

CAPE HATTERAS NATIONAL SEASHORE

2007 SEA TURTLE ANNUAL REPORT



Loggerhead being released after rehabilitation (10/17/07)

National Park Service
Cape Hatteras National Seashore
1401 National Park Drive
Manteo, NC 27954

INTRODUCTION

Five species of sea turtles are found at Cape Hatteras National Seashore (CAHA) – the loggerhead (*Caretta caretta*), green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), hawksbill (*Eretmochelys imbricata*), and Kemp’s ridley (*Lepidochelys kempii*). In the 1970’s, the leatherback, Kemp’s ridley and hawksbill were listed under the Federal Endangered Species Act as endangered and the loggerhead as threatened. The green, listed on July 28, 1978, is designated as threatened in its entire range except in the breeding populations in Florida and on Mexico’s Pacific coast, where it is listed as endangered.

Non-breeding sea turtles can be found in the nearby waters during much of the year. CAHA lies near the extreme northern limit of nesting for three of the five sea turtle species including: the loggerhead, green, and leatherback; the loggerheads being the most common. Documented nest numbers have fluctuated greatly within the last 20 years with only 11 nests recorded in 1987, and a maximum of 99 nests in 2002. The Kemp’s ridley and hawksbill are not known to nest at CAHA, but are known to occur here through the occasional stranding.

The beaches of CAHA have been consistently monitored since 1987. CAHA follows management guidelines defined by the North Carolina Wildlife Resources Commission (NCWRC) in the *Handbook for Sea Turtle Volunteers in North Carolina*. The quality of surveys has improved over time and has developed into the current standardized protocols. Each year data has been collected and analyzed to gain a better understanding of sea turtle use within CAHA. This report summarizes the monitoring and results for 2007.

COOPERATING AGENCIES

CAHA cooperates with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) on sea turtle protection. All original stranding reports and annual nesting activity reports are submitted to the North Carolina Sea Turtle Program Coordinator at the NCWRC. An annual permit is issued to CAHA by NCWRC under the authority of the USFWS for the possession and disposition of stranded marine turtles and relocation of nests.

SITE DESCRIPTION

CAHA is located along the northern Outer Banks region of North Carolina. Consisting of more than 30,000 acres distributed along approximately 64 miles of shoreline, it is part of a dynamic barrier island system. Federal ownership in CAHA extends from ocean to sound across three barrier islands—Ocracoke, Hatteras, and Bodie—spanning Dare and Hyde counties. The former U.S. Coast Guard housing area in Buxton and eight village enclaves are excluded from CAHA boundaries. The villages include Rodanthe, Waves, Salvo, Avon, Buxton, Frisco, and Hatteras on Hatteras Island and Ocracoke on Ocracoke Island. On the oceanside of the villages, federal ownership was established as a 500-foot strip measured landward from the mean low water at the time of acquisition. Fishing piers located in Rodanthe, Avon, and Frisco are operated as park concessions. The 5,880-acre Pea Island National Wildlife Refuge, located at the northern end of Hatteras Island, is within the authorized boundary of CAHA, but owned and administered for refuge purposes by the USFWS.

METHODS

Ocean beaches of CAHA were patrolled daily from May 1 to September 15 in search of turtle crawls and nesting activity. After September 15, the beaches were surveyed three to four times a week for possible late nests and/or hatchling emergence events from possible missed nests through November 15. Volunteers in the Park (VIP'S) and park staff monitored approximately 55 miles of beach covering Bodie, Hatteras, and Ocracoke Islands. For purposes of sea turtle management, Bodie Island District covered from Ramp 1 to Ramp 30; Hatteras District from Ramp 30 south to Hatteras Inlet on the north side; and Ocracoke District from the south side of Hatteras Inlet south to Ocracoke Inlet (*see Appendix A, Map 1*). Efforts began as early as possible (between 5:00 am and 6:30 am) so that all beaches had been patrolled by no later than 12:00 p.m.

Nests were either left in place or relocated for environmental reasons. In general, nest relocation has been discouraged under recommendations of the NCWRC and USFWS; therefore, relocation was confined to nests that were threatened with loss from erosion and nests that were laid below the high tide line that would receive frequent tidal inundation. Nests were considered confirmed when the nest cavity with eggs was located. There were a few situations where eggs were believed to be present (based on presence of primary and secondary body pits) but could not be found. Rather than abandoning the site because staff could not locate eggs (recognizing the possibility of human error), the activity was categorized as a "dig" but treated as a nest. GPS coordinates were recorded for all turtle activities. A transponder ball was buried at a set distance and depth in front of all nests and "dig" sites. A series of three PVC posts were placed in line with and behind the nest with measurement distances recorded. The nest site was protected with eight 2"x2" wooden posts with signs stating the area was closed to entry for a sea turtle nest and should not be disturbed. String with flagging was placed between the sign posts and the area was monitored for signs of violations and/or predation.

At day 50-55 of the incubation cycle, the closure was expanded to encompass the area 50 feet duneward of the nest site down to the tide line. Width of the closures (running parallel to the shoreline) varied from 75/150/350 feet, depending on type and levels of recreational use on that particular beach. For example, a nest on a remote beach would receive a closure of 75 feet in width; a nest in a heavy pedestrian use area such as a village would be 150 feet in width; and a nest in an off road vehicle (ORV) area would be 350 feet in width. If a nest was located on a beach open to ORV use, large signs were posted to notify drivers that the established closure included the shoreline at all tides. When possible, an ORV corridor was maintained duneward of the nest. Reflective arrows and detour signs were clearly posted to alert drivers of the change in traffic pattern. If a nest was laid high up on the beach or in the dunes and did not allow for traffic to be detoured around it, the beach was completely closed from dune to the surf as well as for a width of 350 feet. The perimeter of the closure was well posted and large signs warned visitors at ORV ramps of "No through traffic to the next ramp". The public was notified of closures that would temporarily limit ORV traffic through weekly access reports published by the park. The reports were posted at visitor centers and ramps and distributed to the local tackle shops. Many of the local fishing and ORV groups also posted this information on their fishing web boards. Within the closure all vehicle tracks were smoothed over manually with rakes or

with a steel mat attached to an ATV, so as not to impede hatchlings attempting to reach the surf (NMFS, USFWS 1991).

As hatchlings can become disorientated by artificial light, silt fencing was installed at all nest sites 50-55 days into incubation in order to block any sources of light pollution from nearby villages or ORV's operating with headlights after dark. The fencing was placed in a "U" shape behind the nest and extended oceanward to the high tide line. Sites were then checked on a daily basis for hatching events. Most nests hatched during the evening/night hours either in one event, known as a boil, or intermittently over several nights.

All nests were examined when possible after hatching to determine productivity rates. Nests were excavated at a minimum of 72 hours after hatching. In cases where hatching events or dates were unknown, nest cavities were unearthed 90 days after the laying date. Hatching closures were promptly removed after nest excavations.

All species of sea turtles that strand on CAHA are documented in cooperation with the NCWRC and the National Marine Fisheries Service (NMFS). Handling and collection permits are issued to the park by the NCWRC and all reports are submitted to them within 24 hours of a stranding event. Live animals are transported to a permitted rehabilitation facility for immediate care. A stranding report is completed for each animal documenting such information as species, condition, sex, carapace measurements, tags, wounds or abnormalities, and evidence of fishing gear entanglement or other possible causes leading to injury or death. Photos of each stranding are taken as frequently as possible. Samples were collected from some of the strandings for an ongoing DNA and aging study. Flippers, eyes and muscle tissues were collected from select individuals and were eventually transferred to the NMFS Beaufort laboratory. In some incidents, stranded turtles were necropsied by CAHA staff in order to determine sex, health condition, and occurrences of human interaction. When possible, fresh dead hatchlings removed from the nests were preserved in 10% NBF (Neutral Buffered Formalin) for laboratory sex determination.

RESULTS

Nesting

Sea turtle nest numbers encountered at CAHA vary from year to year. The yearly nest numbers used in this report were taken from a thorough search of the turtle database and may vary from the numbers stated in last year's annual report (Figure 1). This variation is a result of possible data management and quality assurance process deficiencies in past years. This year, an even more thorough overview of past records was completed. The numbers in this report for 2000-2007 are accurate and should be referred to in future applications.

The first recorded nesting activity for the 2007 season occurred on Ocracoke Island with a leatherback nest laid on April 18. The last recorded nest was laid August 22 on Hatteras Island. The 2007 nesting season lasted for 127 days. A total of 197 activities were documented of which 82 were confirmed nests and 115 were false crawls (Table 1). The 82 nests constituted 14.5% of North Carolina's total nests for 2007 (see Table 2). Four "digs" are included in the total false crawl number due to no hatching activity from these enclosed areas. Three species were known to have nested within the park with a total of 74 loggerhead nests, seven green nests, and one

leatherback nest. Although there were no serious hurricanes that hit the park in 2007 a total of five nests were lost to storms and high tides. One nest was lost to storm activity and could not be found after 90 days. It is unknown whether this nest was lost before or after the incubation period reached 50-55 days.

Figure 1. Cape Hatteras National Seashore Sea Turtle Nest Numbers from 2000-2007.

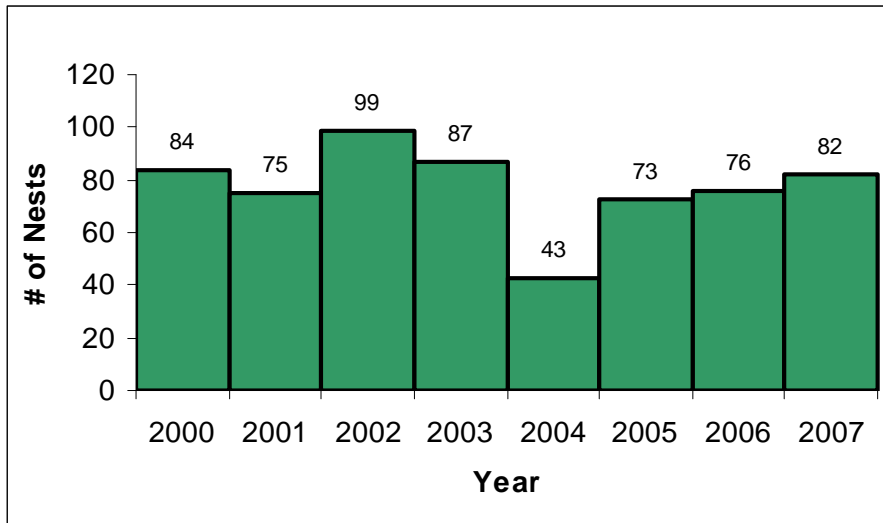


Table 1. Nest Activity by District in 2007.

	Bodie	Hatteras	Ocracoke	CAHA Total
Nests	19	35	28	82
Digs	0	2	2	4
False Crawls	14	61*	40*	115*

*includes digs with no sign of nest or hatching activity

Table 2. Percentage of Total Nests for North Carolina.

