FINAL 2015 Breeding Season Monitoring Report for Western Snowy Plover and California Least Tern

Hollywood Beach, Oxnard, California

Submitted to:

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

by
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Hollywood Beach: Western Snowy Plover and California Least Tern
Final Report 2015

EXECUTIVE SUMMARY

The abundance and productivity of the federally listed threatened western snowy plover (WSP) (*Charadrius nivosus nivosus*) and the endangered California least tern (CLT) (*Sternula antillarum browni*) were monitored at Hollywood Beach located in Oxnard, Ventura County, California during the breeding season 2015. Activities were conducted according to U.S. Fish and Wildlife Service (USFWS) protocols for nest monitoring under the Endangered Species Act (ESA) by monitors with recovery permits Debra Barringer (permit# TE-89964A-0) and Danielle Glenn (permit# TE-35387A-0).

Western Snowy Plover

Nest season monitoring began on March 5, 2015 and the first WSP nest was recorded on May 21, the date of the range-wide Window Survey and over 7 weeks later than the first nest found in 2014. A total of 8 WSP nest attempts were located and documented on Hollywood Beach. Two of these nests were discovered as broken eggs, one of which had been tampered with by humans marking it with sticks. Monitors also saw this practice with several least tern nests and it likely caused nest abandonment and/or predation. American crows were present in the nesting areas most of the season and were observed near predated least tern nests. The other 6 snowy plover nests hatched at least 1 egg. However, no chicks were observed after their first week and it was assumed no WSP fledges occurred on this beach. Monitors used wire exclosures to protect the 6 successful nests until hatching and encircled nests and groups of nests in symbolic fencing with informational signs on posts. This year follows a winter of major dredging of beach sand primarily from the area used for nesting the last two years. The loss of beach sand changed the distance from dunes to the high tide line and overall width of beach near dune habitat available for WSP nesting. Consequently, the nests were spread out. The wind and wave-wash events that caused nest loss in past years did not occur in 2015. However, the likely cause of chick loss was depredation by constantly present crows.

California Least Tern

By early May, monitors were seeing many CLTs flying over Hollywood Beach and it appeared another high nesting season was beginning. However, as with the WSPs, the CLTs didn't find the wide area in front of the dunes that they prefer and scattered their nests more widely. By early June, 24 nest attempts had been made but adult attendance at the nesting area was very low and a small group of crows was able to depredate most nests within days of eggs being laid. Those not predated were abandoned and CLT abandoned the nesting area completely by the first week of June. No eggs made it to viability and no hatches occurred. A CLT nesting increase at McGrath State Beach may indicate these adults re-nested there.

INTRODUCTION AND SITE DESCRIPTION

Hollywood Beach is located in Ventura County on the west side of the City of Oxnard (Figure 1). It is located between the Oxnard State Beach on the north and the entrance to the Channel Islands Harbor on the south; Figure 2 depicts the nesting bird survey area. Hollywood Beach is owned by Ventura County and managed by the Ventura County Harbor Department (HD). It is a popular recreational and tourist beach. Maintenance includes winter beach grooming by HD in front of the homes except in the dune field area. All year, residents can hire a tractor to remove sand from in front of their homes to be pushed toward the beach. Other activities that occur at Hollywood Beach include a summer junior life guard training program

and Fourth of July activities at the Harbor that attract very large crowds to the area and include fireworks. Lifeguard towers, a restroom building, and trash cans are provided for public use and serviced daily by the HD staff in vehicles. The HD staff also stores nest exclosures and fencing material that monitors use and have access to.

The south end of the beach is generally wider, but varies year to year, with a dune field that buffers the sandy beach from the developed area (Figure 2). Some of the dunes are quite high, due to sand build-up caused by the presence of deep-rooted, European beachgrass (*Ammophila arenaria*). The breeding season survey area is approximately 1.5 miles long and includes the USFWS final revised critical habitat designation for WSP (Federal Register 2012). The majority of nesting activity by both species took place in the southern portion of the survey area primarily on the beach side of the dune field. This area is also known as the "sand trap" as it was designed in conjunction with harbor development to capture sand before it enters the harbor mouth. It is the area affected by biennial channel dredging.

Figure 1. Hollywood Beach Region

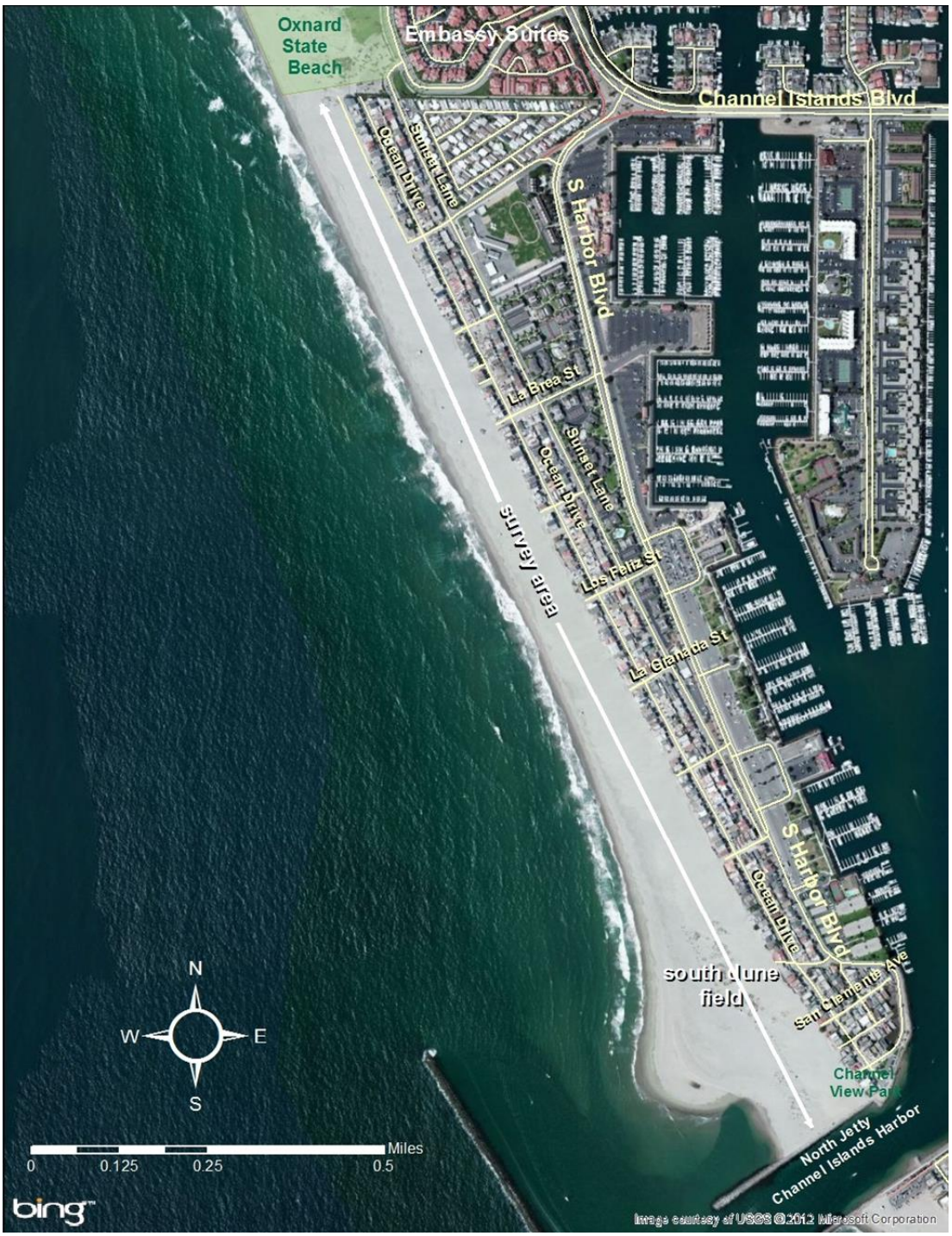


Figure 2. Locations of Survey Area Monitored at Hollywood Beach

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 and disturbance of habitat, predation pressures from a wide variety of animals, and other disturbances of breeding birds have caused the decline of the

coastal population of WSP and 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.

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 large nesting colonies. Much of their historical breeding habitat has been so altered and developed as to reduce nesting to a few areas. The California subspecies was federally listed as an endangered species in 1970 and as endangered under the state in 1980. Recovery Plan goals are to prevent extinction and return the population to a stable status (USFWS 1985).

METHODS

Because this was the first season following an especially large dredging effort, the area in front of the dunes that is historically the preferred nesting habitat was much narrowed. This may have been a factor in the 7 week delay in first WSP nest initiation. To minimize disturbance once nesting began, an area was chosen that overlapped some of last year's larger nesting area in front of the dunes and was symbolically fenced on May 5 when a large flock of CLTs was observed. It has been observed that WSPs nest in association with CLTS. Many of the WSPs subsequently chose nest sites outside the fence, some as far as 1,500 feet from the dune area. Several CLTs also chose nest sites north of the fenced area. The symbolic fence consisted of wood stakes, a single rope or string strand, bright flagging tied on ropes, and both official USFWS signs and child-drawn informative signs. When nests occurred outside the fence, they were either incorporated into the larger fence or another small symbolic fence was erected around the nest(s) until hatching. Consideration was always given to visitors' access to the beach. Outlying nests fenced individually have not been as effective to reduce disturbance and do not provide as effective longer term chick safe havens as large fence areas. On some occasions once nests failed, small fences were left up if monitors felt they may provide safe areas for chicks of other nests in the area, especially if vegetation occurred within the fence.

Population Abundance

Nest monitoring surveys were conducted a minimum of once weekly with monitors checking the entire beach early in the season and focusing on the southern end during active breeding with occasional checks further north. Monitoring was conducted in a systematic manner. A tight grid was walked each week by two permitted monitors focusing on relocating marked nests and finding new ones. As the density of both WSP and CLT nests increased, transects walked were adjusted accordingly so as not to miss any nests. Adult WSPs observed were recorded, as well as chick and fledgling numbers when present. Chick age-week was estimated and associated with a nest number when possible. Adult CLT numbers had to be estimated once the colony grew busier (approximately greater than 30 birds) and when adults were airborne most of the time. The breeding season surveys were conducted until four weeks after the final nest hatched.

Nest Activity

Conducted concurrently with population abundance surveys, nest fate was also tracked. As described above, parallel transects were walked by the two monitors covering the primary nesting area and areas outside suspected of having new nests. Searching for new nests included assessing adult bird behavior for potential breeding activity and waiting for a bird to return to a nest site if applicable. As in the past, the HD staff continued to watch for and receive calls from the public regarding any suspected nests that were not in

the fenced colony area and they would alert the monitors. Located nests were marked with inconspicuous numbered driftwood or wooden tongue depressors placed approximately 3 feet seaward. Mini-exclosures were placed over WSP nests to reduce incidences of predation and minimize most human-caused disturbance. Exclosures are constructed of wire mesh cubes 3 x 3 x 3 feet with 2 x 4-inch openings and were held down with 3 to 4 landscape U-pins to anchor them against strong winds. After exclosure placement, the nest was watched to make sure the brooding parent WSP returned to the nest.

