FINAL 2013 Breeding Season Monitoring Report

Western Snowy Plover and California Least Tern

Hollywood Beach, Oxnard, California

Submitted to:

Chris Kofron
Recovery Permit Coordinator
U.S. Fish and Wildlife Service
2493 Portola Rd, Suite B
Ventura, CA 93003

by

Debra Barringer, M.S.
Ventura Audubon Society
Federal Recovery Permit #TE-89964A-0
State Scientific Collection Permit #SC-10898

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SUMMARY

The abundance and productivity of the threatened western snowy plover (WSP) (*Charadrius alexandrinus 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 2013. 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, Danielle Glenn (TE-35387A-0), and Alexis Frangis (TE-31406A-0).

Western Snowy Plover

The USFWS issued the final revised critical habitat designation for WSP on June 19th, 2012 and included the majority of Hollywood Beach (Unit 2, CA-15, Federal Register 2012). This area was included in monitoring. Monthly WSP population averages varied from 12 in May to 217 in August when winter flocks began to arrive. There were a total of 30 nest attempts that were located and mapped with 27 of them hatching at least one chick for a hatching success of 90 percent. A total of 26 nests included 3 eggs. Nest failure for two of the nests was due to wind events after which the eggs were found buried in sand.

All located nests were protected by anti-predator exclosures consisting of wire of approximately 3 feet X 3 feet X 3 feet. This year, all WSP nests were in fairly close proximity to each other and breeding pairs were likely influenced by the largest nesting colony of California least terns known for the area (209 nests). As in past years, the biggest challenge to both species' breeding success in 2013 on Hollywood Beach was the high recreational use of the beach including human and domestic dog presence and the associated disturbance to brooding adults and chick survival. This year, monitors were fortunate to have the participation of the Ventura Audubon Society and USFWS biologist Michael Glenn's Connecting People with Nature program helping to train volunteer docents and provide more symbolic fencing and signs to encircle the entire colony, which aided in educating the public on the importance of WSP and CLT nesting. The combination of these factors on Hollywood Beach worked well to protect nests and assured the high hatching success (90%). Fledging success was more difficult to assess as once chicks hatch and leave the nest exclosure, they no longer benefit from that or symbolic fence protection when they move around the beach to forage. Common hazards to chicks at Hollywood Beach include unleashed dogs and beach grooming.

California Least Tern

CLTs hadn't nested on Hollywood Beach since 2010, when only one nest was initiated and incubated until it was predated by a crow (Smith 2010). Prior to that, four nests were initiated in 2009 with three of the nests successfully hatching, resulting in 4 fledglings (Smith 2009). In 2008, Hollywood Beach had 24 CLT nests. Smith believed

the drop in nest attempts from 2008 to 2009 was a result of two factors – that significant beach loss occurred after the U.S. Army of Corps of Engineers dredged away a portion of the area of the beach in March that CLTs had used for nesting and that northern anchovy numbers in near-shore waters were lower than normal (Smith 2009).

Dredging did not occur in 2013, leaving an especially expansive beach in the area that includes dunes and the beach extension known as the sand trap, which has been used by terns and plovers for nesting in the past. The first CLTs observed on Hollywood Beach were seen overhead on April 28th. CLT nests began appearing on June 7th, likely at least a second attempt for this population due to the later initiation date and many failed nests at other Ventura County locations. Out of a total of 209 nests initiated, 164 nests hatched 239 eggs, and a minimum number of 31 fledglings was estimated. Adult CLTs and fledges remained in the area until August 24, 2013.

INTRODUCTION

Hollywood Beach is in Ventura County on the west side 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. The beach and survey area is approximately 1.5 miles long. Primarily private residences and a couple businesses lie next to the sandy beach along the entire length on the eastern side. Figure 2 shows an aerial view of the Hollywood Beach survey area. There are regular public access points from cross streets that terminate at the beach, some of which allow vehicle access. The south end of the beach is wider with a dune field that buffers the sandy beach from the developed area. Some of the dunes are quite high, likely due to sand retention caused by the presence of deep-rooted, European beach grass (*Ammophila arenaria*).

Hollywood Beach is owned by Ventura County and managed by the Ventura County Harbor Department (HD). It is a popular recreational and tourist beach. During summer and winter months the beach in front of the homes is groomed. Other annual activities that occur at Hollywood Beach include a summer life guard training program and Fourth of July activities at the Harbor that attract very large crowds to the area and include fireworks. Life guard towers, a bathroom, and trash cans are provided for public use and serviced daily by the HD staff.

The HD staff stored and supplied the majority of predator exclosures (placed over nests only by permitted monitors), and helped position and remove symbolic fencing and educational signs used to encircle the nesting colony.

Western Snowy Plover

The western snowy plover (WSP) (*Charadrius alexandrinus nivosus*) breeds along the coast of the Pacific Ocean in California, Oregon, and Washington and at alkaline lakes in the interior of the western United States (Page et al. 1991). Loss of habitat, predation pressures, and breeding bird disturbance have caused the decline of the coastal population of WSP and led to the federal listing of the Pacific Coast Population of WSP 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

CLTs used to nest in great numbers on the beaches of southern California, using beaches with wide swaths of relatively flat, undisturbed, and partially vegetated sand for their large nesting colonies. Breeding habitat has been so altered and developed as to reduce nesting to a few areas. The CLT 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).

