Escambia County

2024 Marine Turtle Nest Monitoring Report

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ABSTRACT

In 2024, there were 22 loggerhead (*Caretta caretta*) nests, and 1 Kemp's (Lepidochelys kempii) nest on Pensacola Beach (PB). There were also 15 loggerhead false crawls. There were 7 loggerhead nests recorded on Perdido Key (PK) along with 2 loggerhead false crawls. The mean hatch success for all nests on Pensacola Beach was 44.9% while mean emergence success was 43.6%. Mean hatch success for all nests on Perdido Key, was 38.5%, and mean emergence success was 32.6%.

There were zero nests deposited below the Most Recent High Tide Line (MRHTL) on PB or PK, so 0 nests were relocated, in compliance with FWC guidelines. Tropical systems including Alberto, Debbie, Francine, Helena and Milton affected nests this season, and erosion did wash out several nests. Artificial lighting negatively affected 46% of applicable Pensacola Beach nests (n = 6 of 13); several nests were not applicable due to the absence of viable offspring (0% hatch success) or due to weather obscuring the tracks. PK had 100% of the nests that hatched disorient (n = 3 of 3). A total of 32 marine turtle strandings were documented throughout 2024 in Escambia County (8 deceased loggerhead, 11 live loggerheads on the pier, 3 live loggerhead rescues in the surf, 1 deceased green, and 4 deceased Kemp's ridley and 5 live Kemps rescues on the pier. Fishery related entanglements with turtles remain an issue at the PB fishing pier.

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INTRODUCTION

The Pensacola Beach area of Santa Rosa Island encompasses approximately 8.1 miles of Northwest Florida's gulf coast, providing nesting habitat suitable to marine turtles. For the 2024 season, Pensacola Beach was covered under FWC permit #032A. Historically, loggerhead (*Caretta caretta;* CC), green (*Chelonia mydas;* CM), leatherback (*Dermochelys coriacea*: DC) and Kemp's ridley (*Lepidochelys kempii;* LK) have nested on Pensacola Beach. Pensacola Beach has averaged 15.5 nests per season (SD ± 9.2) since annual surveys began, with 2024 exhibiting a nest count of 23 (Fig. 1).

The Perdido Key area is 6 miles in length and is utilized by loggerhead turtles. Historically this area was patrolled by the FL State Park personnel, until the 2018 season. For the 2024 season, Escambia lands on Perdido Key were covered under FWC permit #202. Historically, loggerhead (*Caretta caretta;* CC) and Kemp's ridley (*Lepidochelys kempii;* LK) have nested on Perdido Key. Perdido Key has averaged 7.7 nests per season (SD ± 4.3) since 2009, with 2024 exhibiting a nest count of 8 (Fig. 2).

Volunteers are used extensively in this documentation and monitoring effort. These volunteers are greatly appreciated, and the program could not complete its mission without the effort of this group of people.

METHODS

Survey Area

The Pensacola Beach turtle patrol is delineated on the west end by the Fort Pickens area of Gulf Islands National Seashore (GUIS) and on the east end by the Santa Rosa area of GUIS. The PB patrol utilized a UTV beginning between 0500 – 0600 hours, or first light, and lasting 2-3 hours.

The PB morning patrols began at boardwalk 22C located immediately east of White Sands condos, advanced to the designated eastern limit, and then progressed west to complete the survey at Park West.

Perdido Key is delineated on the west end by the Florida-Alabama state line. The east end is the boundary with the GUIS Perdido Key Area. The center 2-mile portion is Florida State Park land and nesting data is handled by the state park staff. Perdido Key utilized two UTV's this season, one going

east and one going west. This was done to complete patrols earlier to allow beach vendors to begin set up chairs and umbrellas earlier.

Crawl Identification and Data Collection

Daily morning patrols were conducted between 01 May and 10 September 2024 on PB and PK. Patrols were completed by permitted staff and volunteers.

During a collaborative pre-season meeting, it was decided to continue asking chair and umbrella vendors to wait for group texts to arrive from the daily patrol after one pass cleared an area of beach. Texts were sent from the Hilton, Portofino and Park West. Texting was also utilized on Perdido Key.

Data was collected for each nesting and non-nesting emergence event (i.e. false crawl) on nest survey field sheets. This data was then entered into an excel database for storage and analysis. Nest numbers were denoted numerically following the sequence in which they were discovered, e.g. the first nest laid on Pensacola Beach was denoted as 'PB01' while the second nest encountered by patrol on Perdido Key was denoted as 'PK02', with a W for the western side and an E for the eastern side; PK02W and PK02E. Data collected for each emergence included species, incident type (nest or false crawl), distance of the body pit to both the water line and the vegetation lines, whether the nest was relocated, distances from the egg cavity to the nest sign and reference stakes, whether a predator screen was deployed and date if applicable, and location defined as 1) proximity to notable landmarks such as boardwalks and 2) GPS positioning of all nests at the clutch location. GPS positions were also taken for false crawls.

Crawls that contained loops, meandered parallel to the shoreline greater than 100 feet, and/or or traveled inland post-nesting were indicative of disorientation. Maps containing point data for each nest were generated using Google Earth and ESRI ArcPro. A diagram was also illustrated for each emergence event. Daily logs were filled out to document survey completion.

Nest Marking and Monitoring

After nests were located, nests were marked with a sign, a square enclosure, and two reference stakes. Nest relocation for conservation purposes did not occur on PB or PK during the 2024 season due to no opportunistic encounters of nests laid below the Most Recent High-Water Line (MRHWL).
Nests were monitored throughout the incubation period and checked daily by morning patrol for evidence of predation, over wash, erosion, and other disturbances. Additionally, nests were monitored

for signs of hatching during morning surveys beginning day 50-55 of the incubation period to determine the precise duration of incubation, and to gather data on hatchling emergence, predation, and to document disorientation events. Visual emergence signs include a collapse or depression over the egg cavity and a cluster of small, approximately 2" wide tracks radiating from the nest site.

Nighttime nest monitoring (spot checking) was conducted for the 2024 season. This was completed on FWC permit # 272 for PB and # 273 for PK. This work is conducted to mitigate the effect of light pollution which confuses hatchlings upon emergence and causes them to go inland towards the brighter horizon.

Assessments

Nests were assessed 72 hours after the initial hatching event. Nests that were flooded and where emergence signs were not evident were assessed at day 80 of the incubation period. During assessment, nests were excavated and the number of hatched (defined as an intact shell greater than 50%), unhatched and pipped eggs was recorded, along with the number of live and dead hatchlings found in the nest at the time of excavation (Appendix B). Unhatched eggs were opened, and the presence or absence of development was noted. All contents were reburied in the nest chamber. Any hatchlings alive in the nest were released to crawl into the Gulf of Mexico (hereafter referred to as the Gulf) prior to 0900 if ≤ 10 hatchlings were present. In the event > 10 hatchlings were located in the nest during assessment they were either 1) held in a container with 1" of moist sand and kept in a cool, dark place until released that night, or 2) reburied with nest contents and allowed an additional 48 – 72 hours to emerge prior to assessment.

Analyses

Beach success, reproductive success and productivity were determined for the 2024 season. Beach success was defined as the proportion of nests to all emergences:

Beach Success % = Nests / (Nests + False Crawls)

Mean hatch and emergence success rates were calculated for assessed nests as follows:

Mean Hatch Success % = Total # Hatched Eggs All Nests / Total # Eggs Laid All Nests

Mean Emergence Success % = Total # Emerged Hatchlings All Nests / Total # Eggs Laid All Nests

RESULTS AND DISCUSSION

Crawl Activity and Beach Success

Nesting occurred between 17 May and 18 August on PB and between 31 May and 24 July for PK. The 2024 season had 23 nests and 15 false crawls on Pensacola Beach (Fig. 5). This yielded a beach success of 63% compared to the 28-year average beach success of 65% (Fig. 7; Fig 9). One Kemp's ridley nested on PB. The remaining nests were loggerheads. All false crawls were identified as loggerheads.

The 2024 season had 7 loggerhead nests and 2 loggerhead false crawls on Perdido Key (Fig. 6). This yielded a beach success of 78% (Fig. 8; Fig 10.). All nesting activity were loggerheads.

All nests in Escambia County remained *in situ* upon initial location.

Missed Nests

No unknown or "missed" nests, defined as a nest unidentified on patrol the morning after deposition but located some time during incubation or hatch, were documented this season.

Reproductive Success

In 2024, a total of 22 loggerhead nests and 1 Kemp's nest were laid on Pensacola Beach and monitored throughout incubation. The average length of incubation on PB was 59 days (n = 14), with the shortest incubation period observed at 50 days for PB19. The longest incubation length was for PB6 at 74 days.

Five nests were lost to erosion and assigned the "114" egg value that FWC recommends, resulting in an average clutch size of 106 eggs, ranging from 54-154 (Table 1). Nest PB24 was buried beneath 2 feet of sand so the eggs could not be located so the 114 count was assigned to the nest.

In 2024, a total of 7 loggerhead nests occurred on PK. The average clutch size was 117 eggs, ranging from 107 to 144 (Table 2).

Mean hatch success for PB was 44.9% and PK was 38.5% (Fig. 11; Fig. 12). The total number of hatchlings witnessed entering the Gulf from PB was approximately 663 (Figure 13). PK had 109 hatchlings witnessed entering the Gulf (Figure 14).

Hatching success can be related to the location of the nests on the beach. Nests laid lower on the beach, typically have lower success rates (Fig.15). Nests laid in positions that are prone to flooding, have been impacted by storms regularly and have seen a significant decline in hatching success. Seasons that had lower tropical activity typically witnessed higher success rates of nests: such as 2000, 2002 and 2022. Other seasons that had high success rates, had a large percentage of nests relocated higher on the beach above lines of swash impacts from tropical storms, such as 2006, 2009, 2013 and 2016 (Fig.11).

Undeveloped Nests

Pensacola Beach nest PB20 had high numbers of undeveloped eggs. This nest was not impacted by high water events from the Gulf. It had one egg develop and hatch, and 153 undeveloped eggs.

Nests readily fail due to flooding from storms and then typically have developed embryos inside the eggs upon the nest assessment. We have been monitoring for nests that showed no apparent development in the eggs. These eggs, when opened, contained no blood or tissue. We realize that early development could have ceased with the tissue dissolving before the eggs were opened. However, we are now tracking nests that are either infertile, or fail in development at very early stages, and are thus eggs that appear undeveloped at assessment (Fig. 16). Nests that have 40 or more undeveloped eggs are included in this data set.