All nests located were recorded by date found, GPS coordinates recorded as UTMs on a Garmin 72H GPS unit (with approximately 12-ft accuracy), number of eggs, and whether attended by a parent. Recorded nests were checked weekly until hatching, predation, or if non-viability was apparent. Nest hatching was determined by locating either an egg pip shell within the empty nest, observing displaying behaviors from adults in the vicinity of the nest, or by locating chicks when possible. A nest is determined to be successful if at least one of the above signs is observed. When a nest is found without eggs and none of the above signs is observed, evidence of predation is investigated. Evidence of predators includes animal tracks, large shell fragments and/or egg yolk in the scrape or within 2 meters, and the physical presence of an animal predator in the vicinity (Mabee 1997). Where possible the species of predator is determined or at least whether it was mammal or avian. Egg non-viability due to abandonment was determined by a combination of not seeing a brooding bird on/near the nest over a couple weeks, checking the nest for a minimum of the brooding time period (4 weeks for WSP, 3 weeks for CLT), and then placing one egg on end in the scrape to see if it is repositioned by a parent by the next week. If the egg has not been moved, the nest is considered abandoned and egg(s) non-viable.

Breeding Adults

The number of breeding adults was counted whenever possible. Breeding WSP adult numbers could be estimated by adding the number of 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. It is reasonable to assume that some adult WSPs may have bred and nested more than once on this beach, especially following nest, egg, or chick losses. For CLTs, numbers of breeding adults each week was estimated based on known number of active nests and on monitors' observations.

Banded Birds

During weekly surveys birds were examined for leg bands through binoculars. All band combinations were seen on WSPs and reported to Frances Bidstrup at the Point Blue Bird Observatory (PBBO, formerly known as Point Reyes). CLTs were also monitored for bands and/or transmitters but none were observed.

RESULTS

Population Abundance - WSPs

WSP Adults

In April the average monthly number of adult WSPs present was 11 compared to 60 individuals in August (Table 1). Once breeding activity began in May, the average number of adult individuals observed for that month was 7 and in June the average decreased to 5. Beginning in June, the influx of hatch year/juvenile WSPs from other beaches intermixed into the population. The July adult average population count was 11, and by August counts ranged from 43 to 82 reflecting the influx of migratory flocks.

Table 1. Hollywood Beach Western Snowy Plover 2015 Population Counts and Nest Activity

Date	Total Adults	Total All	Females	Males	Un-knowns	Chicks	Juveniles & Fledges	Active Nests
3/5	12	12						
3/13	7	7						
3/19	23	23	8	11				
3/25	18	18	12	6				
March Avg	**15**	**15**						
4/1	14	14	4	9	1			
4/5	6	6	2	3	1			
4/8	18	18	5	13				
4/12	8	8	4	4				
4/16	19	19	4	12	3			
4/20	11	11	2	8	1			
4/23	7	7	4	3				
4/26	12	12	3	9				
4/29	5	5	2	3				
April Avg	**11**	**11**						
5/2	13	13	3	9	1			
5/5	0	0						
5/9	10	10	4	5	1			
5/17	0	0						
5/21	13	13	4	9				1
5/25	6	6	3	3				2
5/29	8	8	5	3				3
5/31	7	7	5	2				4
May Avg	**7**	**7**						
6/3	5	5	4	1				4
6/5	5	9	4	1			4	4
6/9	3	5	3			2	3	3
6/10	8	12	4	4		1	3	2
6/15	6	8	3	3			2	3
6/19	6	10	2	4		2	2	2
6/21	6	6	2	2	2			2
6/24	3	6	2	1			3	2
6/28	2	2	2					2
June Avg	**5**	**7**						
7/2	7	19	2	5		2	10	1
7/4	3	11		3			8	

Date	Total Adults	Total All	Females	Males	Un-knowns	Chicks	Juveniles & Fledges	Active Nests
7/5	3	7	2	1		2	2	1
7/6		15						1
7/9	4	6	2	2		1	1	0
7/10	-	-				1		0
7/12	7	7	1	2	4			0
7/16	12	12						1
7/19	20	20	1	6			13	1
7/23	11	11		3	8			1
7/26	43	43	1		42			1
7/30	4	9	1	3			5	1
July Avg	**11**	**14**						
8/2	43	43	1		42			1
8/5	60	60						1
8/9	82	82						1
8/14	68	68						1
8/16	72	72						1
8/21	54	55				1		1
8/23	52	53				1		0
8/26	42	43				1		0
8/30	62	62						0
August Avg	**60**	**62**						
9/2		78						0
9/6		67						0
9/13		58						0

Figure 3 compares average adult WSP populations in May, the month least affected by non-breeding birds, over the years records have been kept.

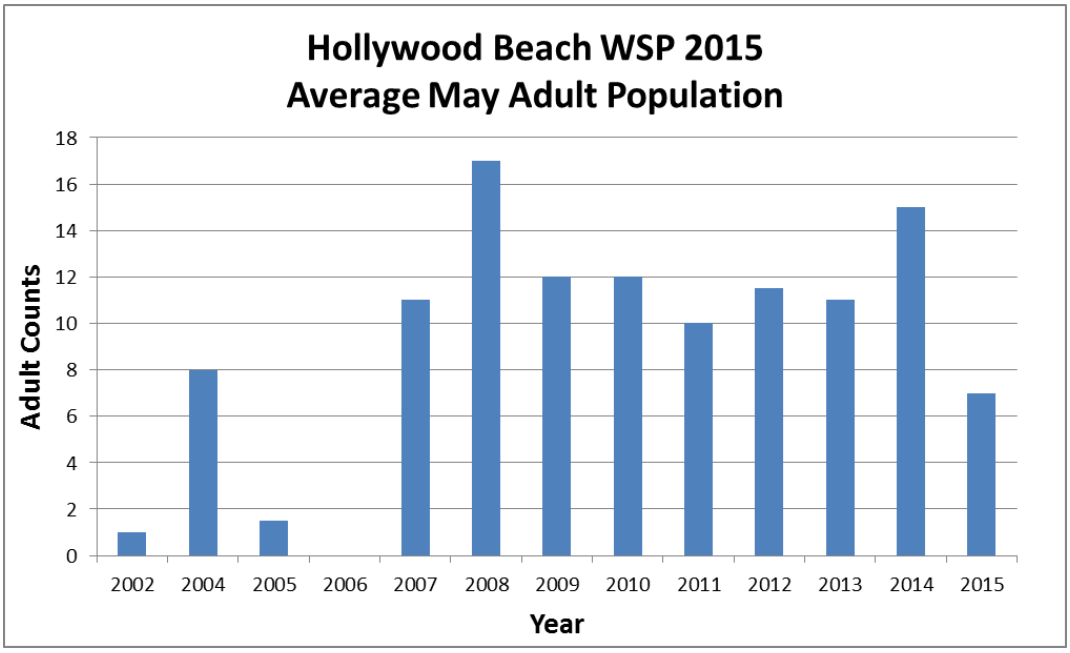


Figure 3. Average May Adult WSPs Population

It is interesting that the average May adult population does not seem to correlate with annual nest attempt numbers, which were by far the highest in 2013 and 2014 (see Appendix A, Figure A-1). One possible explanation may be that more double clutches or re-nesting is going on than can be determined with few individuals banded.

WSP Nest Activity

Below is a quick summary table of Hollywood Beach 2015 breeding information requested by the California Department of Fish and Wildlife (CDFW):

First Observed Nest Initiation Date	21-May-15
First Observed Hatch Date	9-June-15
First Observed Fledge Date	None from this beach
Period of Peak Nesting (the 1-week period with maximum number of active nests)	31-May to 6-June-15
Last Observed Nest Initiation Date	16-July-15
Last Observed Hatch Date	21-August-15
Last Observed Fledge Date	None from this beach
Length of Breeding Period (Total # days from first observed nest initiation to last observed fledging)	98 (to last chick sighting)

The first WSP nest of this year was discovered on May 21, 2015, approximately 7 weeks later than in 2014. The last nest initiated was found on July 16 in 2015 in contrast to in 2014 when WSPs continued to initiate nests until August 1.

During May and June the maximum number of concurrent nests was the same (4 for each month) (Table 1). Following June 16th, monitors never observed more than one active nest at a time (Figure 4). It was fairly certain that for at least one nest, after the loss of young chicks, the same pair re-nested quite close to the former nest. Without bands on the majority of birds, it is difficult to identify individuals for certain.

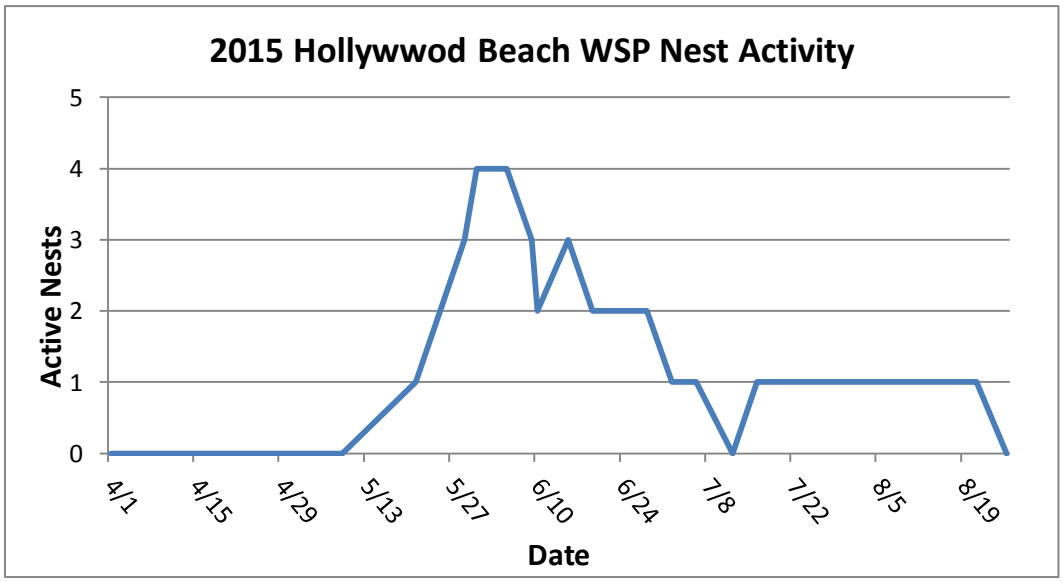


Figure 4. Hollywood Beach 2015 WSP Nest Activity

A total of 8 nests were initiated in 2015 (compared to 29 last year). Unlike the last two years when nests were more concentrated near the dunes on the larger sand trap and among the large California least tern nest colony, 2015 WSP nests were scattered, even well away from the dunes (Figure 5). A total of 21 eggs were laid with at least one suspected second nest by a female or pair.

