FINAL 2014 Breeding Season Monitoring Report for Western Snowy Plover and California Least Tern

Ormond Beach, Oxnard, California

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EXECUTIVE SUMMARY

The abundance and productivity of the threatened western snowy plover (WSP) (*Charadrius nivosus nivosus*) and the endangered California least tern (CLT) (*Sternula antillarum browni*) were monitored at Ormond Beach located in Oxnard, Ventura County, California during the breeding season 2014. Activities were conducted according to U.S. Fish and Wildlife Service (USFWS) protocols for nest monitoring under the Endangered Species Act (ESA) by experienced monitors Debra Barringer (recovery permit: TE-35387A-0) and Chris Kahler.

Western Snowy Plover

Nest season monitoring began on March 14, 2014 and monthly WSP population averages varied from a high of 70 in March as migrating flocks came through the area to 6 in May as birds chose their nesting territories. The first three nests were recorded on March 31st and a total of 10 WSP nest attempts were located and documented over the season. Of these, 5 nests hatched at least one chick for a hatching success of 50 percent. Monitors used wire exclosures to protect all but one WSP nest until hatching. Two large fenced areas with informational signs provided some protection but only 6 of the nests were located within fences. Nest failures were attributed to abandonment, human interference, and high tides. Fledging success was difficult to assess with only weekly monitoring and no banding occurring in Ventura County. Monitoring continued until August 20th, four weeks after the last successful hatch.

California Least Tern

Adult CLTs were first observed flying over Ormond Beach on May 23rd and CLT nests were first located on May 30th. A total of 22 nests were initiated at Ormond Beach in 2014. All nests were located within the fenced northern survey area. Of these, only 4 nests hatched a total of 7 eggs and no fledglings were directly observed during weekly visits. The primary reason for nest failure was abandonment prior to hatching. Adult CLTs seemed to have abandoned the Ormond Beach nesting area altogether by July 2nd, even though eggs on nests were still present. All eggs were monitored until full term and then either buried or collected.

A problem in 2014 was the ineffectiveness of the northern fence to keep trespassers out and this may have contributed to the high rate of CLT nest abandonment. Many visitors enter Ormond Beach from the Arnold Road parking area, but very few of these people walk all the way to the beach near the northern nesting area (over a mile). Very few potential predators or signs of predators were noted during active breeding. Ormond Beach ongoing issues include monitors only visiting weekly and not being able to track chick fates to fledging. Dogs off-leash continue to pose a threat primarily to WSPs on the beach, especially those with chicks. Even though many were trained, few to no docents chose to volunteer at Ormond Beach in 2014 to help educate visitors regarding the presence of nesting birds, which monitors hope to change in future seasons.

INTRODUCTION AND SITE DESCRIPTION

Ormond Beach is located in Ventura County within City of Oxnard jurisdiction between the City of Port Hueneme Naval Base Ventura County (NBVC) and NBVC Point Mugu (Figure 1). The California Coastal Conservancy (CCC) owns the southern (eastern) portion of the beach and has taken a leadership role in holding meetings with interested agencies, NGOs, and individuals concerning the use and protection of the area. CCC presided over the Ormond Beach Task Force that developed a proposed plan for the protection of wetland portions of the beach and development of some inland portions based on stakeholder workshops. This plan is predicated on obtaining more land from private landowners and partnering with University of California Division of Agriculture and Natural Resources Cooperative Extension. It has been presented to the Oxnard City Council. NRG Energy owns a piece of land centrally located on the beach. The City of Oxnard owns the northern (western) portion of the beach and maintains the parking area and portable toilet. In 2014, the City provided additional support to Walter Fuller, the full-time volunteer land steward at Ormond Beach. The City of Oxnard's Animal Regulation Department responds to calls regarding off-leash dogs that are in the fenced nesting protection areas. The Oxnard Police Department has also responded to calls regarding various infractions on the beach such as off-road vehicles and transients.

In the past, the USFWS through the California Department of Fish and Wildlife (CDFW) provided funding for nest monitoring on Ormond Beach, which ceased in 2014. Neither agency has a management plan for the beach and no authority for management beyond its general responsibility for protecting endangered species. The CDFW has addressed problems as they arrive on a case by case basis, when there is a wildlife biologist available to be present during the rule breach.

Staff members from the USFWS take part in discussions and meetings with monitors, other agencies, and NGOs on ways to protect CLTs and WSPs on Ormond Beach. The USFWS revised Final Rule includes all of Ormond Beach from near Arnold Road to the Port Hueneme pier (320 acres) as Habitat Unit CA-39 designated as WSP critical habitat (Federal Register 2012).

Volunteers, primarily with funding from the Ventura Audubon Society, have fenced large portions of the historically used WSP and CLT nesting areas (Figure 2). Oxnard City Corps generously provided labor to assist with this effort (Appendix B, Photo B-2). Fencing consisting of plastic mesh (Cintoflex, ~1 ½-inch square openings) is attached to t-posts with cable ties (Appendix B, Photo B-3). Interpretive signs, both "official" explaining ESA and California Game Codes and signs drawn by local children, are attached to the fences to explain their purpose. The southern enclosed area spans from south of the NRG Energy power plant and extends almost to Arnold Road just north of the boundary with Pt. Mugu. This area includes the wetland salt pannes as well as shorter, undulating backdune areas and allows people on foot access to the beach on its eastern side around the northern end. The northern enclosed fence begins immediately north of the power plant and extends north for approximately 0.5 mile. The southern, western, and northern boundaries are completely fenced but fence is not continuous on its eastern boundary. This area abuts primarily NRG property and is not regularly accessed by members of the public so fencing was thought to be less necessary. A portion of the eastern boundary also abuts The Nature Conservancy (TNC) land and has become more of an issue as evidence of people accessing the nesting area from there was observed this year. The eastern boundary of the area is comprised of a combination of mesh and permanent (chain-link) fencing with several gaps permitting trespass. The area of beach directly in front of the power plant has not been enclosed as less historical WSP and CLT nesting has occurred in this area.

The beach is surveyed for WSP and CLT nests each week including on NRG land in between the north and south fenced areas. The breeding season survey area covers approximately 3 miles through these areas.

Ormond Beach receives many daily visits by fishermen, dog-walkers, surfers, and other beach-goers, who can park in a small lot on the southeast end. Mr. Fuller keeps records on the daily numbers and activities of visitors and provides them to the City of Oxnard. There is little formal beach maintenance but activities include regular trash clean-ups by local non-profits and school groups have done non-native plant removal. Mr. Fuller stores nest exclosures, signs, and fencing material that nest monitors use and have access to onsite near Arnold Road.

The southern nesting area habitat consists primarily of a flat, sparsely vegetated sandy plain with occasional tall dunes on the beach (western) side and wetlands interrupted by salt pannes and small stands of scrub vegetation on the eastern side. In 2014, the wetlands completely dried up by May and only held water again after a July high surf event brought enough tide to flow over land to reach the wetlands. The northern nesting area is comprised of primarily flat areas of sand between rolling smaller dunes.

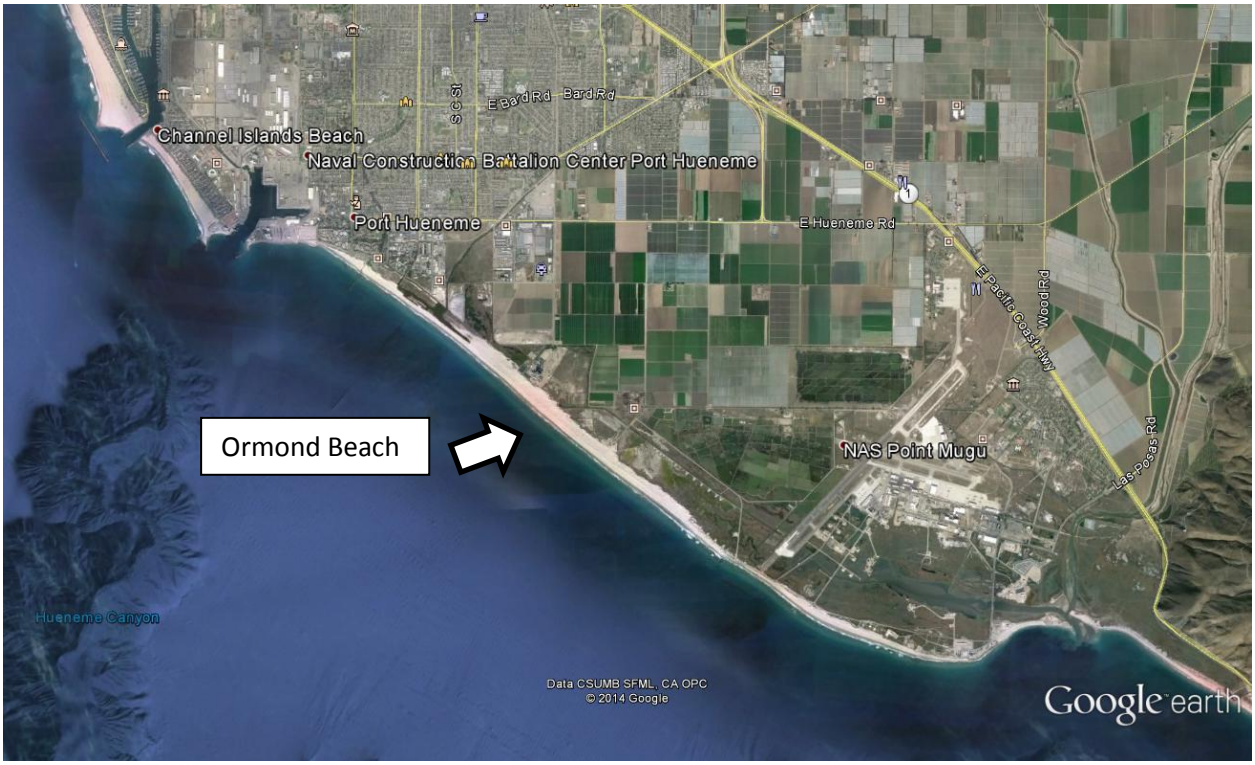

Figure 1. Ormond Beach Regional Area

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). Ormond Beach is part of Recovery Unit 5. The Recovery Plan population target or management potential for breeding WSPs at Ormond Beach is 50 (USFWS 2007).