Effects of Erosion, Inundation and Tropical Weather, General Beach Conditions

The direct impact of tides on several incubating nests this season may be due to a high number of low beach nests. Zero nests were located below the MRHTL.

9 of 23 nests on PB experienced tidal impacts to include erosion, repeated wash over and/or inundation. Of these 9 impacted nests, five experienced total loss of the eggs from erosion (Table 1).

In total, 6 of 7 nests on PK experienced tidal impacts on PK (Table 2).

Sargassum on the beach occurred once in early June and was considered to be light. Green slime algae, Cladophora sp. impacts were moderate in the summer of 2024.

Predation

Complete or partial predation of marine turtle nests did not occur in 2024. While egg and hatchling predation by ghost crabs was only observed at nests, it is likely that greater loss occurred that was not observed and can be attributed to ghost crabs. Burrows were noted in close proximity to a couple of the nest sites, however, sub-surface loss cannot be accurately confirmed. Data sheets include field notes regarding ghost crab activity. Missing eggs/hatchlings could be attributed to either unknown predation events or heavy rain that may have washed out tracks from daytime and nighttime rainfall emergences.

Nest Relocations

In 2024 the average distance of nests on PB to the water line was 64 feet (SD ± 35.8 feet). For PK it was 59 feet (SD ± 40.6 feet). The variance was high for both locations. No nests were relocated upon initial discovery on PB and PK during 2024 due to guidelines outlined in the FWC Marine Turtle Handbook stating only nests deposited seaward of the MRHTL are candidates for relocation (FWC 2016).

Light Pollution and Disorientation

Hatchling disorientation was defined as hatchlings from a given nest orienting > 45º from the most direct path to the Gulf post-emergence (FWC 2016). Artificial lighting negatively affected 6 of 13 nests on PB for a rate of 46 % (Fig. 17).

Artificial lighting negatively affected 100% of Perdido Key nests (n = 3 of 3).

Adult and hatchling disorientation reports are provided annually to FWC for evaluation. The most commonly noted sources of disorientation on reports provided to FWC during the 2024 season were interior and exterior lighting of various homes and condominiums and sky glow.

Obstructed Nesting Events

There was one obstructed nesting attempt on PB and zero on PK in 2024. One adult loggerhead was disoriented on PK and completed four 360 loops then returned to the Gulf.

Research

Escambia County participated in a research program with USGS researcher Dr. Meg Lamont. Two temperature transects were installed on Pensacola Beach to collect data from 3 different depths on the

mid and high beach. Temperature probes successfully collected data through the summer and through October. This replicated the 2021-2023 effort.

Escambia County participated in a research program with the University of Werst Florida, Dr. Phillip Schmutz. The study is titled, The Spatial Variability of Sea Turtle Nest Sites Related to Beach Morphology Characteristics on Pensacola Beach, FL.

Strandings

A total of 32 marine turtle strandings were documented throughout 2024 in Escambia County (8 deceased loggerhead, 11 live loggerheads on the pier, 3 live loggerhead rescues in the surf, 1 deceased green, 4 deceased Kemp's ridley and 5 live Kemp's were rescued on the pier. Fishery related entanglements with turtles remain an issue at the Pensacola Beach fishing pier (Fig. 29). Numerous reports of turtles breaking the lines before personnel arrive continue to occur.

The Escambia County Ambassador Program continued to assist pier staff with turtle rescues on the PB Pier. Escambia County volunteers transport live turtles to rehabilitation at the Gulfarium C.A.R.E. facility in their private vehicles.

CONCLUSIONS AND RECOMMENDATIONS

Escambia County had above average nesting numbers in general. Some nests were lost to erosion and others had low hatching success due to flooding. It is recommended by staff and volunteers that a more reasonable "relocation line" in the sand be permitted, to allow the very low nests to be relocated to higher ground. FWC granted a 10-foot line above high water in early August 2022, but did not allow that again in 2024. The current Most recent High Tide Line is typically only feet from the Gulf. It is expected that if the Most Recent Storm Line were used, located typically somewhere around 25-35 feet up the beach, several nests per season could be relocated. Females that arrive to nest in the area, have to access and negotiate many anthropogenic impacts, before they emerge, as well as during their crawling to the nests site. These include artificially designed/constructed beaches, sand shortages from the Army Corps of Engineers century long practice of dumping dredged sand from channels miles offshore, houses and condominiums constructed just above the vegetation line, that have lighting that alters the night sky, human presence on the beaches at all hours of the night with flashlights/cell phone

lights, that are readily observed for miles. It is impossible for a female turtle to experience natural conditions on our local beaches, and it is speculated they possibly nest lower than normal due to the myriad of human impacts.

Disorientation events were high again in 2024. Nests that hatch under new or less than half-moon conditions typically witness disorientation. Coastal lighting, which contributes to point source and non-point source (sky glow) continues to be an issue.

Limiting Disruption

Human presence on nesting beaches during nighttime hours could disrupt nesting turtles and their hatchlings. Human presence on the beach after dark is frequent in places and includes flashlight/cell phone light usage, that illuminates the beaches. The 2024 season witnessed excessive use of lighting by beach goers in the core areas. This can be a deterrent to females attempting to emerge and nest on these beaches.

The Escambia County's Sea Turtle Ambassador program began to educate beach goers on this issue; however the problem presents unique challenges to changing visitor behavior, partly due to the high number of short-term and day-use visitors on Pensacola Beach. Volunteers provided small red turtle flashlights to the beach visitor centers and participating hotels to help reduce the amount of white light being cast on the beaches at night by beach goers.

Volunteer Time

Volunteers collectively submitted approximately 1200 hours for conducting marine turtle nesting surveys and another 450 hours on monitoring activities. Key issues that require dissemination to the public include how to reduce disorientation caused by artificial lighting, strandings caused by fisherman and improper waste (plastic) disposal. Continuing to utilize permitted volunteers for stranding response and transport will be a beneficial use of volunteer resources and increase chances of survival for sick and injured marine turtles.

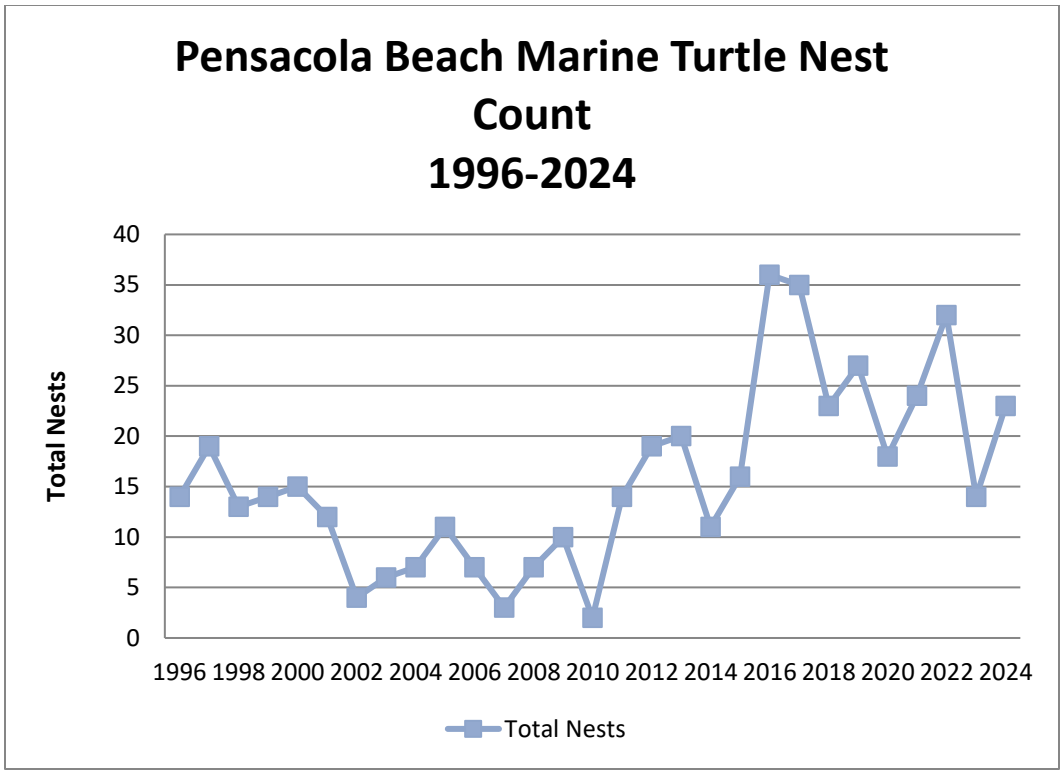


Figure 1: Pensacola Beach annual marine turtle nest count trend from the 1996 - 2024 seasons. Pensacola Beach has averaged 15.7 nests per season (SD ± 9.1) since annual surveys began

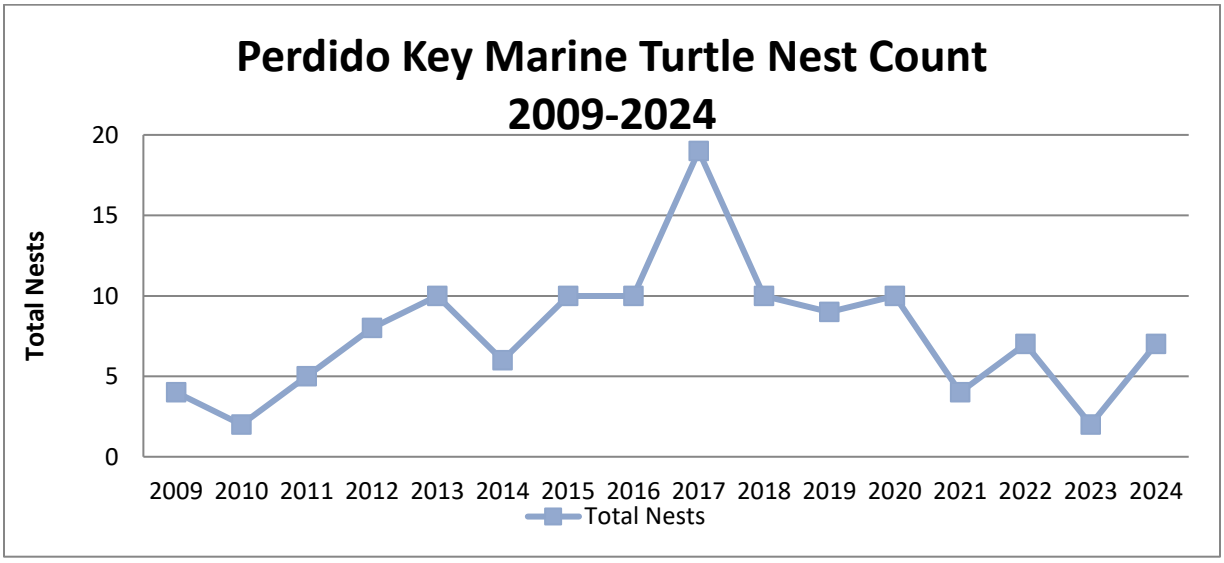


Figure 2: Perdido Key annual marine turtle nest count trend from the 2009 - 2024 seasons. Perdido Key has averaged 7.8 nests per season (SD ± 4.2) since 2009.