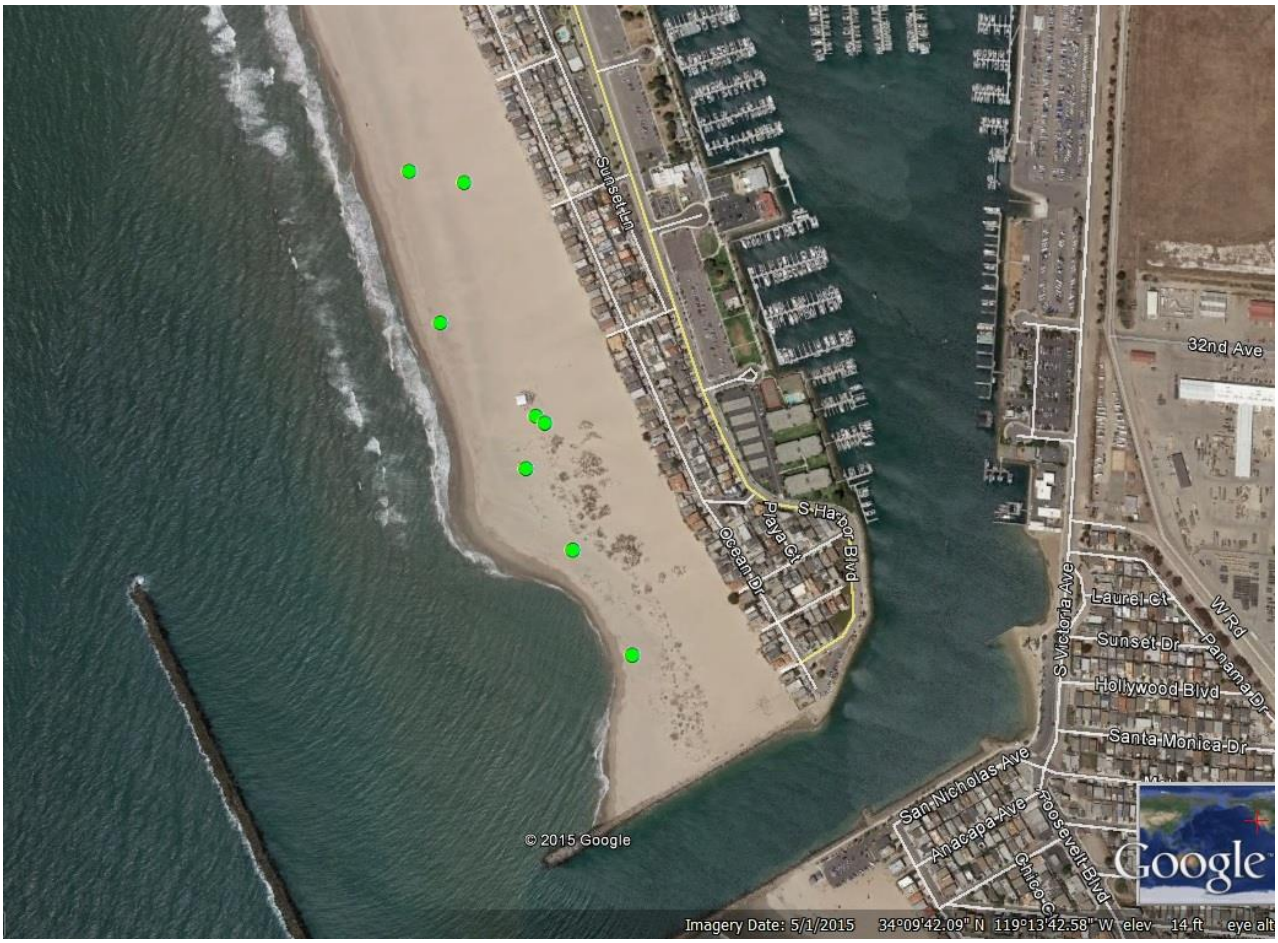


Figure 5. Hollywood Beach 2015 Documented WSP Nest Locations

The highest consecutive number of nests + broods (4) was recorded the week of May 31 to June 6, 2015 giving the estimate of total breeding adult WSPs of 8 for this year.

WSP Nest Fates

Of the 8 WSP nest attempts in 2015, 6 nests hatched 15 eggs for a 71 percent hatch success. The other two nests were found as already-depredated nests prior to being able to add a predator exclosure. One of those had been tampered with by people and was considered a "take" (Table 2 and Figure 6). Hollywood Beach has consistently shown hatching success to be above 50 percent since 2006 and often above 70 percent. Monitors attribute this to the consistent use of predator exclosures. This is, however, no indication of chick survival and whereas most years chicks are observed to reach at least their third week, in 2015 no chicks were seen older than one week. The Discussion section will propose some theories on this low chick survival success in 2015.

Several nests were located dangerously close to the high tide line but it was fortunate this year that high tides didn't coincide with when they were active and no nests were lost to either wave wash or wind this

year. However, nests at the tide line are more frequently disturbed by humans and domestic dogs as the majority travel along wet sand.

One WSP egg was collected but no dead chicks were seen or collected this year. No egg or chick mortality was caused by monitors.

Table 2. Hollywood Beach 2015 Western Snowy Plover Nests Fates

Nest #	Date Found	Eggs Laid	Date of Hatch/Other	Eggs Hatched	Comments
15HB-01	5/21	3	6/10	3	This nest was located far from the dunes and was individually fenced. Upon hatching (3 egg pips were found), there was no good cover for chicks and they were not observed.
15HB-02	5/25	2	6/10	2	Nest near dunes, 2 egg pips found. One chick with the male was observed on 6/10. Chick not seen again.
15HB-03	5/25	2	5/25	0	Monitors found remains of nest. Sticks had been placed like a stockade around nest causing abandonment and/or predation.
15HB-04	5/29	3	6/19	2	Nest far from dunes to the north. Last egg placed on end, adults had abandoned it and was undeveloped (non-viable) when broken.
15HB-05	5/31	3	7/2	3	Three egg pips found. Two adults with 2 chicks seen on 7/2, and 2 chicks again on 7/5. Chicks not seen again.
15HB-06	6/13	3	7/9	3	Three egg pips were found. One chick observed on 7/9 and one on 7/10 with male but not thereafter.
15HB-07	6/15	2	6/13	0	Only broken eggshells in a scrape found.
15HB-08	7/16	3	8/21	2	First egg found 7/16, 3rd egg by 7/26. Single chick seen 8/21 (1 egg still on nest), 23, and 28 but not after. One egg collected.
Totals		21		15	

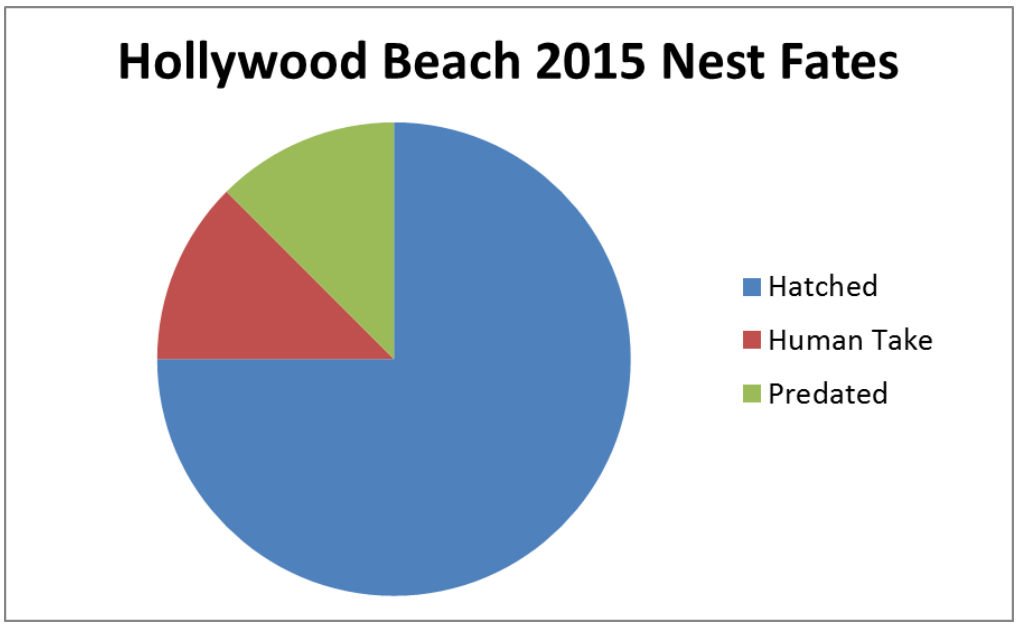


Figure 6. Hollywood Beach 2015 Reasons for WSP Nest Failures

WSP Chicks

WSP chicks were only observed on 8 different days in 2015. These dates spanned from June 10 until August 28 with peak chick activity during the July 4th holiday weekend. Monitors spent extra effort to find and follow chicks this year, visiting with more frequency, but saw no chicks after their first week. One nest hatched on July 9 and a monitor visited the beach the next day. Immediately in front of the small fenced nest site, a group of approximately 70 to 100 people were spread out along the wrack line, all of which likely accessed the beach by walking through the dune area. A male WSP and one chick were observed in the dunes. Chicks are not able to thermoregulate their temperature on their own until after their second week so separation from an adult can cause hypothermia as well as expose the chick to predation. By the next check on July 12, no chicks were found.

It was gratifying to often observe WSP chicks that were born near the dunes spending time inside the largest fence where they had at least a spatial buffer from human disturbance during times when they were not at the wrack line foraging. Some foraging may also have occurred around native dune vegetation. Other bird species were seen to spend resting and loafing time within the fences as well. Monitors felt even the symbolic barrier provided protection from the majority of human, dog, and vehicle traffic. The observation of fewer footprints, dog prints, and tire tracks within the fence was proof of this difference in traffic and therefore, decreased disturbance. In the case of one nest individually fenced, the fence was extended as close as possible to the wrack line as the hatching date approached to provide more protection for feeding. However, fences provided no refuge from natural predators. On one occasion a monitor noted a crow diving at a male that was with a chick.

It is still thought that male WSPs caring for chicks tend to take them into the low, vegetated foredunes in the afternoons after foraging at the high tide line. This would indicate the value of the smaller, naturally vegetated dunes as chick-rearing habitat, even as limited as it is on Hollywood Beach.

Banded Birds

Banded WSP observed during the survey periods were recorded and the data was sent to Frances Bidstrup, with PBBO. Records checked by Frances revealed that the few banded birds observed this year during the breeding season on Hollywood Beach were all banded at Vandenberg Air Force Base (VAFB).

Population Abundance - CLTs

CLT Adults

Monitors began observing CLT flyovers at Hollywood Beach on April 29th, 2015, a few days earlier than in 2014 (May 2nd). There was a sudden peak of 60 flyover CLTs estimated on May 5th, none were observed 4 days later, and then another count of 40 on May 17th when nesting began. Numbers continued to fluctuate after that until the population crashed after May 31st. Scattered few individuals and pairs were occasionally seen June through August.

When CLT numbers were over approximately 30 and they were all airborne at the same time, it was difficult to directly count, therefore, estimates were made. Estimated total breeding adult CLTs for this season, taking probable re-nesters into account, were 14. A graph depicting the history of recorded breeding adult CLT populations at Hollywood Beach is presented in Appendix A, Figure A-2.