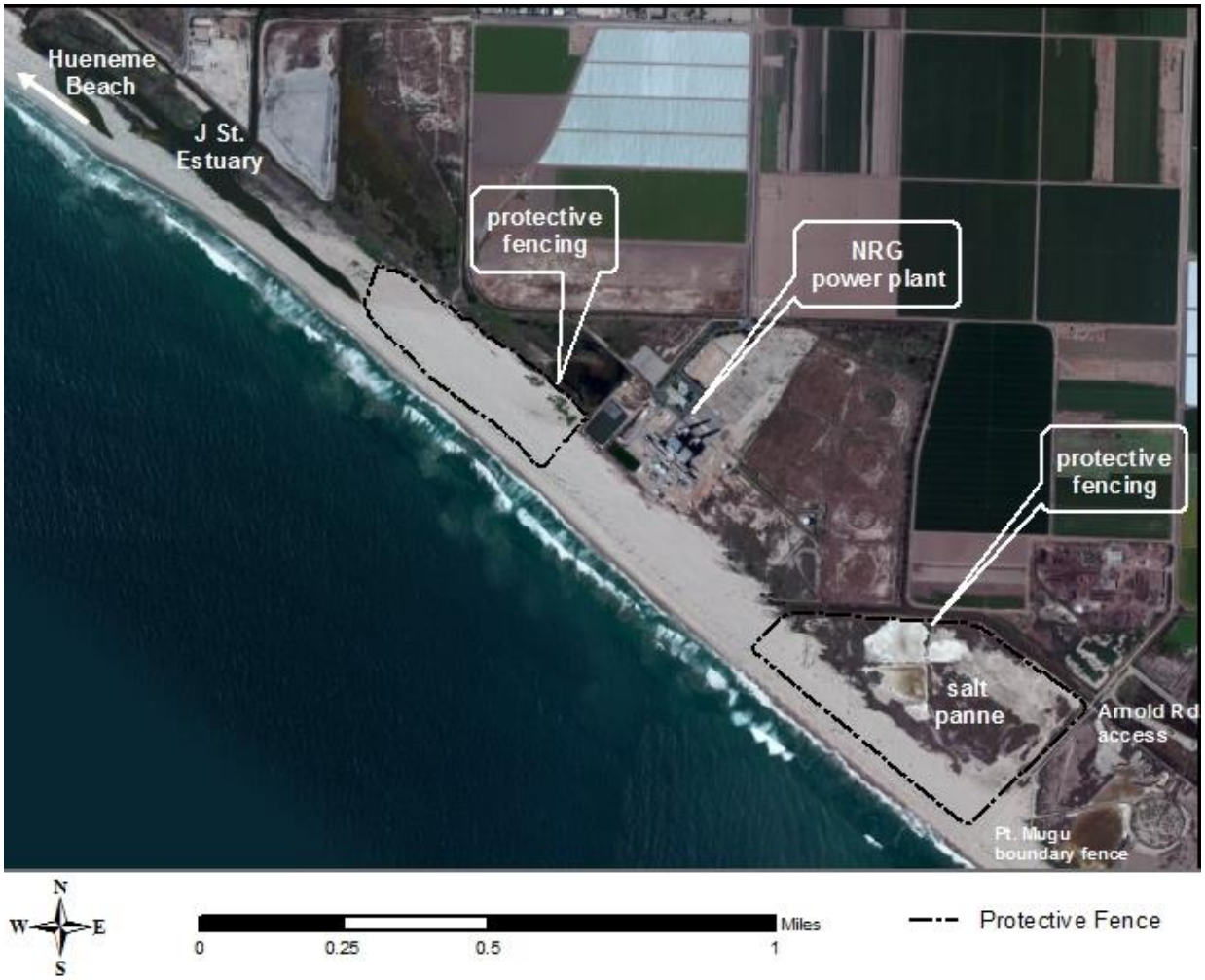

Figure 2. Locations of Survey Areas Monitored at Ormond Beach

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 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

Population Abundance

Nest surveys were conducted a minimum of once weekly with a monitor walking a meandering transect through the fenced breeding areas and a monitor walking the beach outside the fence in front of the dunes from south to north. The area between fences and in front of the NRG power plant was included. Binoculars were used to obtain 100 percent visual coverage of the areas. Monitoring focused on finding adult WSPs and CLTs and then observing them long enough to determine whether the birds were associated with a nest. After several weeks of observing no WSP or CLT presence in the wetlands/salt panne area in the southern end of Ormond Beach, this area was not walked weekly but continued to be visually checked by monitors and Mr. Fuller. Both breeding and non-breeding adult WSPs and CLTs were recorded, as well as chick and fledgling numbers when present. Chick age-week was estimated and associated with a nest number when possible. The breeding season surveys were conducted until 4 weeks after the final nest hatched.

Nests and Nest Fates

As mentioned above, searching for new nests primarily included assessing adult bird behavior for potential breeding activity and waiting for a bird to return to a nest site if applicable. Located nests were marked with numbered 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. After exclosure placement, it was watched to make sure the brooding parent WSP returned to the nest. When nests occurred outside the fence, a symbolic fence with educational signs was erected to surround it using wood stakes and rope.

All nests located were recorded by date found and GPS coordinates recorded as UTMs on a Garmin 72H GPS unit (with approximately 12-ft accuracy) as well as on a datasheet. Each week number of eggs and whether attended by a parent was noted. WSP nest exclosures were anchored with 3 to 4 6-inch landscape pins after strong winds blew several over and in some cases blew exclosures away early in the season. Subsequent week surveys focused on relocating marked nests and finding new ones. Because the Ormond Beach survey area is large, it sometimes became necessary to use the GPS to relocate CLT nests. 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, presence of fecal matter at the scrape (for CLTs), observing displaying distraction behaviors from adults in the vicinity of the nest, or by locating chicks when possible. A nest was determined to be successful if at least one of the above signs was observed. When a nest was found without eggs and none of the above signs was observed, evidence of predation was investigated. Evidence of predators includes animal tracks, large eggshell 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). When broken eggs were found, the species of predator was determined or at least whether it was mammal or avian or if caused by a human. Egg non-viability due to abandonment was determined by a combination of not seeing a parent bird 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), feeling eggs for reduced temperatures, and then placing one egg on end in the scrape to see if it was repositioned by a parent by the next week. If the egg was not moved, the nest was considered abandoned and egg(s) non-viable.

Breeding Adults

The number of 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 WSP male was attributed to each active brood. It is reasonable to assume some adult WSPs may have nested more than once on this beach. 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 May the average number of adult WSPs present was 6 compared to the highest average of 70 individuals in March (Table 1). Some of the birds present in March were part of the migrating population and few stayed at Ormond Beach to breed. In June, the average number of adult WSP individuals observed was 7 and in July the average increased to 19. The average monthly adult population observed in 2014 was graphed for the breeding months (Figure 3). Unlike on many breeding beaches, several WSPs observed seemed to be displaying some behaviors associated with nesting but much effort to follow them revealed no nests. During both of the usually peak nesting months of June and July the nesting activity varied from only 1 to 2 known consecutively active nests even though many more WSPs were observed (Table 1). By August migratory and likely hatch year WSPs from Pt. Mugu began congregating on the beach, and total adult counts similarly increased to an average of 38 for the month.

A comparison of recorded adult breeding WSPs to results from past years at Ormond Beach is presented in Appendix A, Figure A-1. These numbers were calculated for adults present when nests and chicks were also present to focus on breeding birds, which was April through August.