Figure 1. Hollywood Beach Regional Overview

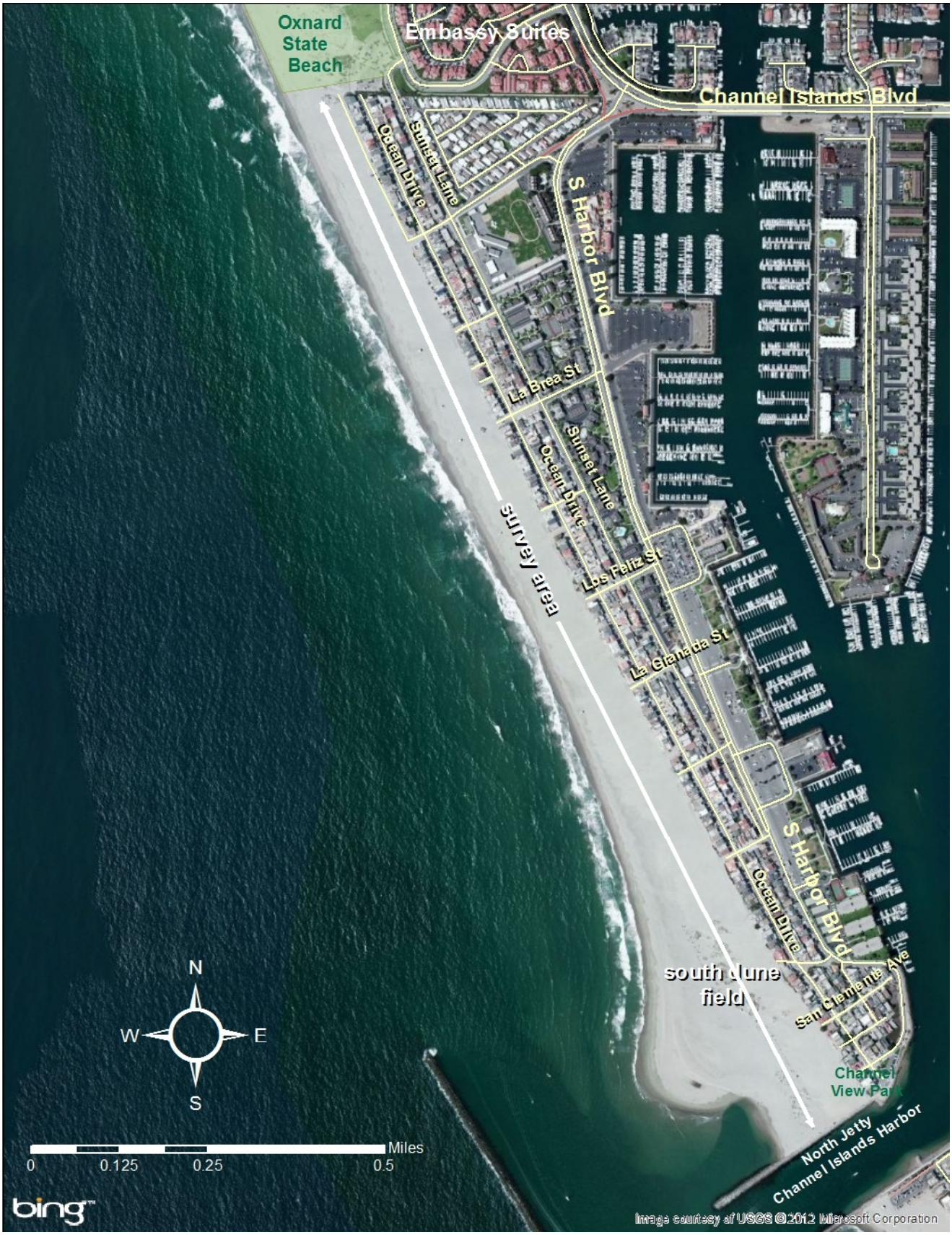

Figure 2. Hollywood Beach Survey Area

METHODS

Population Abundance

Monitoring of Hollywood Beach was conducted by at least two permitted surveyors by walking wandering transects a minimum of once per week in the dune field area. Early and late in the season, the entire beach was walked south to north, but once nesting activity in the very large tern-plover colony reached its highest levels, surveys concentrated on monitoring this area. All adult WSP observed were recorded, as well as chick and fledge numbers when present. Adult CLT numbers had to be estimated once the colony grew above 50 birds. The breeding season surveys were conducted until 4 weeks after the final nest hatched.

Nest Fate

Searching for new nests included assessing adult behavior for potential breeding activity and waiting for them to return to a nest site. 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 colony area and alert the monitors. Located nests were marked with inconspicuous numbered driftwood or wooden tongue depressors. Mini-exclosures were placed over WSP nests to reduce incidences of predation and human-caused disturbance. Exclosures are constructed of wire mesh cubes 3 x 3 x 3 feet with 2 x 4 inch openings. All nests were recorded by date found, locations recorded on a Garmin 72H GPS unit (with approximately 12-ft accuracy, as UTMs), and number of eggs noted. In addition, a perimeter of symbolic fencing (wood stakes and a single, flagged rope) and educational signage was installed around each nest cluster and adjusted as the plover-tern colony grew and shifted every week (see Photo 1). Least tern nests were marked with either a numbered tongue depressor or piece of driftwood about a meter away from the scrape to help with relocation but remain inconspicuous.

Each known nest was checked every week until hatching or date lost prior to hatching. The predator exclosure was kept in place until WSP nests hatched. Once a nest no longer contained eggs, a 2-meter area around the nest was examined for eggshell fragments, egg yolk, bird defecation, tracks of birds or possible predators, or any other disturbance. Next, the nest scrape was carefully examined for shell fragments. Nest hatching was determined by locating pip shells (1-4 mm) within the hatched nest, and/or by observing displaying behaviors of nearby adults and locating chicks when possible. Failed nests were determined based on eggshell evidence such as large shell fragments, fragments with egg membrane still attached and/or egg contents within 2 meters of the nest scrape (Mabee 1997). If an egg was suspected of being abandoned, it was placed on end and left for a week to see if an adult would reposition it in the scrape. In addition signs of predator tracks, nest disturbance, observations of predators in the nest vicinity and eyewitness reports were used as evidence of failed nests. During weekly surveys, the presence of chicks was recorded and potential age-week estimated.

Breeding Adults

The number of breeding adults was counted when possible. It was a particular challenge to determine the numbers of breeding adults for both species this year as the WSPs were nesting within the presence of approximately 400 CLTs. WSP adult numbers could also be estimated by adding the number of active nests and the number of active broods sighted on the same survey date. The survey with the highest combined number of nests and broods was used to calculate the highest consecutive number of breeding adults representative of the season (34 in 2013). 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 some adult WSPs may have bred and nested more than once on this beach. Because of the late date of nest initiation (June 7th) and known failure of nest attempts in other areas of the county, the assumption was made that CLTs were nesting for at least a second time and that none initiated more than one nest. Numbers of breeding adults each week was estimated based on known number of active nests and broods.

Banded Birds

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

RESULTS

Population Abundance - WSPs

WSP Adults

In April the average number of WSP observed was 23, which included only adults. The range was 8 to 42 individuals in April. Once breeding activity began to increase in May, the average number of adult individuals observed was 11and in June the average was 23. During both these months the nesting activity varied very slightly (from 2 to 7 active nests at once until the last week of June where 10 nests were active at once). Also during May and June adult WSP numbers fluctuated from 7 to 18 with one unusual week recording 45 individuals. During July the adult population increased to a high of 150 WSPs (monthly average of 70) including migrating and newly-fledged birds that arrived on the beach. In August large numbers of WSP began congregating on the beach, and flock sizes ranged from 159 to 263 with a monthly average of 217 (see Attachment 1 for detailed population counts and Attachment 2 for field notes).

Because 2013 was an unusual nesting year at Hollywood Beach, a comparison to past records of adult breeding WSPs is presented in Figure 3. These numbers were calculated for adults present when nests and chicks were also present to focus on breeding birds. The 2012 and 2013 numbers are higher than adults currently breeding at Hollywood Beach because in August of those years, migrating adults arrived coincidentally with broods still being raised, so the adult counts were higher.

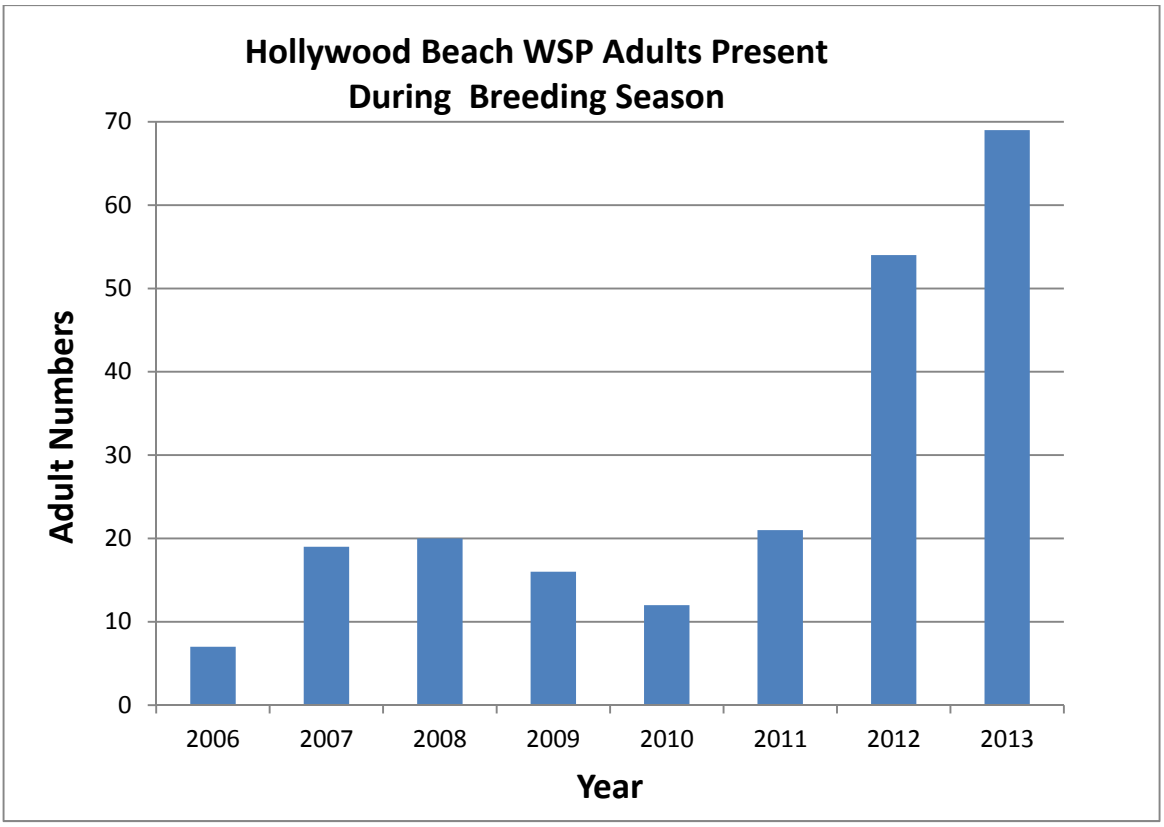

Figure 3. Average Hollywood Beach 2013 Adult WSP Population Present During Breeding Season Over the Last 8 Years

