Ormond Beach, California

Western Snowy Plover and California Least Tern

Nesting Outcome: 2020 Season Summary

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Cynthia Hartley
Ventura Audubon Society
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Introduction

The abundance and productivity of the western snowy plover (WSP) (*Charadrius nivosus nivosus*) and the California least tern (CLT) (*Sternula antillarum browni*) was monitored at Ormond Beach in Oxnard, Ventura County, California from March 21, 2020 to September 1, 2020. The pacific coast population of WSP was federally listed as threatened under the ESA on March 5, 1993 (Federal Register 1993). The California least tern subspecies was listed as an endangered species under the Federal Register in 1970 (USFWS 1985) and as endangered by the state of California in 1980 (USFWS 1985). Nesting of both species has been documented at Ormond Beach since the 1970's and nesting locations and outcomes have been reported in detail since 2003. The 2020 data completes 18 years of continuously collected nesting outcomes and locations.

Ormond Beach is uniquely located at the urban/agricultural/wetland interface of Ventura County. It is part of a Globally Important Bird Area, has been designated WSP critical habitat by the USFWS and an Environmentall Senstive Habitat Area (ESHA) by the Local Coastal Plan.

Executive Summary

Western Snowy Plover

A total of 53 WSP nests were located; of those, 32 hatched (60%) and 20 failed (38%) and 1 nest had an unknown outcome (2%). Of the 20 failed nests, 16 were depredated, 2 were abandoned and 1 nest was vandalized by humans. The calculated number of breeding WSP was 42.

First Nest Initiation:	March 28
First Hatch:	April 25
Period of Peak Nesting:	April 27
Last Nest Initiation:	August 25
Last Hatch:	August 18

# nests	Nest Outcome			# breeding adults	Hatch Rate
	succeed	fail	unknown		
53	32	20	1	42	60.4%

Threats to WSP Nesting Success: Predators, including ravens and squirrels, were the greatest cause of nest loss. Ravens were the cause of greatest nest failure. Human vandalism and trespassing increased in 2020. The presence of homeless encampments near

the north nesting habitat continued for the second year in row. Individuals from the encampments regularly trespassed through the nesting habitat. Trail cameras were moved and stolen, eggs were taken from one nest that had a predator exclosure on it, and predator exclosures were moved off of nests, sometimes crushed and kicked and at least 5 were stolen. The habitat fences protecting the nesting area was vandalized on a weekly basis, and posts and mesh fencing stolen by the encampments inhabitants and repurposed in their nearby camps. Off-roaders where also present, continuing a trend that started in 2019. They cut the fence at the upland side of the north habitat and road through the nesting habitat on at least 5 occasions. Motorcycles were also seen riding at the tideline. There was regular foot and bike traffic inside all of the fenced nesting areas, again a continuing trend that increased in 2020 compared to 2019.

California Least Terns

Least terns first appeared on the north end of Ormond Beach on May 21, and on the south end on May 23. This year two nesting colonies were established, one each at the north and south ends of the beach. The last CLT were seen on August 11 in the north and on July 28th in the south. A total of 23 CLT nests were found, split between two colonies, north habitat (12 nests) and south habitat (11 nests). Nine chicks fledged from the north colony.

	North Colony	**South Colony**
Number nests:	12	11
First Nest Initiation:	May 21	May 23
First Hatch:	June 17	June 23
Last Hatch:	July 14	July 15
Number fledgling:	6 to 9	0

	# nests	**Nest Outcome**			**Fledglings**
		succeed	**fail**	**unknown**	
North Habitat	12	10	1	1	6 to 9
South Habitat	11	4	6	1	0
Total	**23**	**14**	**7**	**2**	**6 to 9**

Threats to CLT Nesting Success: This year nests failed due to abandonment (3 eggs), being buried by wind (3 eggs) or were non-viable (3 eggs). One chick was died after hatching, possible depredated by red ants. Although nests were not depredated by nest predators, there were many squirrel dens present in the colony and there was a regular presence of homeless with bikes and dogs in the nesting habitat. Off roaders were also present in the nesting habitat on the north end of Ormond Beach.

Site Description

Beach Ownership

The boundaries of Ormond Beach are defined on the southeast by the Naval Base Ventura County Pt. Mugu, and on the northwest by the City of Port Hueneme. Ormond Beach is owned by three landowners that jointly manage the property under a Memorandum of Understanding. The land owners are the California State Coastal Conservancy (SCC), the Nature Conservancy (TNC) and the City of Oxnard (the City). The northern portion of Ormond Beach is owned by the City. The center and southern portion of the dunes and an inland salt panne are owned by the SCC. Inland on the northern end of the property is a parcel owned by TNC.

Nesting of the western snowy plover occurs on land owned by the City and the SCC. There are records of California least terns nesting on the northwest end of Ormond Beach since the 1990's. CLT have also nested on the southeast end of the beach regularly before 2012. This year CLT showed interest in this former nesting site, and the first nest in 7 years a nest was established on this end of the beach.

Inland on the north end is the former Halaco property, which was a scrap metal recycling operation designated an EPA superfund site in 2007. Southeast of the TNC property is a power plant owned and operated by GenOn Energy. This parcel is encircled by SCC land and fronts the beach dunes where WSP nest. Adjacent to the salt pan is a small parcel owned by the Ventura County Game Preserve. Just inland from this is the Agromin Composting and Soil Amendment Facility property, which processes yard waste and food scraps into compost. See Map 1: Ormond Beach property owners and neighboring properties.

Survey Area

The survey area is 2 miles in length and runs southeast along the coast covering approximately 200 acres. WSP nest in the dunes along the entire beach, and CLT have nested at the north and south extremes of the beach. The survey area varies in width from 100' by Ormond Lagoon on the north end to over 1000' wide at the south end in the location of the salt pan. The northern end of the survey area begins at the boundary line between City of Port Hueneme and City of Oxnard. The beach in this area is relatively flat and backed by Ormond Lagoon that drains runoff from Oxnard and Port Hueneme. The foredunes have formed a 4-10' tall dune ridge that begins just south of the lagoon and extends along the entire length of the beach to the south. The beach seaward of the dune ridge is flat and varies from 50'-100' wide. The width varies seasonally due to erosion or accretion induced by wave and tide influences. See Map 2: Ormond Beach survey area.

Habitat Fencing

Fence Types: Nesting areas are enclosed with three types of fencing;

1.) Habitat Fence - Black mesh Cintoflex-C fencing attached to metal T-posts (Photo 1)The mesh fencing has openings that are 1.75" square through which birds and small animals

can easily move through, including WSP adults, WSP chicks and CLT chicks. The T-posts are placed every 10-20'. The fence is intended as a visual demarcation of the nesting area, rather than a predator or human exclusion fence. It provides a physical barrier that is challenging, although not impossible, for humans to cross. It presents a significant barrier to loose dogs and is the fencing of choice in areas where the beach goers bring dogs and disregard leash laws. The bottom of the fencing is not buried, so natural openings occur depending on the topography of the beach. Larger mammals including sea lions, elephant seals and coyote are known to cross under the fence.

2.) Symbolic Fence - Metal eye posts strung with cable wire (Photo 2). This is strictly a visual fence, as it presents no physical barrier to animals and humans can easily step over or under it. We are using this type of fence in areas that experience tidal over wash (by the lagoon) and growing and shifting dunes (middle habitat). It is being used on an experimental basis adjacent to the tideline where dunes are growing the most, to replace habitat fence. We seek to determine if the public will comply with this type of fencing and are introducing it in areas where the public usually complies with dog restrictions.

3.) Temporary Symbolic Fence – This type of fencing is put up on an as-needed basis when nests are established outside of the habitat fences. This year for the first time PVC posts strung with string was used (Photo 3). This material is light weight and can be carried by a one or two people long distances on the beach. It is inexpensive, easy to assemble and durable in the beach environment.

Three areas of nesting habitat are protected with fencing: On the south end of the beach, 1.4 miles of mesh fencing encloses 80 acres that include two habitat areas, the "south habitat dunes" and the "salt panne". Southeast of the power plant, 0.5 mile of fencing encloses 7.4 acres encloses the middle habitat. The fencing facing the ocean is composed of post and cable while the sides and back are mesh for both of these fenced areas. The area directly in front of the power plant is approximately 18 acres and is unfenced. On the north end of Ormond Beach, 0.7 miles of mesh fence encloses 18 acres of dunes we call the "north habitat". A length of approximately 1000 feet of post and cable stretches along the south end of Ormond Lagoon and protects birds that forage at the water/sand interface and seek refuge the north habitat. See Map 3: Fences enclose 3 habitat areas.

Signage

Two types of signs were affixed to posts around the perimeter of the fenced habitat areas: 1) "Share the Shore" signs that were created by school children as part of an Explore the Coast grant in 2017. Elementary school children created these signs after a classroom presentation and a field trip to Ormond Beach, and 2) Seasonal closure signs list penalties for entering nesting areas in both English and Spanish.

Methods

Predator Exclosures for WSP

A 2'X2' square wire mesh cage design is used. Exclosures are made of galvanized or vinyl coated wire with 2"X3" openings. A small sign is affixed to the exclosure to warn would-be vandals from moving or tampering with the exclosure. The exclosures are anchored to the ground with 6-inch landscape staples. Exclosures are used when threats from predators are deemed to put nests at risk. Following placement of the exclosure adults are observed to ensure they return to brooding. Throughout the season several decoy exclosures (not on a nest) are left throughout the beach to confuse predators.

Population Abundance

To cover the entire survey area each week, the beach was divided into different areas that were surveyed in blocks of 2-4 hours. This means that in some cases the entire beach was not surveyed on the same day. The different areas were: The tide line in front of the dune ridge from the Mugu boundary line to Hueneme Beach, the south nesting habitat fence, salt panne and dunes in front of the power plant and the north nesting habitat fence. Areas were covered simultaneously by different teams of monitors when possible, or on sequential days, and count totals for the were summed from each of the areas.

A total of 72 surveys were conducted over a 25-week period from March 18 through Sept 19. Monitoring in the dunes was conducted by walking wandering transects, the tideline was walked at the top of the wrack line. The entire beach was covered a minimum of once per week. All WSP observed were recorded by age and gender. Numbers of CLT adults and juveniles were recorded once weekly in a single effort.

Trail Cameras

Camera traps were used to remotely monitor the nesting area to document the presence of predators, predation events, nest hatching and human disturbance. Two camera models were used: 1) Browning Defender 940 (model# BTC-10D) and 2) Meidase SL122. Both cameras had "no-glo" nighttime infrared emitters and detectors, were motion activated and set to take 10-20 second video. Cameras were placed on the ground approximately 30-40 feet from nests. The camera bodies and cases were camouflaged using "stone creations bleached stone" spray paint, which coated the cameras in a sand-colored heavy texture paint that blended with sand. Cameras were placed on nests in the salt panne, south dune and north habitats.

Determination of Breeding Activity

Nest Fate

When a nest was found, it was approached to collect GPS coordinates. The date found and number of eggs was recorded. For WSP, the sex of brooding adult WSP was noted. Because of the presence of ravens, when an adult WSP could be observed brooding a previously marked nest from a distance it was not approached again. CLT nests were marked with a numbered <6" long piece of driftwood or other natural beach debris and placed no closer than 4 feet from the nest. WSP nests that had exclosures did not require markers. Those that did not have exclosures were marked by 6" to 1' pieces of beach wood or debris placed vertical or at an angle in small dunes on either side of the nest at a distance of at least 10' from the nest. If no adult was observed brooding from a distance, the nest was approached to check for the presence of eggs. Each nest was followed until hatching or failure.

Once a nest no longer contained eggs, a 2-meter area around the nest was examined for eggshell fragments, egg yolk, tracks of birds or predators or any other disturbance. The nest scrape was examined for prints and shell fragments. Nest hatching was determined by locating a pip shell (1-4 mm) within the hatched nest, by observing displaying behaviors of adults, noting whether footprints in the nest were from plovers/terns, or other animals, and locating chicks when possible (Mabee 1997). Any nest that had at least one egg was determined to have hatched and was categorized as successful.

If eggs remained in the nest for more than the expected gestation time after discovery (28 days for WSP, 21 days for CLT) and no adult was observed nearby it was tested for continued brooding by placing an egg on end and rechecking within 3-7 days to see if an adult was in attendance. If eggs remained in the same position and no fresh plover/tern footprints could be found in the nest, the eggs were collected. Nests that had eggs disappear before the end of the full gestation period where determined to have failed if no signs of hatching were evident and signs of tracks from animals other than plovers/terns. Nests were determined to have unknown outcome if the eggs were gone after being brooded for the full gestation period, but did not have any signs of hatching or depredation. Unhatched WSP eggs and one dead adult WSP were submitted to the Western Foundation of Vertebrate Zoology (WFVZ) for analysis of incubation stage and for archive. Three WSP eggs from one nest were deposited with the Santa Barbara Zoo for incubation.