Table 1. Ormond Beach Western Snowy Plover 2014 Population Counts

Date	Total Adults	Total All	Females	Males	Unknown and HY	Chicks	Fledges	Active Nests
3/14	26	26						0
3/21	96	96						0
3/31	87	87						3
March Avg		**70**						
4/9	3	3						3
4/16	47	47						0
4/23	26	26						1
4/30	0	0						1
April Avg		**25**						
5/7	5	5						2
5/16	3	3						3
5/23	9	9						3
5/26	3	5				2		2
5/30	8	9	3	5		1		1
May Avg		**6**						
6/6	7	7	3	4				1
6/13	9	10	5	4		1		0
6/20	5	6	4	1		1		0
6/27	5	5	3	2				1
June Avg		**7**						
7/2	31	33	9	20	2	1	1	2
7/9	6	6	4	2				1
7/16	9	9	4	5				1
7/23	17	17	9	7	1			1
7/30	29	32	13	15	1	3		0
July Avg		**19**						
8/6	16	16						0
8/13	45	45						0
8/20	52	52						
August Avg		**38**						

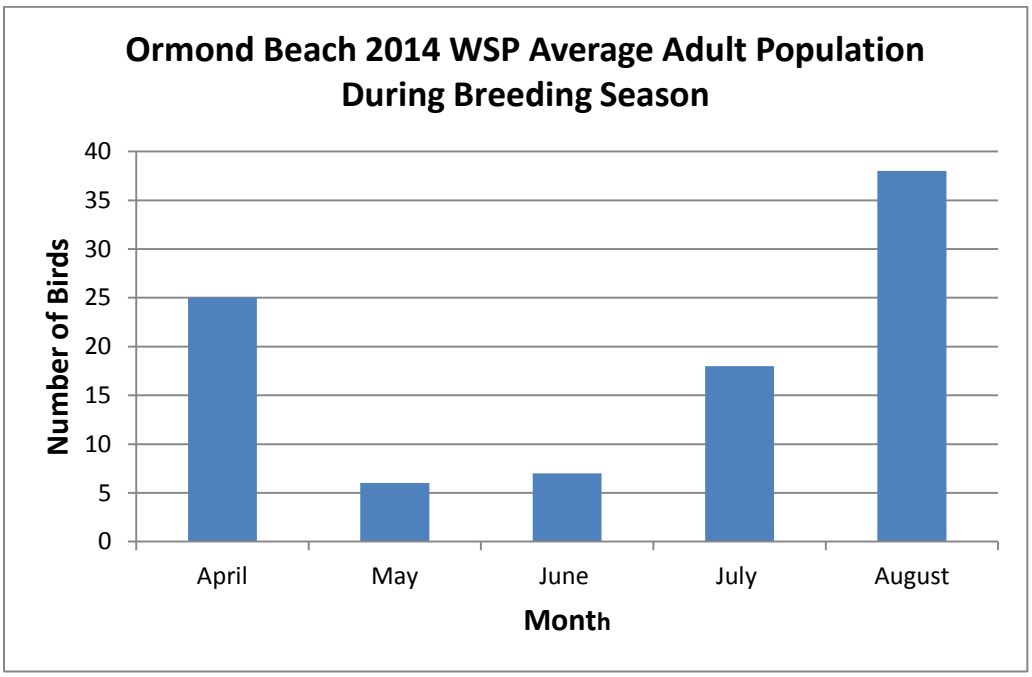

Figure 3. Average Adult WSPs Present During Breeding Season

WSP Nesting

The first WSP nest of this year was discovered on March 31st, 2014 and the last known initiated nest was recorded on July 2nd. A total of 10 nests were recorded during the season, one third of the average of 30 WSP nests initiated on Ormond Beach over the previous 11 years. A graph depicting WSP recorded nests over this time period is included in Appendix A, Figure A-2. Figure 4 shows WSP nest locations and outcomes for 2014.

Early in the season, many more nest scrapes were observed than nests actually initiated. These were especially apparent in the southern fenced area on the northwestern edge of the open beach where vegetation begins to thicken. This was an area where ground squirrels were also observed so perhaps WSPs became aware of this potential danger and did not continue to use scrapes for nests. Nests initiated outside the fences are also interesting to note and it remains a mystery why WSPs choose to nest not only closer to the high tide line but also on the seaward side of relatively high dunes (just visible in the aerial photograph in Figure 4). Over the breeding season, monitors noted a distinct lack of fresh or abundant wrack on the beach and perhaps this influenced not only abundance but location of WSP nesting closer to the wrack line. The two northernmost nests may have been placed with some influence from the fact that least terns were nesting in this area and provide predator defense for the area in general. Even though the tern colony was small, monitors observed successful mobbing of gulls out of the area. The WSP nest activity by date is presented graphically in Figure 5. The highest minimum number of consecutive breeding adults present (6) was calculated using number of known active WSP nests and broods seen on a single date, and this number was noted on several dates throughout the season (Table 1). It can be noted again how unusual it was to have so many other WSPs present that were apparently not associated with nests, especially during July.