Year	CAHA Nests*	NC Nests**	%
2000	84	784	10.7
2001	75	663	11.3
2002	99	708	14
2003	87	867	10
2004	43	354	12.1
2005	73	673	10.8
2006	76	801	9.5
2007	82	567***	14.5

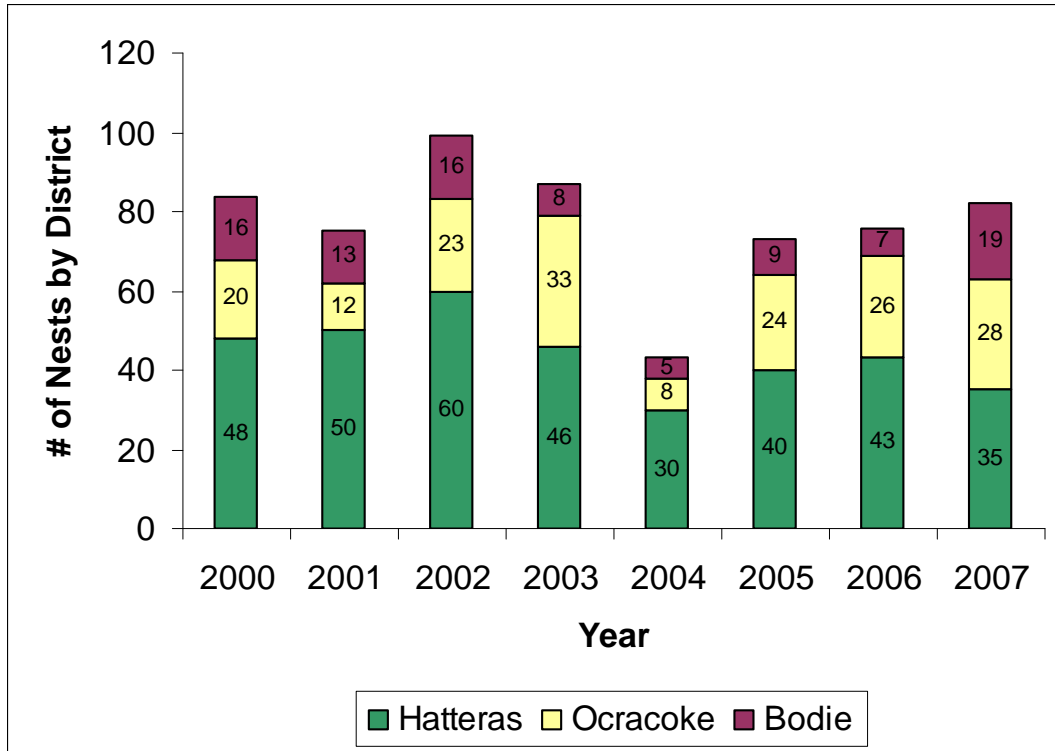
*from CAHA

**from Matthew Godfrey (NCWRC)

***preliminary nest results from Matt Godfrey (NCWRC)

Of the confirmed nests found this season, 35 (43%) were found in Hatteras District, 28 (34%) were found in Ocracoke District, and 19 (23%) were found in Bodie Island District (Figure 2). For maps of all turtle nests and false crawls refer to **Appendix A, Maps 2-11**.

Figure 2. Nest Numbers by District from 2000-2007.



Hatching

Follow-up of nesting activity involved observing nest and dig sites for signs of hatching, recording relevant data, and excavating the site. For management purposes, digs were treated similar to nests, however, for analysis purposes, digs that showed no signs of hatching activity in this report were treated as false crawls. Nests were excavated no earlier than 72 hours post-hatching, unless it was felt that an early excavation was needed in order to uncover live hatchlings that were entombed due to environmental conditions. The last nest was excavated on December 12, 2007 on Day 112. This nest was originally scheduled for excavation on day 90 (November 20th), but viable eggs were found. The nest was therefore left in place until November 27th, when it was determined that air and water temperatures were too low for live hatchlings to survive. One live hatchling did hatch from the nest and was taken to the North Carolina Aquarium on Roanoke Island and eventually released by NOAA. This hatchling did not emerge on its own, and the nest therefore had a 0% emergence success. Of the 82 known nests, 71 nests hatched for a hatching success of 86.6%. The average clutch size was 112.1 (average calculated from the 81 nests with known clutch size). The average clutch size was calculated using information collected during relocations (pre-hatching) and nest excavations (post-hatching). One excavation could not be conducted due to storm activity and recurrent

overwash which made locating the nest impossible. It took an average of 60.7 days to incubate (average calculated from the 71 nests with known lay and emergence dates). Some emergences may have gone undetected because of low emergence rates or the hatch may have gone undetected as a result of rain, wind, or tide. A total of 9078 eggs were excavated post hatching and 5256 (57.9%) of these eggs produced hatchlings that emerged from the nests on their own (Table 3). An additional 668 live hatchlings were discovered during nest excavations and were released on site. The emergence success was 58%, the highest for any nest being 99% and lowest 0%. All of the five nests that were lost to storms and high tides were overwashed on several occasions, making it impossible to know at what point the nest was no longer viable. Therefore, those five nests were given an emergence success of 0%. *For detailed information regarding specific numbers, dates and locations refer to **Appendix B** for nests and **Appendix C** for false crawls.*

Table 3. Sea Turtle Hatch sSummary 2001-2007

Year	Nests	Avg. Clutch	Ave. Incub. (days)	Eggs	Emerged	EMR %
2001	75	111.7	64.5	6257	3402	54%
2002	99	108.7	58.6	10108	7201	71%
2003	87	115.7	69.1	4627	2708	58%
2004	43	103.4	58.5	2999	1609	53%
2005	73	114.6	58	6072	4142	68%
2006	76	114.8	62.9	7059	4444	63%
2007	82	112.1	60.7	9078	6075	58%

Of the 82 nests, 70 (85%) were protected at the original nest site and 12 (15%) were relocated (Table 4). Nests were relocated in all districts. A total of 1305 eggs were relocated and 909 hatchlings emerged for an emergence rate of 69.7% for relocated nests. The emergence rate for non-relocated nests was 55.9%. The highest number of relocations took place in the Hatteras District where 9 (26%) of 35 nests in the district were relocated. Only one (4%) of the 28 nests on Ocracoke was relocated and two (11%) of the 19 nests were relocated in the Bodie District (Figure 4). Of the 12 relocated nests, 10 (83%) were moved because of natural factors such as being laid at or below the high tide line or due to erosion. One (8%) nest was moved because of four crushed eggs inside the nest due to a vehicle running over it prior to the nest being protected. The incident occurred the previous night or early in the morning prior to the nest being protected by Resource Management turtle patrol. One (8%) nest was considered relocated because 15 eggs were found on top of a grass mat on the surface of the sand. The 13 viable eggs (two were predated by crabs) were buried in a new nest cavity.

Table 4. Relocated nests by district in 2007

Nest Type	Bodie	Hatteras	Ocracoke	Total
Non-relocated nests	17	26	27	70
Relocated nests	2	9	1	12
Total	19	35	28	82

False Crawls

During the 2007 breeding season, 115 false crawls or aborted nesting attempts were recorded (Table 1). This total includes four digs where no hatching activity was observed. False crawls accounted for 58% of the total turtle activities within the park. The majority of false crawls occurred in Hatteras District where 61 (53%) false crawls were documented; 40 (35%) occurred in Ocracoke District and 14 (12%) occurred in Bodie District. Loggerheads accounted for 102 (89%) of the total false crawls and the remaining 13 (11%) were identified as greens (see Figure 3).

Figure 3. False Crawls by District and Species in 2007.

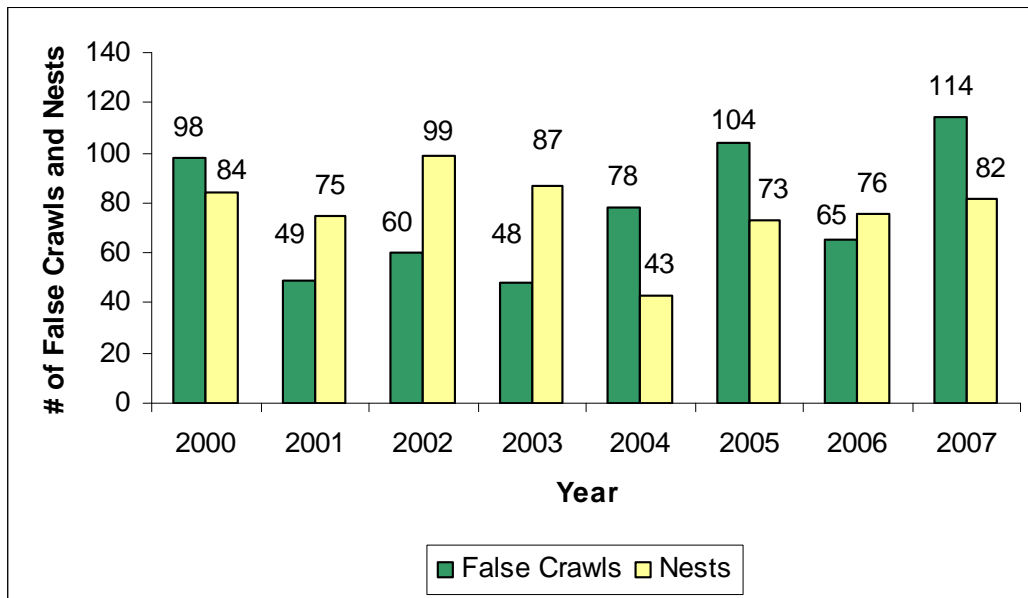


In 2007 110 false crawls and 82 nests were documented, resulting in a 1.34 : 1 false crawl to nest ratio. Therefore CAHA did not meet its target level of a false crawl to nest ratio of less than or equal to 1:1 annually. CAHA has met the desired target level in 4 of the last 8 years (Table 5).

Table 5. False Crawl to Nest Ratios for CAHA (2000-2007)

Year	False Crawls	Nests	Ratio (FC:N)
2000	98	84	1.17 : 1
2001	49	75	0.65 : 1
2002	60	99	0.61 : 1
2003	48	87	0.55 : 1
2004	78	43	1.81 : 1
2005	104	73	1.42 : 1
2006	65	76	0.86 : 1
2007	114	82	1.34 : 1

Figure 4. Nest to False Crawls by Year for CAHA (2000-2007).



Closure Violations

Although closure signs were highly visible and could be easily read, law enforcement staff documented violations at turtle closures throughout the nesting and hatching seasons. In 2007 there were a total of 13 closure violations, four accounts of people bothering or molesting wildlife within a closure, and numerous pet violations. It is unknown exactly how many pet violations occurred within a Resource Management turtle closure. Entry into a turtle nesting area would require people to pass under, drive through flagged string tied between signed posts, or pass below signs by the tide line. Signs were posted as low on the beach as possible. Because of extremely high sign loss near the shoreline at all expanded turtle nests, the two standard closure signs closest to the water were replaced with carsonite, which seemed to hold better in the moist sand. Although carsonite is extremely costly, staff started roping them together so that if the tide washed them out, staff would have a better chance of recovering them.