Nest Initiation Date

Nest initiation dates were calculated for nests confirmed to have hatched by subtracting the expected gestation period for the species plus 2 days from the hatch date. This accounts for the couple days it takes a pair to start laying the first egg until clutch completion. Hatch dates for nests with a newly hatched chicks inside the nest scrape were the same day as the chick observation. If chicks were observed after they left the nest and could be associated with a given nest, hatch date was estimated based on the age of the chick. If a nest was determined to have hatched but no chicks were observed, hatch date was estimated to be 2 days following

the last date of observed brooding for both WSP and CLT. If eggs were abandoned or depredated, the last day the nest was active was determined as the day of the last survey when an adult was observed brooding the nest, and nest initiation was estimated to be date the nest was discovered minus 2 days.

Western Snowy Plover Pair Estimates

Total number of breeding adults for the season were calculated from the survey that yielded the highest number of breeding adults, derived by attributing a male and female pair to each active nest and 1 breeding male to each clutch with at least 1 chick. This method is essentially a window count for breeding adults and assumes that all the breeding adults recorded on the count are representative of the entire breeding population.

Chick and Fledgling Observations

Western snowy plover: Once a nest hatched, chicks were looked for each week. When possible observed weekly until fledging. Fledglings were determined to be from Ormond Beach if they had been observed for several weeks in the same area prior to reaching fledge age and if a guarding adult accompanied them. Hatch year chicks that did not meet these criteria were assumed to be from other beaches.

California least tern: Nests were checked a minimum of once per week. Chicks were re-sighted and associated with nests as much as possible. In order to avoid disturbing the colony after chicks hatched, we observed the colony with a scope from dunes overlooking the nesting area as much as possible. If we confirmed with the spotting scope that a nest had hatched and a chick was present or still being brooded by an adult, we avoided approaching near the nest. The number of fledglings were calculated by adding the daytime counts of fledglings every 3 weeks starting 2 weeks after the first fledglings were sighted (method 3WD from the CA Department of Fish and Wildlife report spreadsheet).

Habitat Assessment

Utilizing literature on analyzing WSP nesting and habitat characteristic for reference (Mabee 2000, Powell 2009, Riensche 2015, and Saalfeld 2012) a protocol was developed to gather micro habitat data for nesting WSP on Ormond Beach. The following characteristics at nest and random sites were recorded using a camera and a 1m quadrant centered on the nest. Utilizing imaging software, the nest photo with the quadrant was further divided into 400 equal squares. Using the photographs, a Munsell Soil Chart and Sand Grain size chart all substrate types, rocks, pebbles, plant stems, woody debris and other object defined within the protocol were counted within 15cm of the nest cup edge or covering 50% of each square of the grid. A color was assigned to each substrate type, plant species and any wood or non-natural item contained within the 1 m to gather percent cover and generate an overall image of the nesting micro habitat. Contents of the actual nest were excluded due to the tendency of snowy plovers to often bring in additional objects (pebble, shell etc) increasing the substrate density. To keep

continuity, random generated sites used the same 1m quadrant and an area roughly the size of a nest (10.4 cm, 2x2 squares) generated within photoshop to excluded in the assessment.

Results

Western Snowy Plover

Predator Exclosures

Exclosure outcomes	hatch	fail	unknown	total
Exclosure	19	2	0	**21**
No Exclosure	13	18	1	**32**
Total	32	20	1	**53**

This year in the beginning of the season exclosures were not used, as no ravens had been sighted, and the first four nests successfully hatched. However, in early May a raven pair moved into the area and depredated 14 nests in one weekend. Thereafter all nests were protected with exclosures when possible. Overall, 21 nests were protected with exclosures, and 32 were not.

Of the 21 exclosed nests, 19 hatched and 2 failed. Of the 2 failed nests, the exclosures were more than likely the cause for the nest loss. One nest in the north habitat was vandalized. The exclosure was removed from the nest and the eggs were taken. A stick was found in the ground next to the nest with the writing “Mia: The Eggs”. Another nearby nest in the north habitat with an exclosure was also targeted, the exclosure was removed from the nest 2 times in as many weeks, although the eggs where not taken. Thereafter we did not use exclosures on this nest or others in the north habitat. The second nest that failed was abandoned pre-term by the adults. One of the known risks of exclosures is an increase in adult mortality, and although we did not pick up a depredation event with the trail camera that was on this nest, this may have occurred in this situation. The eggs were collected when the nest should have reached full term and they contained very small embryos, so they had stopped developing pre-term. We also did not see any adult on the nest with our trail camera after the first week. We assume that one of the adults was depredated and our trail camera just did not pick it up.

Non-exclosed nests: There were 32 total, of which 13 hatched, 1 had an unknown outcome and 18 failed. Of the 18 failed un-exclosed nests, 17 were depredated and 1 abandoned. Ravens were responsible for 16 of the depredated nests, and one nest had an unknown predator (no tracks).

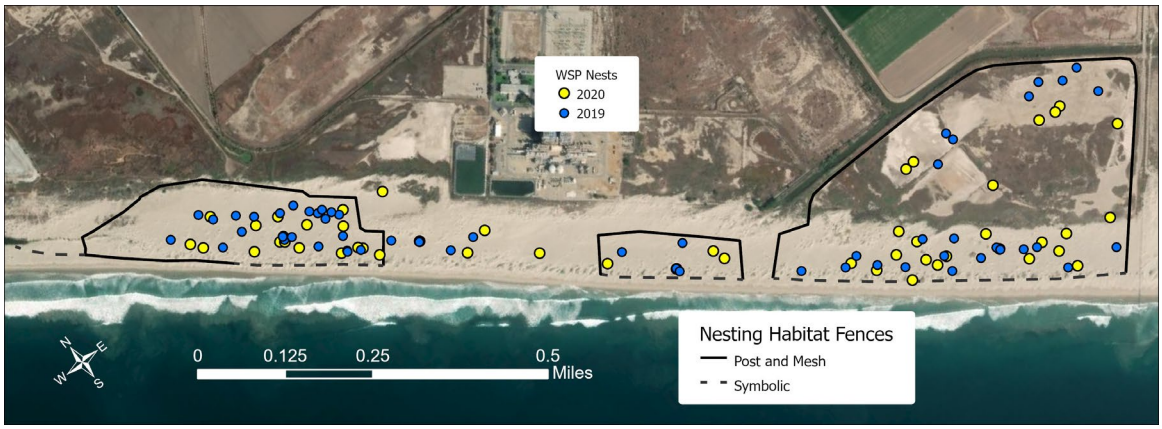
At least 5 exclosures were vandalized or stolen by people on the beach who trespassed into nesting areas.

Spatial Distribution and Abundance

Adult Abundance and Dispersal: In 2020, the number of adult WSP throughout the breeding season fluctuated between 57 and 19 individuals. This year there was no early and late season increase in numbers, a similar pattern to 2019. In the years before 2019, we saw larger numbers at the beginning and end of the season, and smaller numbers of birds in the middle of the season. This also corresponds to an increase in nest numbers in the past 2 years. On the May 21, 2020 spring window count there were 41 adult WSP (21 males, 19 females). (Figure 1).

Nest Locations: Nests were located the entire length of Ormond Beach, from the Mugu fence to the north habitat and in the salt panne. Nests were dispersed over Ormond Beach from the Pt Mugu fence to the interior of the north habitat including the salt panne, which is inland from the south habitat dunes Nests were dispersed in a very similar pattern in 2020 and 2019. See map below.

Habitat Location		North	Power Plant Dunes	Middle	South	Salt Panne	Total
Number of Nests	2019	22	5	4	16	8	55
	2020	**19**	**4**	**5**	**16**	**9**	**53**



Breeding Adults

The estimated number of breeding WSP adults was 44, which occurred on the April 27 and 28 when there were 22 active nests. This is the highest number of breeding individuals recorded on Ormond Beach. Soon after this between May 2 and 5, ravens depredated 14 of these nests. Breeding numbers never returned to this high number again. This year the spring window survey (May 21) was almost a month after the peak of nesting season activity. On this day there were a total of 21 breeding adults (9 nests and 3 clutches of chicks).

Nesting Outcome

Nest Chronology: The first nest was established on March 28 and the last nest hatched on August 18 (Figure 2). There were two waves of nesting activity, the first in early May, then a

second, smaller wave, in June-July. After the July peak, nesting numbers dropped quickly to one or two nests in early August. One late season nest was established at the end of September, but it was depredated by a raven.

Nest Fates: This year 53 nesting attempts were documented, of those 32 nests hatched, 20 failed and 1 had an unknown outcome (Map 4. and Figure 3). Of the 20 nests that failed, 16 were depredated, 1 had the all the eggs taken by a human vandal and 2 nests were abandoned.

Failed Nests

Depredated: Ravens depredated 14 nests and one nest was depredated by an unknown predator. Our trail cameras also documented ravens regularly harassing nests with predator exclosures. Early in the season when there were many active nests, a group of ravens moved in and depredated 13 nests in a 2-day period. Thereafter we used exclosures on all nests when possible.

Vandalized: One nest in the north habitat was vandalized. It had an exclosure on it, which was removed and the eggs were taken. Several other nests nearby were tampered with at the same time. In particular predator exclosures were being targeted. One nearby nest had the predator exclosure removed twice, and at least 3 other exclosures in the area were stolen or smashed.

Abandoned: Two nests were abandoned pre-term. Both nests had eggs with small embryos. One nest had an exclosure and one did not.

See Figure 4. Causes of WSP Nest Failure

WSP Egg Fates

A total of 151 eggs where produced during the nesting season. Out of those, 93 hatched for a 62% hatch rate. Of the 58 failed eggs, 45 were depredated, 3 were taken by humans, 3 had an unknown outcome, 3 eggs were non-viable (one egg from 3 otherwise successful clutches did not hatch) and 4 eggs were abandoned (two clutches, one with 3 eggs and one with 1 egg).

There were 48 nests with 3 eggs, and 2 nests had just 2 eggs and 2 nests had 1 egg.

WSP Comparison to previous years

Nest numbers and outcomes for WSP have been carefully tracked and recorded since 2003 (table below). The number of WSP nesting attempts in 2020 was 53, which was higher than in all years except 2019 when there were 55 nesting attempts. The proportion of failed nests however was higher in 2020 that all recent years since 2013. This is because of the high number of nests lost to raven depredation. In 2013 there were 37 failed nests and most were lost to ravens as well. In 2013 no predator exclosures were used, whereas in 2020 after a first wave of 13 nests were lost to ravens all nests were given exclosures whenever possible. See Figure 5. The number of breeding individual WSP was the highest in 2020, see Figure 6.

Habitat Assessment

See Habitat Assessment Tables for the outcome of the habitat measurements

California Least Tern

CLT Spatial Distribution and Abundance

Adult Abundance and Dispersal:

North Habitat: On May 4th we sighted the first CLT of the season, when 20 adults where observed flying over and landing in the north habitat. On May 21, the first nest was found in the north habitat. Thereafter the adult numbers fluctuated between 8-16 individuals until the end of July. In early August after nesting was over, the numbers dropped to 5 and the last CLT were seen on August 11.

South Habitat: On May 13th, 8 adult CLT were seen flying over and landing in the south habitat, and on May 23 the first nest was found in that location. The adult population in the south habitat increased to a maximum of 12 individuals in early June, then gradually decreased throughout July. On July 21 the last single adult was observed.

See Figure 6 for a chart of adult CLT survey numbers

Nest Locations: CLT established nests in both the north and south habitats this year. This is the first time since 2012 (not counting a single nest last year) that they have nesting in the south habitat. There were far fewer nests this year. All of the north habitat nests were located just inside the large dune ridge on the southern half of the North Habitat. In the south habitat they nested in the smaller dunes near the southern end of this area. All nests were inside of the habitat fences. See Map 6 for nest locations.

Nesting Outcome

Nest Chronology: CLT nested in a single wave in both the north and south habitat. Nesting started at about the same time in both habitats. Nesting numbers peaked at 6 concurrent nests in the south habitat first on June 6, 2020. Nesting finished in both habitats in mid-July. See Figure 8.

Nests Fates: A total of 23 CLT nests were found, with 12 nests in the north habitat and 11 in the south. Nest failure was due to either abandonment or wind, no nests were depredated this year.