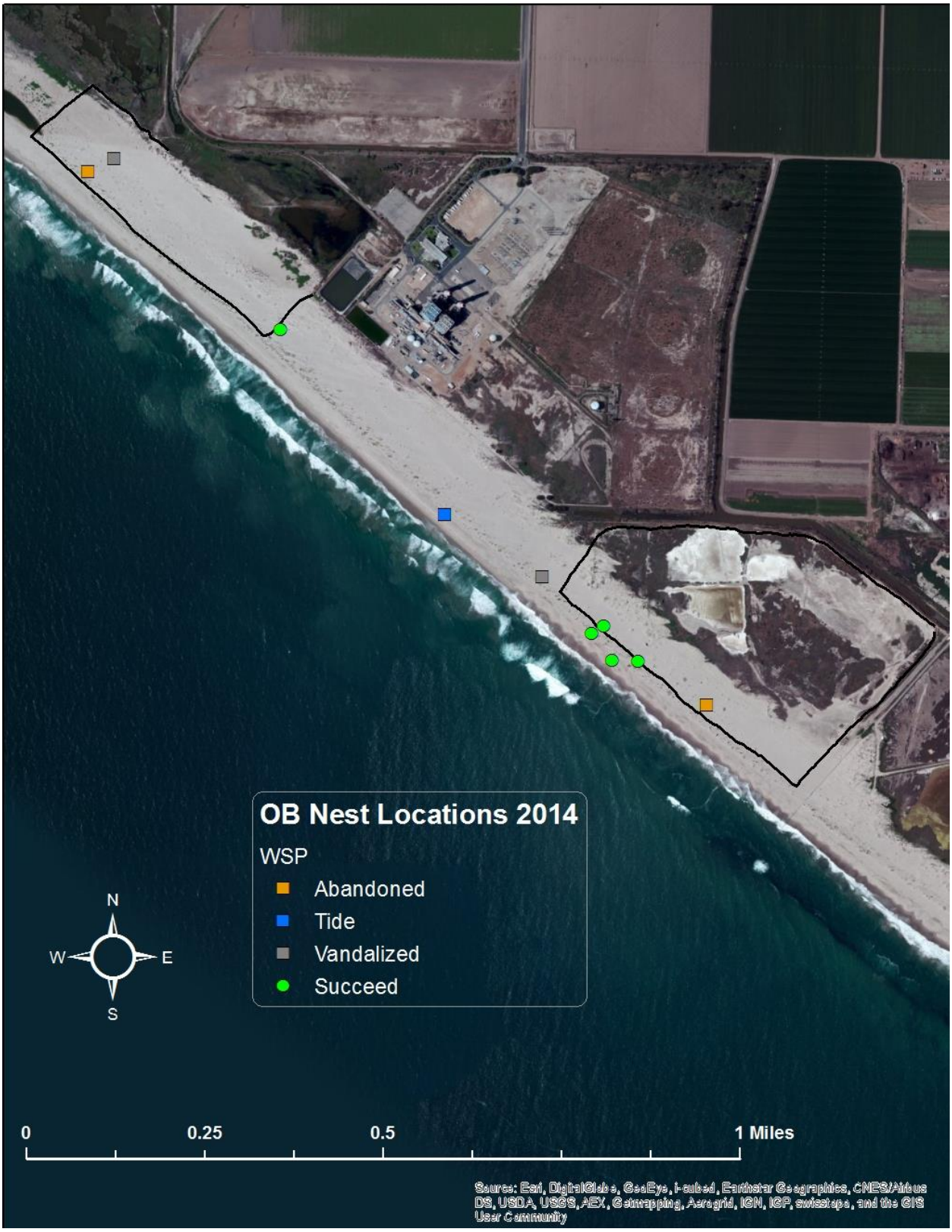

Figure 4. Ormond Beach 2014 Documented WSP Nest Locations and Outcomes

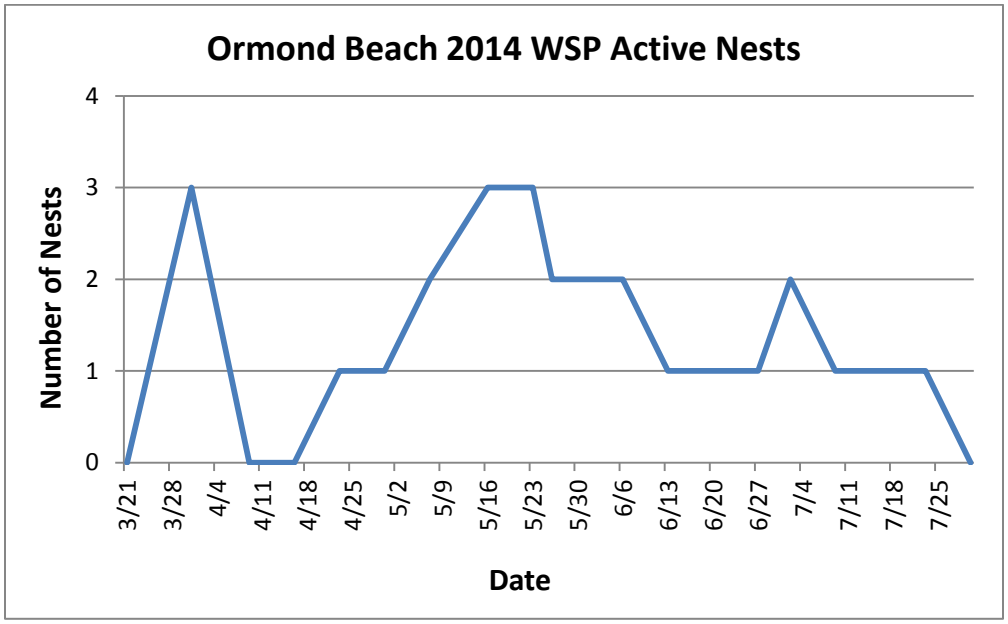

Figure 5. Ormond Beach 2014 WSP Nest Activity by Date

WSP Nest Fates

Due to a history of nest predation on Ormond Beach, monitors re-instigated the use of wire mini-exclosures for WSP nest protection that have been used effectively in the past and at other beaches. Early in the breeding season, northern harriers and gulls were commonly observed in the area but not regularly during nesting activities. As mentioned above, ground squirrels were seen on the edge of the beach in the southern nesting area, but no birds attempted to nest in that area this year.

Two of the earliest three WSP nests recorded were not seen attended by an incubating parent in subsequent weeks even after long observation periods. In some cases, two WSPs were seen on the beach quite a distance from nests that were within the fence. For nests suspected of being abandoned, monitors placed an egg on end and in at least one case, the egg was repositioned the next week but the nest ultimately abandoned. Of the 10 WSP nest attempts in 2014 at Ormond Beach, 5 hatched at least one chick for a 50 percent hatch success. This hatch rate is similar to the average from the years 2004 through 2013 (51%) and much better than the 3 percent hatch success in 2013 (Appendix A, Figure A-2). This success may likely be attributed to the use of predator exclosures, which were not used in 2013. In addition, this beach seemed to have been visited by fewer predators than in recent years. Table 2 describes the individual nests fates.

Nest failures were primarily due to non-predator causes, although reasons for abandonment are not clear. Figure 6 depicts a chart of the reasons for nest failure. The southern nest indicated as "vandalized" in Figure 4 occurred adjacent to a heavily-used footpath where people walk around the fence to the beach. Monitors made the decision to not use an exclosure over this nest to call as little attention to it as possible, hoping the passers-by would not see it. By the next week survey, the eggs had been crushed and/or predated (eggshells and yolks found) and human footprints and dog tracks were found at the nest site. It's difficult to speculate whether the human/dog found the nest before or after its destruction. The northern nest indicated as "vandalized" also was found with human footprints near it but strangely, the exclosure was still in place over the nest. The eggs were gone and the tiny shells lining the nest scrape were scattered to one side. One theory was that a person had used a stick or other long object to move the eggs out of the exclosure.

The two abandoned nests were two of the first three WSP nests initiated and no explanation for early abandonment could be ascertained. After the first week, monitors did not see WSP parents attending these nests. They were both located within the fenced area, the southern one of which proved especially effective in keeping people and dogs out as observed by the lack of footprints within it during the season. The northern fence, however, consistently had footprints and bicycle tracks across the center right near where both WSP nests occurred (Appendix B, Photo B-5). Very few predators were observed during monitoring surveys and no animal tracks occurred near abandoned nests. It was known, however, that a great horned owl nested on a structure located on Navy Base Point Mugu near its boundary with Arnold Road.

Early in the season (late April) there were some strong wind events that blew exclosures off WSP nests subjecting eggs to potential predation/abandonment. However, the one nest that was still active went on to hatch once the exclosure was replaced. A new procedure to anchor exclosures with 6-inch landscape pins proved successful and was used the rest of the season.

Table 2. Ormond Beach 2014 Western Snowy Plover Nests Fates

Nest #	Date Found	Date of Hatch/Other	Eggs Laid	Eggs Hatched	Comments
14OB-01	3/31	4/16	3	0	Abandoned early in term for unknown reason.
14OB-02	3/31	4/9	3	0	Evidence of predation and/or disturbance (broken eggs and yolk) with dog and human tracks nearby. Only nest where an exclosure was not used due to proximity to a heavily-used footpath.
14OB-03	3/31	4/16	3	0	Abandoned early in term for unknown reason.
14OB-04	4/23	5/23	3	1	Nest placed outside breeding area fence on beach; temporary symbolic fence added. Two remaining eggs found broken 5/30 after first hatch on 5/23.
14OB-05	5/16	6/13	2	2	Success, two egg pips found.
14OB-06	Assume laid 4/30	5/26	At least 2	2	Nest was never found but saw a male with 2 chicks on 5/26.
14OB-07	6/27	7/2	3	0	All eggs missing after 1 week, no shells or animal tracks. Human footprints nearby.
14OB-08	7/2	7/9	2	0	Nest placed outside breeding area fence on beach; temporary symbolic fence added. Nest lost to wavewash after 1 week, both parents still present.
14OB-09	7/2	7/30	3	3	Success, saw 3 chicks with parents.
14OB-10	Assume laid 5/30	7/2	At least 1	At least 1	Nest was never found but saw 1-wk old chick with banded NB:OB on 7/2.
Totals			**Minimum 25**	**Minimum 9**	

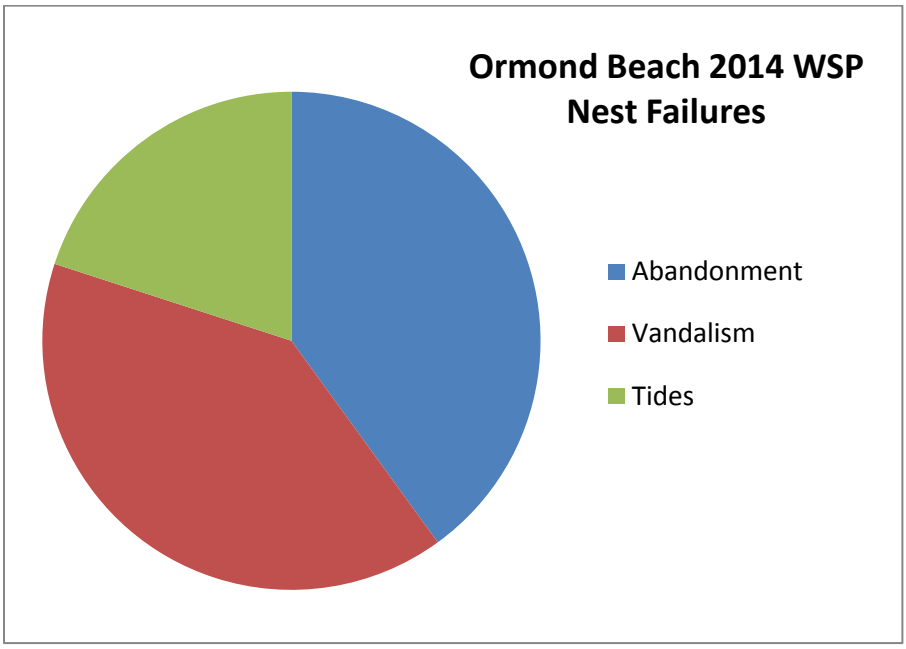

Figure 6. Ormond Beach 2014 Reasons for WSP Nest Failures

WSP Chicks

WSP chicks were observed on six survey dates, the most at once being on July 30 when three newly hatched chicks were seen with both parents (Table 1). The majority of chick sightings were in the dunes between the fence and the open beach. This observation caused monitors to speculate whether moving the protective fence seaward to enclose at least some of the dunes would provide more protection to younger chicks. Two non-viable WSP eggs were collected and delivered to the Western Foundation for Vertebrate Zoology (WFVZ) in Camarillo. No egg or chick mortality was caused by monitors.

With weekly surveys, tracking chicks to fledge stage was not possible. Monitors observed one WSP fledgling on July 2nd.