The actual number of vehicles, people or animals could not always be determined if staff were not there to witness the violation. Even though the nest expansions were well posted, people continually passed below the posted signs when walking along the shoreline, especially during periods of less than high tide when there was a gap between the signs (placed to the high tide line) and the water line. The tracks were typically erased with the tide so this type of violation is often not documented resulting in an underestimation of turtle closure violations. Also, pedestrian violations at turtle nests in high pedestrian areas (e.g. in front of villages) were often underestimated due to the inability of staff to determine the number of violations that had occurred. Footprints and tracks were often recorded as a single illegal entry when an undeterminable amount of tracks had been through the area representing multiple violations.

There was one documented case of pedestrians entering and digging at a nest during hatching. It was unknown whether any eggs or hatchlings were harmed.

Strandings

Please note that totals and species composition of strandings for previous years may have changed from the 2006 annual report. The numbers in this report are accurate and should be referred to in future applications.

During much of the year, non-breeding sea turtles can be found in nearby waters, especially inshore sounds. Their presence within CAHA boundaries is usually documented as a stranding. A stranded turtle is a non-nesting turtle that comes to shore either dead, sick or injured. Much can be learned about sea turtle biology and life history through the documentation of such stranding events. This information also assists regulatory agencies in implementing and modifying conservation measures for protection of the species.

In 2007, 90 stranded sea turtles were documented (Table 6, Figure 5) of which 46 were on ocean beaches and 44 were on the soundside shoreline. Strandings on the oceanside were easily found and responded to, whereas most of the soundside shoreline was only monitored for strandings in accessible areas (i.e., ORV areas, pedestrian beaches, and soundside ramps). Therefore it is likely that there are a high number of soundside strandings that are not reported.

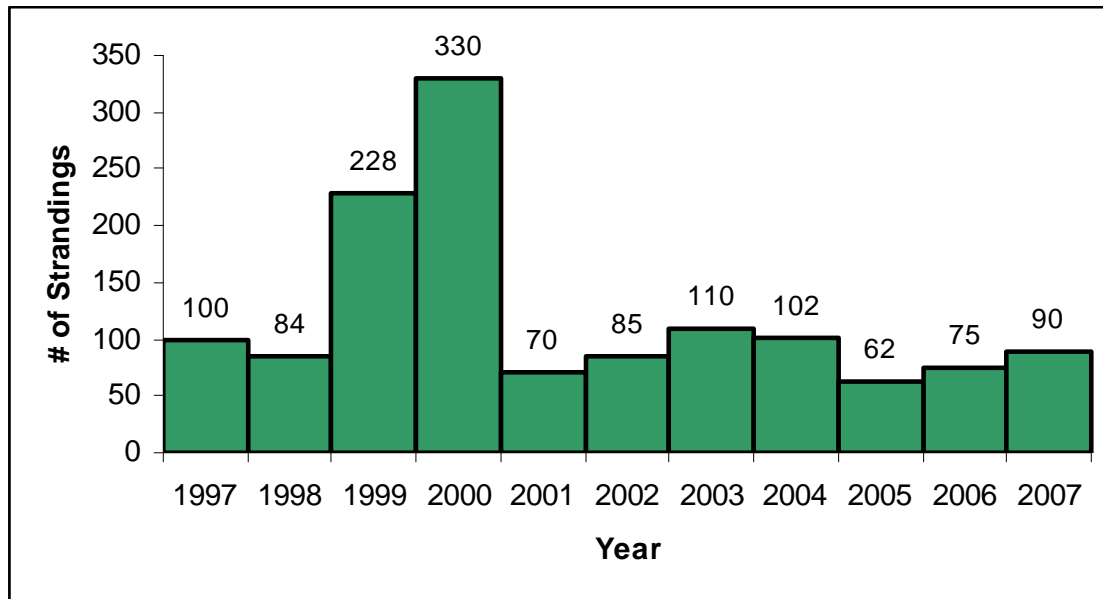
The majority of the strandings were found on Hatteras Island where 51 (57%) strandings were documented. Bodie Island documented 6 (7%) turtle strandings and Ocracoke Island had 33 (37%) (*see Appendix A, Maps 13-17*). Park-wide, 32 (35.6%) were identified as loggerhead, five (5.6%) were Kemp's ridley, 50 (55.6%) were green, one (1.1%) was a leatherback, and two (2.2%) were not identifiable.

Table 6. Sea Turtle Strandings at CAHA from 1997-2007.

Year	Stranding Totals	Species Composition						Location	
		Loggerhead	Kemp's Ridley	Green	Leatherback	Hawksbill	Unk.	Ocean	Sound*
1997	100	65	17	11	3	0	4		
1998	84	45	26	10	2	0	1		
1999	228	150	56	22	0	0	0	140	88
2000	330	253	31	43	2	0	1	240	90
2001	70	41	11	11	4	1	2	46	23
2002	85	54	6	23	0	0	2	54	31
2003	110	87	8	11	2	1	1	88	21
2004	102	38	11	42	5	0	6	47	55
2005	62	33	3	20	1	1	4	41	22
2006	75	45	11	16	2	0	1	65	10
2007	90	32	5	50	1	0	2	46	44

* Soundside strandings include any strandings found on inlets, spits, and interior islands

Figure 5. Sea Turtle Stranding Total at CAHA from 1997-2007.



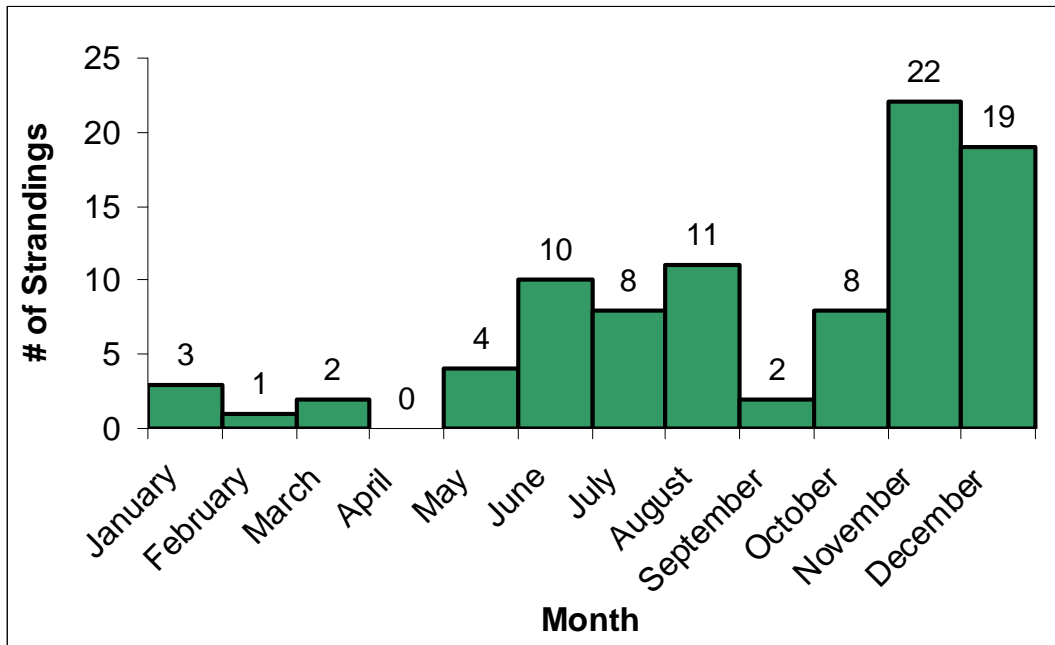
Eighty-six turtles (96%) were dead when found. Of the six live strandings, five were transferred to the Roanoke Animal Clinic, three of which survived and were later released. One loggerhead remains in rehab at the North Carolina Aquarium at Roanoke Island. Necropsies were performed on 23 of the 86 dead strandings (27%). Cause of death in most cases was unknown; however 18 strandings had obvious signs of human interaction (prop wounds, hooks, or plastic). Additionally, 8 green turtles had signs of fisheries interactions from entanglement or drowning.

The largest number of strandings occurred in the month of November, when 22 turtles (24%) were documented (Figure 6). This is relatively unusual, as most often strandings occur in the fall (September/October) as well as spring (May). The NCWRC and NMFS are currently looking into the large number of strandings that occurred from early November into the winter of 2008.

Injuries and abnormalities for each stranded turtle were recorded on a stranding report. Samples, including eyes, flippers, tags, and muscle samples were collected from stranded turtles according to NCWRC guidelines.

Of the 90 strandings this year, 72 were responded to by CAHA staff while 18 were responded to by NPS or NCWRC volunteers. In previous annual reports, it was inconsistent as to whether the strandings reported by volunteers were included in the totals. However, as these strandings all occurred on CAHA, they have been included in this year's totals.

Fig 6. Monthly Total of Sea Turtle Strandings at CAHA in 2007.



DISCUSSION

Storm Activity

Loss of nests to storm activity continues to negatively impact hatch success. While Cape Hatteras was spared from the full force of a hurricane this season, the beaches felt the effects of some tropical storms and hurricanes as they passed by off-shore. Dates with very large high tides included August 23-25, September 9-11, September 17-20, and September 30 to October 3. A total of five nests were either physically lost to heavy seas or drowned by flooding tides.

Predation

Sea turtle nests and hatchlings were predated on by several animals in 2007. One nest on Bodie Island was dug up by a red fox. Several eggs were found around the nesting cavity; it is unknown how many total eggs were lost. This is the first year since 2003 that red fox have predated on turtle eggs. There was one incident of mink tracks surrounding a turtle nest, and multiple times cat tracks were documented on or around nests. It is unknown if emerging hatchlings were predated on by these animals. Trapping efforts by the USDA that began in 2002 have reduced the threat of predation on Bodie and Hatteras Islands. In 2007 the USDA trapped a total of 12 red fox, three grey fox, 34 raccoons, 28 opossums, 19 feral cats, one river otter, and 54 nutria. In addition to the USDA's efforts, CAHA Resource Management staff also traps predators such as fox, mink, feral cats, and raccoons within the park boundary throughout the year. In 2007, CAHA staff, and a volunteer, removed 231 animals from Bodie, Hatteras, and

Ocracoke Islands. That total included six red fox, three grey fox, 101 raccoons, 57 opossums, 38 feral cats, one river otter, 23 nutria, one muskrat, and one mink. The majority of the trapping efforts at CAHA are focused on areas where predation of protected species has thought to have occurred rather than park-wide.

Loss of eggs and hatchlings to ghost crabs continues to be documented. At least 26 nests were recorded as having either ghost crab holes burrowed deep into the nest cavity and/or eggshell fragments found on top of the sand in association with crab tracks. Ghost crab predation was found on all Districts, especially Ocracoke. In some cases, ghost crabs were found within the nest cavities predated on hatchlings during excavation. Additionally, there were several incidents where ghost crab tracks were found within the silt fencing on nights when hatchlings were known to emerge. An undeterminable number of eggs and hatchlings are lost to ghost crabs each year.