North Habitat: A total of 10 nests out of 12 hatched. Of the nests that hatched we estimate 6-9 chicks fledged. One chick was found dead in its nest and was covered by read ants. The nest that failed appeared to be “dropped” eggs, they were late season eggs. They had very thin, transparent shells and were never observed to be tended by adults. One nest had an unknown outcome, the eggs disappeared and there was no evidence of hatch or depredation.

South Habitat: Only 4 nests out of 11 hatched, and of these nests only young downy chicks were ever seen. Two nests were buried by wind and 3 nests were abandoned. As in the north habitat, the last nest found had very thin transparent eggs that were never tended by an adult.

Comparison to previous years

The north habitat had the fewest nests (12) since 2015 with there were no nests. There was a period from 2012 - 2015 when nesting numbers were very poor and the number of nests that

hatched were less than in 2020. But previous to that nests varied from about 22 – 60 nests in this location with relatively high hatching rate (Figure 9) In contrast, there were more nests this year in the south habitat than we've seen since 2008. Although in 2008 and previous to this the nest hatching rate was better than 70%. Since then, most nests established in the south habitat failed, which was also the case in 2020 (*Figure 10*) Overall, compared to past years, 2020 was a poor year for CLT nesting success on Ormond Beach (Figure 11).

Predators

Many predators of WSP and CLT were observed during surveys. Thirteen avian predators were observed. Several non-avian predators were present, primarily evident from tracks, including the long-tailed weasel. However, the most problematic predator was the common raven. This species was responsible for almost all the depredated nests, and it destroyed more nests this year than it has since 2013 when the raven depredated almost every nest WSP and CLT nest on Ormond Beach. Squirrel dens in the north habitat have been increasing for the past 5 years, and it seems now that much of the nesting habitat in the north and inland areas of the north habitat are no longer being used for nesting. Possibly because of the prevalence of squirrel dens. See chart below for a list of all predators documented March - Sept 2020.

Predators	
American Crow (*Corvus brachyrhynchos*)	Opossum (*Didelphis virginiana*) - tracks
Common Raven (*Corvus corax*)	California Ground Squirrel (*Otospermophilus beecheyi*)
Great Blue Heron (*Ardea herodias*)	Coyote (*Canis latrans*)
Great Egret (*Ardea alba*)	Long Tail Weasel (*Mustela frenata*)
Great Horned Owl (*Bubo virginianus*)	Raccoon (*Procyon lotor*) - tracks
Horned Lark (*Eremophila alpestris*)	Rattlesnake (*Crotalus atrox*)
Loggerhead Shrike (*Lanius ludovicianus*)	Domestic dog (*Canis lupus familiaris*)
Northern Harrier (*Circus cyaneus*)	Domestic cat (*felis catus*)
Peregrine Falcon (*Falco peregrinus*)	
Red-tailed Hawk (Buteo jamaicensis)	
Snowy Egret (Egretta thula)	
Turkey Vulture (Cathartes aura)	
Western Gull (Larus occidentalis)	

Discussion

WSP nesting continues at numbers that are high compared to the past 18 years of nesting outcomes. CLT nesting was poor this year compared to past years. WSP success may be because the Ormond Beach Ordinance was passed in 2016 prohibited many of the activities that are harmful to nesting success. WSP and CLT chicks that successfully fledge often return to their natal beach to raise their own nests. However, there are a number of problems that have been increasing each year and they need to be resolved in order to protect these species.

Regular violations of Ormond Beach Ordinance Domestic Animal Ban:

This Ormond Beach ordinance was very effective for several years. The number of dogs we sighted during surveys decreased significantly after the ordinance was passed. However, this year it is very concerning because we saw large numbers of dogs on the beach. Our volunteers approach dog owners to inform them about the presence of nesting birds and the dog ban. But many dog owners were unresponsive, and some were even hostile. It has been our observation that the police do not enforce the dog ban. On many occasions our volunteers have seen police pass by dog owners without engaging them. This year the Oxnard police patrolled Ormond Beach on a Polaris about once a week and we often encountered the police Polaris. However, we often saw the police drive right past people with dogs on the beach. We never witnessed police stopping and talking to dog owners. Other dog owners report that police have talked to them, but they only give out warnings.

We created a Survey123 app for our volunteers to report violations. We have created a Dog Log Map that shows where volunteers saw dogs on the beach. They also uploaded photos and collected information of dog violations.

Homeless Encampments

In 2020 homeless encampments continued to be a problem for nesting WSP and CLT. Encampments nearest the nesting areas had been cleared of inhabitants prior to the 2020 nesting season, but a number of encampments on the Halaco slag heap were not only unchanged but have grown in size and number of inhabitants. Trespassing into the north nesting habitat occurred on a weekly basis, field cameras were moved and stolen, predator exclosures were moved off nests, crushed and stolen, and the eggs from on WSP were taken. Because predator exclosures attracted tampering and vandalism, and because field cameras were being stolen, our ability to protect and monitor nests was hampered. In order to avoid losing equipment and nests we stopped exclosing nests and using cameras after several events of vandalism. We also stopped using trail cameras in this area. This activity impacted our ability to nest monitor and protect nesting WSP and CLT.

All of these incidences were reported to USFWS, CDFW (vis the Cal-tips hotline) and the Oxnard Police department. However, throughout the nesting season no one from any of these agencies responded on site to any of our calls or reports.

Trespassing in nesting habitat

We post signs on the habitat fences notifying the public that endangered CLT and WSP nest inside the fences. The areas inside the fences are off limits during nesting season. It is also a violation of the Ormond Beach Ordinance to tamper with signs or habitat fences. Despite this we had a number of problems with violation of the Ordinance.

Off roaders

Motorcycles, pickup trucks, and quad runners (or "Groms") regularly entered the north nesting habitat by cutting the back fences (Photo 4*).* Motorcycles were seen driving up and down the tideline. These incidences were reported to Oxnard and Hueneme police, the CDFW CAL-TIPS phone line and USFWS.

- March 24 – ATVs had cut the back fence and entered the nesting habitat. They drove all over the inside of the north fenced area, doing donuts and running over dunes. Fence patched.
- April 3 – ATV's back, fence cut again, and many more tracks laid. Fence patched, more signage.
- April 22 – ATV's returned and cut the fence. Repeat of tracks. Fence patched.
- April 26 – Extra posts put in the fence to prevent ATVs from cutting the fence and entering
- May 14 or 15 – ATV's came back again. They cut the fence in a different place and did the same thing again. They also kicked over and damaged a predator exclosure
- May 21 – More posts put in fence, in the new place they entered. First least tern nest found, several new plover nests too.
- May 25 – a small truck drove through the fence and tried to drive across to the beach
- Throughout the rest of the summer the back fence was cut open every couple of weeks and we patched it when we found it cut.

We placed a camera on the fence to try to catch whoever was doing the fence vandalism. Although we did catch some people inside the fence, we never caught anyone cutting the fence and in August the camera was stolen.

Beach goers and homeless

There were regular trespassers inside of the habitat fence.

South habitat: The side of the south habitat fence was changed from T-post and cintoflex (habitat fencing) to post and cable (symbolic). This was done to create easier access to the tideline for nesting birds, decrease the chance of fence collisions and to create a more visually pleasing experience for beach goers. Because most people access the tideline in front of the south habitat from Arnold Rd and this parking lot is not only closely watched by Walter Fuller, but it was also closed for most of the summer due to COVID restrictions. However, we had an increase in trespassing into the fenced area. We caught a man with his two children in the fenced area 3 times, despite talking to him after the first incident when our trail cameras caught him in the nesting area (*Photo 5.).* A fisherman regular walked through the habitat, despite being engaged and asked not to trespass on several occasions. A man with a bike regularly walked through the habitat and was captured on our trail cameras.

North Habitat: This nesting area is close to the Halaco slag heap where homeless have encampments. These individuals regularly walked by nests and tampered with exclosures and

our equipment. On at least two occasions they picked up and moved cameras and one camera was stolen from a nest. We

Recommendations and Objectives for 2021 Nesting Season

1. **Beach Encampments**

   Issue: Homeless encampments near nesting habitat on the Halaco slag heap.
   Solution: Continue to work with local authorities to identify and remove trespassing homeless encampments.

   Issue: Homeless Trespassing in nesting habitat and tampering with exclosures and cameras. Theft of our equipment.

   Solution: Have a pre-season meeting with Oxnard, Hueneme police and USFWS and CDFW law enforcement and outline a decision tree on how to handle these ordinance violations.

2. **Better protection for nests and chicks**

   Issue: Changes to the nesting fences have left some nesting areas unprotected by fences.
   Solution: Change the south habitat post and cable back to T-post and cintoflex fencing in order to create a better barrier

3. **Public Education**

   Issue: Many beach goers are unaware that there are federally listed nesting birds on the beach and that their activities can cause stress and reduced reproductive success. Also, they have little or no understanding of the VAS Shorebird Recovery efforts.
   Solution: Continue to recruit, train and deploy volunteers from the community to greet visitors at Arnold Rd on weekend days during the summer. This summer our ESA Section 6 grant will fund

   Issue: Though dog traffic has dramatically decreased since the dog ordinance, people are still bringing dogs through Arnold rd. and Port Hueneme.
   Solutions:
   i. Collect data on the timing and numbers of dogs entering Ormond Beach beginning in February 2021 and continue data collection through the summer
   ii. Meet with Hueneme and Oxnard enforcement representatives and City of Oxnard before nesting season to communicate the need to enforce dog restrictions
   iii. Continue Ventura Audubon's commitment to conduct public outreach through the Volunteer Naturalist program and CSUCI partnership

4. **Predation**

Issue: Predator pressure continues to impact nesting success
Solutions:

i. Continue to use predator exclosures case by case, based on the nature of predators and nest locations. Start using exclosures in the beginning of the season.
ii. Deploy trail cameras pre-season, on trails and on nests that are within the habitat fences to try to determine which predators are present and which are approaching nests and predating them.
iii. Increase monitoring time in the colony.

Acknowledgements

This work was made possible by an Audubon in Action Grant from Audubon California and a Section 6 ESA grant from CDFW and USFWS. We would like to thank the landowners California Coastal Conservancy and the City of Oxnard for all of your support and assistance.

We would also like to thank the 'Steward or Ormond Beach' Walter Fuller, Ventura Audubon Vice-President Bruce Schoppe, and our many Volunteer Naturalists.

GenOn has made available access to their private contractor's parking lot which provides us safe access to the middle and north nesting habitats, as well as a storage container in the same parking lot for our north end supplies. The Nature Conservancy has made available use of an access road through their property that allows us safe passage and parking close to the least tern nesting area in the north habitat.

Finally, thank you to the Ventura USFWS office for your support and guidance as we navigate the complex landscape of Ormond Beach.