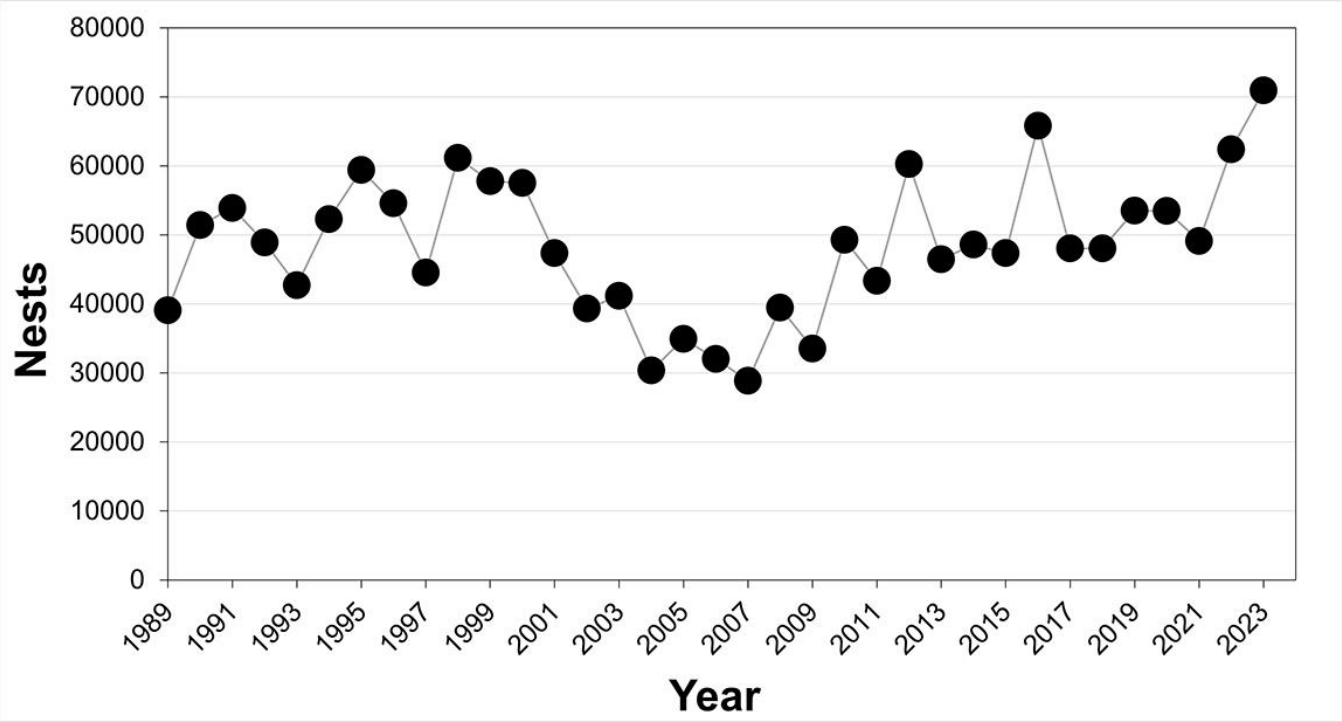


Figure 3: Number of loggerhead turtle nests counted on core index beaches in peninsular Florida, from 1989 through 2023. (FWC data)

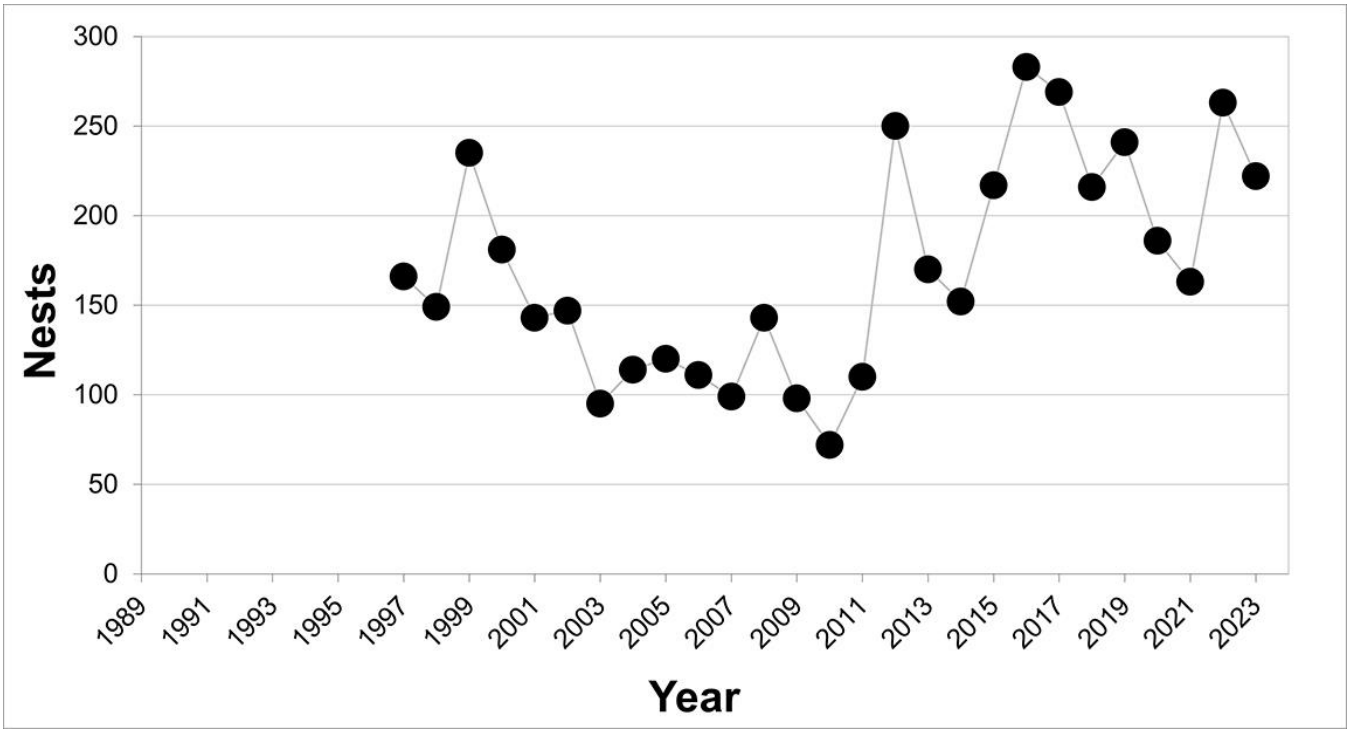


Figure 4: Number of loggerhead turtle nests counted on index beaches in the Florida Panhandle, from 1989 through 2023. (FWC data)

Figure 5: GIS map displaying Pensacola Beach marine turtle nest locations for the 2024 season.

Figure 6: GIS map displaying Perdido Key marine turtle nest locations for the 2024 season.

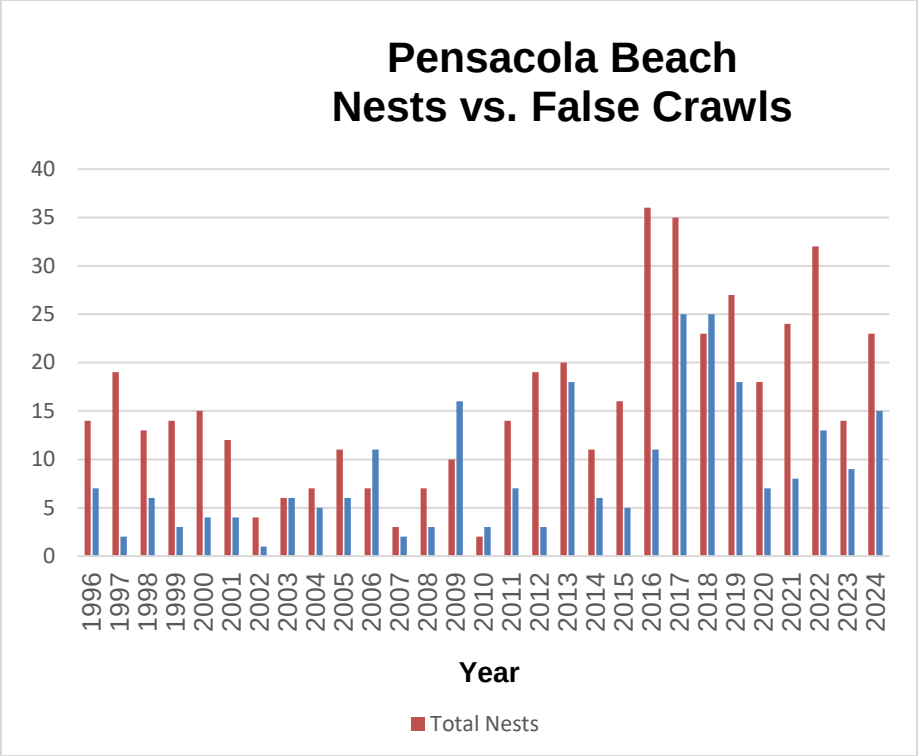


Figure 7: Marine turtle emergence data from Pensacola Beach including the number of nests compared to the number of non-nesting emergences (i.e. false crawls), 1996 - 2024.