Banded Birds

One banded WSP was observed during the 2014 nesting season. NB:OB was observed on two different weekly surveys, the second of which on July 2nd it was observed with a one-week old chick indicating that it was a brooding adult. PBBO records indicate that it is a female that hatched and was banded at Vandenburg Air Force Base in 2013 and also was observed at Hollywood Beach on May 30, 2014.

Population Abundance - CLTs

CLT Adults and Pair Estimation

Monitors began observing flyovers and some hovering/circling flight activity of adult CLTs at Ormond Beach on May 23rd, interestingly three weeks after they were observed at Hollywood Beach. Estimated adult numbers peaked at 35 CLTs on June 13th, which generally coincided with peak adult presence in 2013 (June 4th, Fox-Fernandez et al. 2013) and when active nests hit their peak (14 nests, Table 3). Figure 7 depicts the number of breeding adult CLTs observed for 2014 by date and a graph depicting the recent history of estimated breeding adults annually visiting Ormond Beach is presented in Appendix A, Figure A-3. The CLT Recovery Plan lists adults present at Ormond Beach in earlier years as follows:

Year	1978	1979	1980	1981	1982	1983
Breeding Adult CLTs Recorded	0	12-16	0	0	14	8

Source: (USFWS 1985)

These numbers emphasize the inconsistent and spotty nature of CLT nesting at Ormond Beach, but give a picture of the progress that has been made to attract and keep at least small colonies.

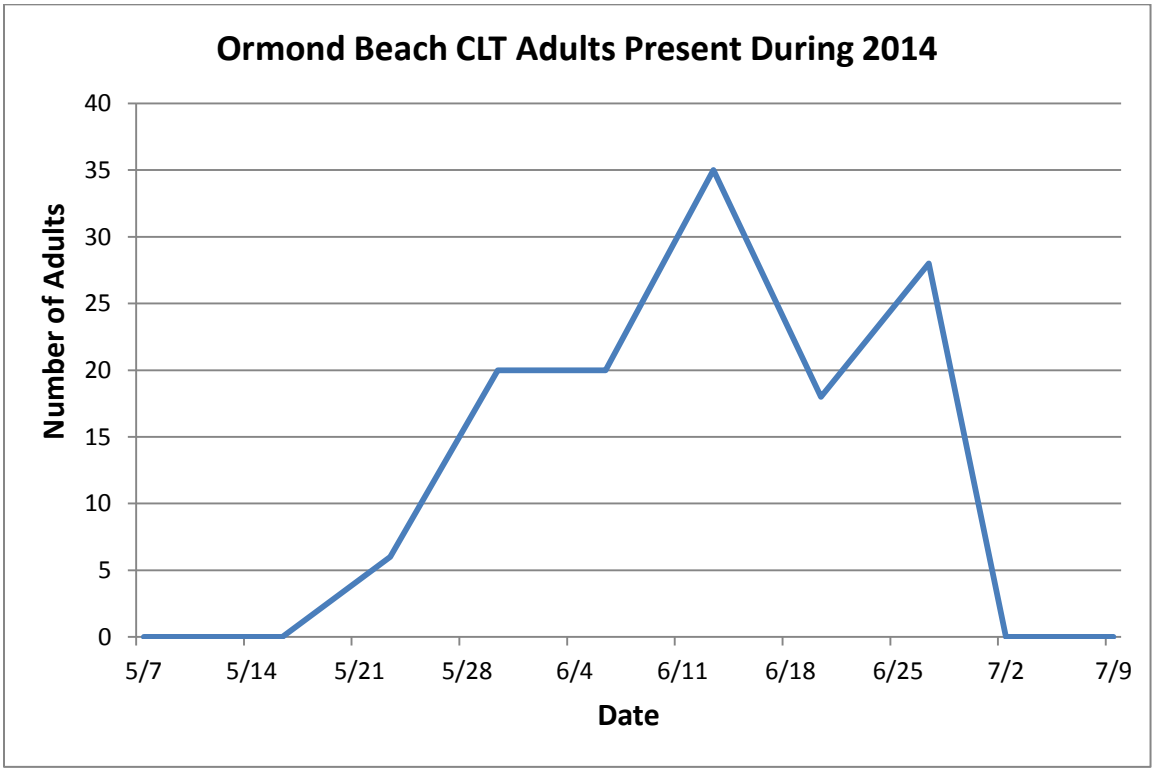

Figure 7. Ormond Beach CLT Adults Present in 2014

To determine the total number of breeding CLT pairs at Ormond Beach in 2014, Method II as described in Massey and Atwood (1981) was used. Methods I and Method III were not used because it did not appear that a second wave of nesting had occurred but probably re-nesting by early failed nesters did occur. While the number of active nests identified during the June 27 survey event was greater (by one nest than the previous survey, this did not equate to a second wave of nesting (Table 3).

The total number of pairs estimated for Ormond Beach for 2014 (T = 12) per Method II is calculated as follows:

Total Pairs = Total nests – (#Unsuccessful nests prior to June 20 + #Broods lost prior to June 20)
12 = 22 – (10 + 0)

Table 3. Ormond Beach California Least Tern 2014 Adult Counts and Active Nests

Date	Adult CLTs Observed	Active Nests
5/7	0	0
5/16	0	0
5/23	6	0
5/30	20	5
6/6	20	8
6/13	35	14
6/20	18	9
6/27	28	10
7/2	0	9?
7/9	0	0
7/16	0	0
7/30	0	0
8/6	0	0
8/13	0	0
8/20	0	0

Since no adults were seen during the July 2nd survey, it is highly likely that most of the nine nests were already abandoned.

CLT Nesting

The first five CLT nests were recorded on May 30, 2014. All nests initiated at Ormond Beach in 2014 occurred in the northwestern portion of the northern fenced area, quite similar to the locations recorded in two prior years (Figure 8; Smith 2009; Wingert et al. 2011). CLT nest numbers recorded increased to eight nests by the first week of June and peaked at 14 consecutively active nests on June 13th; however, monitors recorded the first predation and began to suspect abandonment of some of the nests already by then. CLT nest activity by date is graphed in Figure 9. A total of 22 CLT nests were initiated in 2014, compared to the average over the last 10 years of 41 per season. By June 27th, nest non-viability was confirmed in four nests and four new nests were initiated, likely some of which were re-nesting attempts.

CLT Nest Fates

Of the total of 22 CLT nests initiated that included 38 eggs laid, 4 nests were recorded to hatch at least one chick as verified primarily by presence of defecation near the nest and no sign of eggshells, yolk, or animal tracks present at the scrape. This is an 18 percent hatch success that included 7 eggs hatched. Historic CLT nest success numbers at Ormond Beach are quite variable and compared in Appendix A, Figure A-4. The primary reason for nest failure this year was abandonment and/or egg non-viability, usually for unknown reasons. It was difficult to determine the exact date nests were abandoned as CLT adults were not present in the nesting area as often as normally expected during surveys. Therefore, the amount of nests recorded as “active” may be incorrect and some may have already been abandoned (Table 3). Nests seemed to be adequately defended against aerial predators through late June and

Figure 8. Ormond Beach 2014 Documented CLT Nest Locations

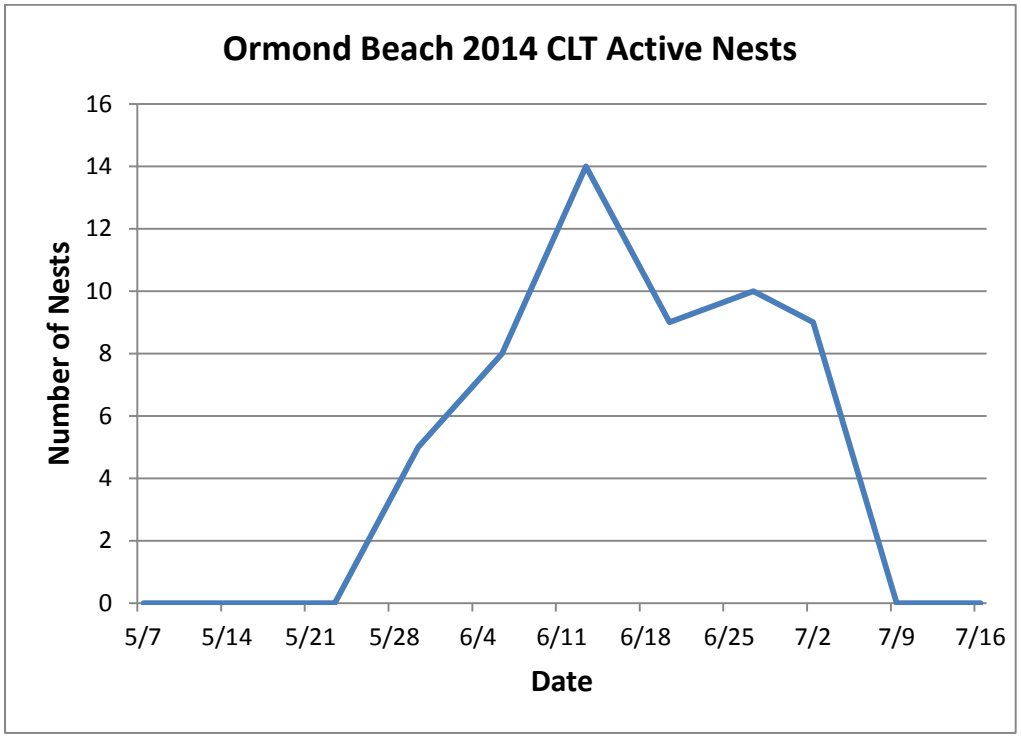

Figure 9. Ormond Beach 2014 CLT Nest Activity by Date

monitors observed gulls that were attempting to fly over the active nest colony promptly mobbed out by CLTs. Reasons for nest failures are graphed in Figure 10. The only perceived explanation for nest abandonment was the presence of humans (footprints observed) passing through the otherwise remote northern nesting area. Trespassers seemed to be primarily accessing the nest area from the adjacent Nature Conservancy (TNC) land. It was not known whether this occurred at night or during the days when monitors were not present. The colony seemed to be abandoned completely by early July. A summary of 2014 breeding results is presented in Table 4.