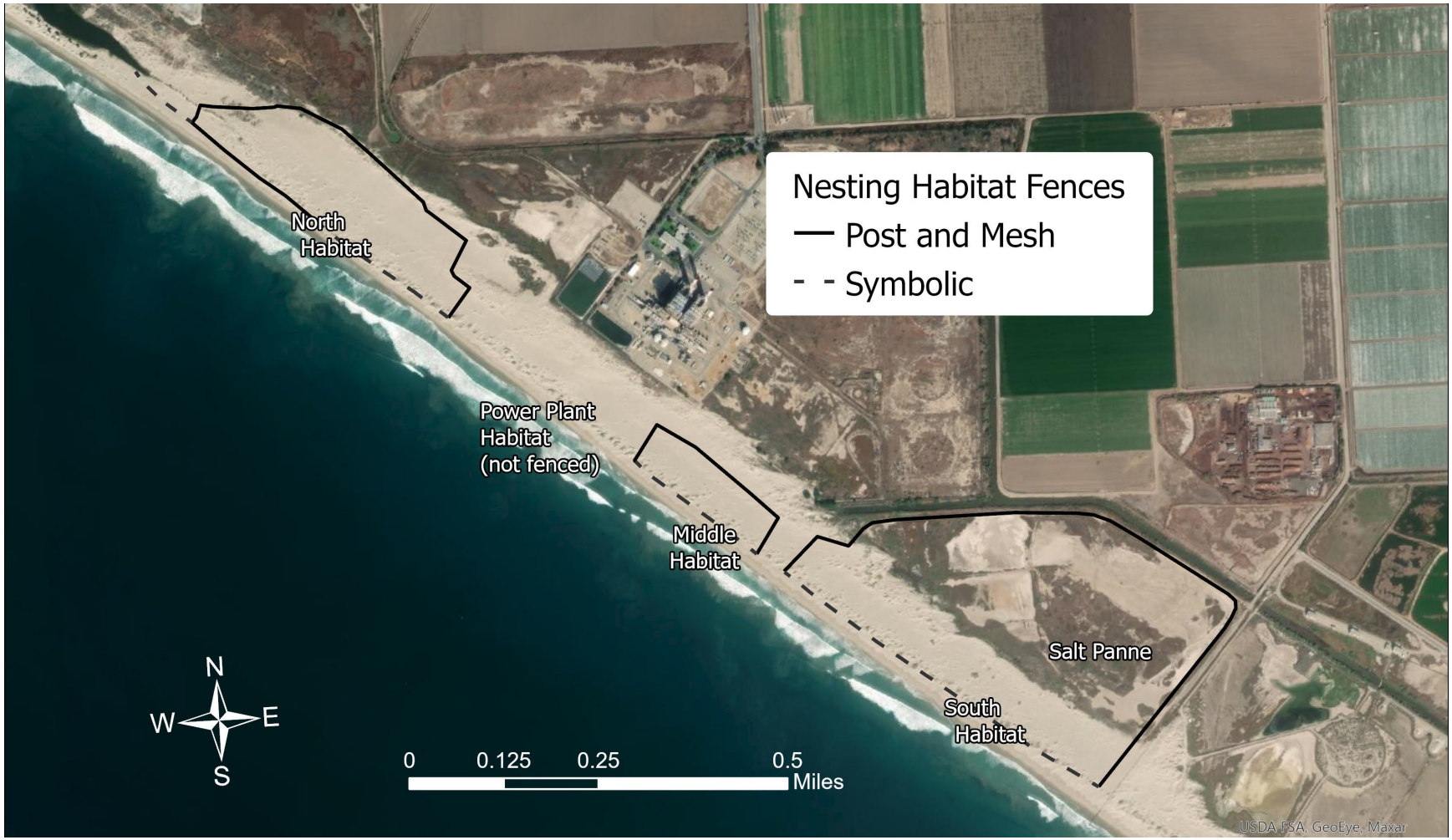
In memory of Reed Smith, our mentor and friend who began Ventura Audubon's work on Ormond Beach over 20 years ago.

Appendix A: Maps

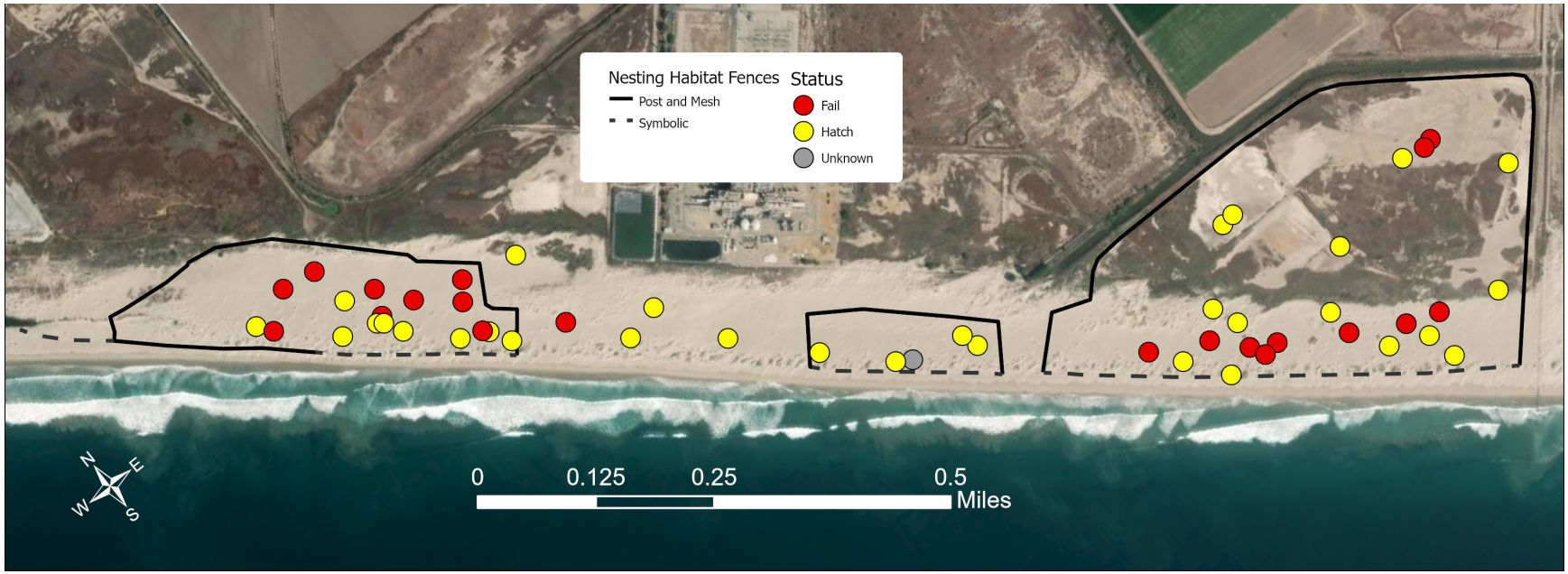
Map 1: Ormond Beach property owners and neighboring properties link

Map 2: Ormond Beach survey area

Map 3: Fences enclose 3 habitat areas



Map 4. 2020 WSP nest locations and outcomes relative to fence boundaries

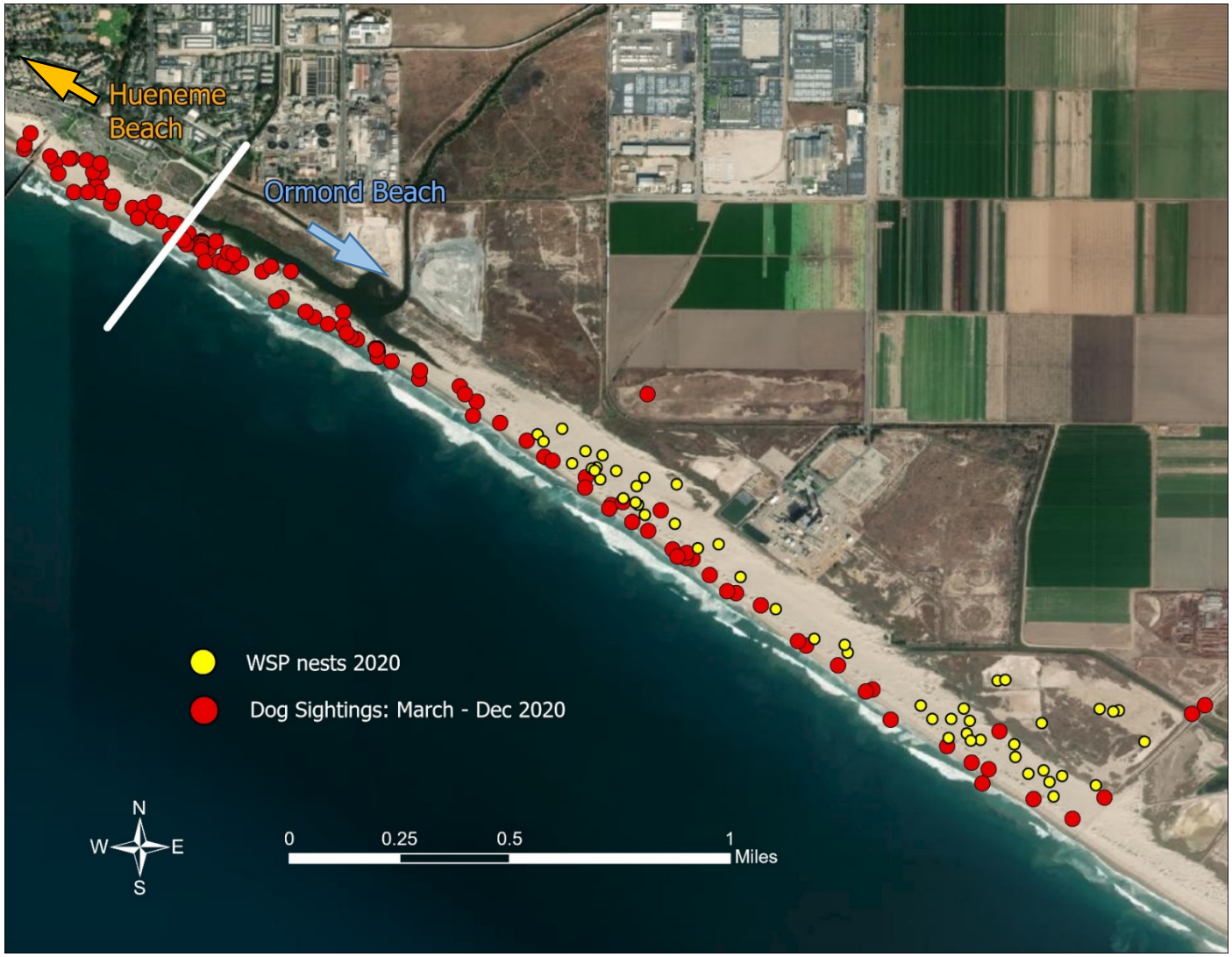


CLT Spatial Distribution and Abundance

Map 5. Locations of CLT nests

Dog Log Map

Volunteers entered a GPS coordinate when they encountered dogs on Ormond Beach. This map shows dog sightings to WSP nest locations.



Appendix B: Tables

Habitat Assessment Tables

Table 1. North Habitat

Habitat or Nest	Substrate Type %	Substrate Tot. %	Veg Type %	Veg Tot. % (Average Height)	Other %
North Habitat (Overall)	25.617% CS 18.869% FS 23.990% Pebble 3.690% Rock 2.483% Shell	74.649%	10.087% SB 5.864% BB 7.576% SV 0.912% SS	24.579% (4.876 cm)	0.631% Woody 0.140% Other
Nest 1	4.798% CS 61.364% FS	66.162%	33.838% SV	33.838% (7.25cm)	0%
Nest 8	57.576% Pebble 26.768% Rock 13.889% Shell	98.232%	1.515% BB	1.515% (3.5cm)	0.253% Other
Nest 9	67.172% CS 25.253% Shell	92.424%	7.576% SB	7.576% (1.64cm)	0%
Nest 10	76.768% CS	76.768%	22.222% SB	22.222% (3.33CM)	1.010% Woody
Nest 13	60.859% CS 8.586% FS	69.444%	30.556% SB	30.556% (2.86)	0%
Nest 17	56.061% CS 26.263% Rock 5.051% Shell	87.374%	12.626% SB	12.626% (2.0cm)	0%
Nest 21	13.384% CS 36.111% Pebble 1.263% Rock	50.758%	45.455% BB 2.525% SV	47.980% (5.0cm)	1.263% Other
Nest 28	79.293% CS 0.505% Pebble	79.798%	3.788% BB 16.414% SV	20.202% (3.5cm)	0%
Nest 33	82.576% FS	82.576%	16.414% SS 1.010% SB	17.424% 6.0cm)	0%
Nest 36	58.333% FS 0.505% Shell	58.838%	39.646% SB	39.646% 4.0cm)	1.515% Woody
Nest 37	25.505% CS	25.505%	39.141% BB 35.354% SV	74.495% (8.75cm)	0%
Nest 38	12.121% CS 81.818% Pebble	93.939%	6.061% SB	6.061% (4.0cm)	0%
Nest 39	54.293% FS	54.293%	45.707% SV	45.707% (6.0cm)	0%
Nest 44	6.566% FS 84.091% Pebble 3.535% Rock	94.192%	5.051% SV	5.051% (5.0cm)	0.758% Woody
Nest 45	87.879% Pebble 6.313% Rock	94.192%	0%	0%	5.808% Woody
Nest 47	42.424% FS	42.424%	39.646% SB 15.657% BB	55.303% (5.25cm)	2.273% Woody
Nest 50	83.838% Pebble 1.515% Rock	85.354%	14.646% SB	14.646% (3.0cm)	0%
Nest 53	90.657% CS 0.758% Rock	91.414%	7.576% SB	7.576% (3.0cm)	1.010% Other

Course grain sand KEY: **0.5-2.0MM(CS)**, Fine grain sand **125µ-0.5MM(FS)**, Pebble **(<8mm diameter)** , Rock**(>8cm diameter)**, Silt/Clay **(S/C)**. Red Sand Verbena:*Abronia maritima* **(SV)**, Pickle Weed: *Salicornia Pacifica* **(PW)**, Sea Bindweed: *Calystegia soldanella* **(SB)**, Salt Grass: *Distichlis spicata* **(SG)**, Salt Bush: *Atriplex leucophylla* **(SS)**,Ice Plant: *Carpobrotus edulis* **(IP)**, Beach Burr: *Ambrosia chamissonis* **(BB)**. Woody **(driftwood,arundo stalks)** Other**(bone, metal , plastic, etc)**