CLT Nest Activity

The first 8 CLT nests were observed and recorded on May 17, 2015, 9 days earlier than in 2014. Figure 7 shows a close-up of the locations of the documented CLT nests at Hollywood Beach in 2015 (in context with the WSP nests). These sites represent waves of nests, predations, and replaced nests so did not occur at the same time. By the date of the next survey (May 21) 7 of the first nests had been depredated and one considered a “take” as it had been tampered with. Monitors noted the presence of American crows on most days and they entered the nesting area frequently. A great blue heron that had become habituated to fishermen was seen foraging in the dune area on a couple occasions and its tracks near some nests. During that second survey, 3 additional nests were located and one newly predated nest. A slight “second wave” was noticed on May 31st when 9 new nests were found, some of which had already been depredated. By the next survey, all of the remaining active nests were either depredated or had unknown fate. A couple of CLTs, in their attempt to foil predators, even hid nests so well from monitors they were not found until weeks later and, since eggs were present, considered abandoned. A total of 24 nest attempts were located and recorded, none brooded to hatching. All nests were lost or abandoned by their second week. It was also noted by monitors that CLT presence at the nesting area was much diminished from what is normally required to defend nests and brood eggs successfully.

Figure 7. All Hollywood Beach 2015 Documented Nest Locations

CLT Nest Fates

A summary of 2015 CLT breeding results is presented in Table 3. There were no successful hatches from the total of 24 CLT nests initiated in 2015. The presence of crows near the nesting area was noted from April through mid-July and they were often seen walking between nests. Adult CLTs were rarely noted to be present and defending nests as in the past. Three nests had uncertain outcome and 2 nests were found abandoned (with eggs still present). One nest was attributed to human "take" as it had a stockade of sticks placed around it and then abandoned and/or predated after that. Historical CLT nest success numbers at Hollywood Beach are compared in Appendix A, Figure A-3.

No non-viable CLT eggs or dead chicks were collected. No takes of eggs or chicks were caused by monitors.

Table 3. Hollywood Beach 2015 CLT Breeding Summary

Date terns first observed	29-Apr
Date terns last seen	1-Aug
Date of first nest	17-May
Date last nest found	9-Aug
Date last nest established	31-May
Date of first hatch	N/A
Date of last hatch	N/A
Date of first fledgling	N/A
Estimated number of pairs	14
Total number of nests	24
Total number of eggs	28
Clutch size:	
1 egg	24
2 egg	4
3 egg	0
4 egg	0
unknown (min. 1 egg)	
Average clutch size	1
No. of nests hatching young	0
Total number of eggs hatched	0
Estimated number of fledglings	0
Number of chicks banded	0
Number of adults banded	0
Uncertain outcome	
Nests	3
Eggs	4
Documented Mortality	
Preyed upon	
Nests	18
Eggs*	20
Chicks	0
Fledglings	0
Adults	possibly 1*

Human disturbance	
Nests	1
Eggs	1
Chicks	0
Fledglings	0
Adults	0
Other causes	
Nests	
Abandoned (pre-term)	2
Failed to hatch (incubated to term)	0
Died hatching	0
Damaged (eggshell thinning)	0
Flooded	0
Eggs	
Abandoned (pre-term)	3
Failed to hatch (incubated to term)	0
Died hatching	0
Damaged (eggshell thinning)	0
Flooded	0
Chicks	0
Fledglings	0

*****Feathers thought to be from a CLT were collected.

DISCUSSION

WSPs

Many questions were raised in this nesting season that followed one of the largest dredging efforts at Hollywood Beach. Studies have shown that at least some WSPs return to nest on the beach where they hatched (Colwell et al. 2007). It is difficult to verify return rate on Hollywood Beach as only a few bands are seen during the breeding season. But if some that returned were hatched on Hollywood Beach in either 2013 or 2014, they returned to a very different beach. Dredging was conducted in winter 2014-2015 and removed approximately 2/3 of the width of the area in front of the dunes where most nesting occurred, judging from Google Earth aerial photography (see Figures 8 and 9). The suitable nesting habitat available was much reduced. Snowy plovers have shown that they prefer nesting between dunes and the high tide line and around dunes up to a certain height. They seem cognizant of where high tides will occur and usually avoid placing nests at the tide line. Some of the dunes at Hollywood Beach have risen to unnatural heights with the presence of European dunegrass (*Ammophila arenaria*), which can collect sand and continue to grow. Beachgrass and high dunes can harbor hiding places for predators and WSPs tend to avoid nesting near them. Thus, the higher dunes have reduced available nesting habitat beyond that lost to dredging.

WSP nest initiation occurred 7 weeks later in 2015 than in 2014. The weather was probably more favorable in 2015 with fewer high wind events. However, some April tides were noted to rise almost right up to the dunes remaining after dredging. Pairs were watched early in the season near the dunes. However, the first, third, and fourth nests were laid in the vast, flat area north of the dunes near tiny vegetation patches. Crows were noted to be present in the dunes in late April and may have deterred WSP nesting. In addition an beach event may have caused some delay in nest initiation. Monitors had been noting WSP presence consistently in the northwestern portion of the dune field, with several pairs and scrapes there beginning in April. A large event tent was set up near there on May 1st, accompanied with vehicles bringing in chairs and other equipment. This tent is actually visible on the Google Earth photo in Figure 9. The several-day disruption most likely had an effect on plover pairs that were in the vicinity that may have subsequently moved out of the dune area or delayed nesting. The event group had contacted Harbor Department but changed the location they had originally told them the event was to be held (off-beach). Monitors exchanged emails with HD and all hope to avoid this type of event during nesting seasons in the future.

The likely benefits to the WSPs for placing nests in and near active CLT nests (e.g., CLT aerial defense of nests from predators) seemed to be much diminished this year as the CLTs were less attendant at fewer and more scattered nests. Because CLT nests cannot be protected with exclosures, losses to their nests were high and the rest were abandoned. Every WSP nest that was enclosed was not depredated; two were first found already depredated, one after being “marked” by well-intentioned humans.

The average number of breeding adult WSPs present in May was 7, compared to the recovery plan goal for this beach of 4 breeding adult WSPs (USFWS 2007). The 8 nests initiated on Hollywood Beach in 2015 compares with the annual average of 8.5 nests initiated from 2005 to 2012, when dredging occurred regularly. The 2015 WSP nests continued the historically high hatch rate recorded on this beach. However, with nests scattered far from the protection of the dunes and vegetation, once chicks hatched from several nests there was no access to cover. The constant presence of crows was likely both a deterrent to nests being placed in the dunes and probably the cause of early chick loss after hatching. Other reasons that are common on this beach for chick disturbance and perhaps separation from adults include the high number of visitors and dogs off leash, maintenance and other vehicles such as golf carts and bicycles, and increased human activity in the high dunes including bonfires and drinking parties.

Figure 8. Taken December 9, 2013 after Several Years of No or Limited Dredging with WSP Nest Locations.

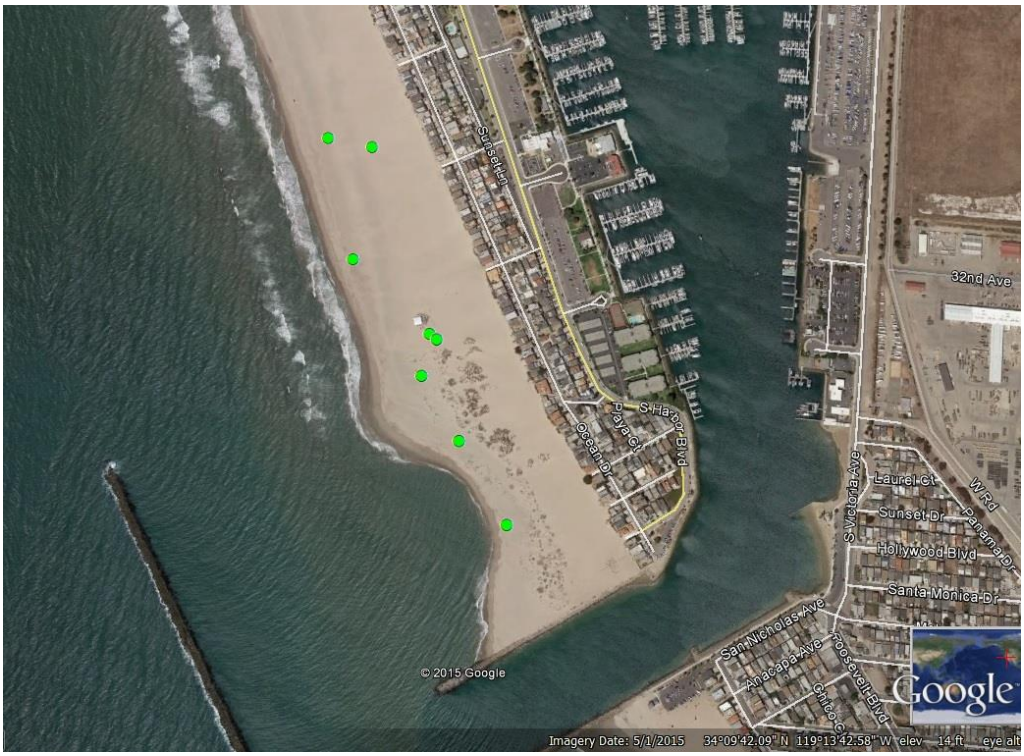


Figure 9. Beach Width Remaining in May 2015 After Winter Dredging of the Adjacent Channel, and WSP Nest Locations.

Appendix A, Figure A-1 depicts the recorded history of WSP nests initiated and hatched on Hollywood Beach. Some of the high hatching success is attributed to the use of predator exclosures compared to other nesting areas within and outside Ventura County that do not use the exclosures and experience high nest depredation. It was fortunate that during 2013 and 2014 when nesting was historically highest on this beach, predator presence was low or occurred early enough in the season to allow re-nesting and the large number of CLTs were overall effective in defending the colonies, which benefitted WSPs as well.

CLTs

The primary reasons for CLT nest failure in 2015 seem to include a combination of nest inattentiveness and colony size too small to be effective in defending against even a small number of predators, as well as several nests being too scattered to benefit from the colony aerial defense (Figure 7). The narrow configuration of the dredged beach remaining in front of the dunes must have had an effect on placement of nests, which over the last 2 years were more clustered near the dunes. Like the WSPs, the CLTs have shown a preference to nest between dunes and high tides. They also seem to have a minimum beach width requirement for nesting in addition to topography of low sand mounds to flat areas. It can be speculated that some of the nesting CLTs had hatched on this beach in the last year or two and were young, inexperienced nesters. Also, they may have had to travel far to obtain sufficient prey fish and were therefore leaving nests unguarded longer than prudent. Because crows are long-lived and are known to have good memories, it is tempting to think that the frequently seen small band of crows observed were the same ones that depredated the first 34 CLT nests of last year. A monitor observed that after setting up the first empty wire exclosure of the season so it would be handy for when nests were found, a crow landed on top of it within minutes. Even if the crow is not associating the exclosure with potential food within it (which is protected), it can become a perch to observe unprotected CLT nests around it. Monitors keep this in mind when deciding if skipping the use of an exclosure is warranted. They are also trying to come up with ways to keep the crows from landing on exclosures. They have used several “decoy” exclosures distributed across the area not associated with any nests to disassociate exclosures with access to nests. They have also flipped some spare exclosures with the open section on top preventing landing on top - another method to provide disincentives to crows. Even if they are prevented from accessing plover eggs within the exclosure, crow presence is surely a disturbance to the brooding adult.