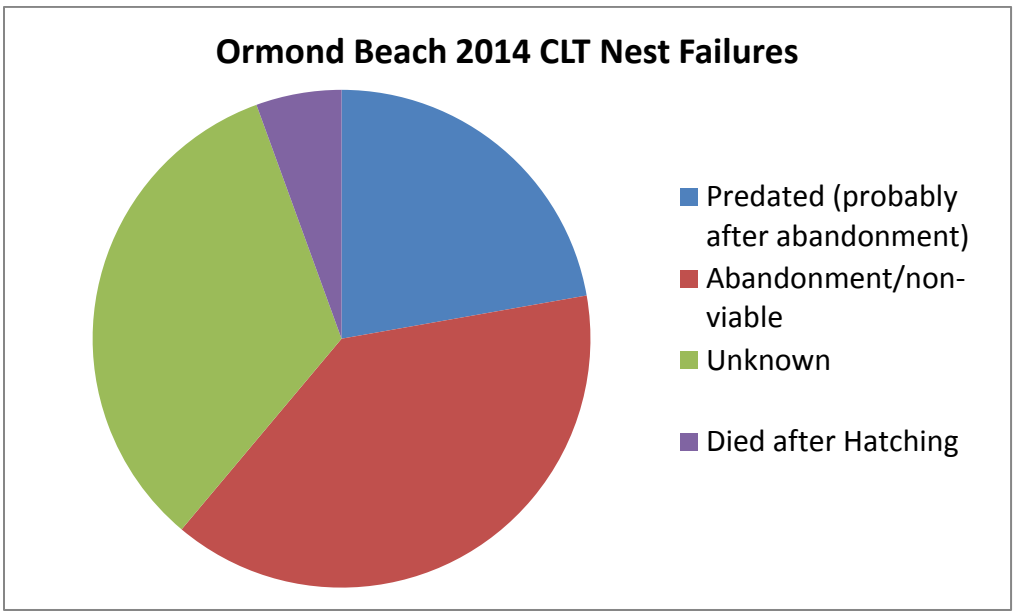

Figure 10. Ormond Beach 2014 Reasons for CLT Nest Failures

Table 4. Ormond Beach 2014 CLT Breeding Summary

Date terns first observed	23-May-14
Date terns last seen	27-Jun-14
Date of first nest	30-May-14
Date last nest found	27-Jun-14
Date last nest established	unk
Date of first hatch	27-Jun-14
Date of last hatch	9-Jul-14
Date of first fledgling	unk
Estimated number of pairs	15-18
Total number of nests	22
Total number of eggs	38
Clutch size:	
1 egg	6
2 egg	16
3 egg	0
4 egg	0
unknown (min. 1 egg)	0
Average clutch size	1.73
No. of nests hatching young*	4
Total number of eggs hatched	7
Estimated number of fledglings	unk
Number of chicks banded	0
Number of adults banded	0
Uncertain outcome	
Nests*	7
Eggs	13
Documented Mortality	
Preyed upon	
Nests*	4
Eggs**	6
Chicks	unk
Fledglings	0
Adults	0
Human disturbance	
Nests*	0
Eggs	0
Chicks	0
Fledglings	0
Adults	0
Other causes	
Nests*	
Abandoned (pre-term)	1
Failed to hatch (incubated to term)	6
Died hatching	0
Damaged (eggshell thinning)	0
Flooded	0

Table 4. Ormond Beach 2014 CLT Breeding Summary (cont.)

Documented Mortality - Eggs	
Abandoned (pre-term)	1
Failed to hatch (incubated to term)	10
Died hatching	0
Damaged (eggshell thinning)	0
Flooded	0
Chicks	1
Fledglings	0
Adults	0
* may be included in more than one category	
** not including previously abandoned eggs that were depredated/ scavenged	

Two non-viable CLT eggs were collected and delivered to the WFVZ. WFVZ staff expressed that they didn't need more than two samples from each population so several non-viable eggs were buried on site to minimize attracting scavengers. No takes of eggs or chicks were caused by monitors.

CLT Chicks

Only one CLT chick was observed in 2014 and it was found dead at the scrape, likely occurring soon after hatching. There were no signs of it having been attacked or other reasons for mortality noted. No CLT fledglings were observed.

DISCUSSION

The average number of breeding adult WSPs present from April through August was 19, down compared to the average of 34 adult WSPs during past seasons (Appendix A, Figure A-1). The recovery plan Management Potential goal for this beach is 50 breeding adult WSPs (USFWS 2007; Federal Register 2012). The 10 WSP nests observed as initiated on Ormond Beach in 2014 were one third the usual annual average of 30 nests recorded from 2003 to 2013, even though hatch success was about average for Ormond Beach's history at 50 percent (Appendix A, Figure A-2). WSP chicks were observed during six surveys with a high count of three seen on July 30th. Within hours after hatching, WSP chicks are mobile and leave the nest area to follow their parent birds to begin foraging. On Ormond Beach this most often results in chicks leaving the protection of the fenced area, and negotiating tall dunes to reach the beach wrack line. The topography and vegetation in the dunes provide the best cover available and chicks were most often observed there. As in past years, not being able to track survival of both species of chicks to fledge stage with only once-weekly surveys is of concern.

The 2014 nesting season showed a tripling in nest attempts for CLTs from the last couple years (22 vs. 6 and 7 from 2012 and 2013, respectively). However, the total CLT breeding pair estimation of 12 was similar to that of the last two years (14 and 12) (Appendix A, Figure A-3). This likely reflects that the CLTs that lost nests early in the season attempted to re-nest at Ormond Beach. Re-nesting for least terns is not uncommon (Massey & Atwood 1981). The total of 22 nests is about half the average number of CLT nest attempts over the last 10 years at Ormond Beach of 41. From the 22 CLT nests, 7 CLT eggs hatched from 4 nests in 2014 for a nest hatch success of 18 percent, compared with the average of 51 percent pre-2014 (Appendix A, Figure A-4). Monitors did not observe any live CLT chicks or fledglings in their once-per-week surveys. The nesting colony appeared to be abandoned by July 9th.

In contrast to previous years where many predators were observed in or near the nesting colony (Wingert 2011b; Fox-Fernandez 2013), very few avian or mammalian predators were observed during surveys in 2014 after April. This may have to do with the drought conditions in the area and the fact that the wetlands completely dried up by May. The lack of water to support grass and other plant species may have contributed to sustaining less prey species, such as ground squirrels and other rodents, which may be a reason that predators (e.g., hawks, falcons) occupy the area in typical years since WSP and CLT nests are not a reliable prey item. Even with the common presence of gull species due to the Agromin greenwaste recycling facility nearby, gulls have not been a notable predator of WSP or CLT at Ormond Beach. In addition, there was very little WSP and CLT activity in and near the southern fenced area where the few ground squirrels that were seen occurred even though many fresh nest scrapes were observed there. It is tempting to theorize that WSPs and CLTs used past nest failure experience to avoid nesting in this area.

Abandonment of both WSP and CLT nests pre-term was a major failure factor in 2014. This outcome may have to do with unknown factors such as predators or human trespassers startling brooding birds at hours when the birds are more sensitive (night or very early mornings) and/or availability of nearshore prey resources for CLTs. It was suggested by Smith (2009) that one possible explanation for CLT nests location placement in the northern portion of Ormond Beach to be nearer the J. St. estuary due to the lack of suitable forage fish in the nearshore waters. The closest other prey sources are in freshwater ponds east of this area on TNC property. An interesting study could be made comparing local anchovy and other small fish counts and CLT nesting attempts and successes over several years.

Hollywood Beach utilized many hours of trained docents to help educate visitors in 2014 and the hope is to have more docents volunteer at Ormond Beach in 2015. Walter Fuller reported Ormond Beach

visitation in 2014 as: a total of 22,575 people entering from Arnold Road and of those 13,820 were there during the WSP and CLT nesting season. Of these visitors, 2,399 brought dogs to the beach, 1,352 occurrences of which were during the nesting season. Peak visitation month was 3,100 people during August (pers. comm. Schoppe 2015). As mentioned in this report, monitors saw evidence that some people were also accessing Ormond Beach through TNC property, past a gate and fencing, and by walking across the northern breeding area.