Table 2. Power Plant Habitat

Habitat or Nest	Substrate Composition %	Barren Substrate Tot. %	Veg Composition %	Veg Tot. % (Average Height)	Other %
Power Plant (Overall)	0.884% CS 31.313% FS 36.427% Pebble 1.389% Rock	7001.300%	14.205% SB 3.851% SS 0.316% IP 9.848% SV	28.220% (3.955cm)	1.768% Woody
Nest 7	10.354% FS 67.677% Pebble 3.788% Rock	81.818%	16.919% SB	16.919% (2.07cm)	1.263% Woody
Nest 26	54.293% FS	54.293%	29.040% SB 15.404% SS 1,263% IP	45.707% (3.25cm)	0%
Nest 46	60.606% FS	60.606%	39.394% SV	39.394% (6.75cm)	0%
Nest 49	3.535% CS 78.030% Pebble 1.768% Rock	83.333%	10.859% SB	10.859% (3.75cm)	5.808% Woody

KEY: Course grain sand **0.5-2.0MM(CS),** Fine grain sand **125µ-0.5MM(FS)**, Pebble **(<8mm diameter)** , Rock**(>8cm diameter),** Silt/Clay **(S/C)**. Red Sand Verbena:*Abronia maritima* **(SV**), Pickle Weed: *Salicornia Pacifica* **(PW)**, Sea Bindweed: *Calystegia soldanella* **(SB)**, Salt Grass: *Distichlis spicata* **(SG)**, Salt Bush: *Atriplex leucophylla* **(SS)**,Ice Plant: *Carpobrotus edulis* **(IP)**, Beach Burr: Ambrosia chamissonis **(BB)**. Woody **(driftwood,arundo stalks)** Other**(bone, metal , plastic, etc)**

Table 3. Middle Habitat

Habitat or Nest	Substrate Composition %	Barren Substrate Tot. %	Veg Composition %	Veg Tot. % (Average Height)	Other %
Middle (Overall)	4.798% CS 61.364% FS	66.162%	33.838% SV	33.838% (5.0cm)	9.912% Woody
Nest 2	83.586% CS 11.869% FS	95.455%	4.545% SV	4.545% (6.25cm)	0%
Nest 6	70.960% FS	70.960%	0.253% SV	0.253% (5.0cm)	28.788% Woody
Nest 16	77.778% CS 8.333% FS 2.020% Rock	88.131%	1.010% BB	1.010% (5.0cm)	10.859% Woody
Nest 41	66.919% CS 7.071% FS	73.990%	26.010% BB	26.010% (5.0cm)	0%

KEY: Course grain sand **0.5-2.0MM(CS),** Fine grain sand **125µ-0.5MM(FS)**, Pebble **(<8mm diameter)** , Rock**(>8cm diameter),** Silt/Clay **(S/C)**. Red Sand Verbena:*Abronia maritima* **(SV**), Pickle Weed: *Salicornia Pacifica* **(PW)**, Sea Bindweed: *Calystegia soldanella* **(SB)**, Salt Grass: *Distichlis spicata* **(SG)**, Salt Bush: *Atriplex leucophylla* **(SS)**,Ice Plant: *Carpobrotus edulis* **(IP)**, Beach Burr: Ambrosia chamissonis **(BB)**. Woody **(driftwood,arundo stalks)** Other**(bone, metal , plastic, etc)**

Table 4. South Habitat

Habitat or Nest	Substrate Composition %	Barren Substrate Tot. %	Veg Composition %	Veg Tot. % (Average Height)	Other %
South Habitat (Overall)	42.961% CS 28.046% FS 0.095% Rock 0.237% Shell	71.338%	7.607% SB 16.588% BB 2.399% SV	26.594% (4.961cm)	1.452% Woody 0.616% Other
Nest 3	90.909% CS	90.909%	7.576% SV	7.576% (2.25cm)	0%
Nest 4	77.525% CS 0.253% Shell	77.778%	22.222% SB	22.222% (1.75cm)	0%
Nest 5	3.283% CS 67.677% FS	70.960%	28.283% SV	28.283% (2.35cm)	0.758% Woody
Nest 11	97.475% CS	97.475%	2.252% SV	2.252% (2.4cm)	0%
Nest 12	80.303% CS 8.838% FS 1.515% Shell	90.657%	0.758% BB	0.758% (6.5cm)	8.586% Woody
Nest 18	86.111% CS 2.020% Shell	88.131%	0%	0%	3.283% Woody 8.586% Other
Nest 19	65.404% FS	65.404% FS	34.596% BB	34.596% (7.75cm)	0%
Nest 20	87.374% CS 1.515% Rock	88.889%	2.020% BB	2.02% (5.0cm)	0%
Nest 22	81.313% CS	81.313%	18.687% BB	18.687% (8.75cm)	0%
Nest 24	38.384% FS	38.384%	42.677% SB 18.939% BB	61.616% (4.75cm)	0%
Nest 25	74.242% FS	74.242%	25.758% BB	25.758% (2.75cm)	0%
Nest 29	63.889% FS	63.889%	36.111% BB	36.111% (7.0cm)	0%
Nest 30	83.081% CS	83.081%	16.919% BB	16.919% (5.25cm)	0%
Nest 31	43.182% FS	43.182%	56.818% SB	56.818% (3.25cm)	0%
Nest 32	25.758% FS	25.758%	74.242% BB	74.242% (3.25cm)	0%
Nest 43	61.364% FS	61.364%	37.374% BB	37.374% (5.0cm)	1.263% Other

KEY: Course grain sand **0.5-2.0MM(CS),** Fine grain sand **125µ-0.5MM(FS)**, Pebble **(<8mm diameter)** , Rock**(>8cm diameter),** Silt/Clay **(S/C)**. Red Sand Verbena:*Abronia maritima* **(SV**), Pickle Weed: *Salicornia Pacifica* **(PW)**, Sea Bindweed: *Calystegia soldanella* **(SB)**, Salt Grass: *Distichlis spicata* **(SG)**, Salt Bush: *Atriplex leucophylla* **(SS)**,Ice Plant: *Carpobrotus edulis* **(IP)**, Beach Burr: Ambrosia chamissonis **(BB)**. Woody **(driftwood,arundo stalks)** Other**(bone, metal , plastic, etc)**

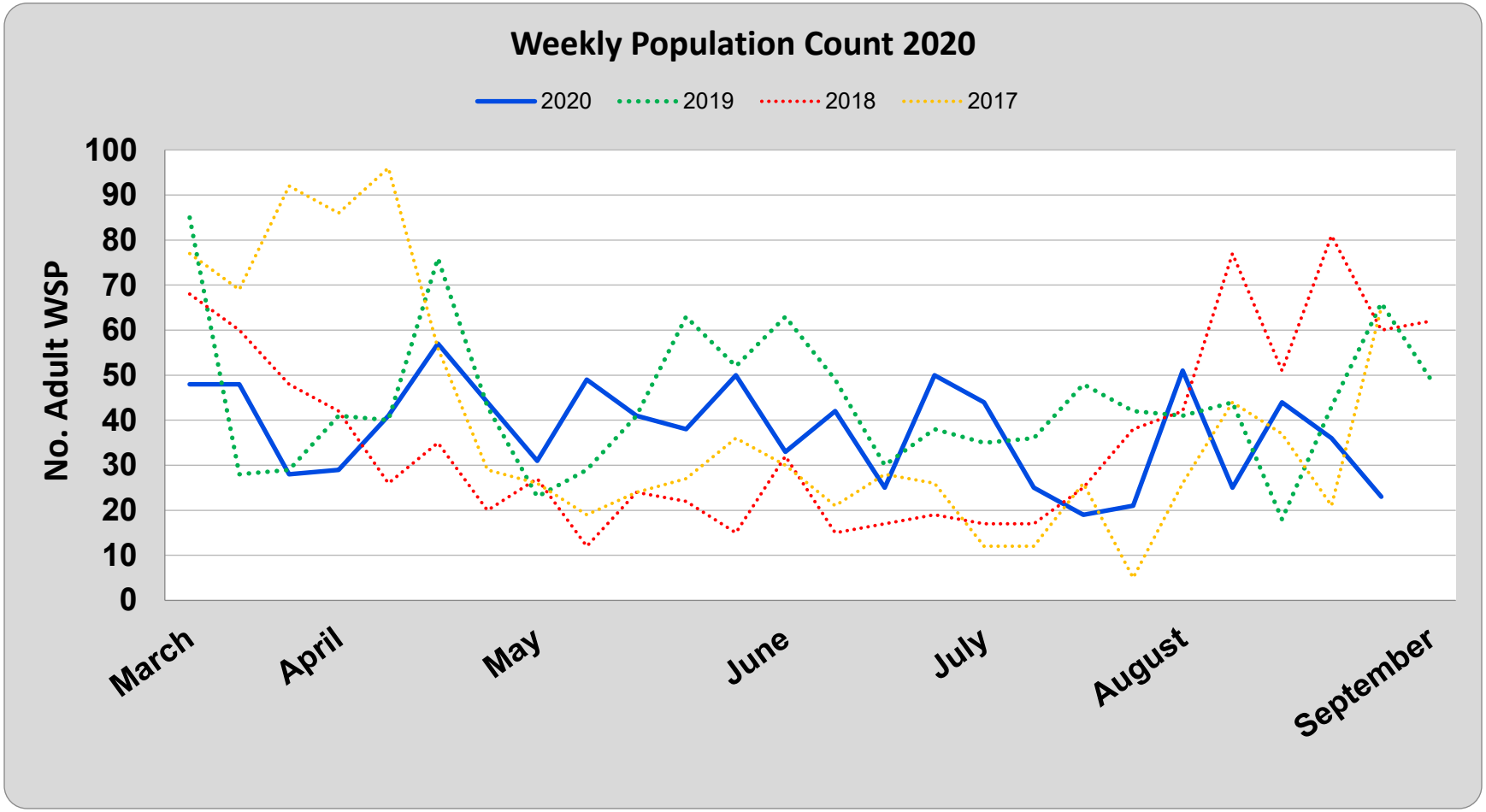
Table 5. Salt Panne

Habitat or Nest	Substrate Composition %	Barren Substrate Tot. %	Veg Composition %	Veg Tot. % (Average Height)	Other %
Salt Panne (Overall)	54.966% S/C	54.966%	23.064% PW 21.970% SG	45.034% (10.858cm)	0%
Nest 14	61.869% S/C	61.87%	38.131% PW	38.131% (11.5cm)	0%
Nest 15	48.485% S/C	48.485%	51.515% PW	51.515% (11.4cm)	0%
Nest 23	80.556% S/C	80.56%	19.444% PW	19.444% (11.5CM)	0%
Nest 40	60.354% S/C	60.354%	39.646% SG	39.646% (11.25cm)	0%
Nest 48	70.707% S/C	70.707%	29.293% PW	29.293% (9.75cm)	0%
Nest 51	7.828% S/C	7.828%	92.172% SG	92.172% (10.75cm)	0%

KEY: Course grain sand **0.5-2.0MM(CS),** Fine grain sand **125µ-0.5MM(FS)**, Pebble **(<8mm diameter)** , Rock**(>8cm diameter),** Silt/Clay **(S/C)**. Red Sand Verbena:*Abronia maritima* **(SV**), Pickle Weed: *Salicornia Pacifica* **(PW)**, Sea Bindweed: *Calystegia soldanella* **(SB)**, Salt Grass: *Distichlis spicata* **(SG)**, Salt Bush: *Atriplex leucophylla* **(SS)**,Ice Plant: *Carpobrotus edulis* **(IP)**, Beach Burr: Ambrosia chamissonis **(BB)**. Woody **(driftwood,arundo stalks)** Other**(bone, metal , plastic, etc)**