The 24 CLT nests initiated in 2015 was about twice the average of 11 nests initiated in the years prior to 2013. These numbers fluctuate widely for unknown reasons (Figure A-3). It was learned in 2013, however, that when populations crash at other locations, having an alternate nesting beach is important to sustain a Ventura County breeding CLT population. In the past, Hollywood Beach had experienced very little predation pressure of WSP and CLT nests/eggs, even though daily human/dog disturbances can be high. With the historically patchy, inconsistent nesting attempts and usual lack of a substantial colony size at this beach, predators may not have been aware of the prey resource until later in the 2013 season, when a single peregrine falcon and a red-tailed hawk were observed. However, the crows were present from the start of the 2014 breeding season and showed an obvious lack of fear of the diving CLTs and of humans (including hazing techniques such as shouting, running toward, and throwing rocks) while depredating eggs. A lack of fear could be because these crows are local residents that usually feed on trash. It was observed that people in the nearby parking lot feed birds and this can contribute to crows becoming habituated to humans. The CLTs were likely able to replace the early 2014 season lost nests as they had a larger colony and were present more often to defend. Re-nesting for least terns is not uncommon (Massey & Atwood 1981) and was noted at Hollywood Beach in 2004 when Ormond Beach experienced an unsuccessful nesting season (Smith 2007). In 2015, a similar small group of crows seemed to be present constantly and were the likely predators for all the lost CLT nests. After a small wave of re-nesting on Hollywood Beach in 2015, the

small CLT colony abandoned completely and likely re-nested on McGrath State Beach, where a subsequent increase in nests was seen.

It is still believed that breeding success at Hollywood Beach is enhanced by the combination of the use of nest predator exclosures, educational signage, the large symbolically fenced area that kept the majority of human and dog disturbance at a distance, regular nest monitoring, and docent presence. As in past years, survival of both species of chicks to fledge stage is the primary unknown and most difficult to achieve. Both species must avoid the dangers of frequent humans, dogs, and vehicles on the beach as well as other more natural threats of predators, wave wash and wind events.

A pipeline rupture and spill into the ocean near Refugio Beach north of Santa Barbara on May 19th was thought to affect waters as far south as Oxnard in the following weeks. The observed effects included thin patches of oil at the high tide lines but also the increased presence of state and private workers and vehicles near nesting areas. It was noted on Hollywood Beach that on 5/29, a CDFW truck was apparently stuck in the sand near the nesting area and once free, drove away at a speed that may have been dangerous to nesting birds and chicks as the monitor approached to speak with him.

These reports will continue to pursue the idea that there may be a relationship between winter dredging of the near-shore channel at Hollywood Beach and the effects to the extent of the suitable nesting habitat available, as measured by the number of CLTs and WSPs that choose to nest. The area that becomes wide where the majority of nests occur was developed by the Army Corps of Engineers as a “sand trap” to collect sand naturally moving southward, primarily from the Santa Clara River mouth, before it enters the Channel Islands Harbor.

The informal aerial photo comparisons with annual WSP and CLT nest numbers is presented again in Appendix B with newest available photos added. Dredging of the sand trap and channel resumed in fall of 2014 through January 2015 and the corresponding reduction in beach size and breeding abundance for the 2015 season is striking. Other factors affecting breeding abundance and preferred locations, including changes in forage prey availability, predation pressure, and other types of disturbances at this and other locations, may also play into reasons for inconsistency in CLTs using Hollywood Beach for nesting. WSP nesting attempts and success may be influenced by numbers of CLTs that chose to nest there.

Once again Dan Robinette, Senior Biologist/ Coastal Program Leader at Point Blue Conservation Science (formerly PRBO), Vandenberg Field Station, collected least tern droppings and discarded prey fish from the beach to continue his analysis of prey resources across the CLT range.

RECOMMENDATIONS

1. Human Disturbance

Issue: Humans trespass near and into fenced nesting areas cause disturbance to brooding birds. Also, well-intentioned but deadly vandalism of nests to "mark them" before they are found by monitors.

Solution: Will continue to symbolically fence around potential nesting area and hope to get more docents involved. Hope to get the word out to locals to not mark or touch nests or eggs.

Human "marking" of a nest that was then abandoned and/or depredated.

2. Resident Crow Predation

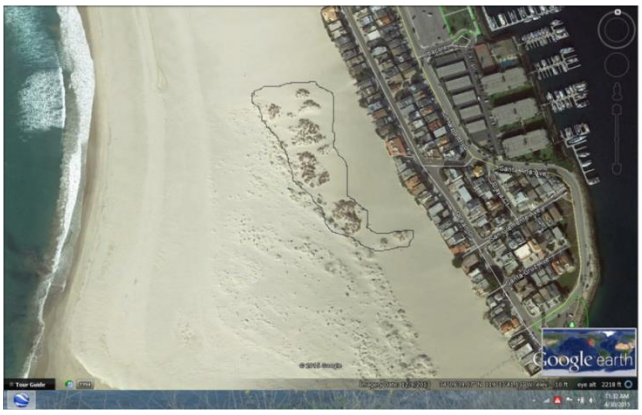
Issue: Corvids are considered a human-subsidized native species and are increasing everywhere. Predation of least tern eggs and newly hatched snowy plover chicks became a problem on this beach last year, when CLTs were able to recover. This year predation caused a total CLT colony collapse and abandonment.

Solution: Continue to caution people about leaving trash around and feeding of birds.

3. Beach Loss due to Dredging

Issue: In regular dredging years, suitable nesting beach will be lost.

Solution: With help of VAS, we are focusing on a Plan to remove European beachgrass and reduce tall dunes in height to expand suitable nesting areas that are not prone to dredging and are more permanent.



Grass-covered dunes (background) and natural dunes in foreground; dunes with grass of unnatural height (outlined)

4. 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 of chicks and buries natural constituents (vegetation and driftwood) effectively eliminating cover and invertebrate (food) sources.

Solution: Sand moving should be prohibited during the WSP nesting season (March - Sept 15th). As it stands now, the driver has been good to call monitors and clear an area before sand-moving, sometimes skipping those areas close to nests.

Private sand-moving tractor; Hollywood Beach following sand-moving

5. Vehicles

Issue: Illegal access onto the sand by golf carts, ATVs, and unauthorized trucks, especially harmful during nesting season.

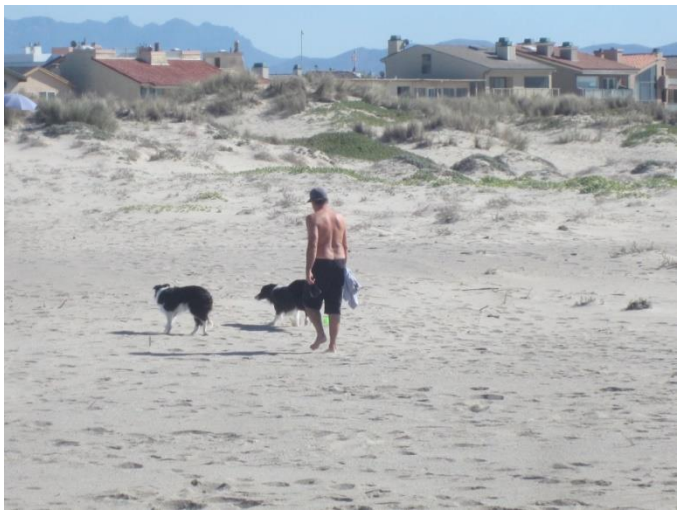
Solution: We need responsible enforcement to ticket violators during nesting season. Post signs at the many side street access points that only authorized vehicles are allowed on beach. Best if maintenance vehicles stay away from dune area during nesting season.

Private beach cart next to fenced active nesting area.

6. **Dog Laws**

Issue: Posted dog rules are: dogs allowed on leash before 9:00 a.m., not allowed after 9:00 a.m. 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 and perhaps nest/chick abandonment. No agency has taken responsibility for enforcement.

Solution: Need 1 or 2 visits per week by dog law enforcement (County Animal Control) and citations given out to decrease scofflaws. Word will get out quickly.



7. **Beach Grooming**

Issue: Winter grooming by Ventura County of most of the beach removes vegetation and wrack that harbors primary food supply for over-wintering and migratory WSPs that don't remain only in dune area.

Solution: We asked that they leave some fresh wrack at the high tide line.

8. **Homeowner Education**

Issue: Some of the public are not attuned to the idea of sharing the shore with sensitive nesting birds. Some of the local homeowners don't realize that most of the beach is County land.

Solution: Docent presence during nesting season helps answer questions and explain disturbances. Ventura Audubon Society planning a spring Beach as Habitat event for Oxnard area.

9. **Ultra-lights, motorized parasails, drones, kites, low-flying aircraft, etc.**

Issue: Low-flying and loud aerial hobbyists too near the nesting colony cause distress among brooding birds. Least terns may actually dive at the object and hurt themselves. On one occasion, monitors recorded brooding CLTs being flushed off nests by a low-flying helicopter.

Solution: Ban flying recreational objects from March through September 15. Provide an enforcement phone number (Oxnard police?) for monitors/docents for immediate action when problems occur.

10. July 4th Celebration

Issue: City-sponsored festivities draw huge crowds, noise, and lights of fireworks over nesting birds. Also private fireworks launched into dunes endanger birds and nests.

Solution: More docents during this and other summer holidays (especially Memorial Day, Father's Day).

11. Special Events

Issue: Large disturbance events popping up on beach with no contact to monitors. An early May 2015 event tent and crowds over several days may have been a reason for delay in nesting or for WSPs choosing to nest far from dunes in unsuitable habitat.

Solution: Better communication in future years and events will not be allowed, especially during nesting season, next to the dune area. Monitors may be able to clear another beach area with prior notice.

ACKNOWLEDGEMENTS

A special thank you to Danielle Glenn for her invaluable assistance in monitoring once again; the success of this effort would be adversely affected without her expert help. Other gratitude goes out to Alexis Frangis for mobilizing and training docents, Bruce Schoppe for pursuing funding and help with fence detail, Cynthia Hartley for grant writing and map creation, and Chris Dellith, Michael Glenn, and Bill Standley for being agency liaisons. Also thanks to the Harbor Department staff that helped moved supplies off the beach and continues to store them. The biggest appreciation goes to Ventura Audubon Society and The U.S. Fish and Wildlife Service who generously provided funding for monitoring and fencing materials this year. Sincere thanks goes out to those trained docents who volunteered their time to oversee visitation to the area and to educate the public on how extraordinary it is to have these incredible birds call Hollywood Beach their home for the breeding season.