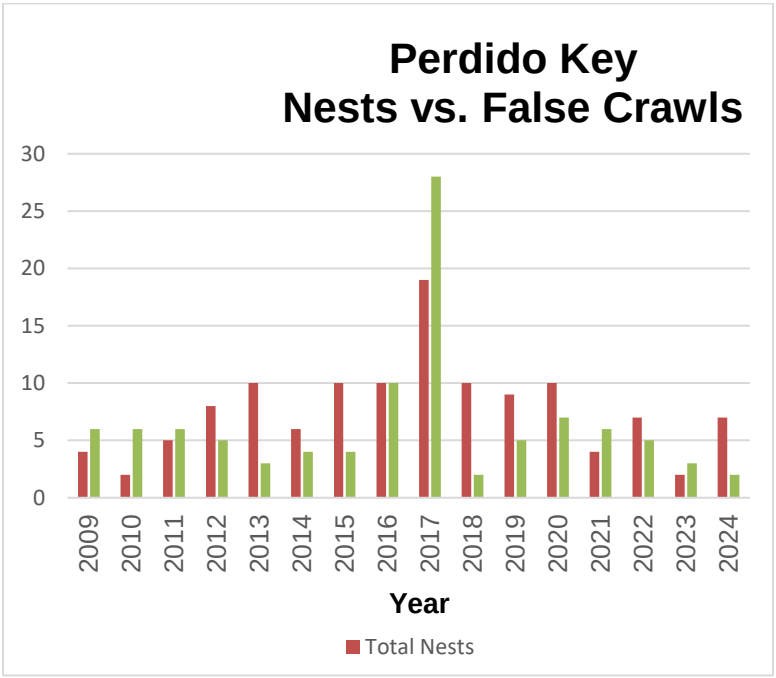
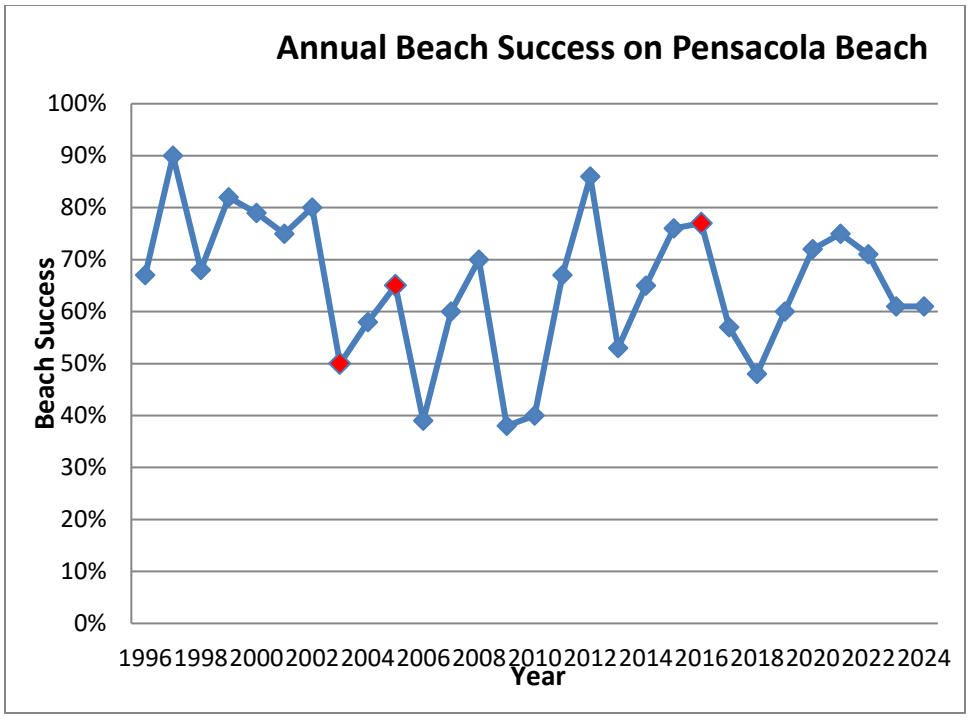
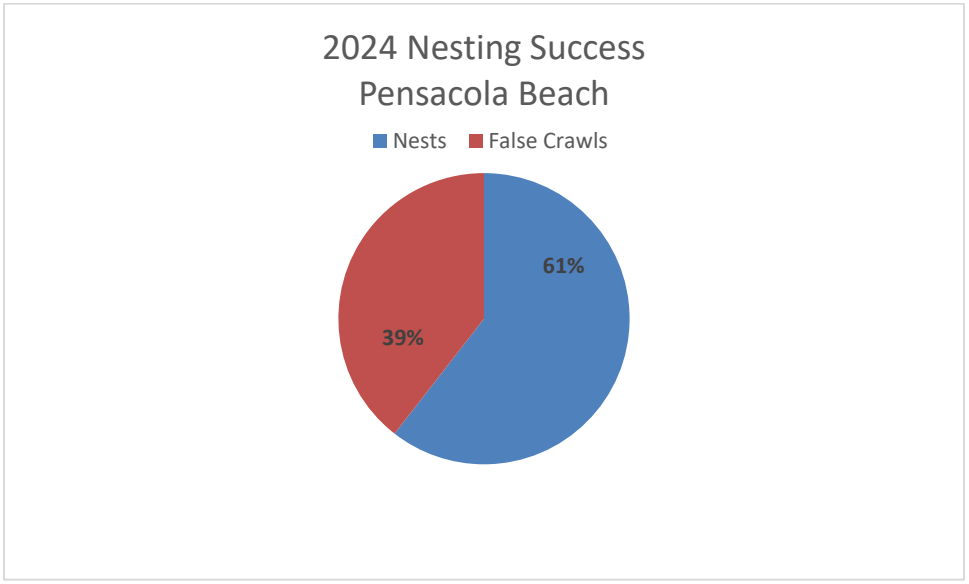


Figure 8: Marine turtle emergence data from Perdido Key including the number of nests compared to the number of non-nesting emergences (i.e. false crawls), 2009 - 2024.

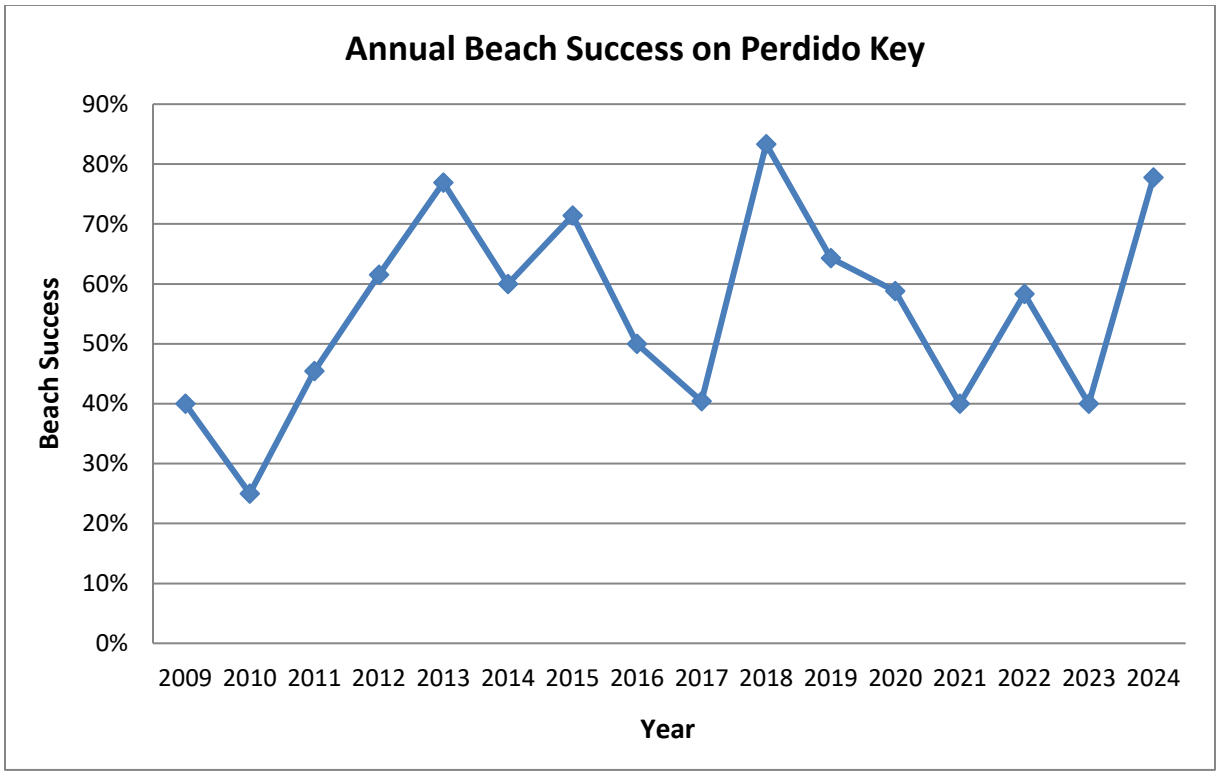


a.



b.

Figure 9: Annual beach success data from Pensacola Beach, 1996-2024 (a). Beach success is defined as the proportion of nests laid to the total number of crawls. Beach nourishment project years are represented by red data points (2003, 2005, and 2016). Beach success for 2024 was 61%, compared to the 28-year average of 65%. (b). Proportion of nests to false crawls for 2024.



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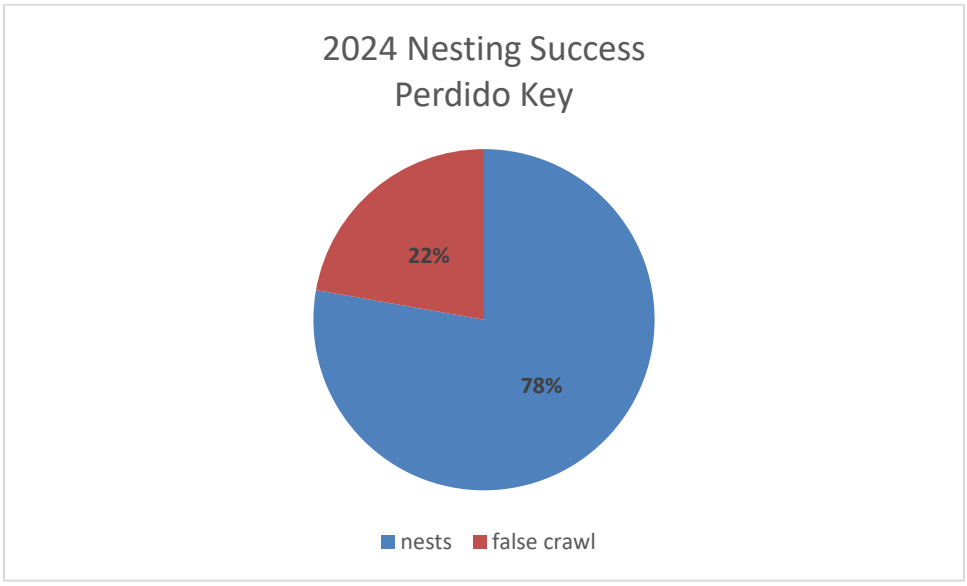

b.