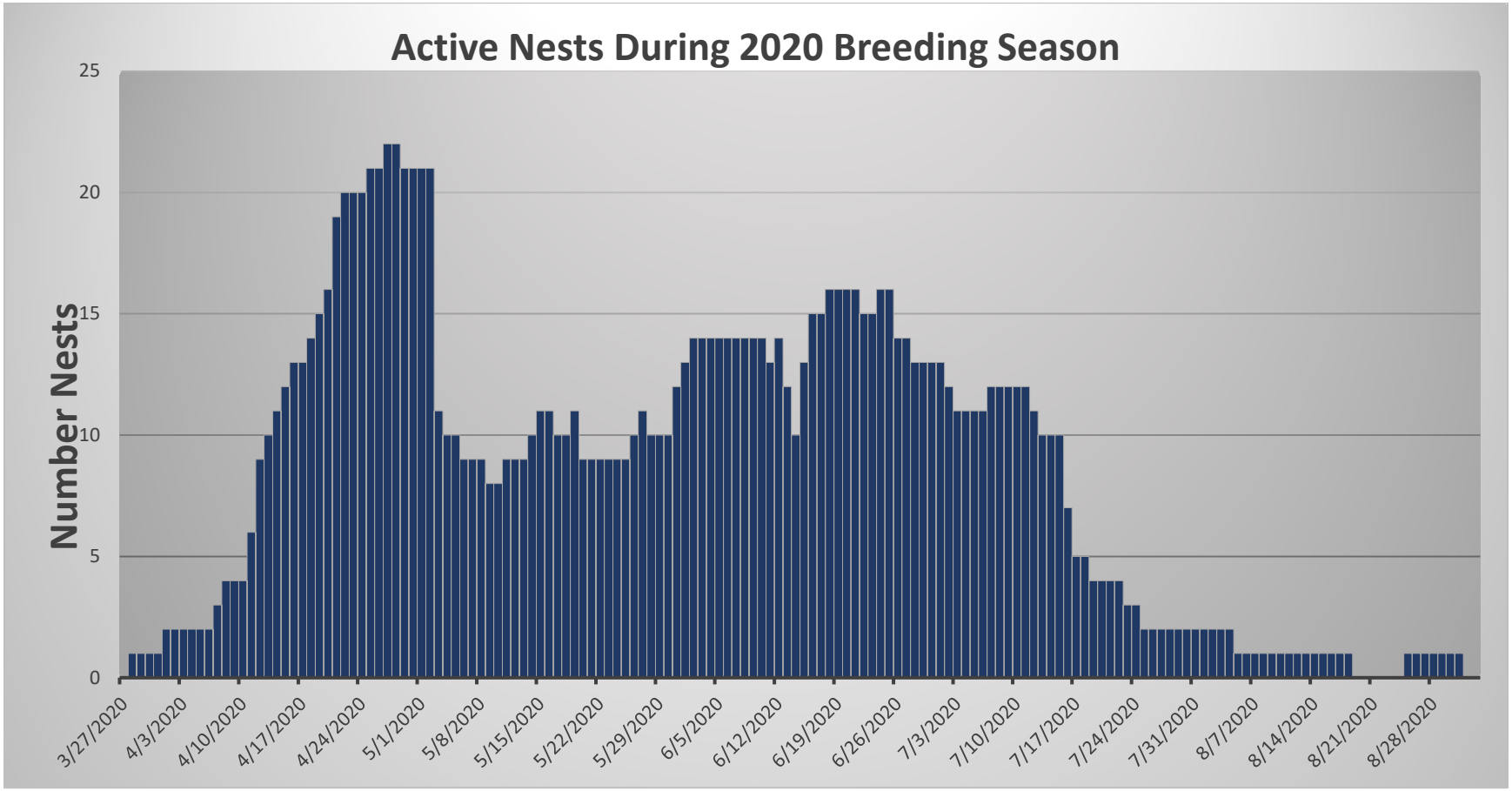
Appendix C: Figures

Figure 1. Weekly WSP Adult Population Counts



Nesting Outcome

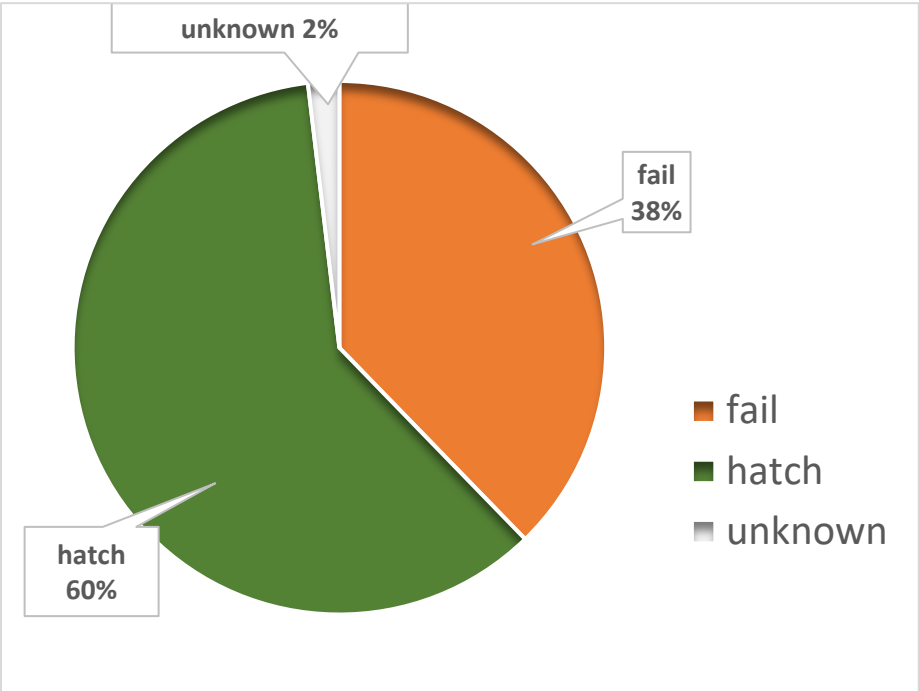
Figure 2. WSP Nest Chronology, breeding activity peaked on April 27 and 28 2020