Nesting Outcome

The first WSP nest was discovered on April 7, 2013 and the last nest was discovered on July 18, 2013, interestingly almost 2 weeks later than the last nest in 2012. A total of 30 nests were initiated, 3 times the amount from 2012 (10) and much less scattered along the beach (Figure 4). All of the 2013 WSP nests were concentrated in the area most frequently used for nesting located seaward of the dunes at the south end of the beach (see Photo 2 for a typical habitat view). WSP nests were also within the large California least tern nest colony that occurred this year; no least terns nested in 2012 there (Figure 4). It is thought there may be a benefit to the WSP for placing nests near least tern colonies. Least terns are persistent nest area defenders that utilize calls, diving flights, and even defecation onto potential nest predators that approach the area. This behavior was observed many times during the peak nesting weeks and the only potential predators to approach the colony (gulls) were swiftly chased away. The human nest monitors were also harassed by least terns as they located marked nests and searched for new ones.

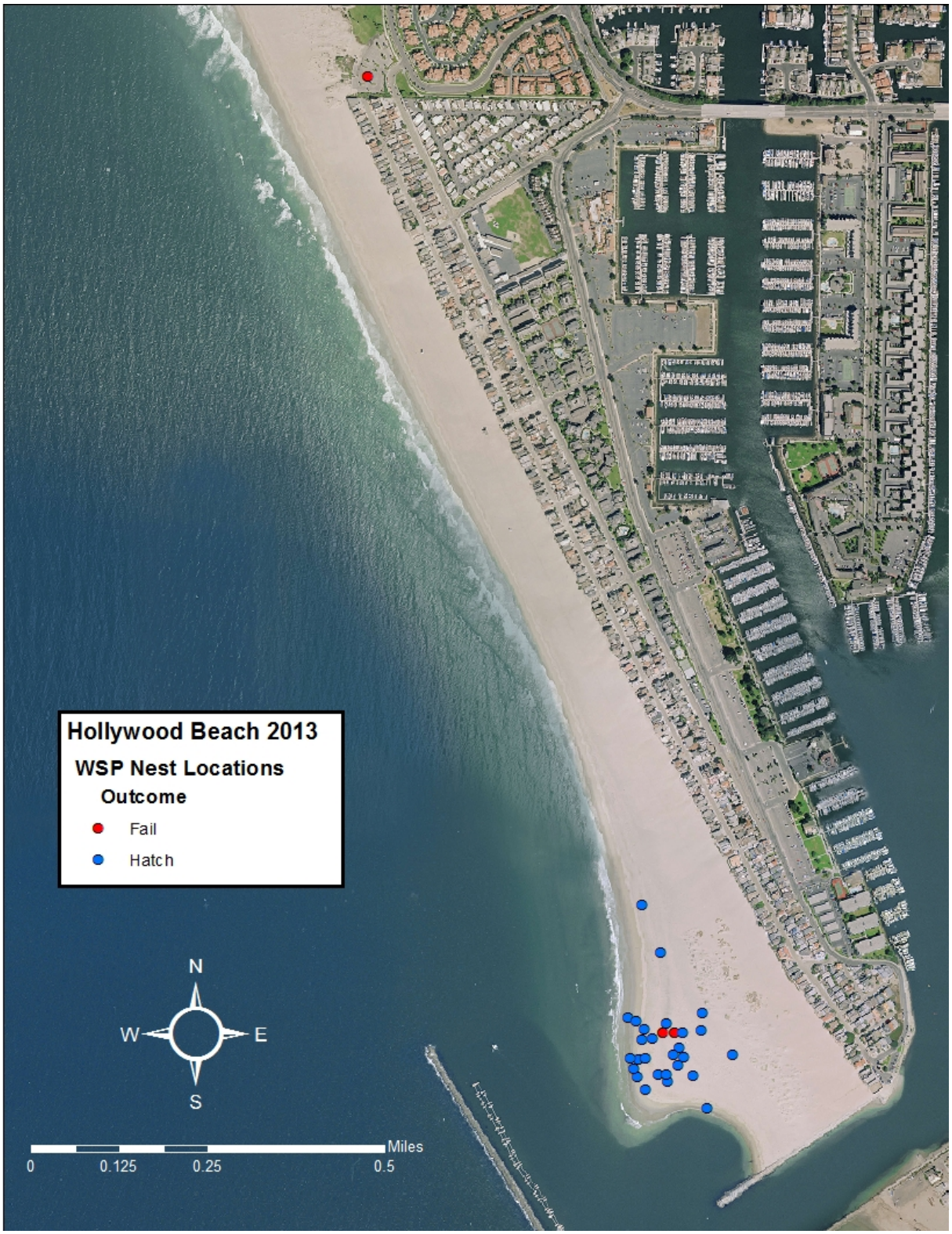

Figure 4. Hollywood Beach WSP Nest Locations in 2013 and Outcomes.

Nest Fates

Of the 30 WSP nest attempts in 2013, 27 hatched at least one chick as verified by pips and other evidence observed by monitors. This is a 90 percent hatching success. Hollywood Beach has consistently shown hatching success to be above 50 percent since 2006 and often above 70 percent. Figure 5 depicts the WSP nests initiated and hatched over the last several years. Some of this success is likely 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 predation. In addition, this beach being primarily urban in nature is visited by far fewer predators than more remote beaches. However, frequent presence of corvids, gulls, and curious humans occurs and there is a probability that housecats and dogs off-leash may disturb eggs and chicks as well. The monitors documented human disturbance at several WSP exclosures in 2013 where kelp and trash were piled on top of exclosures, causing sand to rain down on the nest and eggs. These were removed as soon as discovered and the nests went on to be successful. Two of the failed WSP nests were buried under sand by wind events and even though uncovered by monitors, were not attended again by adults. Another nest was partially buried and was not attended by adults again after that. No dead WSP chicks were found by monitors.