Overall, benefits to nest success at Ormond Beach can be attributed to the combination of the large fenced areas that kept the majority of human and dog disturbance at a distance, educational signage, the use of predator exclosures for WSP nests, regular nest monitoring, and the 24/7 assistance in overall land stewardship by Walter Fuller. Mr. Fuller has had success in getting response to calls to Oxnard police and animal control to minimize major disturbances when people or dogs gain access to the nesting area fences.

As noted in the 2014 Hollywood Beach report, the availability of suitable nesting habitat is much reduced on that beach due to the fall 2014 dredging that occurred there. This may be the impetus for more WSPs and CLTs to choose to bypass nesting at Hollywood Beach and shifting back to Ormond Beach in 2015.

Therefore the primary factors that seem to affect breeding abundance and preferred nest locations at Ormond Beach, including changes in forage prey availability, and predation pressure and other types of human-caused disturbances, likely contribute to fluctuations in WSP and CLT breeding success.

RECOMMENDATIONS

1. **Issue: Aging Fencing.** Especially noticed by the lack of footprints within the completely fenced southern area, fences seem to have proven to be effective to minimize disturbance to nesting WSPs and CLTs at Ormond Beach. After several years, many of the supporting t-posts are starting to rust and crumble. For some unknown reason, WSPs have chosen to nest outside the fence on the seaward side and most chicks were seen on that side of the fence. Also, the northern fenced area was not complete and failed to keep people out in 2014.

    a. Potential solution: Metal t-posts on the ocean side of fencing need to be replaced before next breeding season as many posts have oxidized to the point of crumbling. Galvanized posts on this side should be considered for longer life.

    b. Potential solution: Serious thought needs to be given to extending fencing seaward to include at least some of the dune areas. Dune areas were consistently used by brooding WSPs and their chicks.

    c. Potential solution: Extremely high tides this year knocked down fence posts on the ocean side and consideration should be given to using taller t-posts (7-8 ft). Not only high water, but shifting sand dunes also cover t-posts eventually and taller ones would remain effective longer.

    d. Potential solution: The northern breeding area needs to be secured better with fencing. Direct effects to nests were noted in 2014 from trespassers in this area. A sign could indicate where walkers could go around to access the beach.

    e. Potential solution: Perhaps more of the area in front of the NRG plant could be fenced if funding becomes available. It would warrant watching in the next couple seasons to see if more nests are attempted there. An access trail to the beach should always be left unfenced.

2. **Issue: Not being able to attract docents to volunteer at Ormond Beach in 2014.**

    a. Potential solution: Mobilize the group that trained last year again and get them excited about Ormond Beach. There may be some lingering fear about the remoteness of this beach and the past presence of homeless people but much has changed. TNC hires a security guard who patrols regularly on the northern portion and Walter keeps a good eye on the southern portion. Monitors saw very few shady people in 2014.

    b. Potential solution: Recruit additional docent volunteers that may live nearer Ormond Beach or be from Oxnard colleges.

3. **Issue: Predation Threats.**

    a. Potential solution: Continue to use the nest exclosures for WSP nests.

    b. Potential solution: If mammalian predators are identified, consider a trapping program on the eastern perimeter of the southern fenced area. Permits may need to be pursued.

4. **Issue: Dogs Off-Leash.** On- and off-leash dogs will always be perceived as a threat by beach-nesting birds. The majority of people that bring dogs to the beach stay within the first half mile of the Arnold Road access on the wet sand and do not threaten nest sites. However, once chicks are on the beach dogs may become more of a perceived threat, especially to WSPs foraging on the wrack line.

a. Potential solution: Even the occasional law enforcement presence during the breeding season with issuance of a couple tickets per day for off-leash dogs has been shown in the past to change behavior and reduce visitation by people with dogs.

b. Potential solution: Provide monitors and docents with a phone number of a responsible official willing to make these contacts (animal control? City? CDFW?) Monitors are still unsure who is responsible for dog rule enforcement and for a response to be effective it would need to be prompt.

5. **Issue: All landowners/responsible agencies not contributing to the protection of listed species on their lands.** For several years NRG Energy and in 2014 The Nature Conservancy have contributed funding to the efforts to sustain the listed CLT and WSP on Ormond Beach. The City of Oxnard has also helped sustain Mr. Fuller's efforts at beach and species protection. More federal and state support is needed for Ormond Beach WSP and CLT protection.

   a. Potential solution: The California Coastal Conservancy should again show responsibility for required endangered species protection on their lands that includes contributions to future funding for nest monitors and necessary equipment to sustain successful breeding at Ormond Beach. They contributed to the effort in 2013.

   b. Potential solution: The USFWS and California Department of Fish and Wildlife should resume monetary support they provided for many years.

   c. Potential solution: As stated in the California Least Tern Recovery Plan (USFWS 1985), beaches in Ventura County, which include Ormond Beach listed as an "insecure colony", need to have a management plan developed. The Plan also mentions several other study ideas that are needed to understand the factors affecting CLT success. USFWS and CDFW should secure funding for such efforts and make the opportunity to author or at least contribute to them available to the long-term local volunteers who have collected data and devoted much attention to the protection of WSP and CLT at specific beaches.

6. **Issue: Drones on the beach.** Walter has reported seeing two drones at Ormond Beach recently. Nesting WSPs and CLTs are constantly aware of overflying objects because most birds that are larger than themselves pose a risk of predation. Drones overhead would undoubtedly cause stress to incubating birds and potential abandonment of active nests. Since CLTs use aerial defense they may even be injured by a drone. Ultralight aircraft were suspected of causing a failure of least terns to fledge at Ormond Beach in the past (Smith 2009), and drones may become an even bigger threat as they could be nearer and louder to nesting birds.

   a. **Potential solution:** This technology is so new regulations are still being considered. A complete ban of their use during nesting season would be the best option. This decision would likely be upheld by officials for the adjacent Pt. Mugu because of their airspace.

ACKNOWLEDGEMENTS

Thanks goes out to Chris Kahler for his assistance in monitoring and historical knowledge of the WSPs, CLTs, and human activities at Ormond Beach. A key reason there is continuity of protection and awareness of sensitive birds at this beach is due to Walter Fuller, the quintessential land steward in Ventura County. No one can hold a candle to his many years of dedication to these special creatures. Also thanks to Cynthia Hartley for grant writing, map creation, and historical perspective; Bruce Schoppe for pursuing funding and other support; and Chris Dellith and Michael Glenn for being agency liaisons. A big help this year was having the Oxnard City Corps youth come out and complete the perimeter of the southern breeding area fence. The biggest appreciation goes to Ventura Audubon Society and NRG Energy who generously provided funding for monitoring and fencing materials this year.

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Personal Communications (pers. comm.)

Schoppe, B. 2015. Ventura Audubon President email dated January 6 with beach visitation information provided by Walter Fuller, Ormond Beach Land Steward.

Appendix A. Comparing 2014 with Past Breeding Seasons

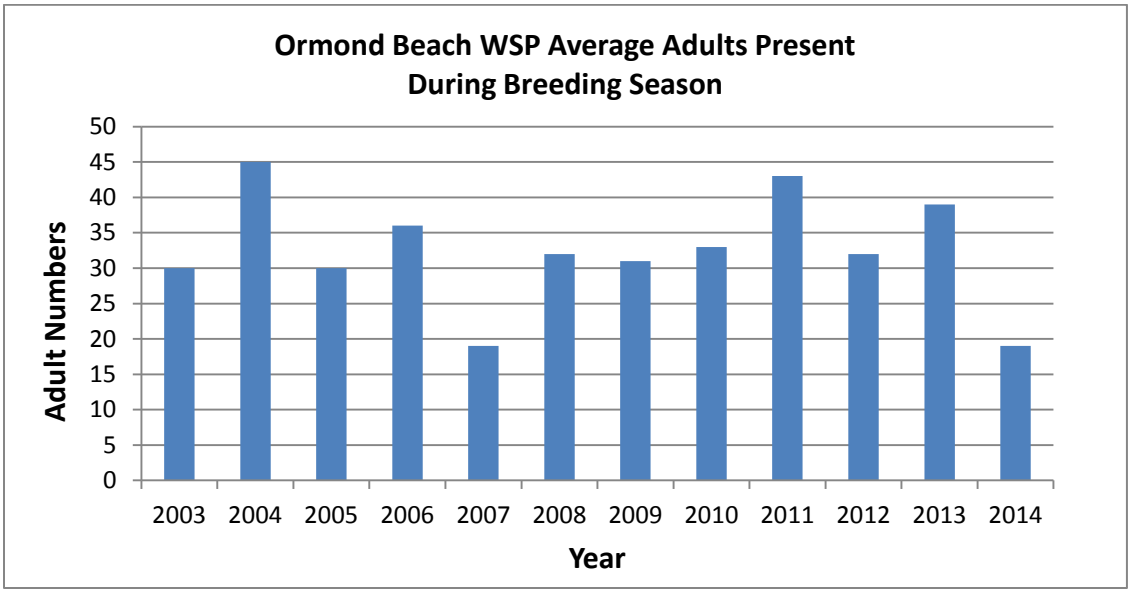

Figure A-1. Average Numbers of Adult WSPs Present at Ormond Beach During Breeding Season