Other Egg Mortality

Upon excavation, eight nests were found to have unhatched eggs with the egg contents exhibiting a bright pink color (yolk sac, amniotic fluid, etc.). The number of eggs in each nest with this trait ranged from one to roughly 70 (~50% of a nest with 141 eggs). The locations of these nests were widely spread through all three districts. It was hypothesized that the unusual color was or came from a bacteria or fungus. It is unclear if the pink substance was the cause of the eggs not hatching or if the substance only showed up in eggs that were unhatched.

False Crawls

An unexpectedly high number of false crawls were documented between Cape Point and Ramp 45 (see *Appendix A, Map 12*). Even though ORVs were not allowed to drive on this beach because of a bird closure, 24 false crawls were documented within the bird closure area. In 2006 there were only three false crawls and in 2005 there were six false crawls in this section of beach. No obvious reasons for such a high number of false crawls in this one section of beach could be determined. Without these irregular false crawls the park-wide false crawl to nest ratio would have been 1.09 : 1 (90 false crawls : 82 nests), much closer to the target ratio of 1:1.

Leatherback Turtles

This year's one leatherback nest is the first at CAHA since 2004. At the excavation, an egg was opened and an underdeveloped, mid-stage embryo was discovered alive. The remaining 15 viable eggs were reburied. When those eggs were excavated November 19th, two had emerged. The remaining 13 eggs were at all stages of development but were no longer viable. Leatherback nests have been found at CAHA in 1998, 2000, 2002, 2003, 2004, and 2007. The presence of a leatherback nest in 2003 indicated that more than one female of the species had been using CAHA as a nesting ground, since generally the species has a minimum of two years between nesting cycles, although there are exceptions. In addition, leatherback nesting was recorded at Cape Lookout National Seashore on the same night as nesting at CAHA in 2004. This provided strong evidence that more than one female was nesting in North Carolina in 2004. CAHA remains the northernmost nesting location on record for the species (Rabon et al. 2004).

Human Disturbance

It is unknown to what extent human activities disrupt nesting activities. Although CAHA remains open to the public 24 hours a day, Park staff is not available around the clock to safeguard and monitor the natural resources.

Many Park visitors, especially in front of the villages, leave their recreational beach equipment and chairs or loungers on the beach overnight. This equipment and furniture can cause turtles to forgo laying eggs by hampering or trapping animals attempting to locate a nesting site (NMFS, USFWS 1991). This is the seventh season that Resource Management staff has tied notices to personal property found on the beach after dawn, advising owners of the threats to nesting sea turtles as well as safety issues and NPS regulations regarding abandoned property. The date and time items are tagged is clearly written on each tag. Items left on the beach 24 hours after tagging are removed by NPS staff. Not all tagged items are removed within 24 hours as staff patrolling on ATVs cannot safely remove the property from the beach. At other times, not all abandoned property can be removed because of the abundance encountered and staff availability.

In 2007 two nests were known to have been run over by off-road vehicles before turtle patrol found them. Both were found early in the morning (between 6am and 8am) with tire tracks directly over the nest disturbance. These both occurred on ORV-accessible beaches and since no closure was erected at the time, they were not counted as violations. Four eggs were crushed in one nest and no eggs seemed to be damaged in the other. The nest with the crushed eggs was relocated because of possible predation due to yolk in the nest cavity.

The Resource Management Division continues to receive disturbance reports of nesting female turtles from park visitors. During the 2007 nesting season, turtle patrol discovered a crawl and nest disturbance in front of Avon village. Visitors informed staff that they had seen a turtle the previous night digging on the beach. They also informed staff that as many as 15 people were surrounding the turtle, taking many flash photos. A distinct nest chamber was discovered, but no eggs were laid.

Artificial light is known to disturb nesting females and can disorient hatchlings. Outdoor lights, unshaded indoor lights, and vehicle headlights outshine the natural glow of the moonlight on the ocean waves misguiding hatchlings away from the sea as well as possibly deterring nesting females. No problems with hatchlings becoming entangled in the filter fencing were documented in 2007.

In 2007 there was one documented instance witnessed by Resource Management staff of a nesting turtle being disturbed by headlights on the beach. On July 9th, after a successful nesting, the turtle began crawling towards headlights, parallel to the shoreline. Staff asked that the headlights be shut off, after which the turtle headed directly into the ocean.

Filter fencing is a high maintenance and costly response to lighting issues. Fencing is often washed out by incoming tides, buried by winds and/or completely uprooted by storm activity. Nest sites in their hatching window are checked and maintained daily; however, this does not help hatchlings at nest sites where the filter fence has been knocked down during the night. Hatchlings may become entangled in the fencing if it is not properly maintained. CAHA will

continue to use the filter fencing until a better option is identified. Since 2005, all turtle nests within their hatching window receive filter fence treatment. This treatment was continued in 2007.

At a nest in Hatteras Village in 2007, filter fencing was installed in the wrong location with the nest outside the protected area. When the initial hatchlings emerged on August 23rd they were disoriented and tracks suggested that they were nearly all predated by ghost crabs and a domestic cat while moving in circles on the sand. The filter fencing was subsequently moved to the correct location in case any additional hatchlings emerged.

Beach fires are a potential hazard to nesting turtles. On August 18, 2007, a crawl and nest was discovered in front of Hatteras Village. While attempting to locate the eggs, the remains of a recent beach fire were located adjacent to the disturbed nesting area. Visitors relayed to turtle patrol that the previous night, they, along with 15-20 people, had a fire on the beach. They saw a large turtle crawling towards the fire so they quickly threw sand on top to extinguish the flames. The turtle continued and came within a couple feet of the fire. The nest was discovered about two feet from the fire site. The eggs did not seem to be affected since the nest eventually hatched.

Beaches fronting villages are closed to ORV use in the summer months to provide for the safety of an increased pedestrian population. While many of these beaches are wide enough to support sea turtle nesting, problems that come with the high amount of human activity and density of development (i.e. lighting within the villages) make these beaches less than optimal nesting sites. With an increase in visitor use, the potential of human disturbance of nesting turtles increases. There are concerns that turtles may be deterred from nesting on beaches of their first choice and forced to lay eggs at a less optimal site.

Education

Volunteer nest sitters have spent numerous hours from early evening and into the night at nests within their hatching window fronting villages. They take this opportunity to talk with and educate the numerous visitors who are vacationing at the beach about the turtle program and how they can help the programs success. Many visitors become so excited about the possibility of seeing a turtle nest hatch that often times a volunteer may have groups of 20-30 people sitting quietly at a nest site with them. If the nest doesn't hatch many of visitors return the next night and the next until either the nest hatches or their vacation ends.

In addition, the Resource Management and Interpretation Divisions have combined educational efforts at nest excavations. Some excavations were officially advertised at the Visitor Centers with the date, place and time set; while others were more informal, relying on the curiosity of by-passers. The latter was more conducive to excavations taking place in the villages where the beaches were typically busy. This again provided visitors with a positive "once in a life time" park experience.

US Fish and Wildlife Service Biological Opinion (BO)

In accordance with the BO received from USFWS August 14th, 2006, Resource Management staff performed daily nest surveys on the ocean beach from May 1 to September 15. Daily nest checks were performed until the last nest was removed from the beach on November 27. During the course of periodic beach surveys conducted through other activities, no unknown nests were discovered. This annual report fulfills the reporting requirements.

Performance measures targets for sea turtles consist of having a total of 10% of the statewide average number of nests for the previous five years and having a sea turtle false crawl to nest ratio of less than or equal to 1 : 1 annually. Reinitiation of consultation with USFWS is required if the total number of nests is fewer than 10% of the State's total annual nesting number and/or if the false crawl to nest ratio is greater than 1.3 : 1 annually. The first measure was met with 82 nests, making up 12% of the state's average of 681 nests over the last five years. The second measure was not met in 2007 with a 1.4 : 1 false crawl to nest ratio.

LITERATURE CITED

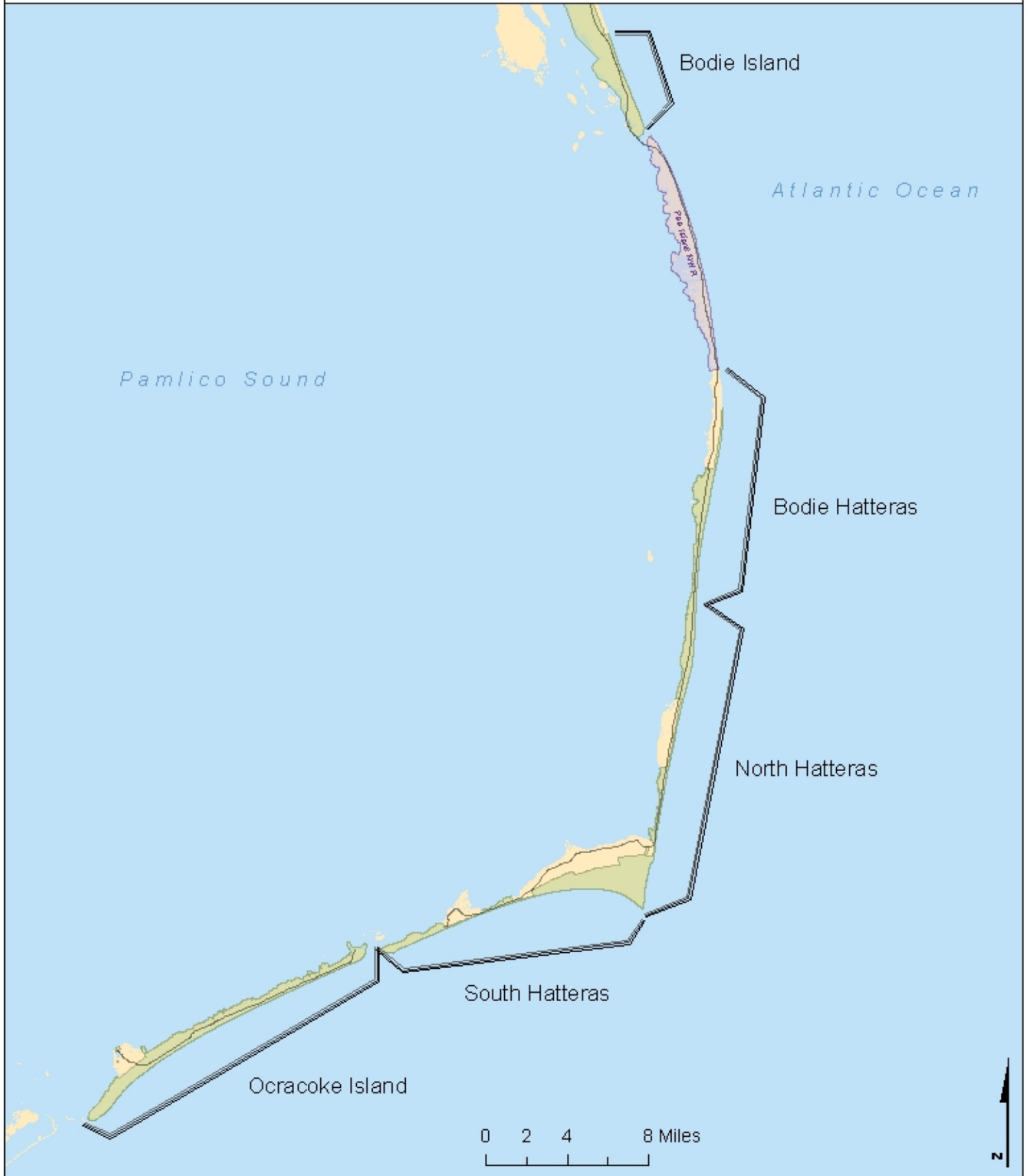
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Appendix A