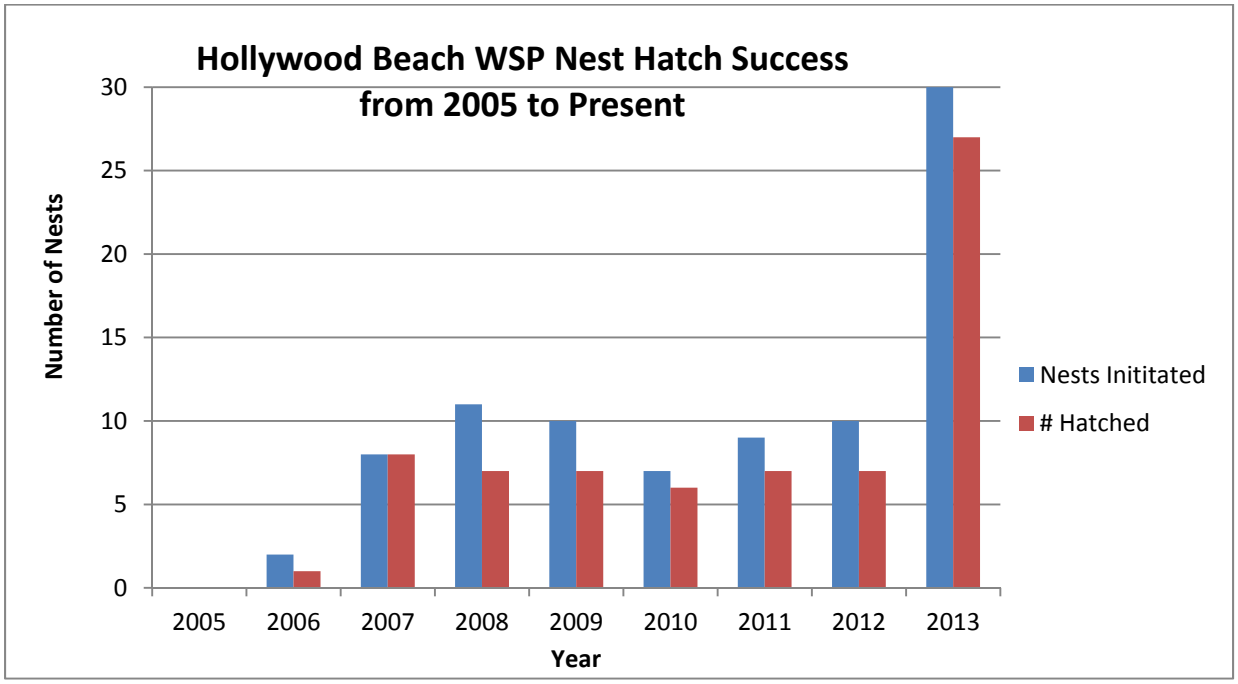

Figure 5. Hollywood Beach WSP Nest Hatch Success from 2005 to Present

Chicks

WSP chicks were observed fairly consistently during the season (Figure 6) with peak chick activity in late May and in mid-late July. The highest numbers of active WSP nests at one time (17) occurred, ironically, over the busy Fourth of July holiday weekend and remained high until the last week of July. With the sometimes confusion of having

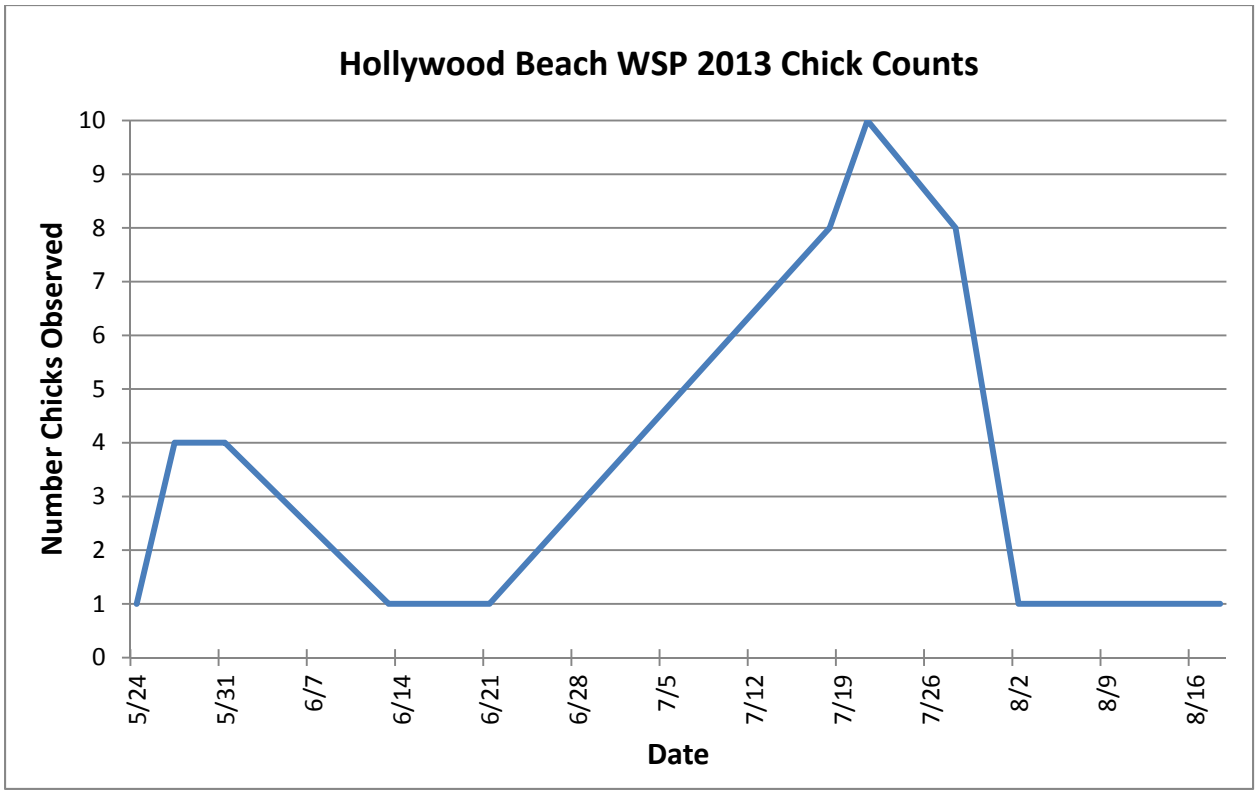

Figure 6. Hollywood Beach 2013 WSP Chick Sightings

the breeding WSP families intermixed with 400+ least terns, it was not always possible to do thorough chick searches and monitors did not always estimate ages for chicks seen. The majority of chick observations this year occurred just outside the symbolic fence to the north and within the fence on the north end of the breeding colony.

Banded Birds

Banded WSP observed during the survey period were recorded and the data was sent to Frances Bidstrup, with Point Reyes (Point Blue) Bird Observatory. Banded birds observed on Hollywood Beach that corresponded to PRBO records were banded at Vandenberg Air Force Base (VAFB), Oceano Dunes State Beach, Salinas River State Beach, Monterey State Beach, Moss Landing Salt Ponds, and Salinas River State Beach. Between April and June, nesting activities of terns and WSPs were so hectic, it was not always possible for the two monitors to spend the time to check for bands. When time permitted beginning in July, many more birds and bands were observed and noted. A total of 17 banded individuals were identified during the month of July with one nesting female seen three times. This female (NO:OY) was originally banded at Vandenberg in 2009 and is well-known in the area. NO:OY was frequently observed in 2010 and 2011on another Ventura County location, McGrath State Beach, nested there twice in 2012, paired with a third male at a nearby beach, Mandalay, on 7/12/12, and then was seen three times on Hollywood Beach in 2012. She also was seen in April and May of 2013 at McGrath before travelling to Hollywood Beach and establishing nest HB22 on July 4, 2013. In August, nine individuals with bands were recorded, with only one overlapping with those seen in July (banded bird details available upon request).

Population Abundance - CLTs

CLT Adults

Monitors began observing flyovers and some hovering/circling flight activity of CLTs at Hollywood Beach on April 28, 2013. Number of adults terns observed stayed quite low (below 6) until June 7th when the nesting activity began and it was estimated that 77 adults were present (see Attachment 3 for CLT data). In the next few weeks, the adult population rose steadily to estimates of 140, 200, 380, 400, and then a high of 415 on July 11 just before fledging of the first nests. Accurate counts were nearly impossible with the colony being so concentrated in a small area and the mobbing behavior of the terns when monitors were present. Figure 7 depicts the estimated adult least tern breeding population in 2013 compared to previous years. No CLTs initiated nests in 2005 and 2006.