Figure 10: Annual beach success data from Perdido Key, 2009-2024 (a). Beach success is defined as the proportion of nests laid to the total number of crawls. Beach success for 2024 was 78%. (b). The proportion of nests to false crawls for 2024 is also depicted.

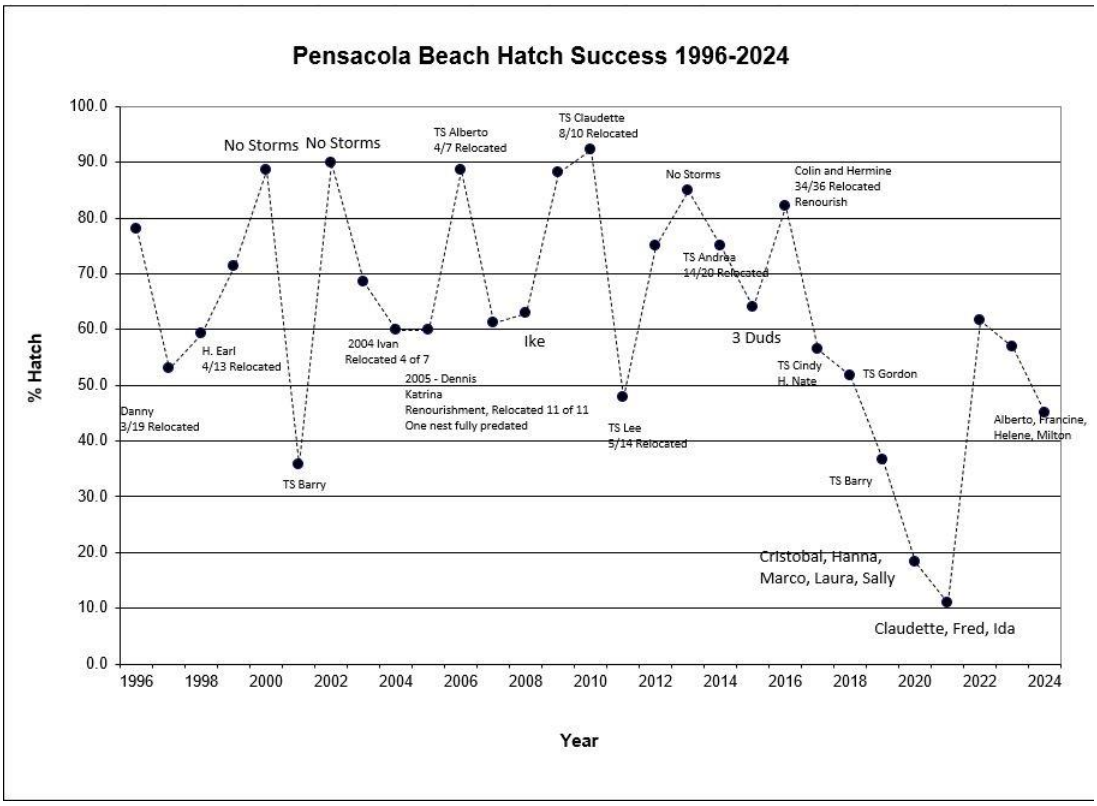

Figure 11: Annual mean hatch success (% hatch) from the 1996 - 2024 nesting seasons on Pensacola Beach. Mean hatch success for the 2024 season was 44.9 (SD ± 21). Long-term monitoring efforts have established a 25 year mean hatch success of 62.9%.

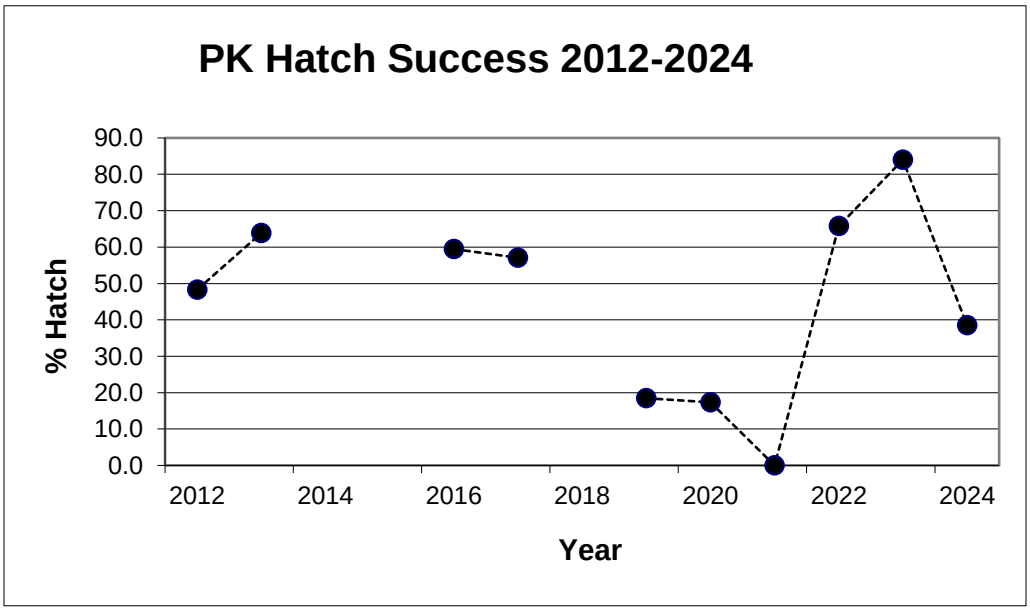

Figure 12: Annual mean hatch success (% hatch) from the 2012 - 2024 nesting seasons on Perdido Key. Data is missing or incomplete for some years. Mean hatch success for the 2024 season was 38.5%.

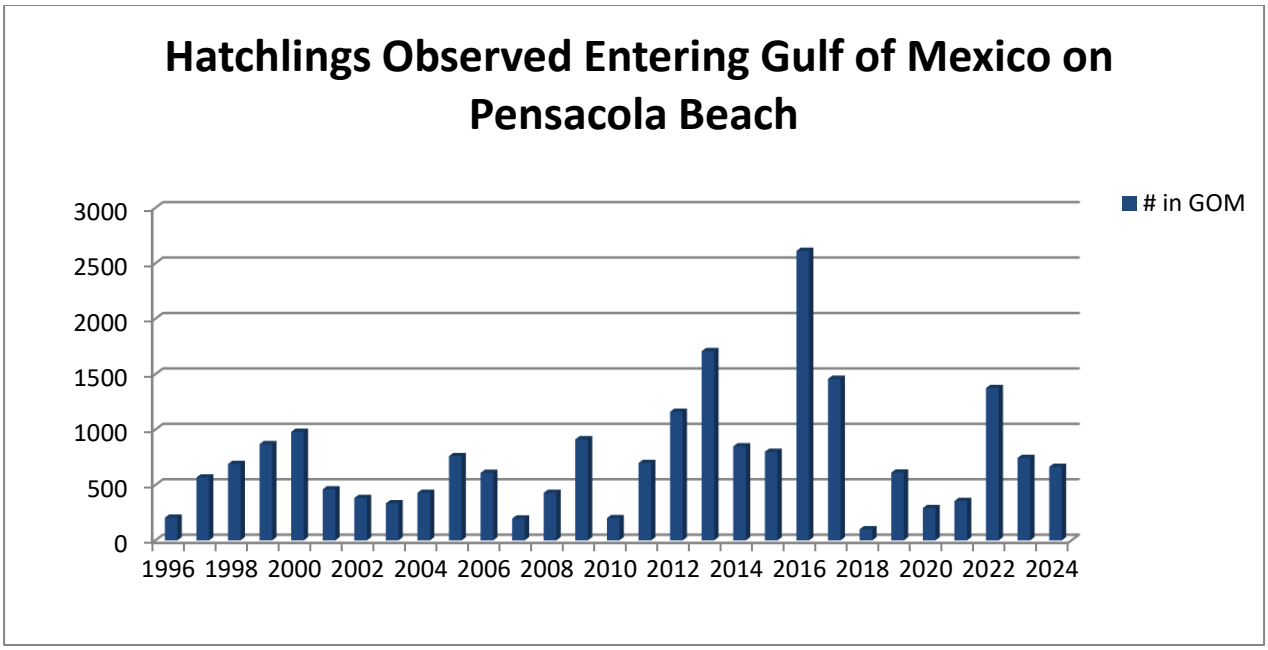

Figure 13: Number of hatchlings observed entering the Gulf of Mexico from the 1996 - 2024 nesting seasons on Pensacola Beach.