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Appendix A. Comparing 2015 with Past Breeding Seasons

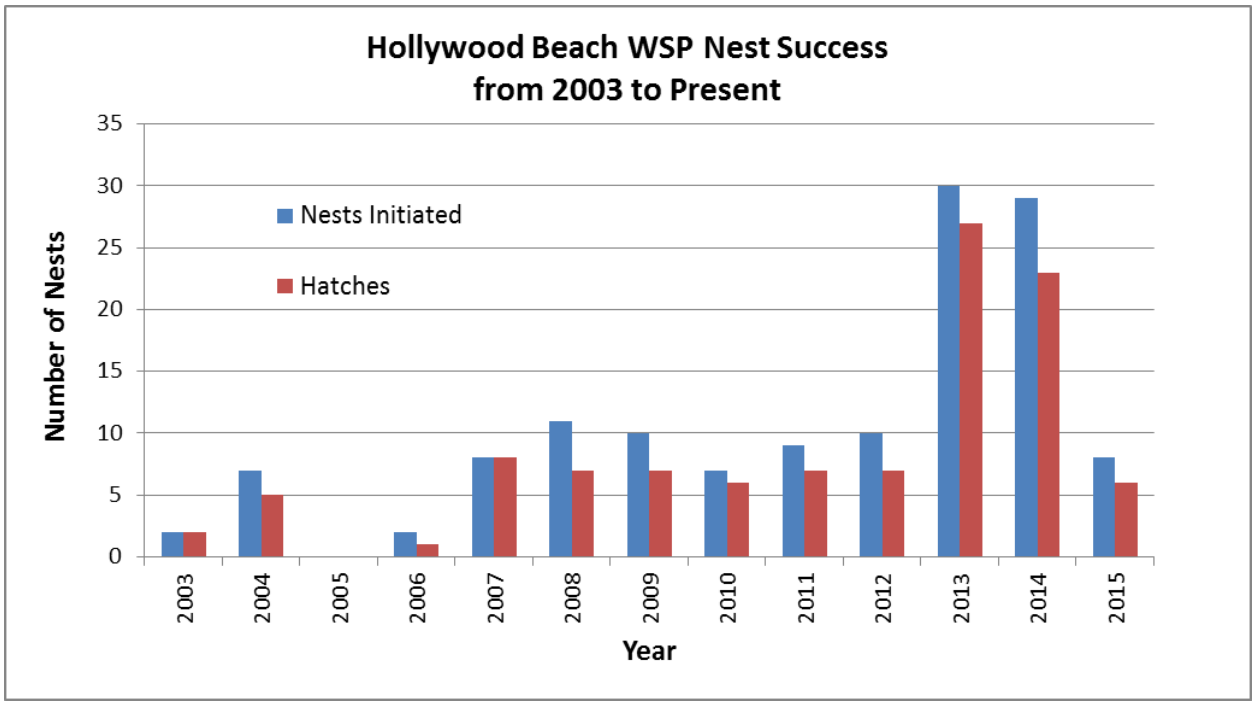


Figure A-1. Hollywood Beach WSP Nest Success from 2003 to Present

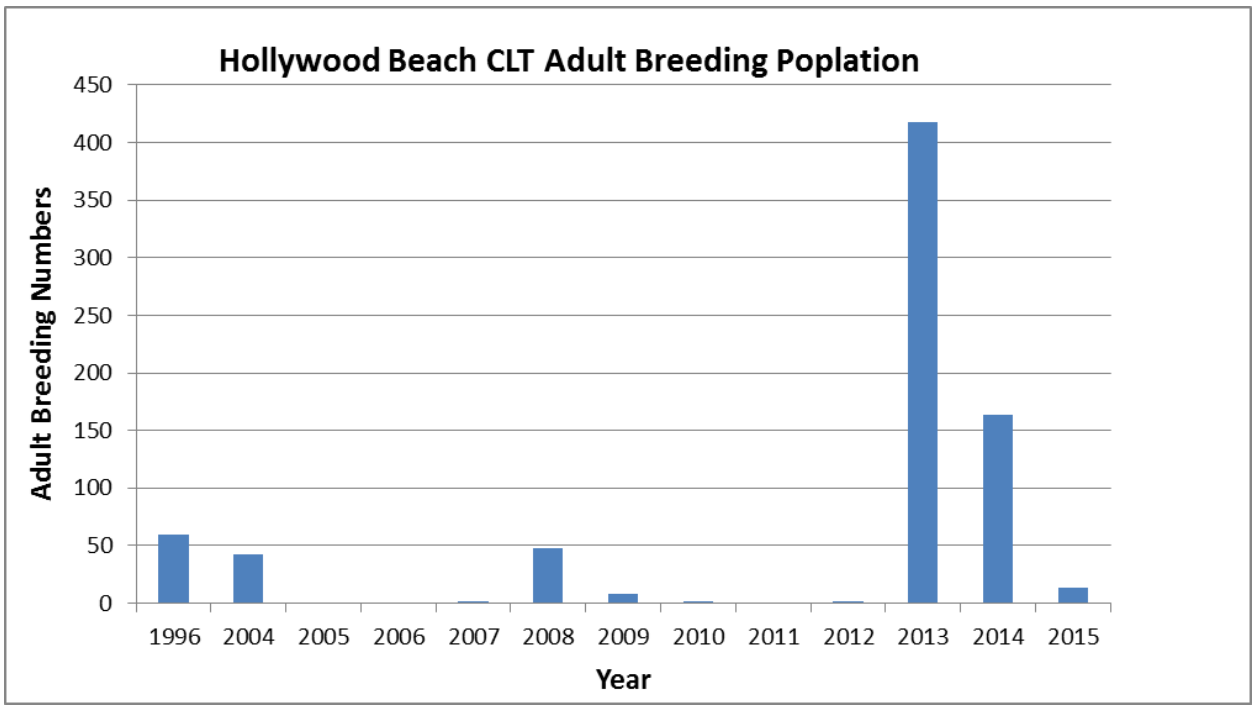


Figure A-2. Average Numbers of Adult CLTs Present at Hollywood Beach During Breeding Season

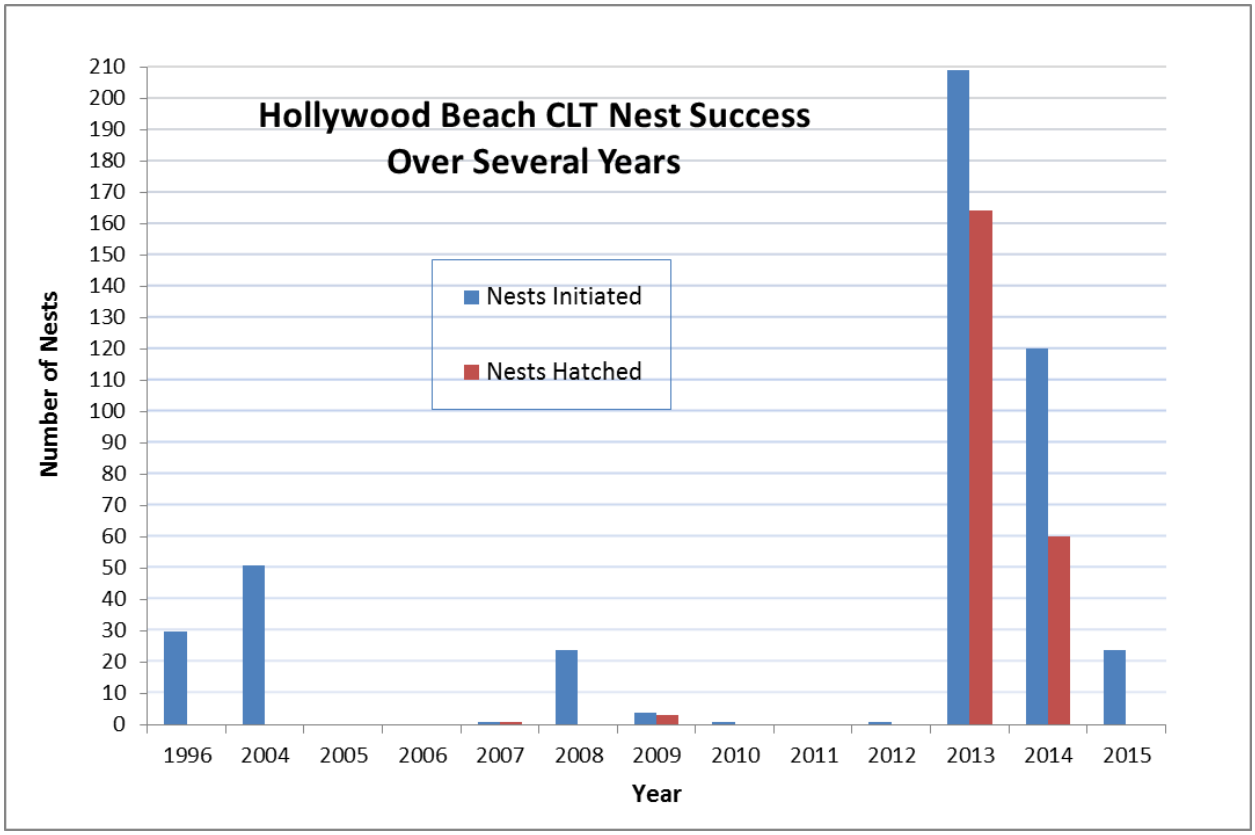


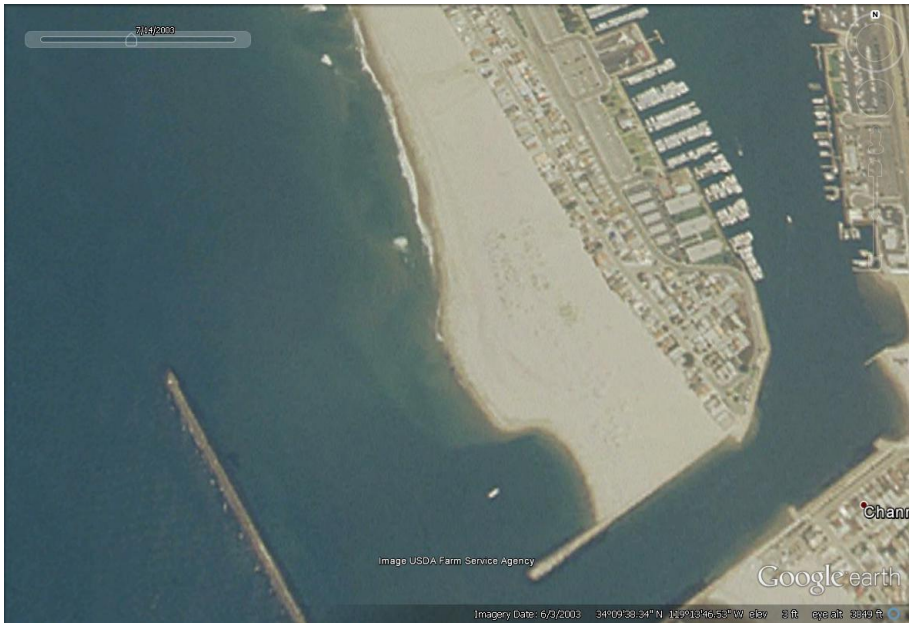
Figure A-3. Hollywood Beach CLT Nest Success