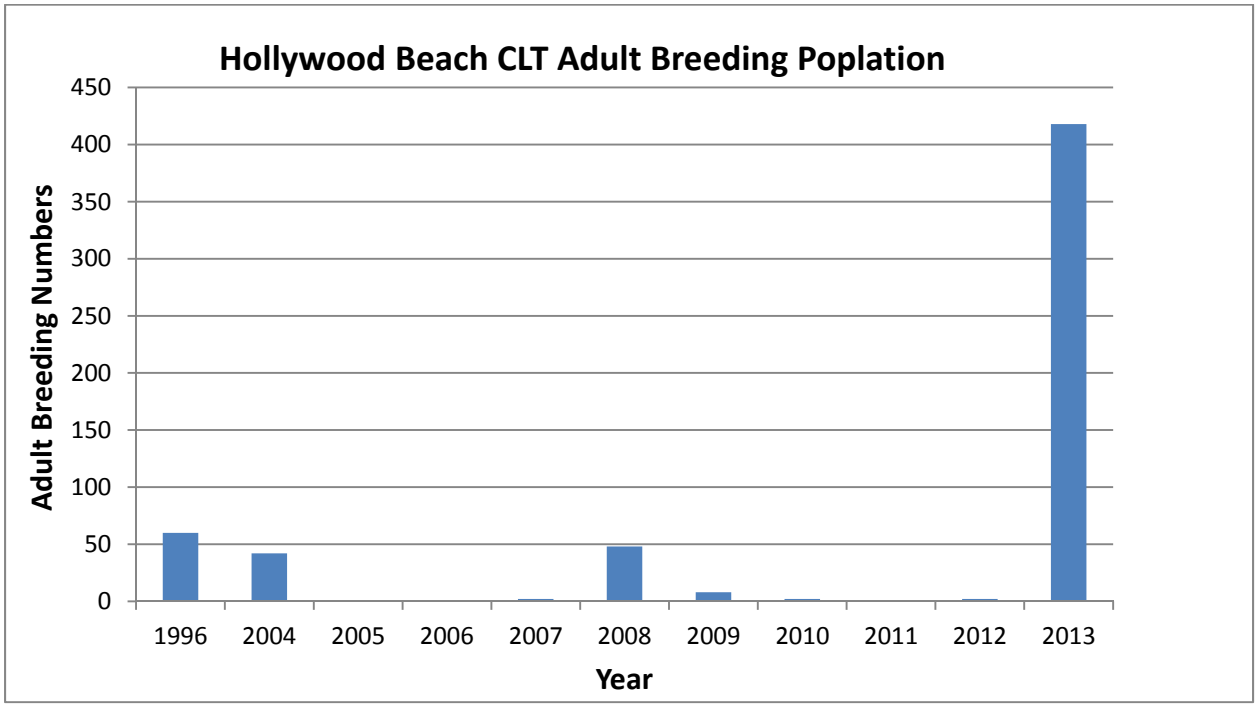

Figure 7. Hollywood Beach CLT 2013 Breeding Adult Numbers Compared to Past Years

Nesting Outcome

The first CLT nest was initiated on June 7 and new nests appeared until August 2, when the 209th nest was documented. With once per week monitoring, there certainly could have been additional nests that were not discovered and several nests were only seen once, with uncertain hatching fates after that. Figure 8 shows a close-up of the locations of the documented nests at Hollywood Beach. Table 1 presents a summary of nest, egg, hatch, and other fate numbers as well as mortalities documented for CLTs.

Figure 8. Hollywood Beach CLT 2013 Nest Colony Location Close-up

Table 1. California Least Tern Summary, Hollywood Beach, 2013

Date terns first observed	28-Apr
Date terns last seen	24-Aug
Date of first nest	7-Jun
Date last nest found	2-Aug
Date last nest established*	2-Aug
Date of first hatch	27-Jun
Date of last hatch	28-Jul
Date of first fledgling	18-Jul

* based on last nest to hatch

Maximum number of active nests	145	(w-eggs)
Date of maximum active nests	4-Jul	
Estimated number of pairs	209	
Total number of nests	209	
Total number of eggs	311	
Clutch size:		
1 egg	109	
2 egg	101	
3 egg	0	
Average clutch size	1.49	
No. of nests hatching young	164	
Total number of eggs hatched	239	
Estimated minimum number of fledglings	31	
No. of nests with unknown fate	14	
No. of eggs with unknown fate	20	
DOCUMENTED MORTALITY		
Preyed upon		
Nests	0	
Eggs	0	
Chicks	0	
Fledglings	6, feather piles found with RTHA present on 8/2	
Adults	0	
Human disturbance		
Nests	Some disturbance but none known to cause mortalities	
Eggs	0	
Chicks	0	
Fledglings	0	
Adults	0	
Other causes		
Nests		
Abandoned (pre-term)	?	
Damaged	0	
Flooded	0	
Eggs		
Abandoned (pre-term)	?	
Failed to hatch (incubated to term)	39	
Died hatching	0	
Damaged	1	
Chicks	25	
Fledglings	0	
Adults		
Removed to rehab facility		
Nests	0	
Eggs	0	
Chicks	6 pre-fledges briefly removed, then returned to beach	
Fledglings	0	
Adults	0	

Nest Fates

Of the 209 CLT nest attempts in 2013, 164 hatched at least one chick as verified primarily by presence of defecation near the nest and no sign of egg damage or yolk present at the scrape. This is a 78 percent nest hatch success and included 239 eggs hatched. As shown in Figure 9, this is completely unprecedented at Hollywood Beach since records have been kept. With the colony fence being largely symbolic (a single strand rope) and located near a residential area, there were incidences of human intrusion near nests. Several least tern nests were noticeably disturbed by people placing driftwood and other debris near and around scrapes (Photo 6) and one incident of two nests being enclosed with a wire plover nest exclosure. Monitors removed these as soon as discovered, carefully observed these nests over the next couple weeks, and noted that each of them surprisingly produced successful hatches. Only one egg was found to be damaged in the colony and no egg predation was suspected. The primary reason for egg failure was abandonment, usually near end of or after term. Seven tern eggs were collected and delivered to the Western Foundation for Vertebrate Zoology (WFVZ) in Camarillo, as were 11 dead CLT chicks. Several non-viable eggs were buried on site to minimize attracting scavengers. Some abandoned eggs were examined before burial and contained full term chicks. No takes of eggs or chicks were caused by monitors.