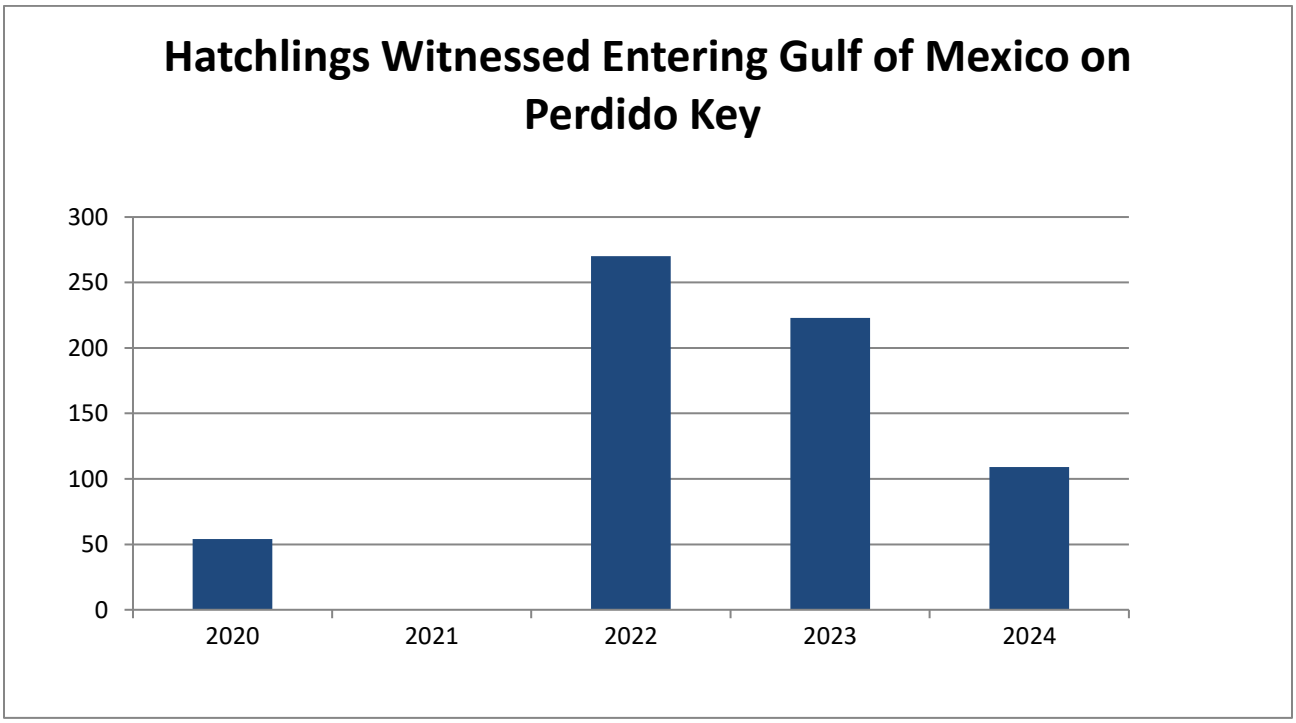

Figure 14: Number of hatchlings observed entering the Gulf of Mexico from the 2020 - 2024 nesting seasons on Perdido Key.

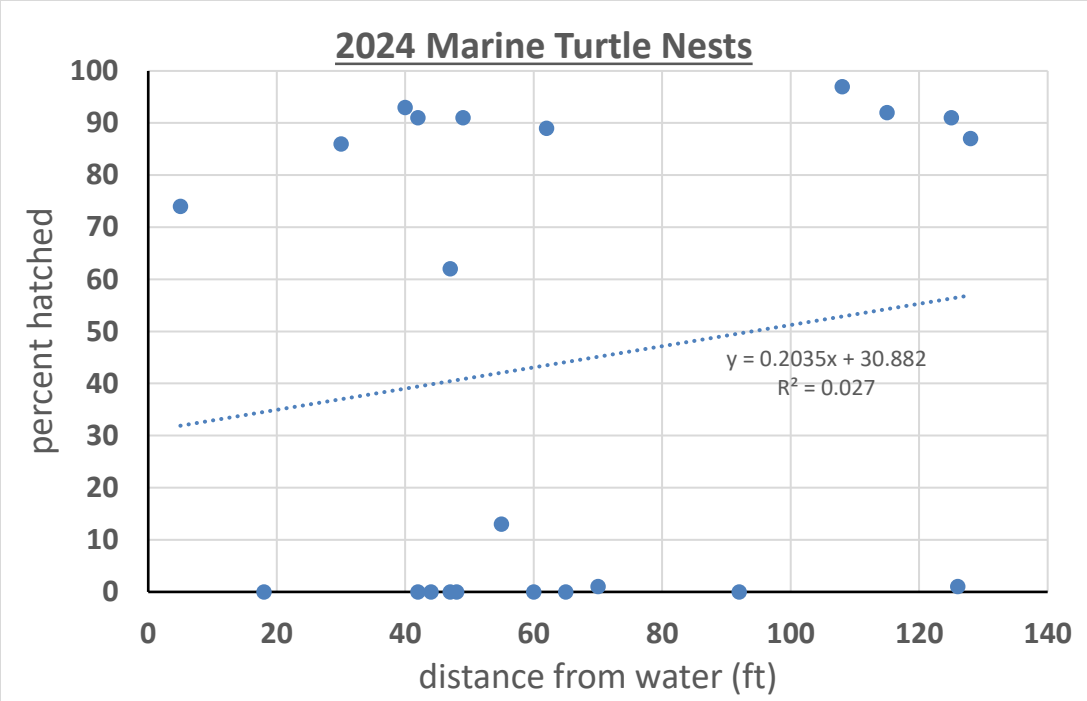

Figure 15: 2024 Pensacola Beach plotting nest hatching success versus distance nests are laid upland from the Gulf of Mexico.

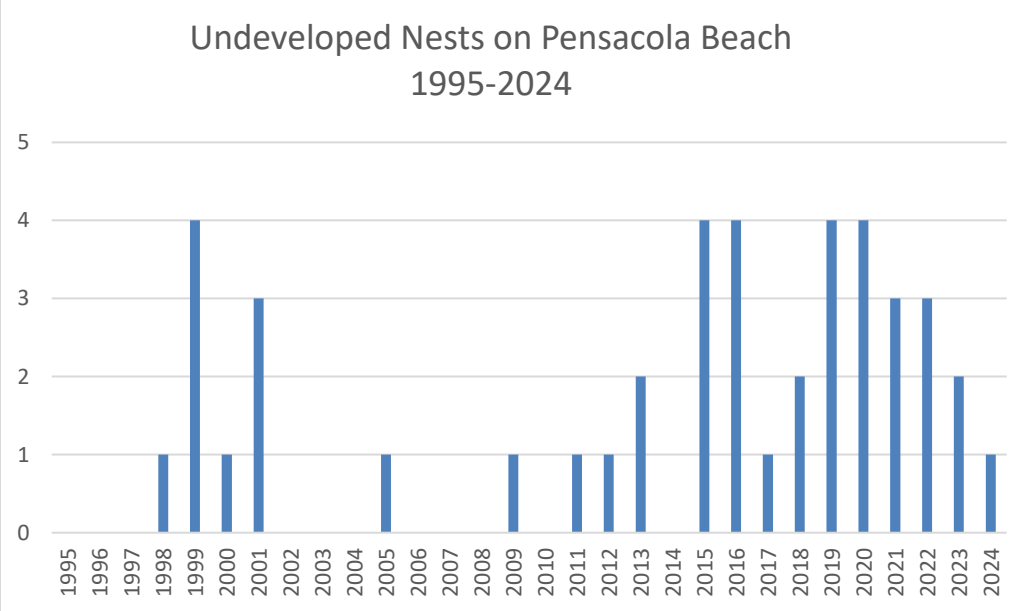

Figure 16: Pensacola Beach undeveloped nests from 1995-2024

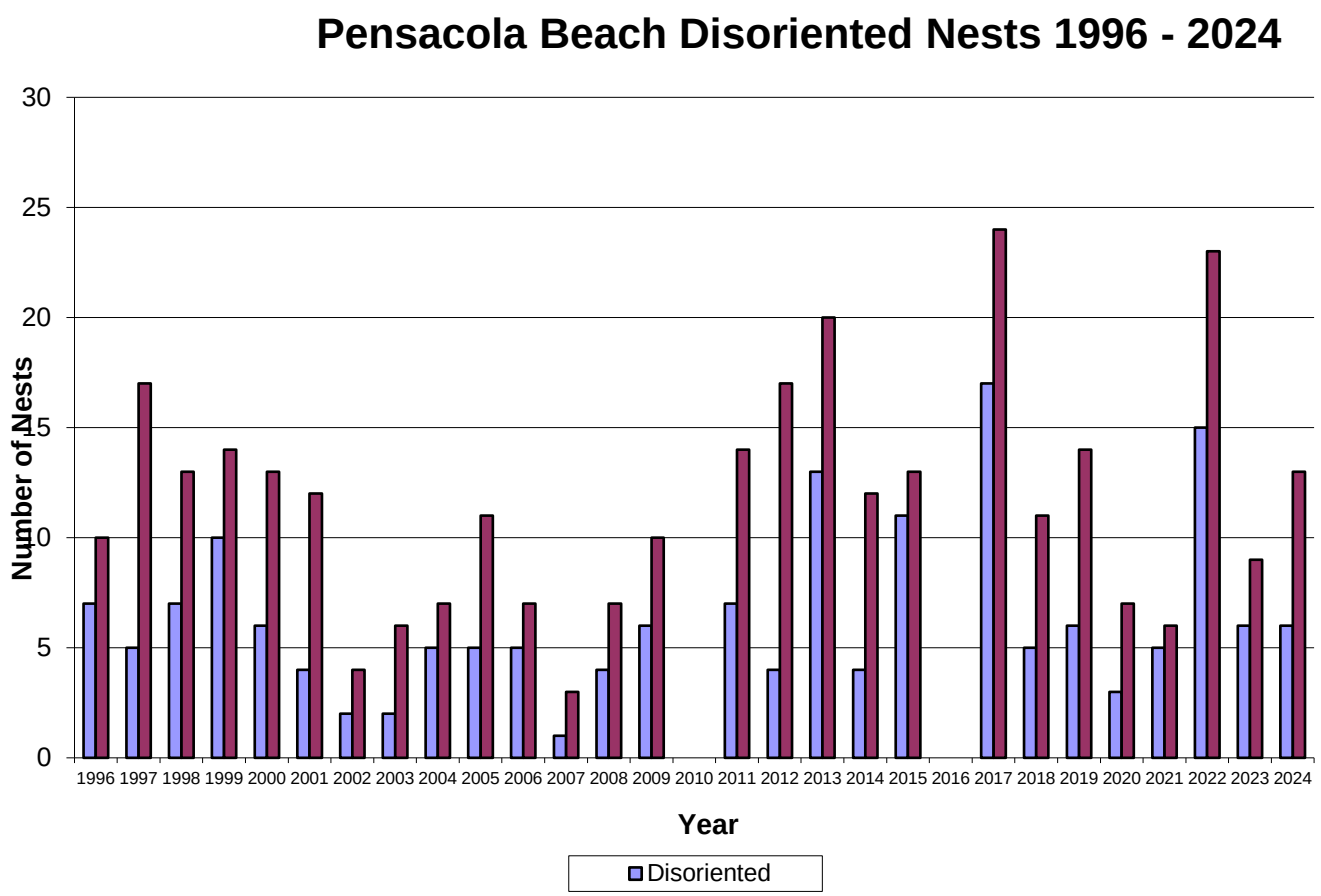

Figure 17: Comparison of marine turtle nests with hatchling disorientation to the total number of nests per season from 1996-2024 on Pensacola Beach. Disorientation data is not shown for the 2010 and 2016 seasons due to relocation of all incubating nests offsite during the 2010 Deepwater Horizon oil spill and 2016 nourishment project. Hatchling disorientation was defined as nests with ≥ 5 hatchlings crawling at > 45° angle from the direct path to the water. Hatchlings were required to crawl ≥ 10 feet to be classified as disoriented.