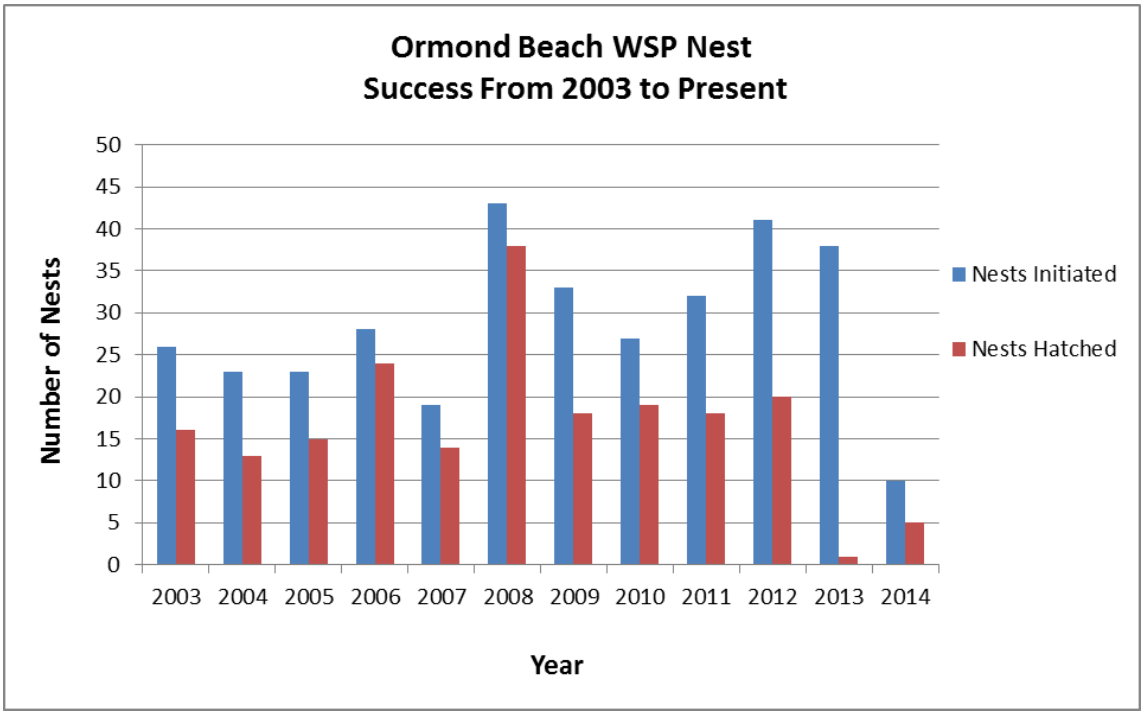

Figure A-2. Ormond Beach WSP Nest Success from 2003 to Present

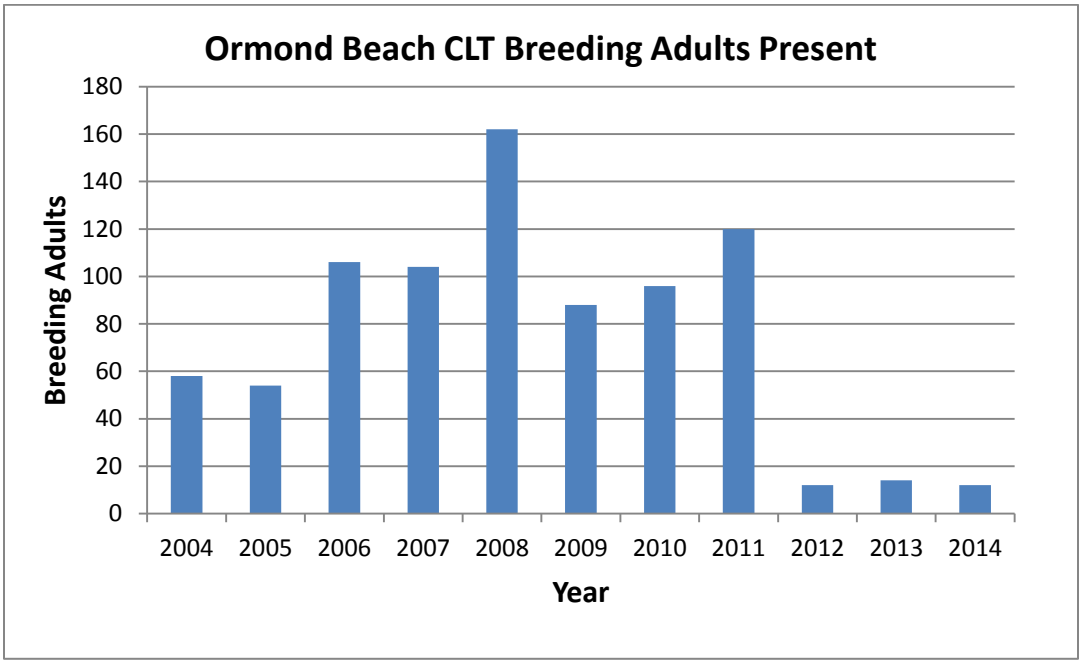

Figure A-3. Ormond Beach CLT Breeding Adults from 2004 to Present

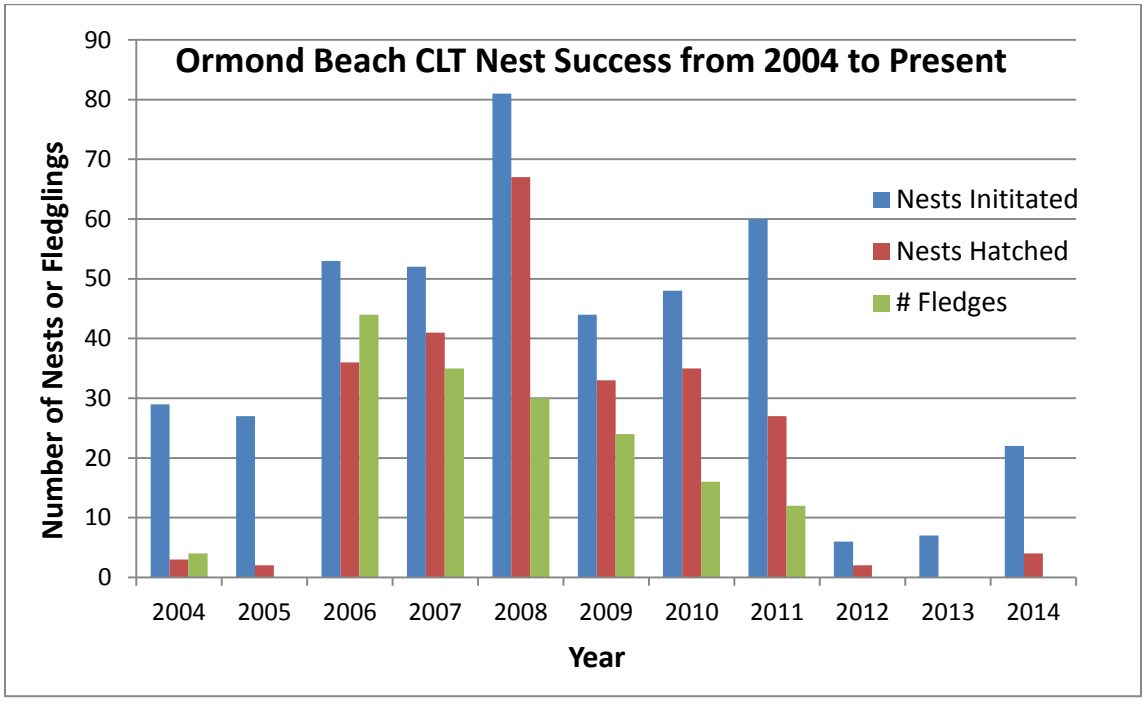

Figure A-4. Ormond Beach CLT Nest Success from 2004 to Present

Appendix B. 2014 Breeding Season Photos

Photo B-1. Ventura Audubon Society Signs at Ormond Beach's Arnold Road Entrance.

Photo B-2. Oxnard City Corps helping complete the southern breeding area fence.

Photo B-3. Plastic mesh (Cintoflex, ~1 ½" openings) fence used at Ormond Beach attached to t-posts and a child-drawn sign. NRG Energy plant in background.

Photo B-4. WSP nest with wire predator exclosure over it near NRG plant.

Photo B-5. Trespasser tracks leading from TNC gate across most heavily used CLT nesting area in northern breeding area fence.

Photo B-6. Walter Fuller on the job.