Nesting Outcome

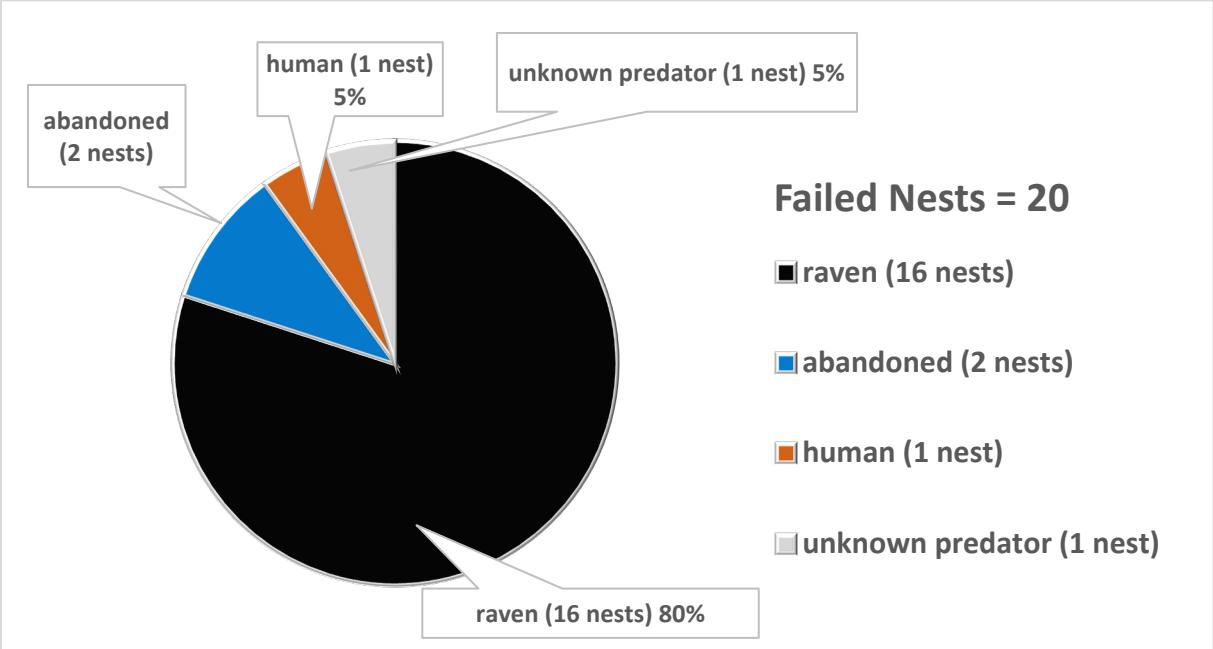
Figure 3. WSP Nest Outcome

Total # WSP Nests = 53; Hatch: 32, fail: 20, unknown: 1



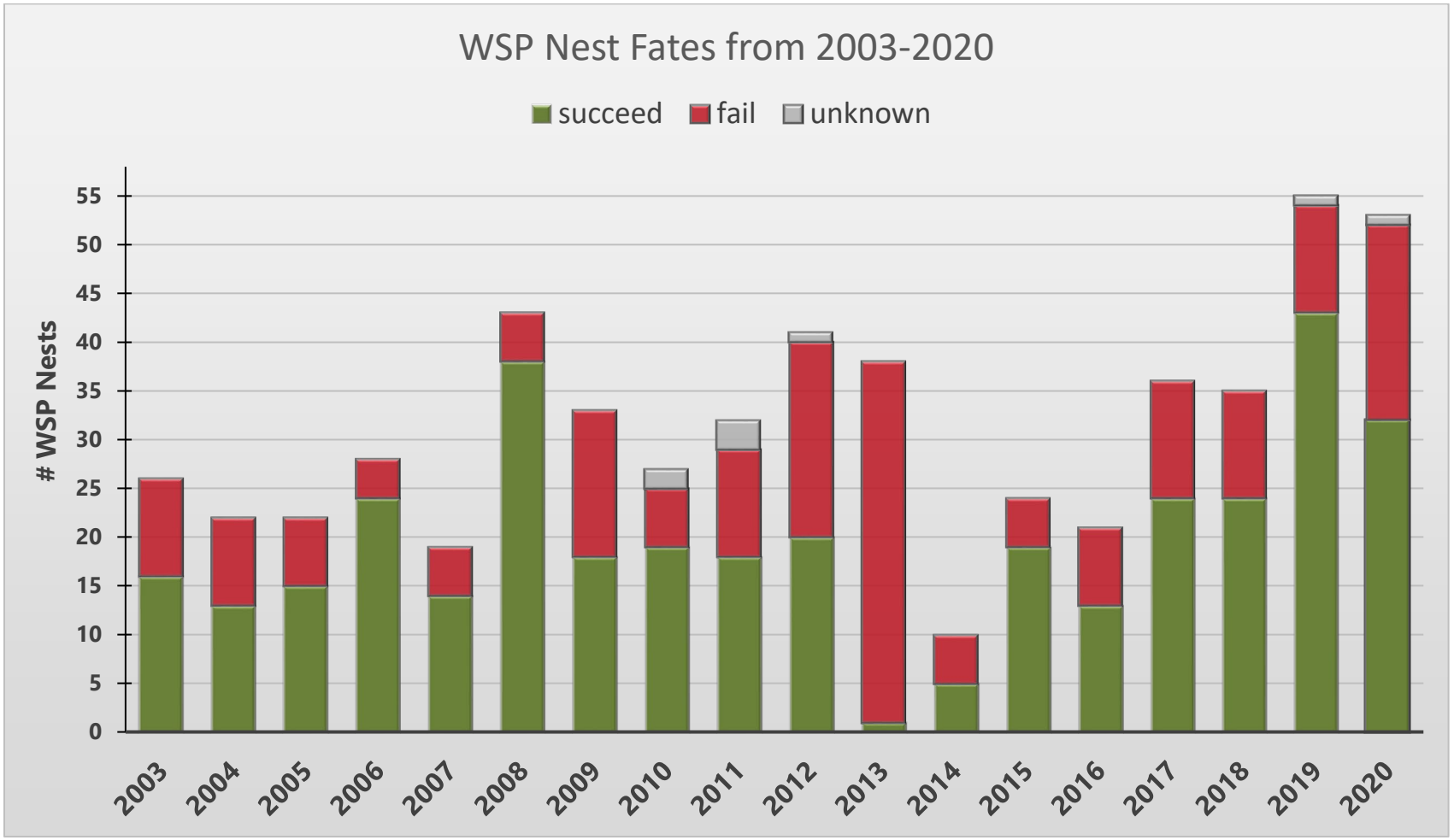
Failed Nests

Figure 4. Causes of WSP Nest Failures



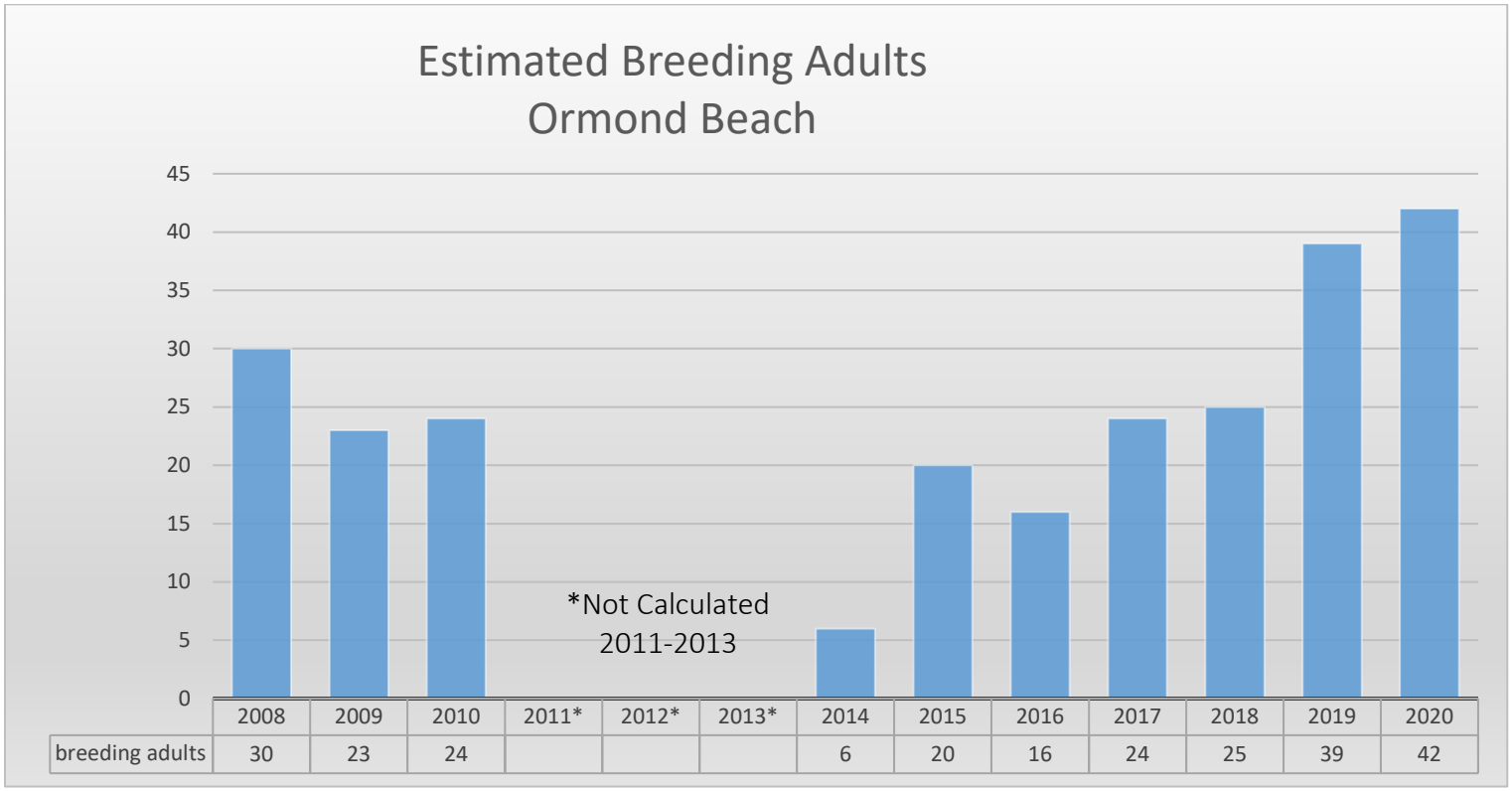
WSP Comparison to previous years

Figure 5: WSP Outcomes for the past 18 Years, 2003-2020



WSP Comparison to previous years

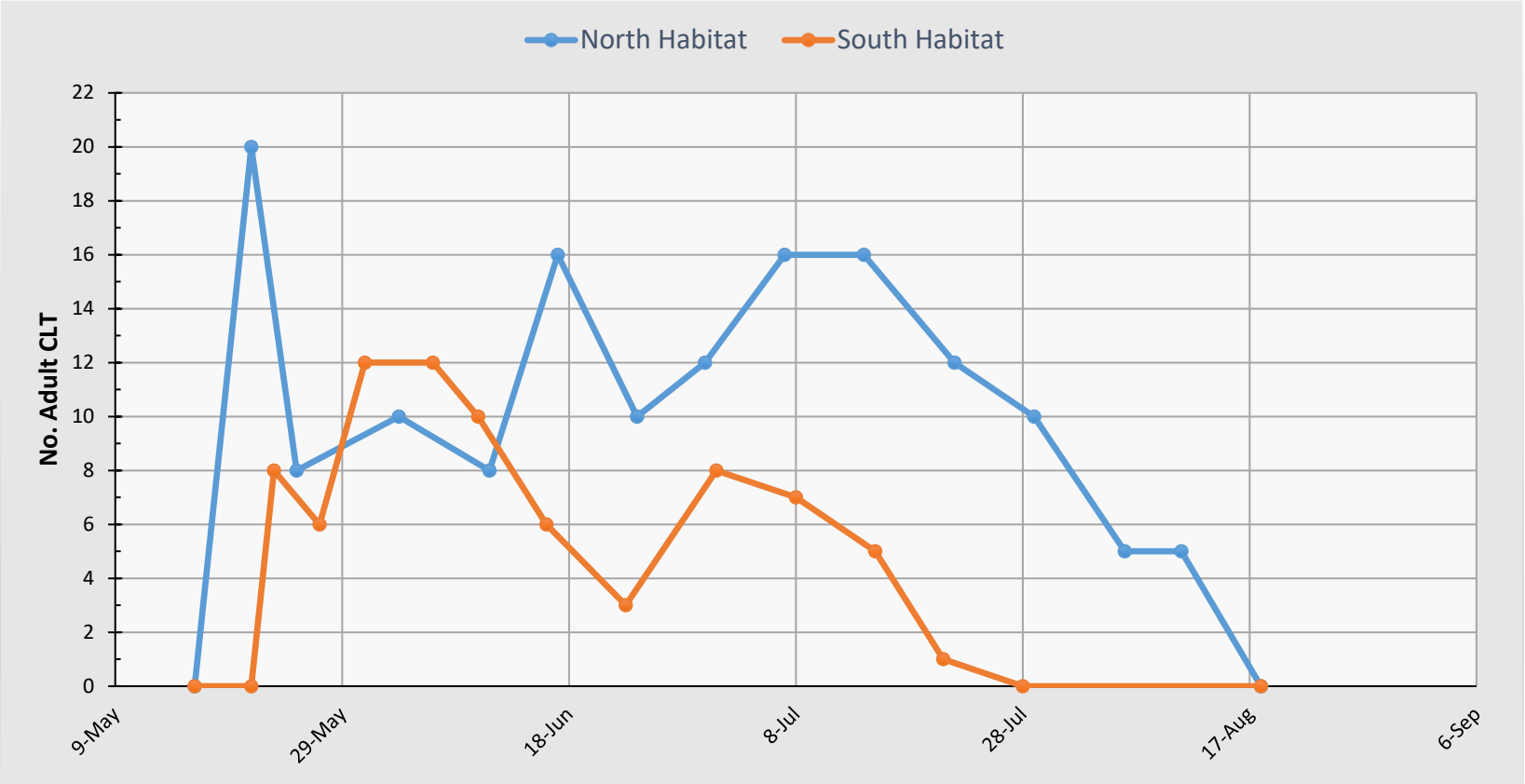
Figure 6. Estimated Number of Breeding WSP



	2008	2009	2010	2011*	2012*	2013*	2014	2015	2016	2017	2018	2019	2020
breeding adults	30	23	24				6	20	16	24	25	39	42