Figure 18: Nest PKE1 was laid 6 feet from the high tide line on June 5, 2024 and by June 18 it was taking on water. By June 20 it was lost to erosion.

Figure 19: Pensacola Beach nest and volunteer answering questions from the public

Figure 20: Nest PB07 Disorientation Event with hatchling tracks ENE bound.

Figure 21: Lone hatchling track 100 feet east of nest PB07 and headed east.

Figure 22: Kemp's turtle nesting at PB11 site.

Figure 23: Volunteers arrived a short time after the female Kemp's left nest PB11 site and secured the area.

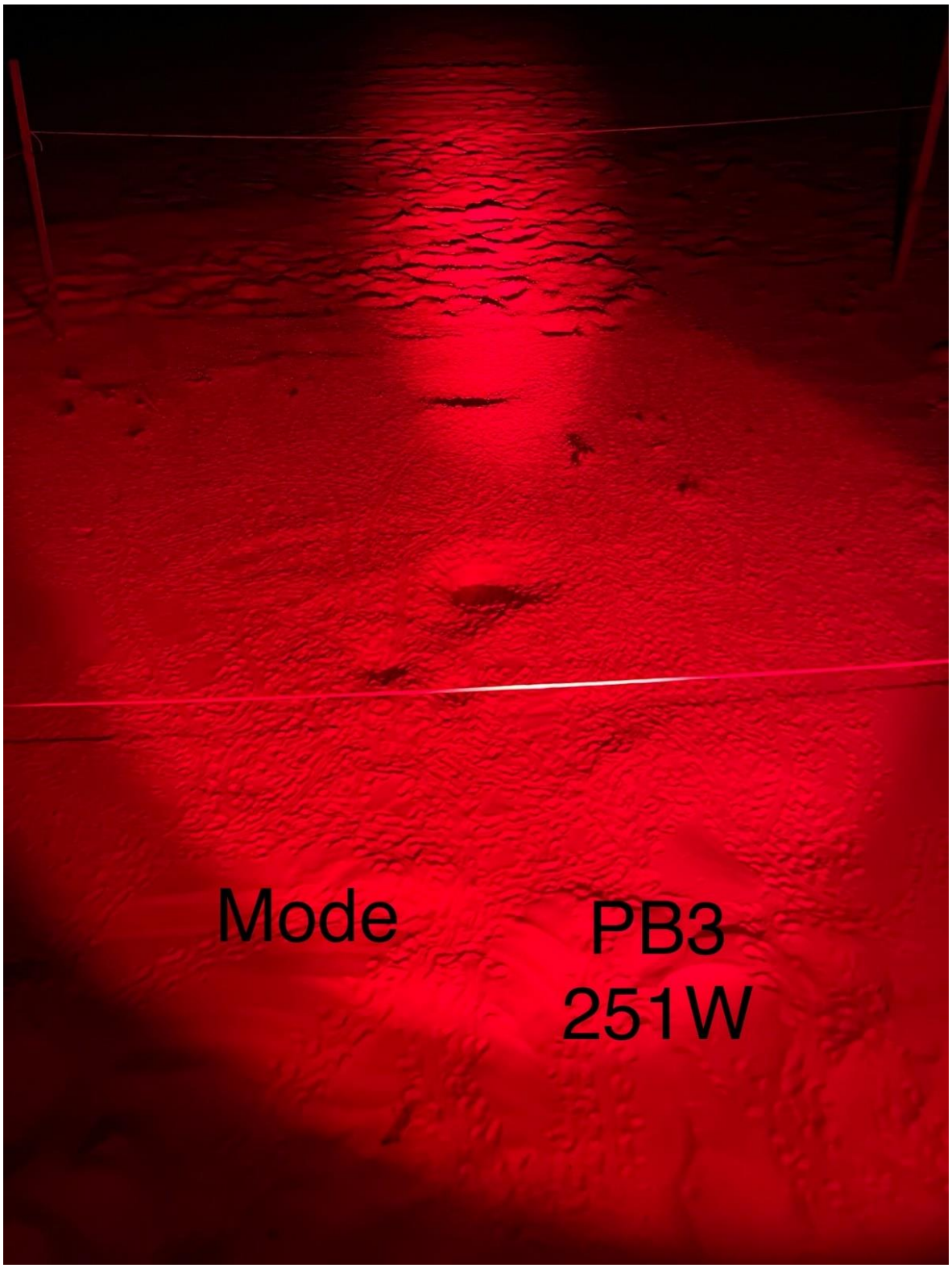

Figure 24: PB3 hatchling disorientation event, most headed off to the west. The Gulf is at roughly 180 degrees, but hatchlings travelled at 251 degrees.

Figure 25: PKW1 hatchling from nest assessment.

Figure 26: Volunteers at PKW1 nest site

Figure 27: Lights of Eden Condos drew hatchlings north bound from nest PKW1 rather than south to the Gulf of Mexico.

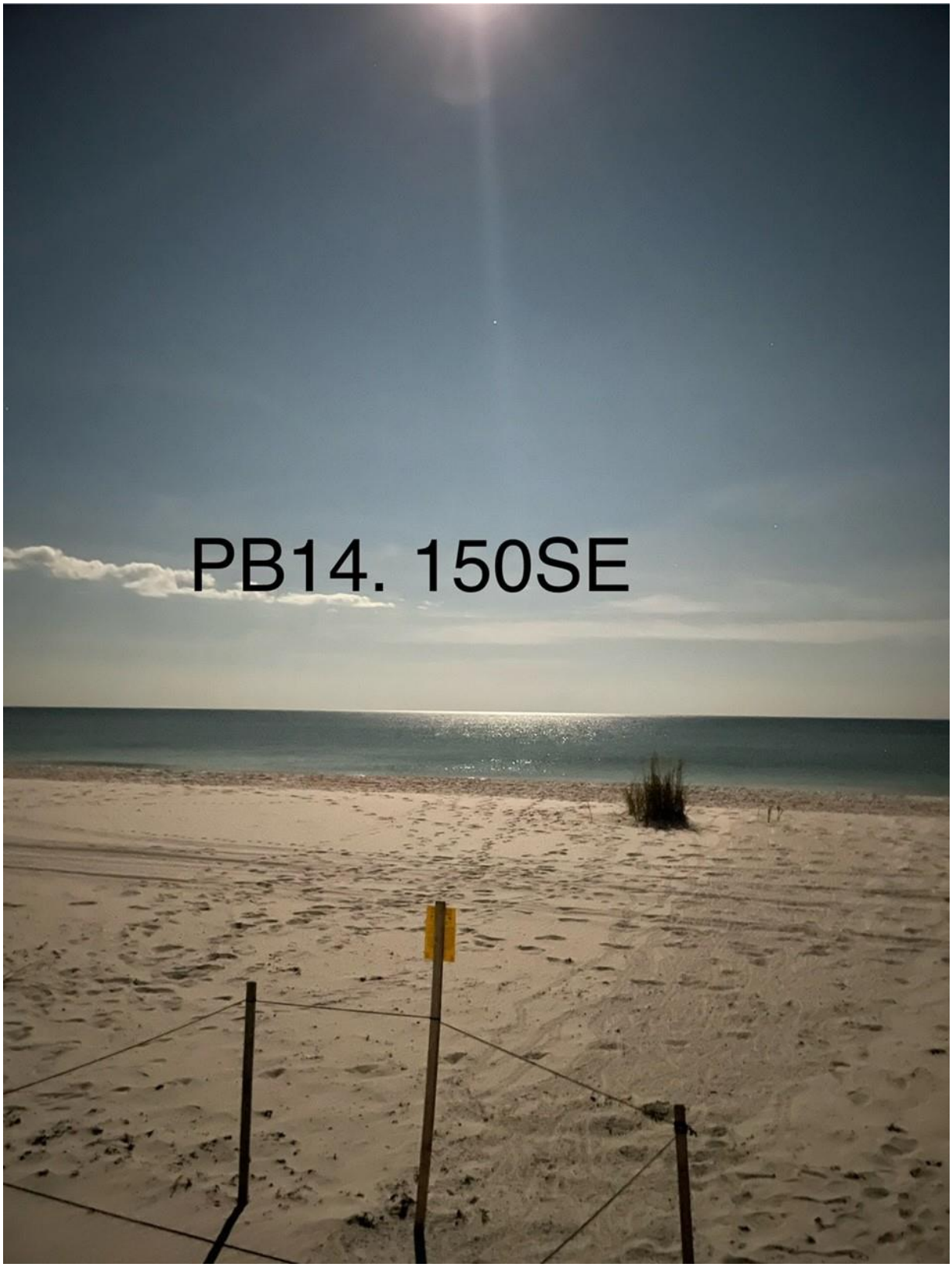

Figure 28: PB14 hatchlings headed south southeast at 150 degrees with a full moon. Angular Range is well below 90 degrees and modal divergence is less than 30 degrees.

Figure 29: Loggerhead rescue from Pensacola Beach pier on May 23, 2024.