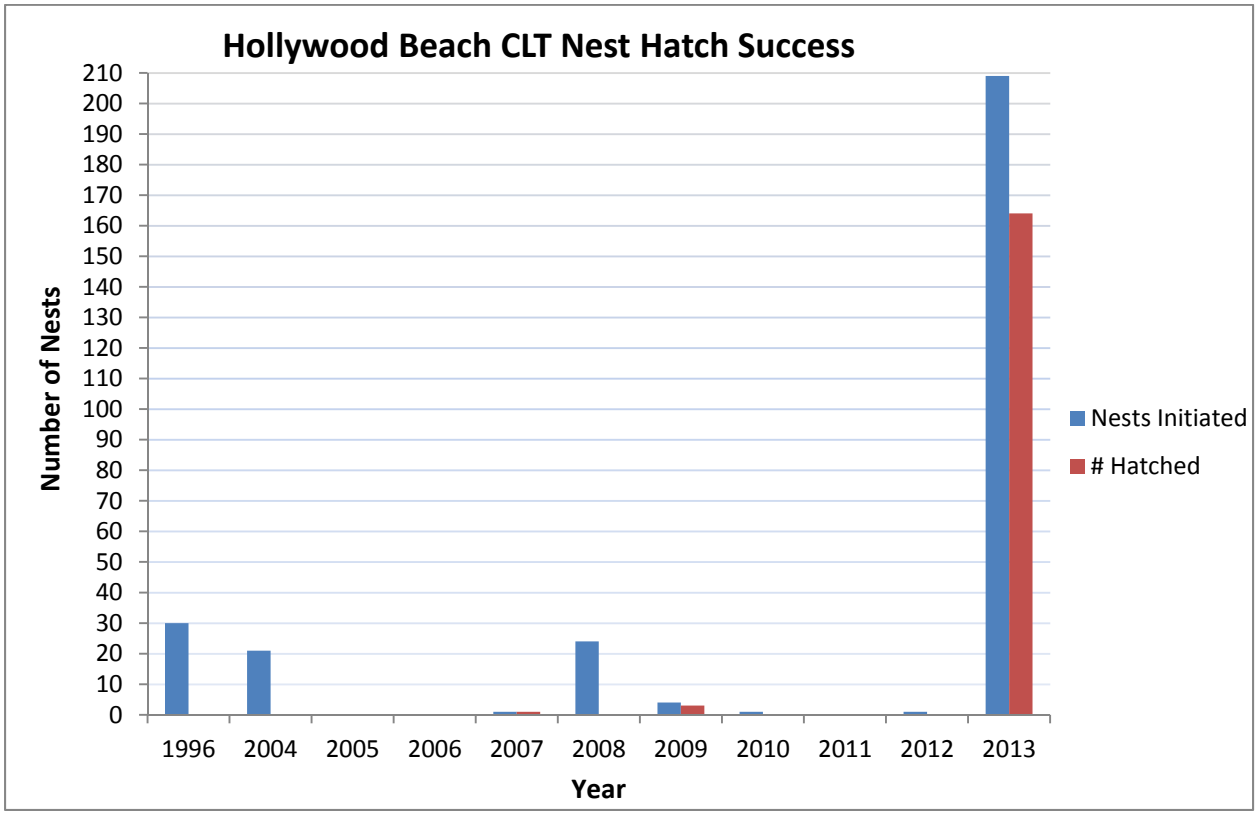

Figure 9. Hollywood Beach CLT Nest Hatch Success in Recent Years

Chicks

The first CLT chicks observed occurred on July 4th with a high count of 30 chicks seen on August 2nd. The first fledges were observed on July 18th with a high count of 26 recorded August 2nd. Of the 164 least tern eggs that hatched in 2013, 25 chicks were found dead near scrapes. Many were collected and delivered to the WFVZ. Photographs were also taken of dead chicks. Live chicks were recorded and are presented along with fledges seen in Figure 10.

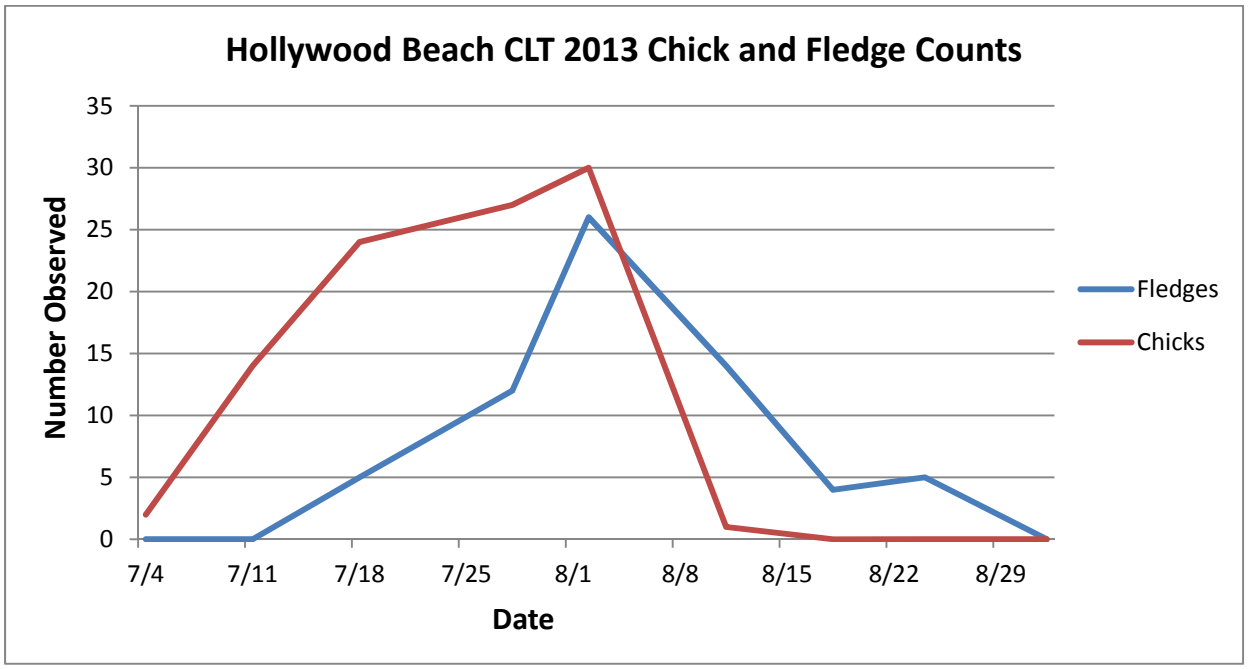

Figure 10. Hollywood Beach 2013 CLT Chick and Fledge Sightings

Six of the fledges recorded on August 2 were actually feather pile remains, with feather coloration indicative of fledge-age birds. The first known predator observed of the season was also recorded on August 2. A red-tailed hawk with a full crop was seen in the middle of the nesting colony upon arrival that morning. The next week, a peregrine falcon was perched on a colony fence post but no plover or tern remains were found and most remaining plovers and terns had moved north along the beach with their chicks and fledges.

DISCUSSION

In 2013 WSPs initiated over three times the average number of nests they have initiated on Hollywood Beach in the recent past; annual nest numbers averaged 8.5 from 2005 to 2012 (Figure 5). Overall WSP hatching success was excellent on Hollywood Beach in 2013 with a 90% hatch rate. This is especially important in light of that fact that most other Ventura County beaches had comparatively low hatch success in 2013 (C. Dellith, USFWS, pers. comm.). The combination of nest predator exclosures, educational signage, the large symbolic fenced area used this year that kept the majority of human and dog disturbance at a distance, regular nest monitoring and docent presence, and the 24/7 assistance in nest defense provided by the colony of 400+ least terns present all benefitted WSP nest success. The coincidence of the largest known least tern nesting colony at Hollywood Beach and the largest number of WSPs known to have nested at this site occurring in the same year and in very close proximity is worth noting. It seems reasonable to think that the WSPs may have been attracted to the large amount of nesting activity when they chose this beach, possibly after losing nests on other Ventura County nest beaches. Hollywood Beach was also likely a “last resort” for CLTs that abandoned predated and failed nests elsewhere in the county and relocated there after the first week of June to re-nest. Re-nesting for least terns is not uncommon (Massey & Atwood 1981) and was noted for Hollywood Beach in 2004 when Ormond Beach also experienced an unsuccessful nesting season (Smith 2007). In 2013 Ormond Beach, as well as other county locations including McGrath and Mandalay state beaches, saw significant predation of WSP and CLT nests. Hollywood Beach has experienced very little predation of WSP and CLT nests/eggs, even though daily disturbances can be high. Predators that have been present in the past include American crows but few were observed during the breeding season in 2013. Gulls that showed up during tern breeding were swiftly mobbed out of the colony. With the patchy, inconsistent nest colony size, predators may not be aware of the prey resource until later in the season, as was seen in 2013.

The large nesting CLT colony was a surprise, a challenge, and a delight for monitors. Monitoring was systematic and a tight grid was walked each week focused on relocating marked nests and finding new ones. Of the 311 CLT eggs laid, 239 were determined to have hatched from 164 nests. Given these numbers, the CLT chicks and fledges observed were not high over the season. As many as 30 tern chicks and 26 fledges were observed on a single day (Figure 10, August 2), however, 6 of the fledges were located as feather remains attributed to hawk predation. The tendency seemed to be for parents to move their chicks out of the fenced colony and to the north soon after chicks were up and moving, so perhaps many were not observed. Verbal reports from beaches to the north included least tern fledges. The estimate of min-max fledges using the second-week-after-first fledge counting method results in a minimum and maximum of 31 tern fledges.