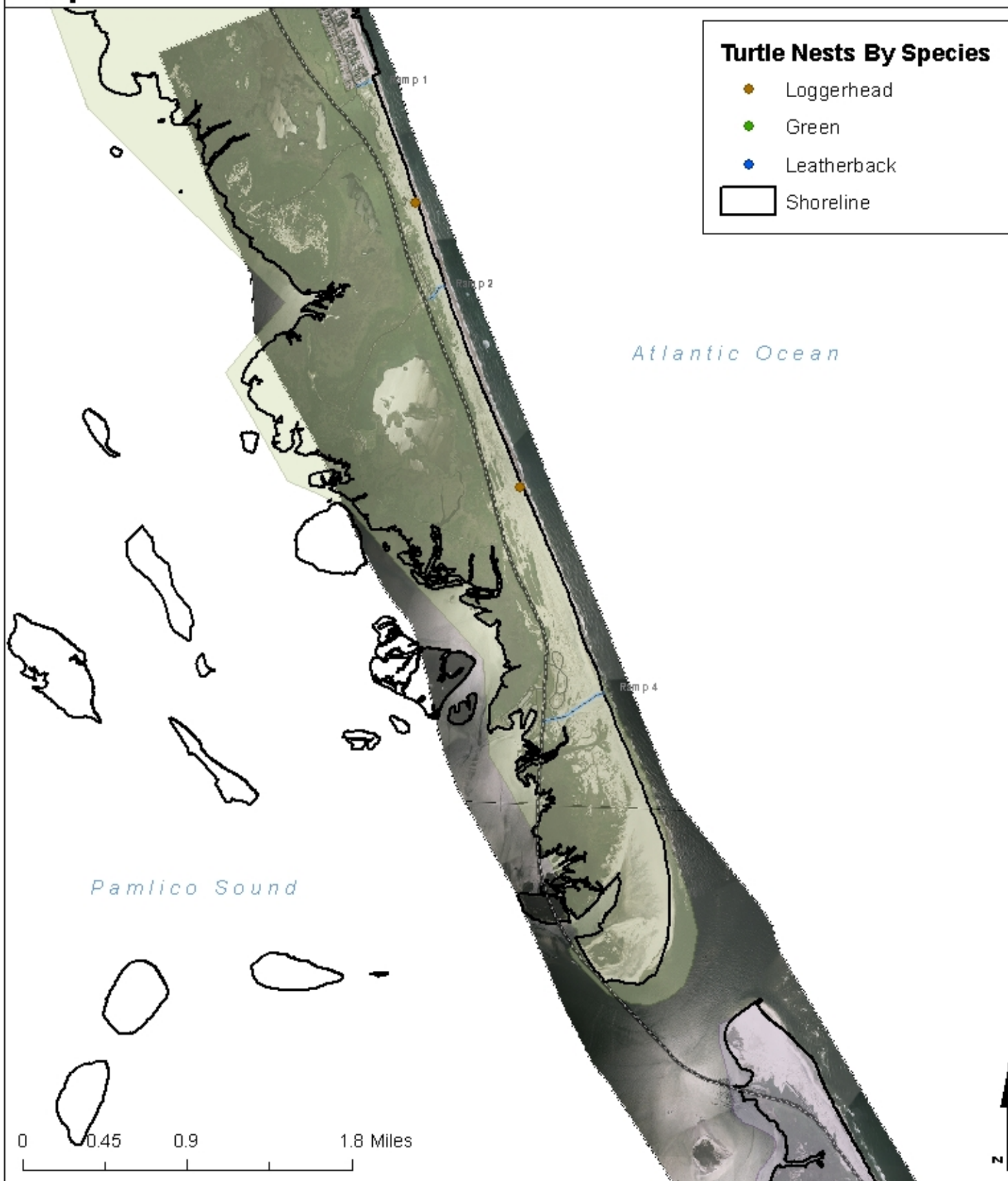


Map 1 - 2007 Turtle Management Districts



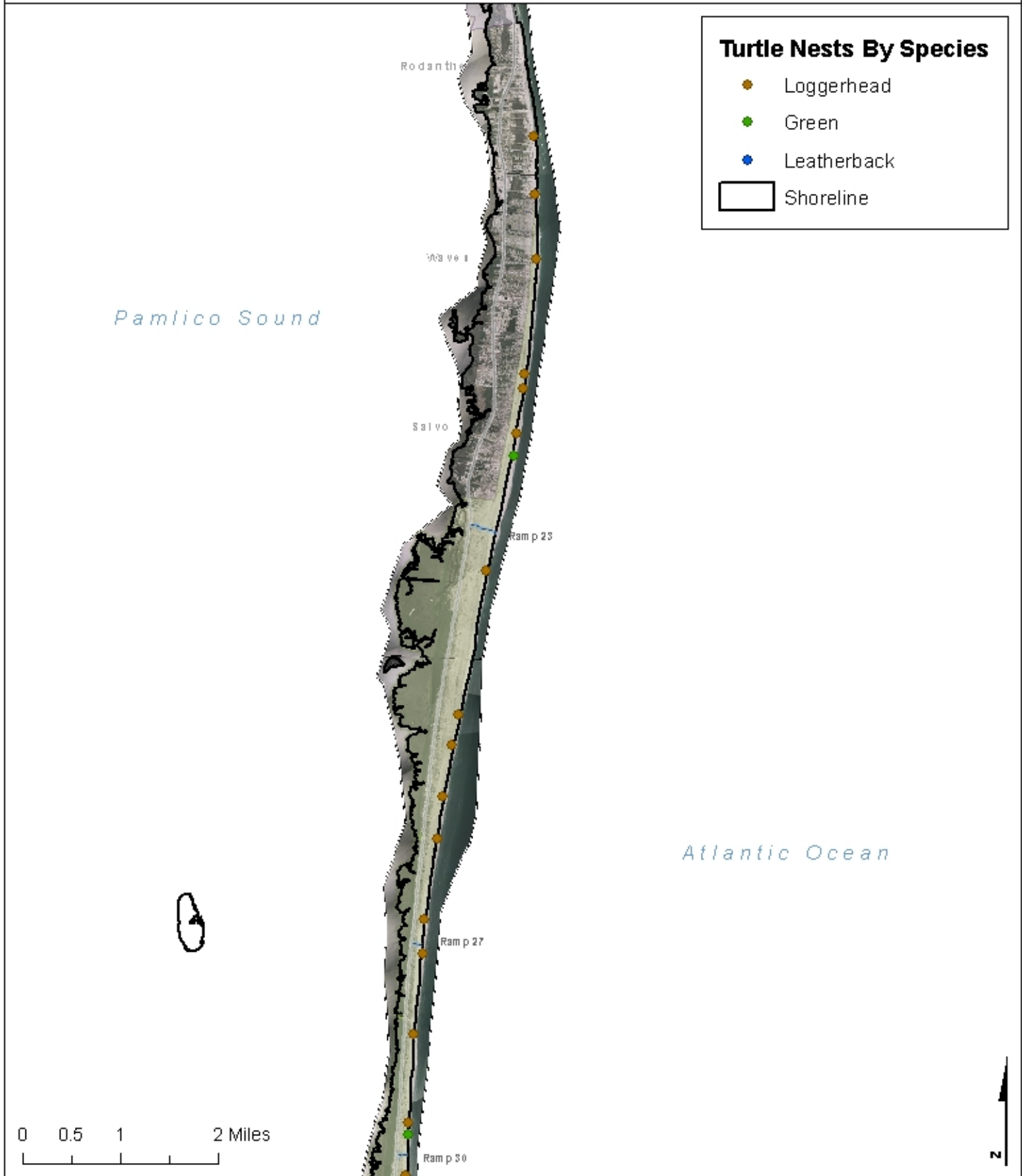


Map 2 - 2007 Bodie Island Turtle Nests





Map 3 - 2007 Bodie/Hatteras Turtle Nests



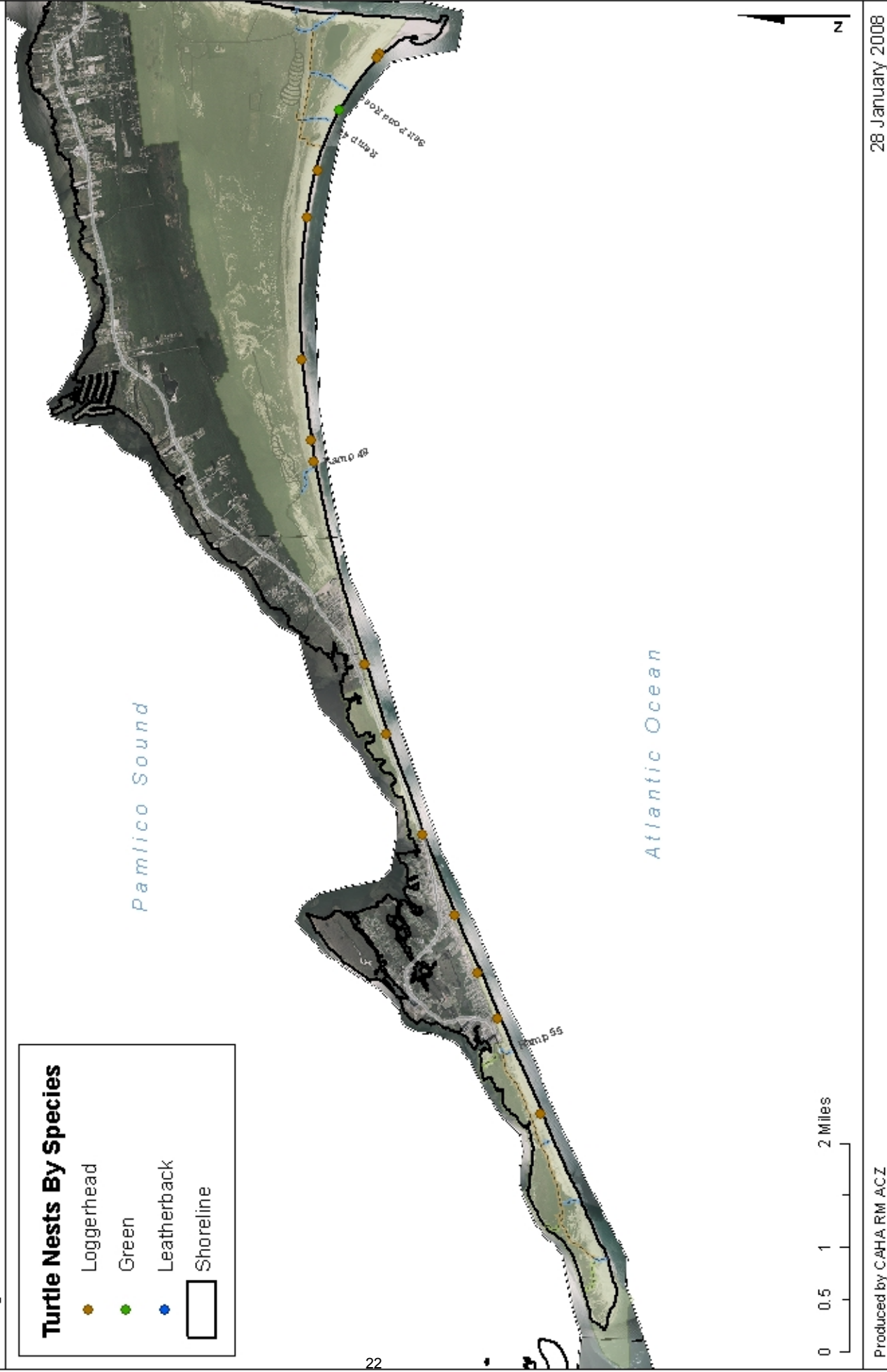


Map 4 - 2007 North Hatteras Turtle Nests



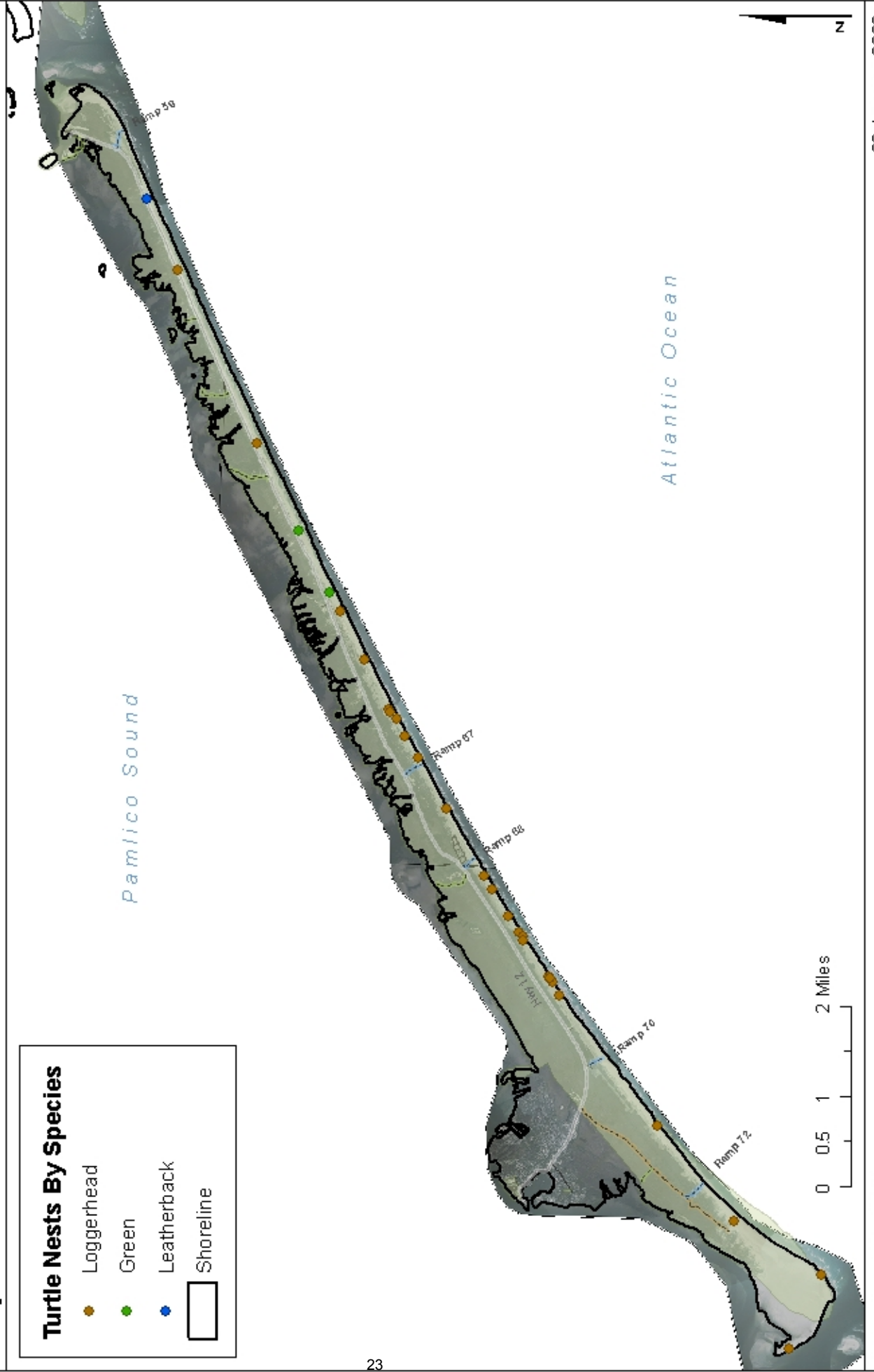


Map 5 - 2007 South Hatteras Turtle Nests





Map 6 - 2007 Ocracoke Island Turtle Nests



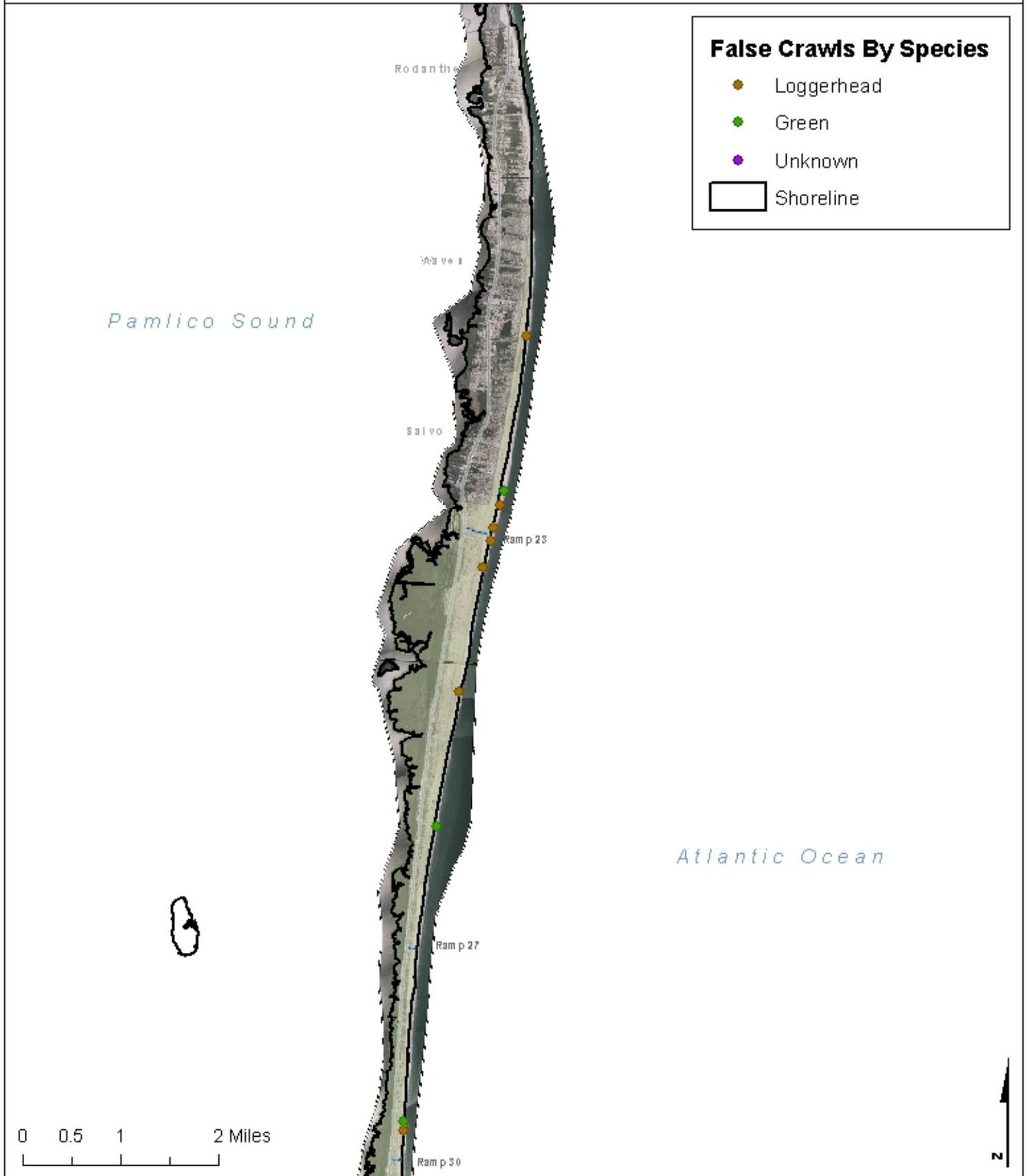


Map 7 - 2007 Bodie Island False Crawls





Map 8 - 2007 Bodie/Hatteras False Crawls





Map 9 - 2007 North Hatteras False Crawls



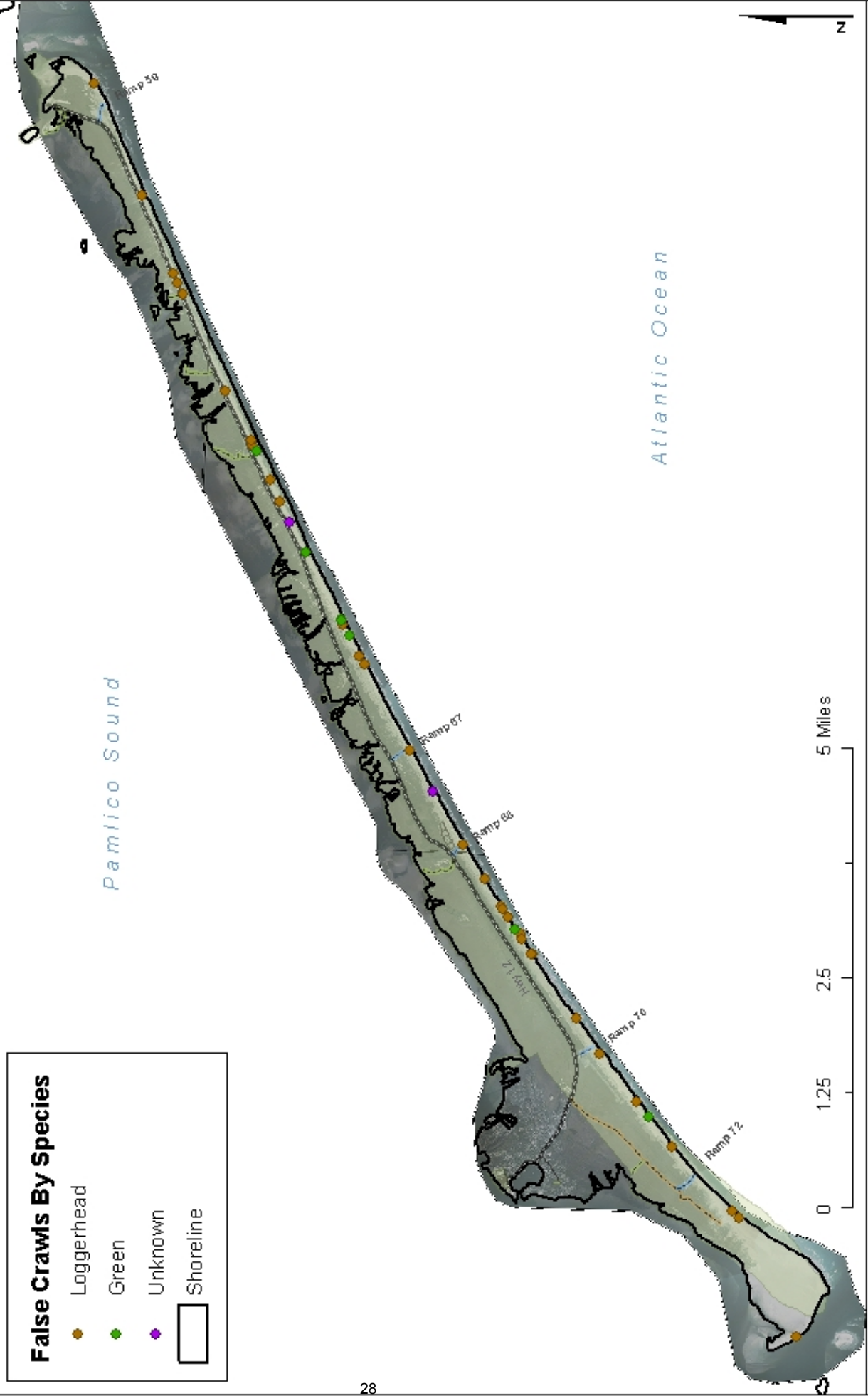


Map 10 - 2007 South Hatteras False Crawls



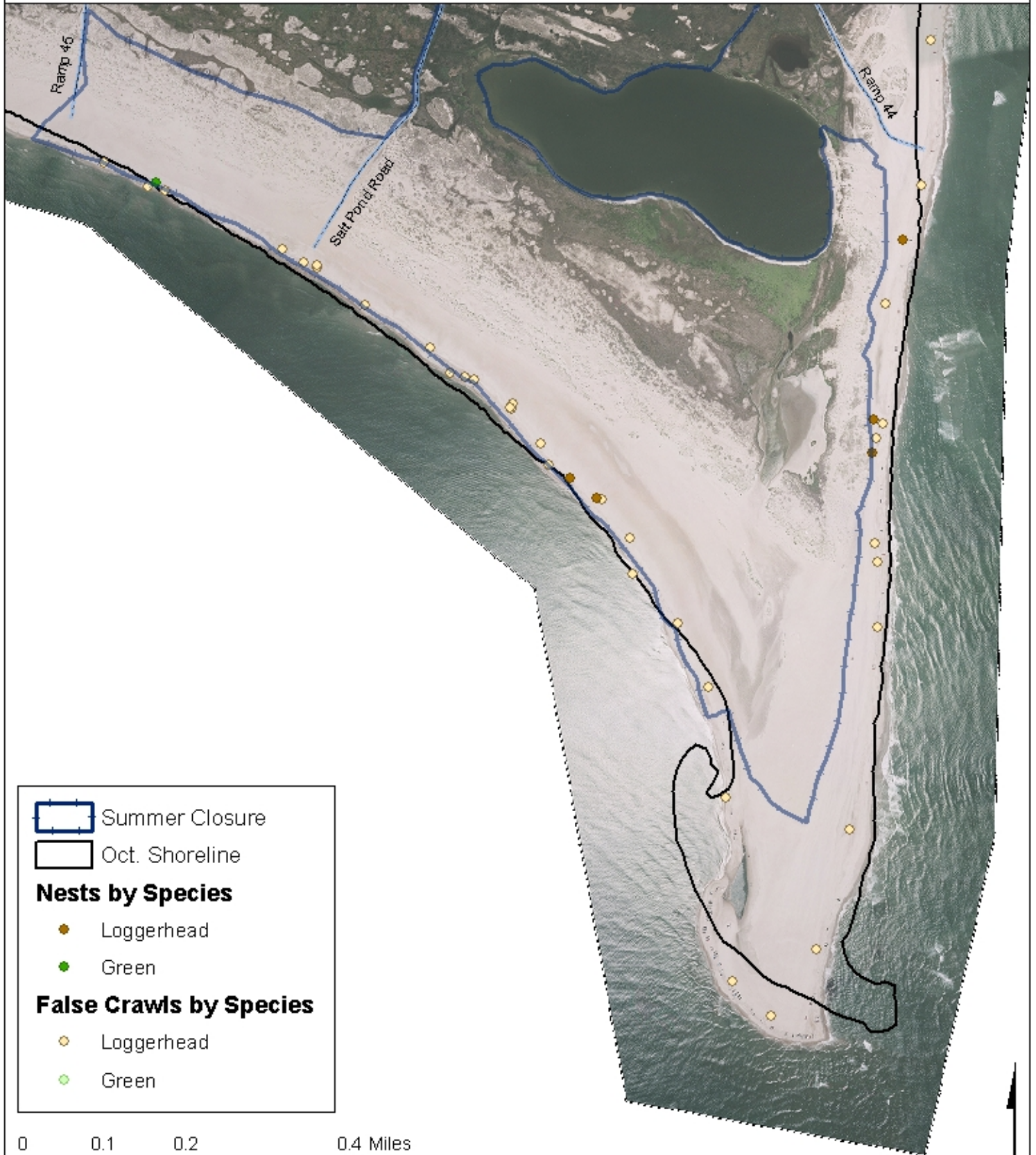


Map 11 - 2007 Ocracoke Island False Crawls





Map 12 - 2007 Turtle Activity at Cape Point



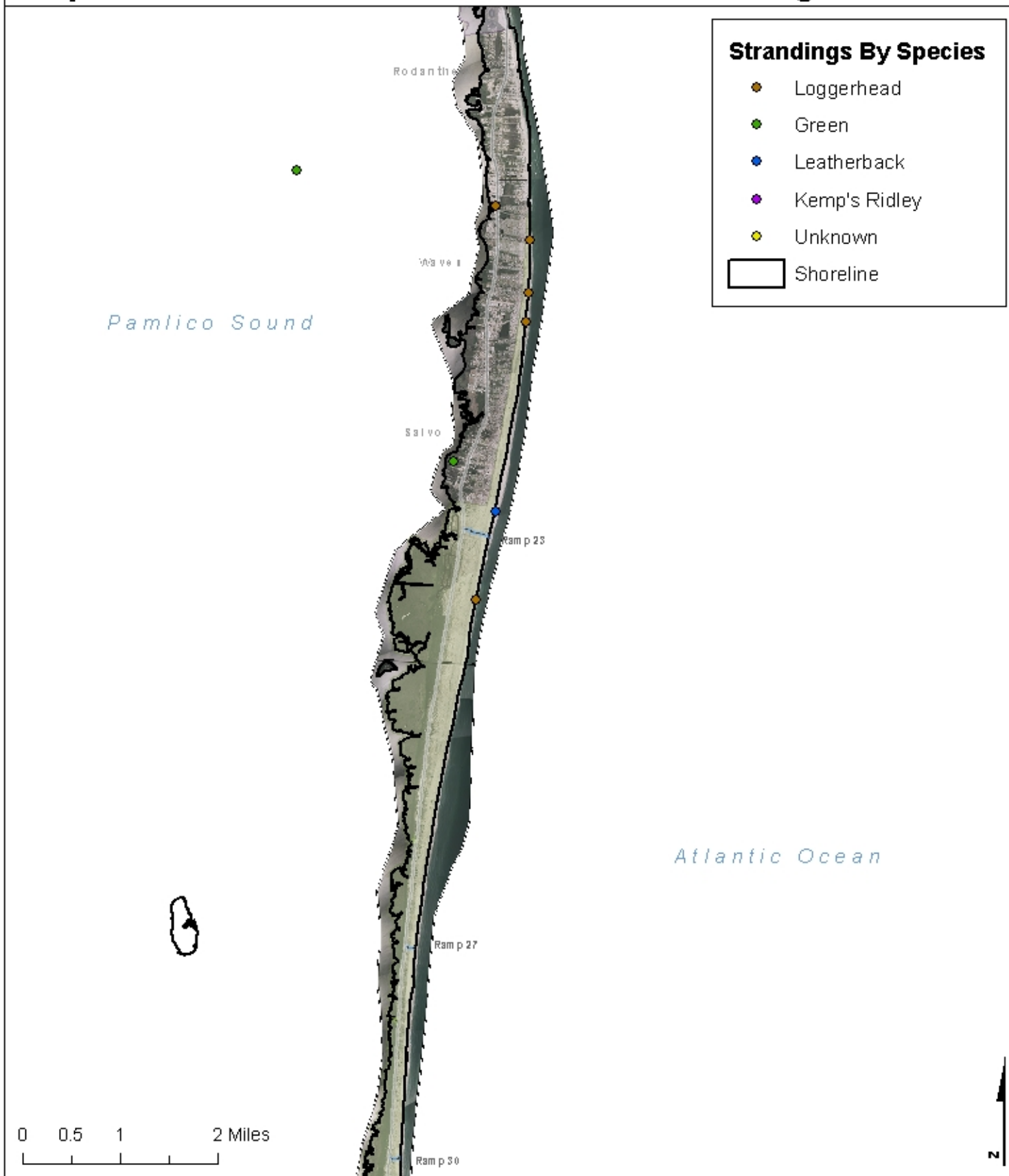


Map 13 - 2007 Bodie Island Turtle Strandings





Map 14 - 2007 Bodie/Hatteras Turtle Strandings





Map 15 - 2007 North Hatteras Turtle Strandings



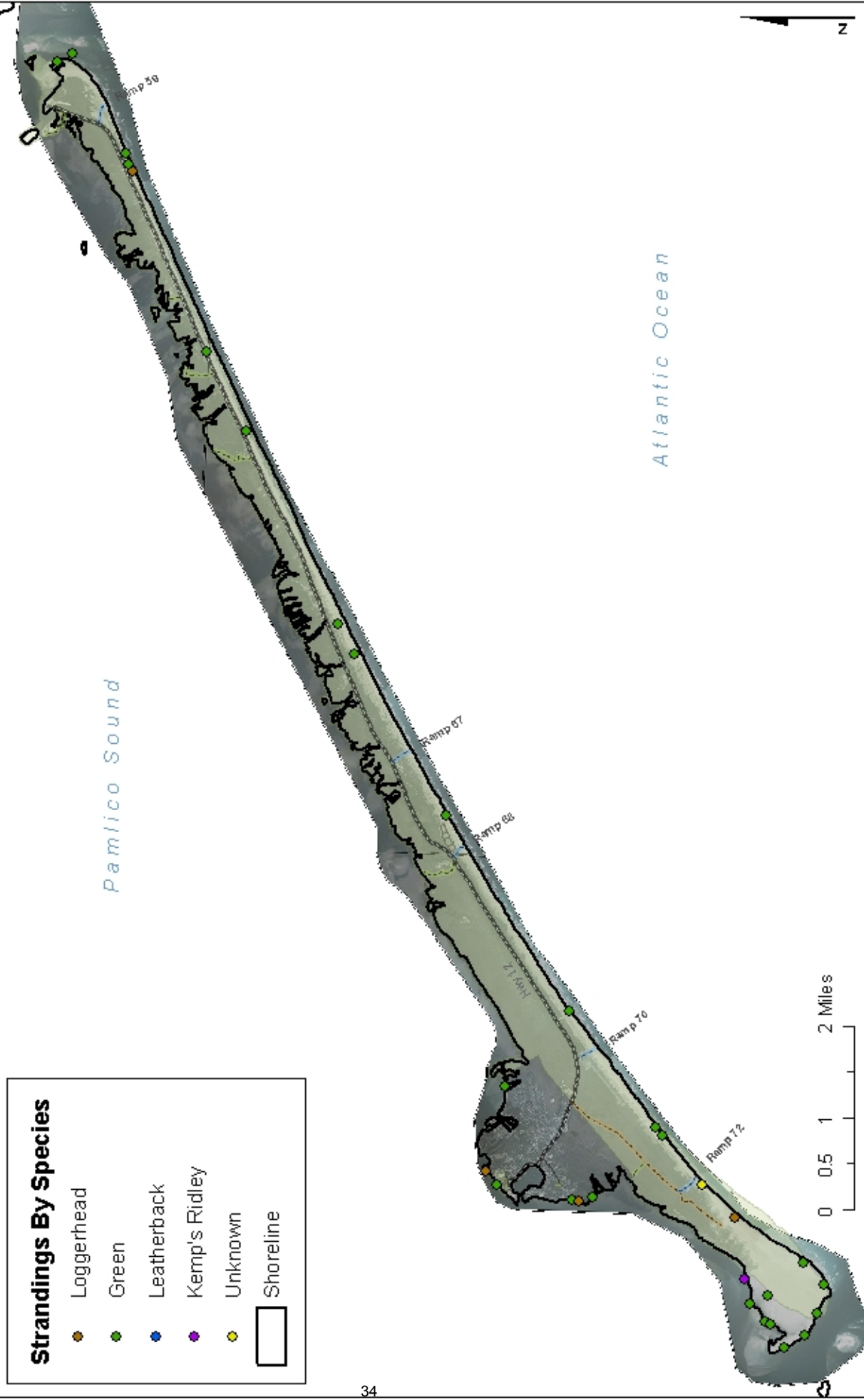


Map 16 - 2007 South Hatteras Turtle Strandings





Map 17 - 2007 Ocracoke Island Turtle Strandings



Appendix B: 2006 Sea Turtle Nest Activity

Date	Act. #	Sp.	Nest #	Rel	Nest Site Type	Location	Hatch Date	Emerge	ES%	Incubated Days
Hatteras Island District										