Appendix B. Aerial Photo Comparisons to Nest Attempts

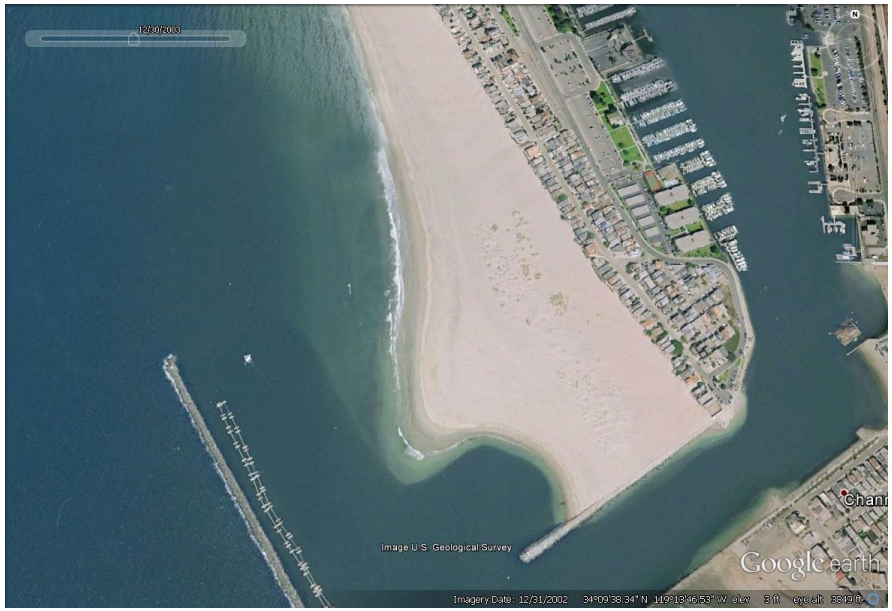
Hollywood Beach
Oxnard, CA

Comparing Historical Aerial Imagery
and WSP & CLT Nest Initiation Numbers

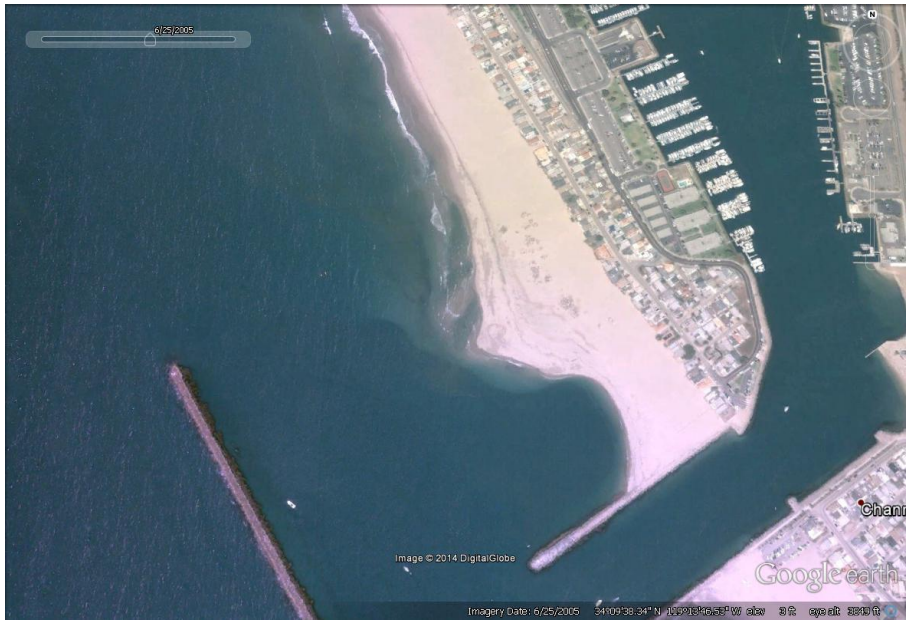
September 1994
(no nest data)



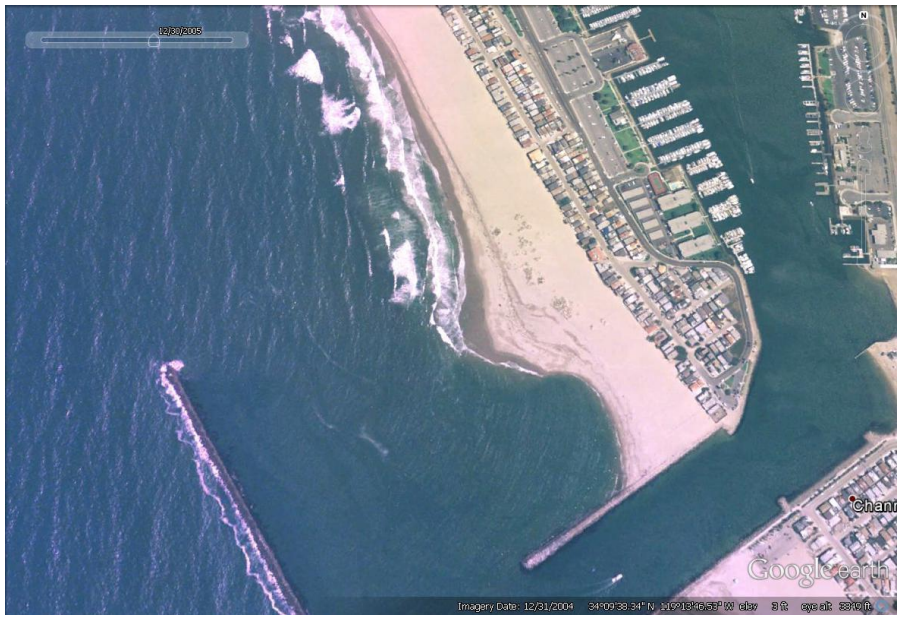
July 2003 (Nests = WSP-2, CLT-0)



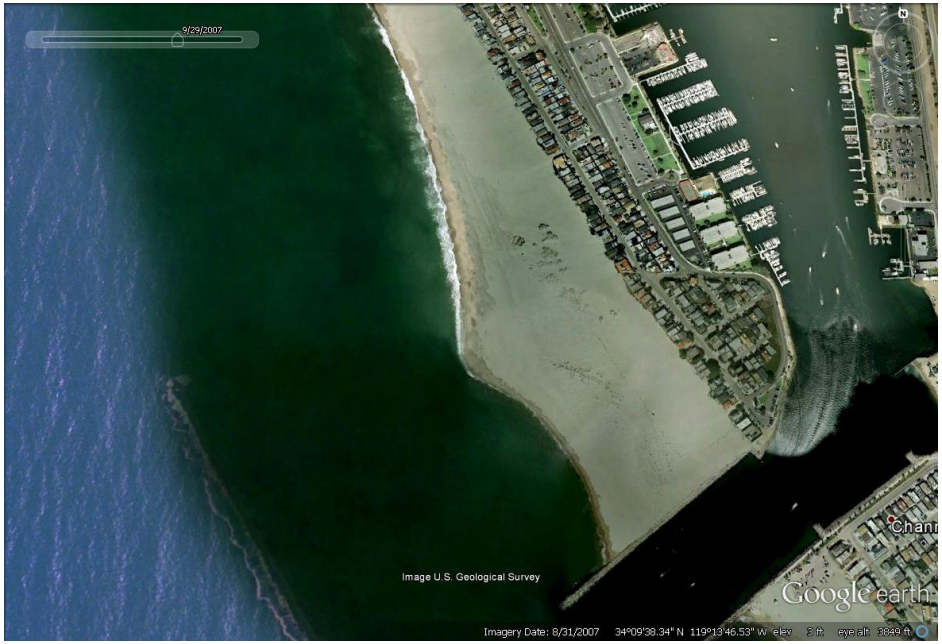
December 2003 or October 2004 (photos appeared to be the same)
(2004 nests = WSP-7, CLT-21)



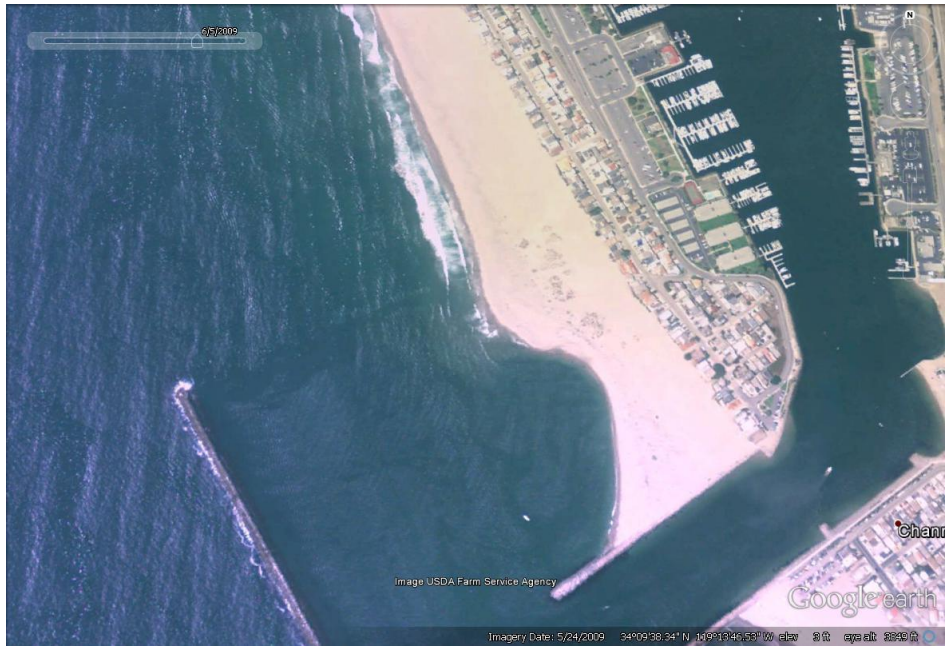
June 2005 (Nests= WSP-0, CLT-0)