As in past years, survival of chicks to fledge stage is primarily unknown for both species and of concern. As many as 10 WSP chicks were seen on one day in 2013 (Figure 6), but with 27 nests hatching potentially 74 eggs, the hope would be that there were many

more chicks. Within hours after hatching, WSP chicks are mobile and leave the nest area to follow their parent birds to begin foraging. On Hollywood Beach this means they leave the protection of the nest exclosure and symbolic fencing. Between the nesting area and foraging area at the wrack line there is very little vegetative cover, and only scattered driftwood and no undisturbed areas for chicks to be safe from people, dogs, gulls and other avian predators. WSP chicks are not capable of flight until approximately 28 days after hatching. Least terns are very dependent upon parents for food until (and after) fledging and are left unprotected on the beach while parent birds forage. Both species must avoid the dangers of frequent humans, dogs, and vehicles on the beach as well as numerous other threats and predators.

In the past, the HD had helped with adding nest exclosures when only WSPs nested on the beach and when monitors were not immediately available. However, it was critical this year (and as required by the USFWS) that nests be exclosed only by trained/permitted monitors as WSP nests look very similar to CLT nests, and least terns cannot continue to access exclosed nests to brood. There was an instance this season where two CLT nests were mistakenly exclosed, but it was discovered soon after, exclosures removed, and the pairs continued to brood long enough to hatch both tern nests. Monitors discussed the issue with HD staff and supervisor.

It was noted during past monitoring that there may be a relationship between winter dredging of the near-shore area adjacent to the nesting colony (developed as a “sand trap” to protect the harbor mouth), reduced width of the beach, and number of CLTs that choose to nest (Smith 2009). This periodic dredging and beach reduction, in addition to changes in forage prey supply, may be a reason for inconsistency in CLTs using Hollywood Beach for nesting.

Due to the increased nesting activity this season, several interested scientists visited Hollywood Beach to collect data. These included Julia Jesu from San Diego State University who is studying the fine-scale habitat characteristics at least tern nest sites; and Dan Robinette, Senior Biologist/ Coastal Program Leader at Point Blue Conservation Science (formerly PRBO), Vandenberg Field Station, who collected least tern droppings and discarded prey fish from the beach to analyze prey resources (photos of various prey fish left by terns in the nesting area are presented in Photo 8). A couple days of monitoring assistance was also provided by Francesca Ferrara, biologist from Pt. Mugu Naval Air Station who also alerted monitors to a report of “rescued CLT chicks.” This incident occurred at a very inopportune time (August 2) when a concerned citizen observed a dead adult bird (unknown species) with several chicks nearby in what she perceived to be danger. These were least tern chicks just prior to fledging and therefore not able to escape when the citizen decided to collect six of them to deliver them to a known area bird rehabilitator. The rehabilitator took the chicks to a Santa Barbara wildlife care facility where it was recognized that these were healthy least terns and should be returned to their beach. This was done either that evening or the next morning. The monitors checked in a couple days and found no trace of chicks or fledglings so it was difficult to know whether the chicks found their parents and were able to reach fledge stage.

Representatives from the Ventura Audubon Society and nest monitors met with the Hollywood Beach Homeowners Association on August 24, 2013 to answer their questions on the expanded nest colony this year and find out their concerns. Hopefully this and other efforts to engage docents coupled with the heightened nesting activity shined a light on the importance and challenges of sharing the beach with the endangered least terns and threatened snowy plovers. Monitors hope for continued nesting success and public outreach in future years.

The biggest factors negatively affecting WSP and CLT breeding success on Hollywood Beach are:

1. Frequent human and dog use of the beach, in particular unleashed dogs

On Hollywood Beach the County of Ventura regulations prohibit dogs off leash at any time and allow dogs on leash only from 5 PM to 9 AM. However, monitors frequently observe and often document leashed and unleashed dogs after 9 AM. The approach and often just the presence of a person or dog within the site of a brooding WSP can flush it off the nest, exposing the eggs to heat and cold and other predators as well as endangering the adult. This also wastes precious energy for the brooding bird. Dogs are a natural predator and are especially a hazard to chicks because they cannot out-run the dog or fly away. In addition the natural instinct of snowy plover chicks is to freeze in response to threats such as dogs and chicks can become separated from their parents when they freeze and the adults fly away.

2. Beach grooming and other vehicles on the beach

Monitors in 2013 documented (with photographs) tractors and other vehicles on many occasions during the nesting season, even though it was understood that grooming was not supposed to occur this time of year (Photo 7). Homeowners hire sand movers to pull sand build-up away from houses seaward and spread it out over large portions of the beach (Photo 3). In some cases this effectively removes and covers natural beach constituents such as vegetation and driftwood. These constituents provide habitat for invertebrates that the WSP forage on so any sand covering them is not beneficial to the WSP population. Beach grooming is also a direct hazard to unknown and unfenced nest sites and chicks on the beach. Grooming also damages foraging and roosting habitat for WSPs by smoothing out small areas of relief relied upon for cover by WSPs.

There were also occurrences of driving too near nesting areas by HD staff, junior lifeguard support vehicles, and possibly private vehicles with easy access from residential streets (Photo 7). At least one nest was driven right over (see Photo 4), luckily the vehicle perfectly straddled the eggs and they survived.

3. Public misinformation.

Many of the local residents were surprised by the increased activity on Hollywood Beach and reactions to this varied from positive to negative. Some were overheard stating that they felt there were “plenty of plovers,” why was so much effort being expended, and why was such a large area fenced for this particular year. Some stated

to monitors that they were irritated by having to walk further around fencing to reach the beach and some didn't like the look of the symbolic fencing. With the additional signs and efforts by Michael Glenn and the new docent program to inform the public, it is hoped that these perceptions changed or will change, especially if a large nesting colony returns next year. A few nests were vandalized or otherwise "decorated" by people, perhaps trying to mark them so others would avoid stepping on them (Photos 5 and 6). A change in nearby landmarks is thought to disturb nesting birds and may cause nest abandonment. There is also concern about the public mistakenly thinking young chicks are "orphaned" when found on the beach. More effort to inform will be expended on this next year as well.

4. The large July 4th celebration at Channel Islands Harbor

One can only imagine what the reactions of the nesting plovers and terns are when the loud bombs are bursting in air during the fireworks display each July 4th at the adjacent Channel Islands Harbor. This was the most active week of nesting for both species and the noise along with the extra crowds of people must be stressful for the brooding parents. Monitors have also found evidence of home-made rockets in the nesting colony fence. It is not known if this practice will continue but monitoring was stepped up July 4th weekend and will continue to be.

The factors positively affecting WSP and CLT breeding success on Hollywood Beach are:

1. Nest protection with help of Ventura County Harbor District

The nest exclosure and symbolic fencing efforts have been instrumental for WSP protection on Hollywood Beach. HD staff have been good to work with and helpful to the nest protection effort throughout the season; they are to be commended for their hard work. The symbolic fence perimeters are effective in keeping most people a safe distance from the nests on a very busy public beach. With little evidence of predation, it is difficult to ascertain if the wire mini-exclosures are protecting nests from predation but they definitely keep people and dogs off leash from trampling nests.

2. Wrack left at the high tide line

When the contractor running the beach grooming tractor leaves wrack, driftwood, and undulated sands at the high tide line uncovered, it provides hiding cover for chicks and forage for all beach birds. Leaving as much untouched in this area is best if grooming will continue to occur near the nesting areas.

3. Nest avoidance by the beach groomer

The primary grooming contractor seems concerned and knowledgeable about avoiding the areas near known and marked nests and she carries binoculars to watch for birds. Less is known about operators of other tractors seen on the beach during the breeding season.

4. Dune field habitat on the south end of the beach

All of the chicks observed were in or close to the south dune field (Photo 2). It is a wider part of the beach and because of the presence of topography, vegetation, and

driftwood, seems the best place for chicks to hide and remain safe. Many beach goers also avoid walking through it preferring the hard sand near the tide line. The dune area is not groomed so sand dunes and vegetation that provide cover for chicks can persist. This is an important area for WSP and CLT breeding success.

5. Dedicated volunteers.

Breeding fates would be unknown and likely not as successful without the nest monitors, Audubon Society members, concerned USFWS staff, and trained docents that care about successful snowy plover and least tern nesting continuing at Hollywood Beach.