11-Jun	H04	CC	NH01	Y	Village	0.5 miles S. of Ramp 23	15-Aug	24	29%	65
21-Jun	H08	CC	NH02	N	ORV	50 ft. N. of Ramp 49	18-Aug	96	86%	58
21-Jun	H09	CC	NH03	N	ORV	0.8 miles N. of Ramp 34	15-Aug	48	42%	55
21-Jun	H10	CC	NH04	N	ORV	0.9 miles S. of Ramp 30	13-Aug	102	92%	53
24-Jun	H11	CC	NH05	N	ORV	0.2 miles S. of Ramp 30	17-Aug	113	83%	54
30-Jun	H13	CC	NH07	Y	Day Use	0.5 miles N. of Ramp 43	29-Aug	41	68%	60
30-Jun	H16	CC	NH08	N	Village	0.3 miles N. of Ramp 55	23-Aug	101	86%	54
1-Jul	H17	CC	NH09	N	Village	2.3 miles N. of Ramp 55	22-Aug	96	93%	52
3-Jul	H20	CC	NH10	N	Day Use	2.4 miles N. of Ramp 43	25-Aug	86	77%	53
4-Jul	H28	CC	NH11	N	ORV	1.0 miles N. of Ramp 49	26-Aug	93	64%	53
7-Jul	H38	CC	NH12	N	ORV	1.3 miles S. of Ramp 38	Unknown	59	55%	68
9-Jul	H41	CC	NH13	N	ORV	0.4 miles S. of Ramp 44	Unknown	6	4%	72
11-Jul	H46	CC	NH14	N	ORV	0.2 miles S. of Ramp 49	Unknown	7	7%	91
16-Jul	H49	CC	NH16	N	Village	0.4 miles S. of Ramp 34	4-Sep	38	28%	50
17-Jul	H53	CM	NH17	N	ORV	0.3 miles S. of Ramp 45	n/a	0	0%	89
18-Jul	H56	CC	NH18	N	Village	0.1 miles S. of Frisco Pier	8-Sep	2	2%	52
18-Jul	H57	CC	NH19	N	ORV	0.9 miles S. of Ramp 45	11-Sep	61	69%	55
19-Jul	H58	CC	NH20	Y	ORV	2.1 miles S. of Ramp 30	16-Sep	67	54%	59
19-Jul	H59	CC	NH21	N	Day Use	2.5 miles S. of Ramp 38	6-Sep	74	78%	49
20-Jul	H61	CC	NH22	Y	ORV	0.2 miles S. of Ramp 44	Unknown	93	78%	61