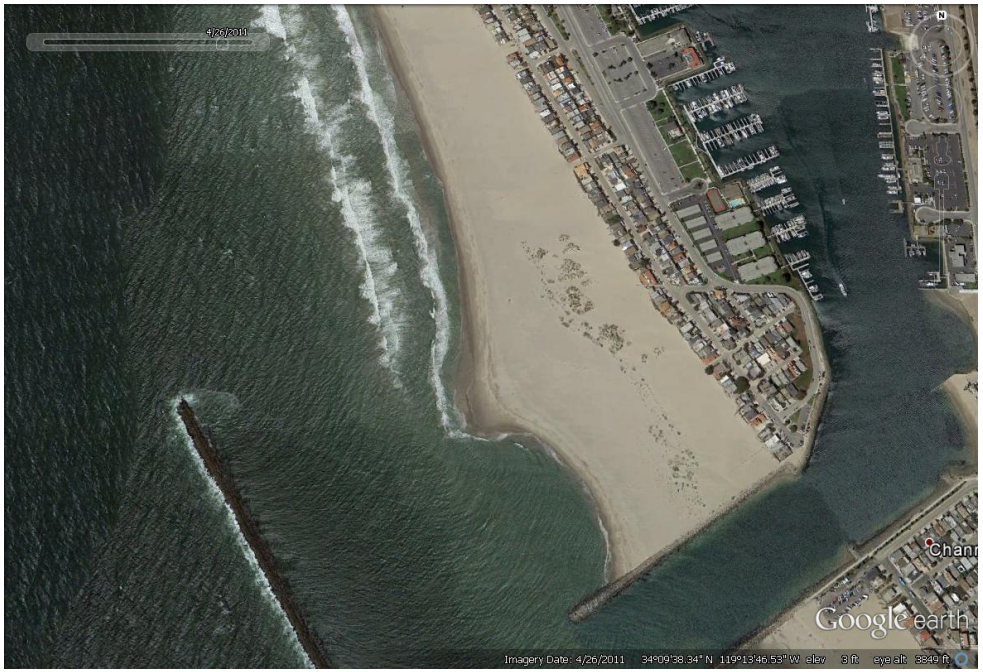
December 2005



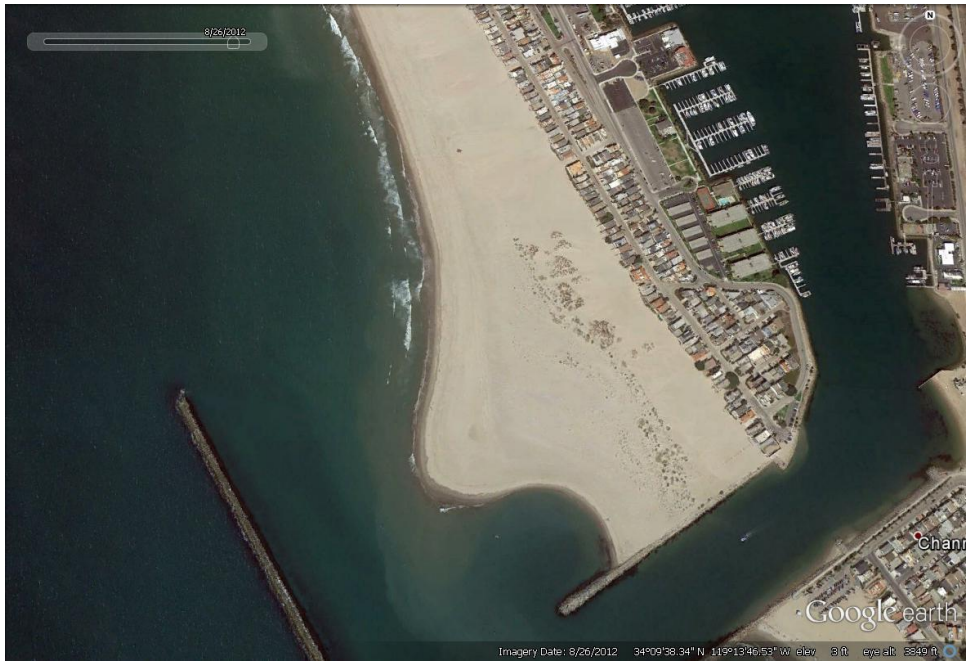
September 2007 (Nests = WSP-8, CLT-1)



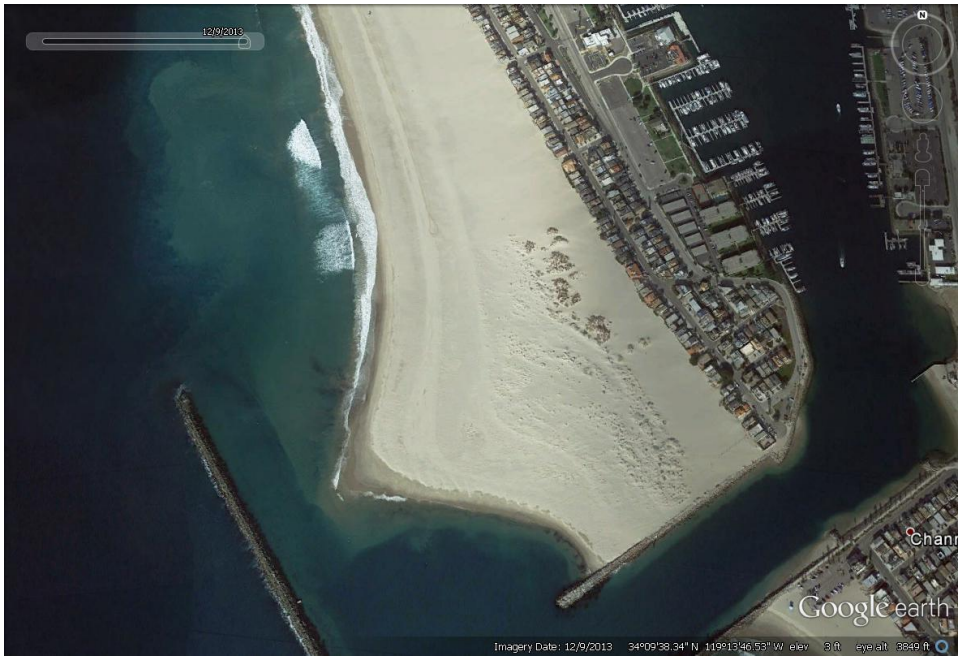
June 2009 (Nests = WSP-10, CLT-4)



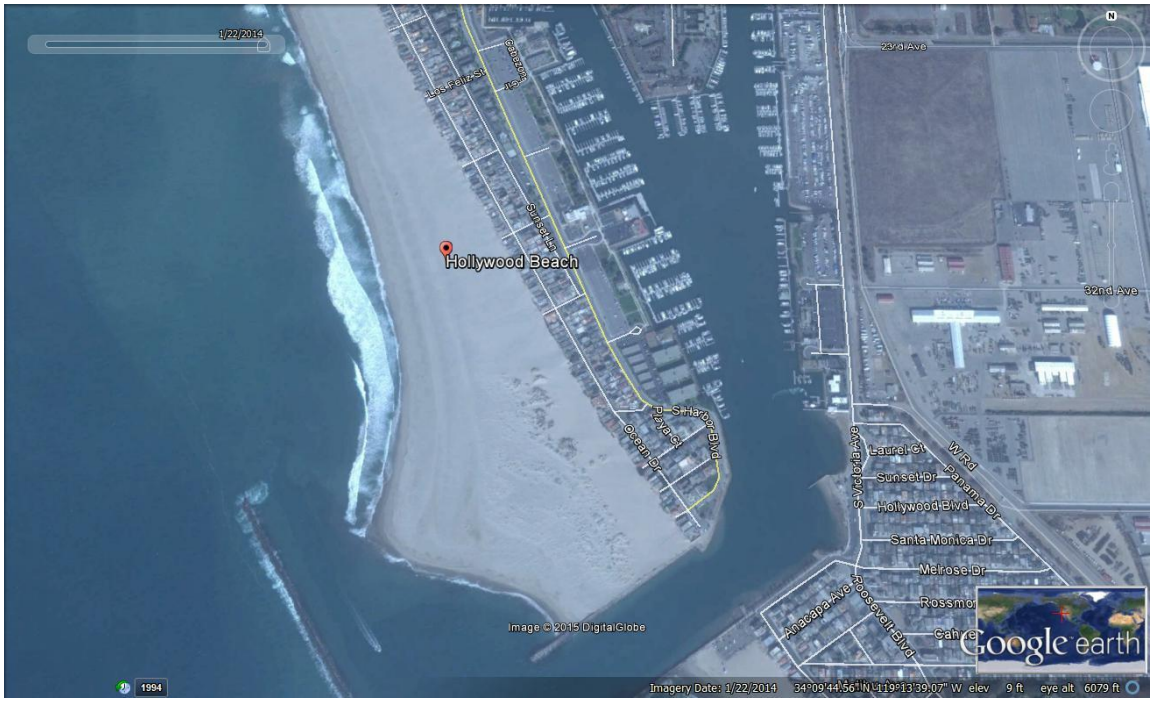
April 2011 (Nests = WSP-8, CLT-0)



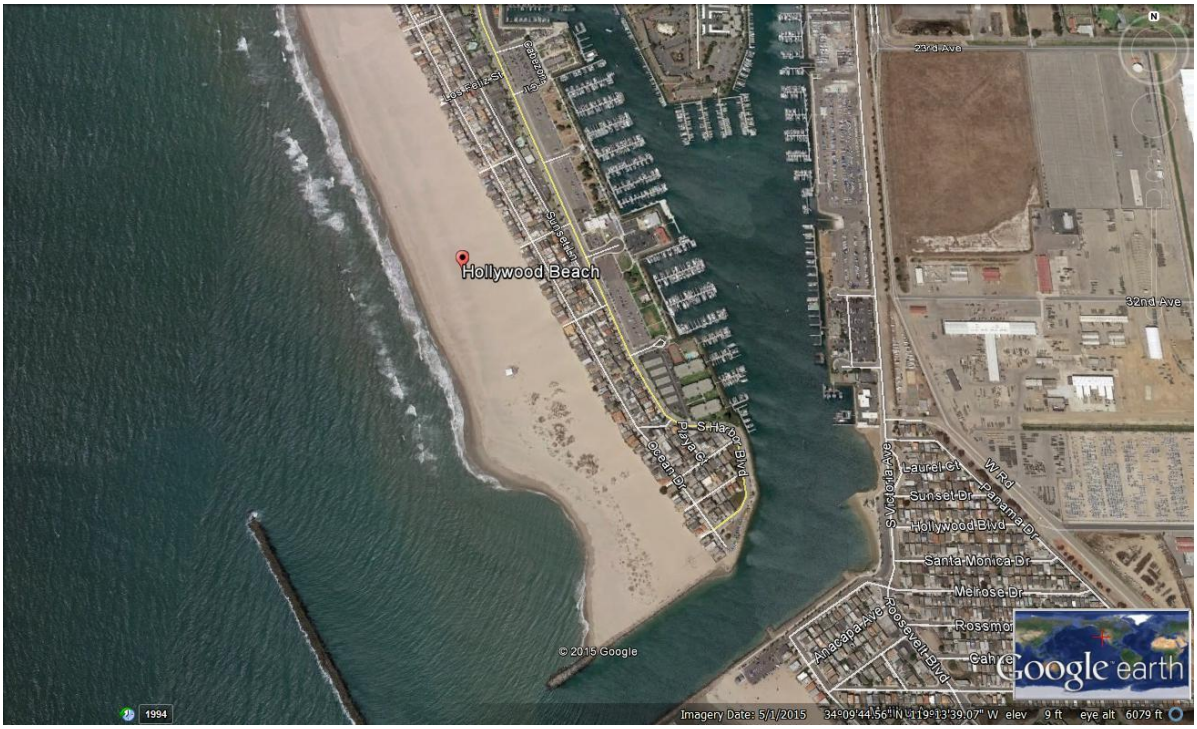
August 2012 (Nests = WSP-10, CLT-1 egg)



December 2013
(Nests = WSP-30, CLT-210)



January 22, 2014
(Nests = WSP-29, CLT-120)



May 1, 2015
(Nests = WSP-8, CLT-24)

(Note: presence of event tent north of dunes)