Recommendations to improve nesting success:

1. Continue to monitor success of WSP and CLT nesting at Hollywood Beach.
2. Enforcement of the Ventura County dog regulations posted at the beach.
3. Better communication and coordination between the nest monitor and the beach groomer. Monitors should communicate nest hatching as well as imminent hatching to the beach groomer as soon as possible and work with the contractor to help them avoid young chicks. Best-case-scenario is that a monitor be present when sand will be moved near the dune area or any area used for nesting to reduce the chance of accidental ESA-listed species “take.”
4. Ensuring limited vehicle access to the beach to those that are authorized. Monitors believe that some of the danger to unknown nests and to helpless chicks that may occur outside fences may be reduced if easy access to the beach from residential streets were limited to the primary grooming contractor and HD vehicles only. Also, danger to nests and chicks would be reduced if maintenance staff gave the nesting area a much wider clearance when doing trash removal. In addition, potential egg and chick harm and disturbance would be reduced if junior lifeguard training would occur at a further distance from the nesting area.
5. Groomers should continue leaving wrack exposed in the high tide line all year long and minimize piling sand near there or smoothing undulating topography as much as possible.
6. Seasonal fencing of the south dune area. This would protect the highest quality habitat and give birds and their offspring a better place of refuge. It would also delineate the importance of the habitat and the concept of sharing the beach to beach goers.
7. Continued educational outreach to homeowners and visitors. Docents and monitors encountered many citizens and tourists this summer and answered questions.
8. Continuing the docent program to train and engage locals. Adding a program so that homeowners could report nest observations as part of a "citizen scientist" program and potentially individuals could be assigned to track nests from a safe distance. This would also enhance observation time and data collection.

9. Working with the County and USFWS to expand suitable habitat areas by reducing the height of some of the tallest dunes that have been artificially increased by the presence of beachgrass and other non-native plants. This type of project may create additional breeding habitat to compensate for that lost when the sand trap area needs to be reduced during routine harbor dredging.

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Attachment 1. 2013 Hollywood Beach WSP population abundance per survey.

Date	Hatch Year	Chicks	Adults + HYs	Total WSPs	# Active Nests	Avg Monthly Adult Pop	Bands	Dogs off Leash
4/7/2013			42	42	1			
4/14/2013			8	8	0			
4/21/2013			22	22	1			17
4/28/2013			21	21	1			5
April Avg						23		
5/5/2013			17	17	4			5
5/10/2013			14	14	4			2
5/19/2013			7	7	4			10
5/24/2013		1	8	9	4			
5/27/2013		4	8	12	3			
5/31/2013		4	10	14	3			
May Avg						11		
6/7/2013			45	45	2			
6/13/2013		1	11	12	5			
6/21/2013		1	18	19	7		bo:yb	
6/27/2013			18	18	10			
June Avg						23		
7/4/2013			21	21	17		no:oy (w-Nest HB22)	
7/11/2013			30	30	17		no:yb	
7/18/2013		8	39	47	14			
7/21/2013	5	10	110	120	14		pr:g, nr:bw, ob:ww, no:oy	
7/28/2013		8	150	158	3		nr:by, gg:aa, wr:by, no:oy, bb:gw	
July Avg						70		
8/2/2013		1	158	159	2		pg:ab	
8/11/2013			252	252	0		nw:_r, bg:gw, nb:ob, go:oy	11
8/18/2013		1	262	263	0		nw:ob, ny:or, gr:rg	
8/24/2013			194	194	0		pr:g	
August Avg						217		

Attachment 2. WSP field notes on nest and chick sightings for Hollywood Beach in 2013.

Date	Count	Notes
4/7	42	1st nest - HB01!
4/14	8	HB01 buried
4/21	22	HB02
4/28	21	Found broken egg, not near nest.
5/5	17	3 new nests (HB03-05)
5/10	14	4 nests going well
5/19	7	Window Survey, 4 nests (HB02 1 hatch)
5/24	8 adults, 1 chick	New nest HB06; 1st chick
5/26	8 adults, 1 chick	HB03 3 hatch, 1 chick up
5/27	8 adults, 4 chicks	HB03 3 chicks up; older chick also seen
5/31	10 adults, 4 chicks	HB04 hatch, HB05 likely hatch; new HB07 (3 eggs) and HB08 (1 egg)
6/7	45 adults	HB08 failed
6/13	11 adults, 1 chick	New nests HB09, 10 and 11, HB06 and 07 active with 3 eggs each
6/21	18 adults, 1 fledge	New nests HB12, 13, 14, 15, HB06 hatched 3
6/23	13 adults	New nest HB16
6/27	18	New nests HB17-3 eggs and HB18-2 eggs
7/3,7/4	21	New nests HB20, 21, 22, 23, 24, 25, 26, 28 all with 3 eggs. HB11 hatched.
7/7		Checking new exclosures placed yesterday.
7/11	30	HB10 and 18 hatched; new nests HB27 and 29. Documented failure of Unk sp. nest Harbor had fenced to the north of colony.
7/18	39 adults, 8 chicks	New nests HB30 and 31; hatches = HB16, 17, 20, and 21.
7/21	105 adults, 5 HYs, 10 chicks	No nest monitoring, primarily bird counting.
7/28	150 adults, 7 chicks, 1 fledge	Hathces = HB15, 19, 22, 23, 24, 25, 26, 28, 29, and 30. HB14 = unk fate.
8/2	158 + 1 chick	HB13 hatched. 6 military & 1 private helicopters seen overhead.
8/11	252	HB27 and 31 hatched - last plover nests.
8/18	262 adults, 1 chick	Last chick seen.
8/24	194	

Attachment 3. 2013 Hollywood Beach CLT population abundance per survey.

Date	Number of Adult CLTs	Number of New Nests	Total Nests Initiated	Number of Fledges Observed	Number of Chicks Off Nest	Number of Observed Predators
28-Apr-13	2					
5-May-13	5					
19-May-13	6					
31-May-13	3					
7-Jun-13	77	8	8			
13-Jun-13	~140	18	26			
21-Jun-13	~200	55	81			
27-Jun-13	~380	80	161			
4-Jul-13	~400	31	192		2	
11-Jul-13	~415	8	200		14	
18-Jul-13	~400	7	207	5	24	
28-Jul-13	~400	1	208	12	27	
2-Aug-13	~200	1	209	26	30	1RTHA
11-Aug-13	30			14	1	1PEFA
18-Aug-13	4			4		
24-Aug-13	2			5		
1-Sep-13						
Note: RTHA = red-tailed hawk, PEFA = peregrine falcon						

Attachment 4. PHOTOS

Photo 1. Ventura Audubon Society-provided signs used on Hollywood Beach. In the upper right, WSP exclosures are visible behind. Lower right is a permanent sign. Peregrine arrived just after all nests hatched and could not be traced to any mortalities of WSPs or CLTs.

Photo 2. Typical healthy WSP habitat with vegetation, relief, drift wood, and hiding places for chicks; second week old chick visible in photo center (photo courtesy of A. Frangis).

Photo 3. Typical appearance of groomed beach and residences adjacent to Hollywood Beach nesting area (photo courtesy C. Hartley).

Photo 4. Active WSP nest with fresh tire tracks surrounding it (inset shows Nest HB05). Luckily, monitors discovered it in time and added a wire exclosure and fencing to prevent additional vehicles driving too close to the nest.

Photo 5. Human disturbance at a WSP nest exclosure. Material was removed and the nest hatched successfully.

Photo 6. Least tern nest “enhancements” added by humans. When objects prevented normal nest brooding, they were removed and all observed disturbed nests hatched.

Photo 7. Vehicles on Hollywood Beach, August 2 and September 1, 2013, respectively. Above, typical sand-moving tractor with nest colony symbolic fence barely visible in foreground. Colony is located behind photographer in lower photo. Chicks and fledges were most abundant the week of August 2nd and may have still been present in early September.

Photo 8. Least tern prey assortment from Hollywood Beach, 2013.