20-Jul	H62	CC	NH23	Y	Day Use	2.7 miles S. of Ramp 49	6-Sep	86	84%	48
22-Jul	H65	CC	NH24	N	ORV	1.8 miles S. of Ramp 30	16-Sep	98	75%	56
23-Jul	H70	CM	NH25	Y	ORV	1.6 miles S. of Ramp 38	12-Sep	74	63%	51
24-Jul	H76	CC	NH26	N	Day Use	2.4 miles N. of Ramp 43	15-Sep	93	96%	53
24-Jul	H73	CC	NH27	N	ORV	0.5 miles E. of Salt Pond Rd.	Unknown	128	92%	62
24-Jul	H72	CM	NH28	Y	ORV	0.7 miles S. of Ramp 30	17-Sep	110	93%	55
26-Jul	H78	CC	NH29	N	ORV	1.7 miles S. of Ramp 30	Unknown	2	3%	92
28-Jul	H79	CC	NH30	Y	ORV	0.6 miles S. of Ramp 55	25-Sep	112	89%	59
2-Aug	H82	CC	NH31	N	Village	0.8 miles N. of Ramp 55	n/a	0	0%	54
8-Aug	H88	CC	NH32	N	Day Use	3.3 miles S. of Ramp 38	Unknown	93	99%	63
9-Aug	H89	CC	NH33	Y	ORV	0.5 miles W. of Ramp 45	21-Oct	65	71%	73
9-Aug	H90	CC	NH34	N	ORV	0.4 miles E. of Salt Pond Rd.	10-Oct	134	92%	62

Appendix B: 2006 Sea Turtle Nest Activity (Cont.)

Date	Act. #	Sp.	Nest #	Rel	Nest Site Type	Location	Hatch Date	Emerge	ES%	Incubated Days
Hatteras Island District (Cont.)										
11-Aug	H91	CM	NH35	N	ORV	0.8 miles S. of Ramp 30	14-Oct	90	80%	64
18-Aug	H96	CC	NH36	N	Village	1.4 miles N. of Ramp 55	Unknown	83	88%	65
22-Aug	H96	CC	NH37	N	ORV	0.5 miles S. of Ramp 44	n/a	0	0%	112
Ocracoke Island District										
18-Apr	O01	DC	NO01	N	ORV	0.8 miles S. of Ramp 59	Unknown	2	5%	92
