Some of 13 access points between houses off Ocean Street.

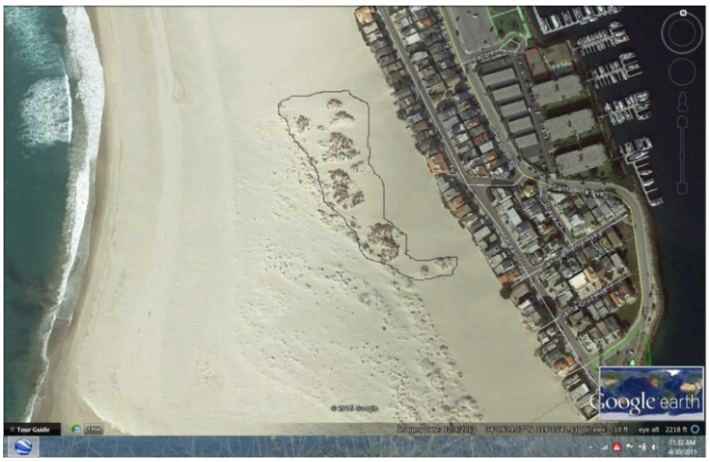


Missed nest

4. Nesting Habitat Loss due to Dredging and Nonnative Plant Spread

Issue: During bi-annual Army Corps of Engineers (ACOE) dredging years, suitable nesting beach habitat is lost. In addition, nonnative beachgrass is present and spreading in dunes, causing them to grow taller. Birds avoid thick vegetation and high dunes for nesting so grass spread is further reducing suitable nesting habitat.

Potential Solutions: In my role with the Ventura County Resource Conservation District, I submitted a grant proposal to CDFW Environmental Enhancement Fund for the nonnative plant removal and dune reshaping project for this beach. Our project lost out on funding in 2021 by less than 1 point and we were encouraged to reapply in January 2022, which I also did and was rejected a second time. Ventura County Planning Department will be writing a dune management plan, which will address issues. The ACOE may become involved, including with funding, as part of mitigation requirements. The greatest threat to habitat is the spread of beachgrass (*Ammophila* sp.) and iceplant and the unnaturally tall dunes they cause. Removing nonnative plants and deep roots completely and recontouring dunes is required and may increase suitable nesting habitat for plovers, especially in post-dredge years so they don't have to nest so far from the dunes' cover and food resources.



(Left) Grass-covered dunes (background) and natural dunes in foreground with great blue herons; (right) dunes of unnatural height with nonnative grass outlined within dune field

5. Sand Moving

Issue: Private homeowners hire a tractor to move sand from the edge of their property toward the tide line all year. During nesting season, this threatens safety and survival of unknown nests and flightless chicks outside fences and can bury essential natural constituents (e.g., vegetation and driftwood) effectively eliminating cover and invertebrate (food) sources for WSPs. This is becoming a more important threat as WSPs move their nests into open beach.

Partial Solutions: Ventura County included more ordinances in the 2018 LCP update to designate ESHA buffers around dunes and limit sand moving during the WSP nesting season (March-Sept 15th). There was some discussion about allowing natural spread of native plants and dune growth to occur to the north of the dune field, which should expand suitable habitat for summer and winter bird populations. At this time, that sand is regularly scraped (homeowner-funded). Monitors have not seen designated ESHA buffers enforced. We do maintain a good relationship with the current regular tractor driver who has cooperated to call us and clear an area before sand moving, sometimes skipping those areas close to nests. Other future operators may not be so careful.

(Left) Private sand-moving tractor; (right) after sand moving (background), WSPs using remaining wrack in foreground

6. Harbor Department Beach Grooming

Issue: Winter sand grooming by Ventura County removes vegetation, driftwood, wrack and essential natural constituents that provide cover and primary food supply for over-wintering and migratory WSPs that occupy the entire beach often numbering over 100 during the non-breeding season. Vegetation and beach debris are also the catalysts for new dune formation that is prevented where grooming removes them.

Partial Solutions: Grooming is not done before October or after March and operators are leaving some fresh wrack at the high tideline. Grooming less beach area near the dunes has allowed more of the native plants to grow and wrack to remain, which has benefited WSPs and other over-wintering shorebirds. Allowing new dune formation could actually trap more windblown sand before it reaches the homes and streets.

7. Homeowner and Visitor Education

Issue: Some of the residents are not attuned to the idea of sharing the shore with wildlife including sensitive nesting birds, native vegetation, natural debris, or dunes as habitat. Some of the local homeowners don't realize that most of the beach is County Open Space land, that two bird species have federal protection, and that their activities can cause stress and reduced reproductive success.

Partial Solutions: Ventura Audubon held a "Beaches as Habitat" public informational meeting in 2016 nearby. Continued seasonal educational sign use. VAS volunteer naturalists' presence during nesting season helps answer questions and explain disturbances, especially to dog owners. Additional outreach by County and HD would help educate residents on these and other (e.g., sea level rise) issues.

8. Aircraft, ultra-lights, motorized paragliders, drones, kites, low-flying aircraft, etc.

Issue: Helicopters, low-flying and loud aerial hobbyists near the nesting colony cause distress of incubating birds exhibited by adults leaving the nest. Nesting birds perceive these as predatory threats. Least terns may actually dive at the object and hurt themselves, pilots, or aircraft.

Partial Solution: In the past, the USFWS has sent a memo with map to local airports reminding pilots to fly above 500 feet in nest areas during the nesting season. Letter may need to be resent every year and to U.S. Coast Guard facility at NBVC. It would be nice if CDFW law enforcement resumes talking to paraglider pilots launching from Oxnard Beach Park about protected airspace.

Motorized paraglider and ultralight observed low over Hollywood Beach

9. July 4th Celebration and Illegal Fireworks

Issue: City-sponsored July 4th festivities draw huge crowds, loud noises, and bright lights of fireworks audible/visible from nesting area that disturbs breeding birds at a high chick presence time of the season. Also, private (illegal) fireworks launched into dunes endanger birds and nests.

Solutions: Move the public July 4th fireworks celebration from the area. More volunteer naturalists during July 4th and other summer holidays (especially Memorial Day, Father's Day, and Labor Day) helps with public education.

Illegal fireworks found on Hollywood Beach nesting areas