Pensacola Beach 2024	Nest #	Date Laid	Species	Hatch Date	Incub Days	# Eggs	# Eggs Predated	# without develop	# with develop	# Unhatched (including pipped)	# Hatched	# Emerged	% Hatch	% Emerge	Adult Dis. (Y/N)	Hatchling Dis. (Y/N)	Tidal impact (Y/N)	# in water witnessed	Apx. Tracks to GOM	Relocated (Y/N)	Crawl width (in)	Distance dune/veg (ft)	Distance from High Tide Line (ft)	≥18" scarp (Y/N)	Latitude	Longitude
	1	5/17	Cc	7/26	70	104	0	6	3	9	95	92	91%	88%	N	Y	Y	59	0	N	36	55	42	N	30.329538	-87.146855
	2	6/1	Cc	8/11	72	105	0	24	3	27	78	66	74%	63%	N	Y	Y	77	1	N	NA	86	5	N	30.334018	-87.123010
	3	6/3	Cc	8/6	64	108	0	7	3	12	96	94	89%	87%	N	Y	Y	86	0	N	36	42	62	N	30.336748	-87.107995
	4	6/3	Cc	NA	Alberto	92	0	81	9	83	1	0	1%	0%	N	NA	Y	0	0	N	34	12	70	N	30.340280	-87.089305
UWF	5	6/6	Cc	8/2	57	93	0	6	1	7	86	85	92%	91%	Y	N	Y	0	84	N	36	106	115	N	30.350883	-87.035905
	6	6/7	Cc	8/20	74	54	0	47	0	47	7	5	13%	9%	N	N	Y	1	4	N	32	32	55	N	30.341149	-87.085384
	7	6/10	Cc	8/5	56	139	0	34	17	53	86	78	62%	56%	N	Y	Y	8	25	N	26	64	47	N	30.325717	-87.175028
	8	6/14	Cc	NA	Alberto	114	NA	NA	NA	NA	0	0	0%	0%	N	NA	Y	0	0	N	38	101	47	N	30.336241	-87.109733
	9	6/17	Cc	NA	Alberto	104	0	104	0	104	0	0	0%	0%	N	NA	Y	0	0	N	37	175	65	N	30.330383	-87.141961
	10	6/17	Cc	NA	Alberto	114	0	NA	NA	NA	0	0	0%	0%	N	NA	Y	0	0	N	33	50	60	N	30.346708	-87.057255
	11	6/17	Lk	NA	Alberto	100	0	100	0	100	0	0	0%	0%	N	NA	Y	0	0	N	23	67	42	N	30.347470	-87.053295
	12	6/21	Cc	8/16	56	110	0	7	1	8	102	101	93%	92%	N	N	N	102	0	N	35	17	40	N	30.341068	-87.086243
	13	6/22	Cc	8/15	54	101	0	6	0	6	95	95	94%	94%	N	N	N	1	94	N	29	NA	NA	N	30.326151	-87.172524
	14	6/25	Cc	8/19	55	104	0	2	1	3	101	101	97%	97%	N	N	N	101	0	N	38	0	108	N	30.337356	-87.105646
	15	6/29	Cc	8/23	55	92	1	7	1	9	84	84	91%	91%	N	N	N	0	0	N	38	0	125	N	30.332974	-87.129734
	16	6/30	Cc	8/23	54	110	0	10	0	10	100	100	91%	91%	N	NA	N	100	0	N	40	56	49	N	30.343510	-87.074044
	17	7/3	Cc	NA	Francine	114	NA	NA	NA	NA	0	0	0%	0%	N	NA	Y	0	0	N	29	90	18	N	30.326701	-87.164053
	18	7/5	Cc	8/28	54	118	0	2	14	0	102	102	86%	86%	N	Y	N	101	1	N	39	40	30	N	30.343587	-87.073342
	19	7/10	Cc	8/29	50	71	0	9	0	9	62	61	87%	86%	N	Y	N	27	31	N	30	0	128	Y	30.335737	-87.114142
	20	7/20	Cc	9/13	55	154	0	153	0	153	1	1	1%	1%	N	N	N	0	1	N	43	0	126	N	30.345609	-87.063886
	21	7/31	Cc	NA	Francine	114	NA	NA	NA	NA	0	0	0%	0%	N	NA	Y	0	0	N	42	50	48	N	30.326555	-87.167141
	22	8/3	Cc	NA	Francine	114	NA	NA	NA	NA	0	0	0%	0%	N	NA	Y	0	0	N	42	100	44	N	30.347486	-87.052799
	24	8/12	Cc	NA	Francine/Helene	114	NA	NA	NA	NA	0	0	0%	0%	N	NA	Y	0	0	N	48	25	92	N	30.339817	-87.092198
n=	23	23			14	23	23	23	23		23	23	23	23	23	13	23	23	23	23	23	23	23	23		
sum						2443	1	605	53	640	1096	1065						663	241		784	1168	1418			
mean					59	106	0	36	3	38	50	48	44.9%	43.6%	1	6	15	30	11	0	36	53	64	1		
St Dev						20.1	0.2	45.9	5.2		46.5	45.8	0.4	0.4				42.8	26.6		5.9	44.0	35.8			
						114	egg # assigned by FWC for nests lost to erosion																			
	\\coc-fs\nesd\Marine_Resources\Active MRD Projects\WWAY MGMT\WM2409 Sea Turtles; TE Sp Strandings\Data\Historical Data by Year\2024 data 20240612\[2024PBData20241115.xlsx]2024 Annual Data																									

Table 1: 2024 Pensacola Beach marine turtle nesting data summary.

Perdido Key 2024	Nest #	Date Laid	Species	Hatch Date	Incub Days	# Eggs	# Eggs Predated	# without develop	# with develop	# Unhatched (including pipped)	# Hatched	# Emerged	%Hatch	% Emerge	Adult Dis. (Y/N)	Hatchling Dis. (Y/N)	Tidal impact (Y/N)	# in water witnessed (apx.)	Apx. Tracks to GOM	Relocated (Y/N)	Crawl width (in)	Distance dune/veg (ft)	Distance from water (ft)	≥18" scarp (Y/N)	Latitude	Longitude
	PKW1	5/31/2024	Cc	8/2/2024	63	123	0	7	34	1	81	80	65.9%	65.0%	N	Y	Y	68	2	N	45	90	50	N	30.286117	-87.485971
	PKE1	6/5/2024	Cc	Alberto	NA	114	0	NA	NA	NA	0	0	0.0%	0.0%	N	NA	Y	0	0	N	36	135	6	N	30.294650	-87.438025
	PKE2	6/12/2024	Cc	Alberto	NA	114	0	NA	NA	NA	0	0	0.0%	0.0%	Y	NA	Y	0	0	N	36	125	31	N	30.294896	-87.436810
	PKW2	6/12/2024	Cc	8/8/2024	57	107	0	11	20	1	75	73	70.1%	68.2%	N	Y	Y	26	0	N	40	147	71	N	30.280686	-87.514193
	PKE3	7/14/2024	Cc	9/9/2024	57	144	0	110	15	117	15	9	10.4%	6.3%	Y	Y	Y	11	2	N	37	76	71	N	30.293660	-87.449706
	PKE4	7/21/2024	Cc	9/10/2024	51	115	0	5	4	9	106	105	92.2%	91.3%	N	NA	N	4	0	N	33	0	135	N	30.295290	-87.435580
	PKW3	7/24/2024	Cc	Francine	NA	101	0	1	18	62	38	0	37.6%	0.0%	N	NA	Y	0	0	N	30	104	47	N	30.281970	-87.508340
n=	7					7		7	7	7	7	7	7	7	7	3	7	7	7	7	7	7	7	7		
sum						818	0	134	54	2	315	267			2	3	6	109	2	0				0		
mean					57	117							38.5%	32.6%							37	97	59			
St Dev						6.5574							0.39283	0.38492							4.82	49.46	40.58			

114 egg # assigned by FWC for nests lost to erosion

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Table 2: 2024 Perdido Key marine turtle nesting data summary.

APPENDIX A

MARINE TURTLE MONITORING REPORT

CIRCLE: PK PB **NEST NUMBER**_____

REPORTED BY: _____

DATE: _____ TIME: _____AM/PM

WEATHER_____

LOCATION: _____YARDS/MILES EAST/WEST OF

MARKER: _____

DESCRIPTION: _____

_____

SPECIES: (circle one)
Cc = Loggerhead
Cm = Green
Dc = Leatherback
Lk= Kemp's Ridley

INCIDENT TYPE:

NEST
FALSE CRAWL

MOST RECENT HIGH TIDE LINE:
ABOVE

BELOW

DISTANCE OF BODY PIT FROM: (feet/ meters)

WATER LINE: _____

VEGETATION LINE: _____

SIGNS/STAKES: from center of body pit/egg cavity (feet / meters)
Sign: ____

From the sign:
1st stake_____

2nd stake_____

CRAWL MEASUREMENTS:
ALTERNATING
SYMMETRICAL

WIDTH: _____IN/CM

PREDATOR SCREENED: ____YES ____NO _____ DATE

RELOCATED: ____YES ____NO **If YES Proceed to back of form**

ADDITIONAL COMMENTS:

_____

_____

_____

PLEASE DRAW A DIAGRAM BELOW

NEST'S INCUBATION INCIDENTS

DATE	WASHED OVER PAST SIGN (# of FEET)	PREDATION / TYPE (ghost crabs/fox/coyote)	NAME & OTHER INCIDENTS OR COMMENTS
	YES NO		
	YES NO		
	YES NO		
	YES NO		
	YES NO		
	YES NO		
	YES NO		
	YES NO		
	YES NO		
	YES NO		
	YES NO		
	YES NO		
	YES NO		
	YES NO		

RELOCATION INFORMATION: Nest Relocated BY:_____

TIME EGGS OUT:_____ TIME EGGS IN: _____ # of EGGS:_____

Original Nest: depth to **TOP** of Eggs: _____cm depth to **BOTTOM** of Eggs:_____cm **WIDTH**at top:_____cm

Relocated Nest: depth to **TOP** of Eggs:_____cm depth to **BOTTOM** of Eggs:_____cm **WIDTH** at top:_____cm

Relocated Nest LOCATION:_____

COMMENTS:_____

APPENDIX B

Nest Assessment Data Sheet

SEA TURTLE NEST ASSESSMENT REPORT

v.09.13.2017

DATE:	TIME:	NEST NUMBER:
LOCATION:	REPORTED BY:	

RELOCATED: Y / N <12 HOURS / > 2 WEEKS

PREDATION:

NEST:_____

HATCHLING:_____

DISORIENTATION:

_____

_____

ADDITIONAL COMMENTS:

_____

_____

TOTAL EGGS FOUND	_____	LIVE IN NEST	_____
HATCHED EGGS	_____	DEAD IN NEST	_____
UNHATCHED W/ DEVELOPMENT	_____	% HATCH SUCCESS	_____
UNHATCHED W/O DEVELOPMENT	_____	DAYS INCUBATED	_____
PIPPED ALIVE	_____	WITNESSED ENTERING GULF	_____
PIPPED DEAD	_____	EMERGED	_____
		GHOST CRAB PREDATION	_____

- The # of hatched eggs + unhatched eggs + pipped alive & dead = # of eggs in nest
- Hatched eggs do not include “pipped” eggs

HATCHING (please initial all entries)

DATE	**TIME** in GOM	**#HATCHLINGS**	**DISORIENTED**	**UNDER SCREEN**	**ROOTS**	**OBSERVER**	**COMMENTS**

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