Spatial Distribution and Abundance

Figure 7. CLT Season Chronology



CLT Spatial Distribution and Abundance

Figure 8. Nest numbers California Least Terns

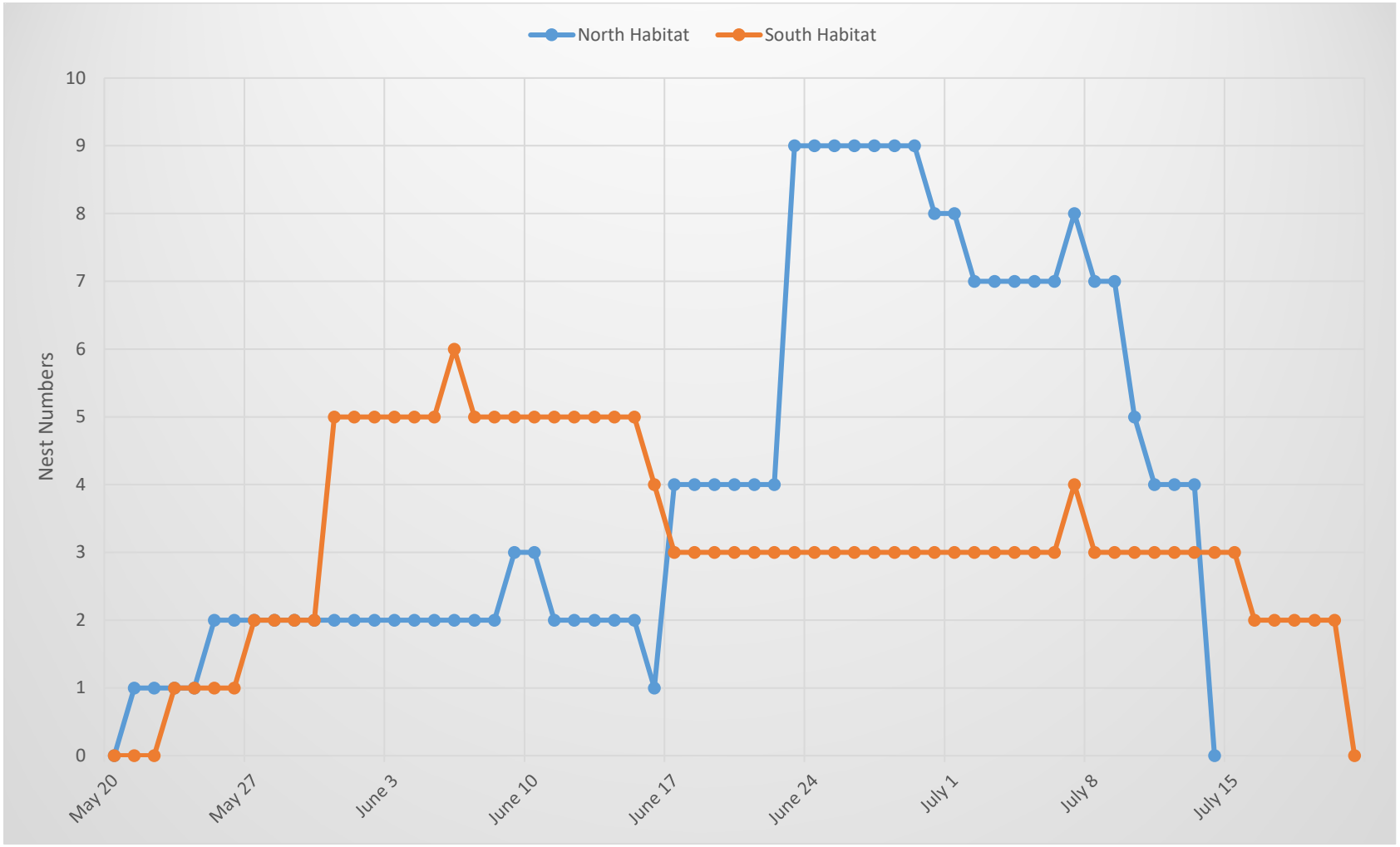


Figure 9: CLT Outcomes in North Habitat, 2005-2020

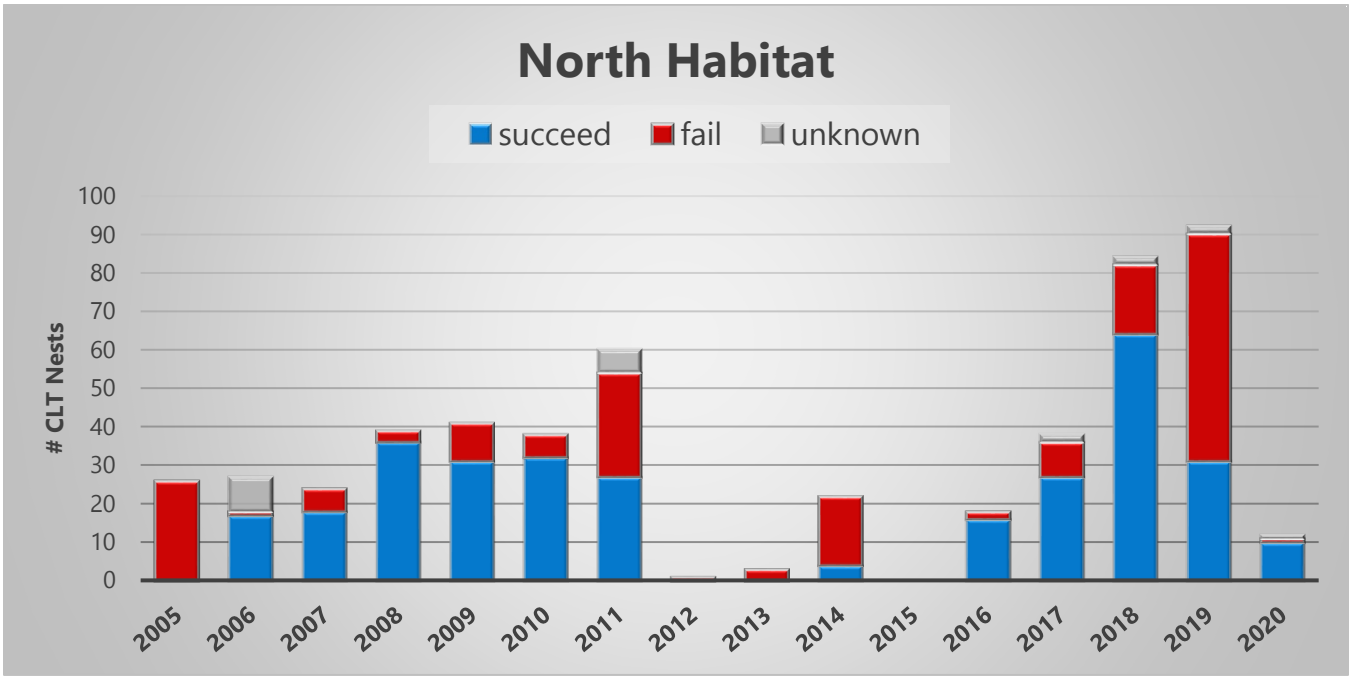


Figure 10. CLT Outcomes in South Habitat, 2005-2020

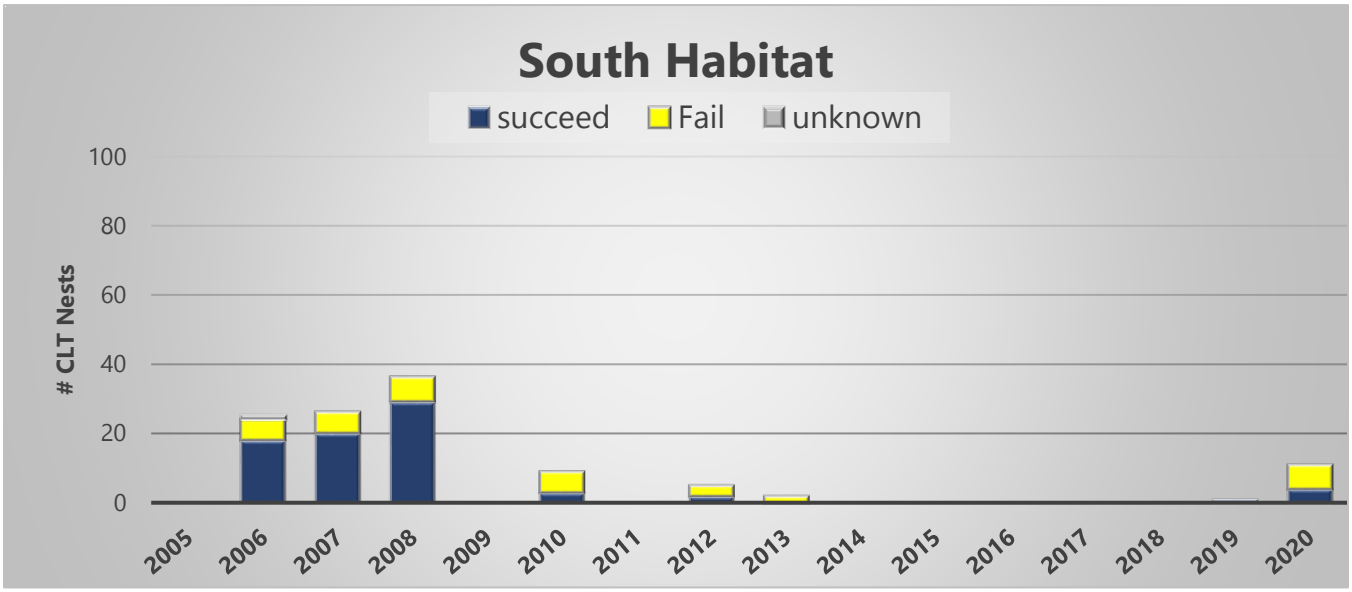
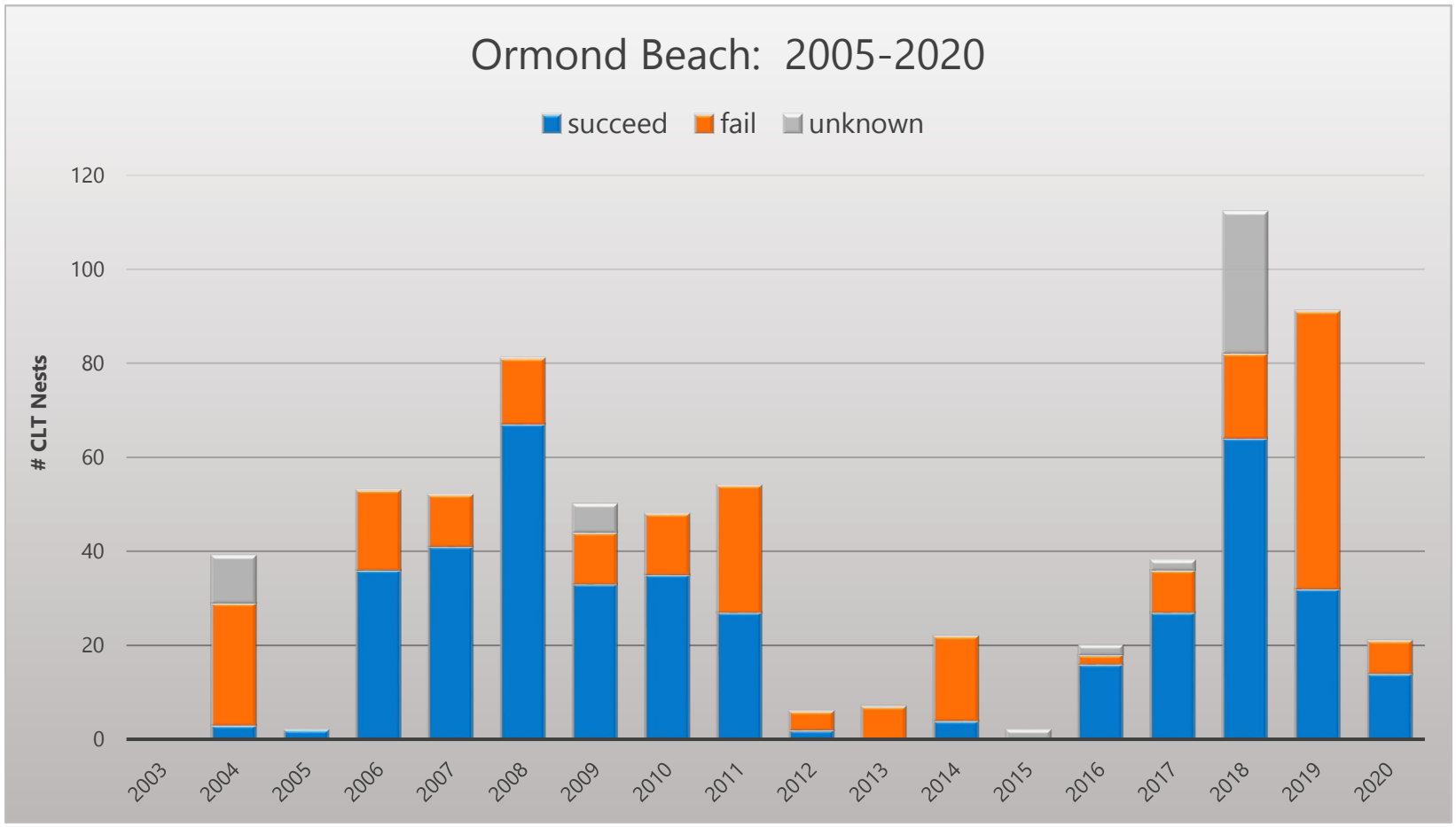


Figure 11. Figure 9: CLT Outcomes Ormond Beach Overall, 2005-2020



Appendix D: Photographs

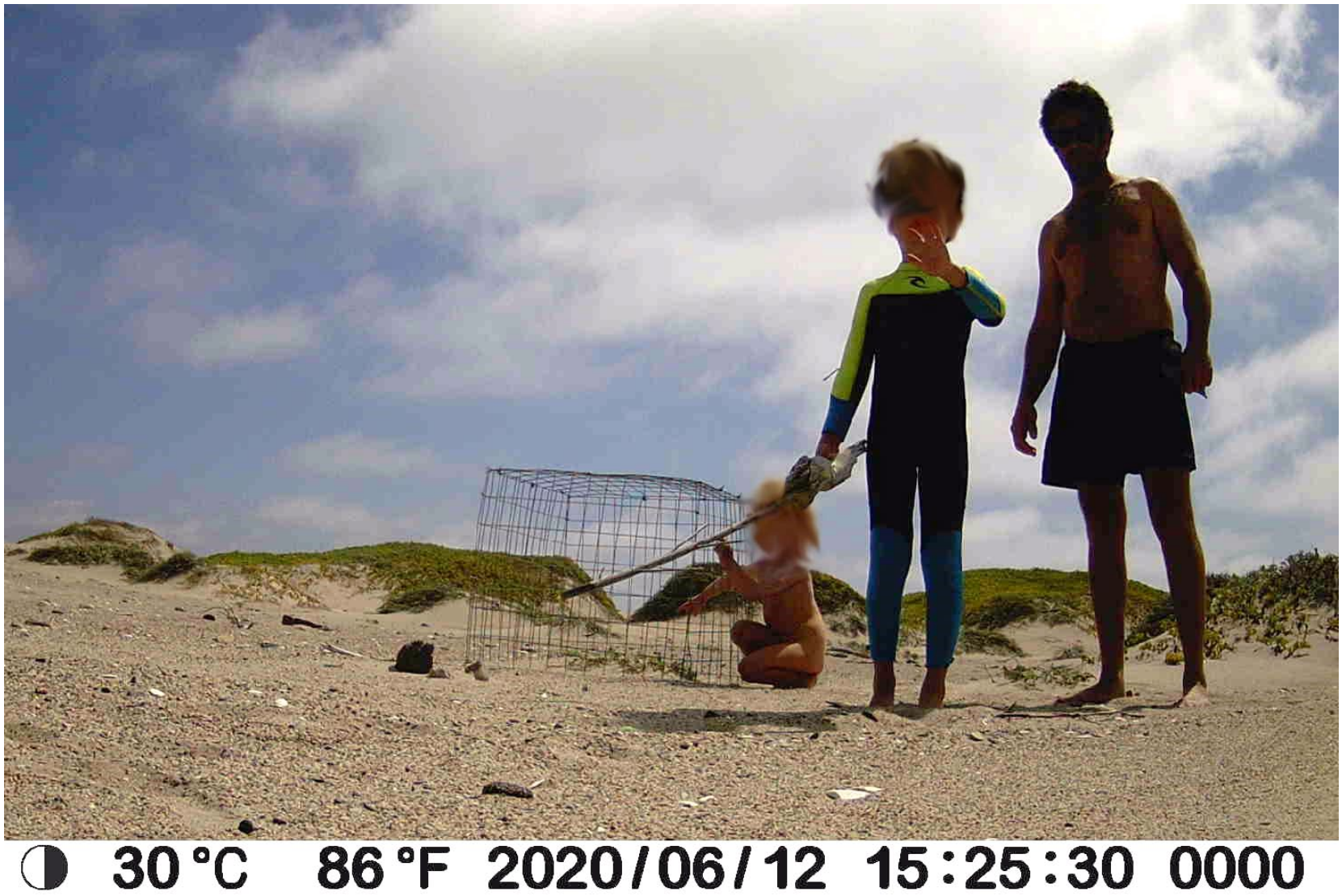
Photo 1: Habitat Fence

Photo 2: Symbolic Fence and Cable Fence

Photo 3: Temporary Symbolic Post and String Fence

Photo 4 ATV tracks in the north habitat

Photo 5. This man and his two children were regular visitors inside the south nesting habitat. The older boy is waving at our camera.



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