1-Jun	O04	CC	NO02	N	Day Use	0.4 miles S. of Ramp 68	n/a	0	0%	90
19-Jun	O10	CC	NO03	N	ORV	0.4 miles N. of Ramp 67	13-Aug	156	89%	55
19-Jun	O11	CC	NO04	N	Day Use	0.2 miles S. of Ramp 68	18-Aug	118	84%	60
19-Jun	O12	CC	NO05	N	Day Use	1.0 mile S. of Ramp 68	Unknown	55	67%	70
20-Jun	O13	CC	NO06	N	Day Use	1.6 miles S. of Ramp 59	Unknown	104	95%	74
23-Jun	O14	CC	NO07	N	Day Use	1.1 miles N. of Ramp 70	n/a	0	0%	90
23-Jun	O16	CC	NO09	N	Day Use	1.9 miles N. of Ramp 67	20-Aug	115	93%	58
26-Jun	O20	CC	NO10	N	Day Use	1.2 miles N. of Ramp 67	19-Aug	104	93%	54
29-Jun	O23	CC	NO11	N	Day Use	1.9 miles N. of Ramp 70	24-Aug	72	69%	56
5-Jul	O26	CC	NO12	N	Day Use	1.0 mile N. of Ramp 70	28-Aug	42	42%	54
6-Jul	O27	CC	NO13	Y	ORV	0.5 miles S. of Ramp 72	7-Sep	103	66%	63
6-Jul	O29	CC	NO14	N	Day Use	1.1 miles N. of Ramp 70	n/a	0	0%	88
14-Jul	O34	CC	NO16	N	ORV	0.9 miles N. of Ramp 72	Unknown	103	87%	66
15-Jul	O35	CC	NO17	N	Day Use	0.9 miles N. of Ramp 70	Unknown	112	97%	65
19-Jul	O36	CC	NO18	N	Day Use	1.6 miles N. of Ramp 70	n/a	0	0%	74
19-Jul	O41	CC	NO19	N	ORV	0.6 miles N. of Ramp 67	13-Sep	3	3%	56
20-Jul	O42	CC	NO20	N	ORV	2.7 miles S. of Ramp 72	n/a	0	0%	53
20-Jul	O43	CC	NO21	N	Day Use	1.6 miles N. of Ramp 70	16-Sep	105	93%	58
20-Jul	O44	CC	NO22	N	Day Use	0.1 mile N. of Ramp 67	11-Sep	117	95%	53
21-Jul	O45	CC	NO23	N	Day Use	4.0 miles N. of Ramp 67	13-Sep	120	74%	54
28-Jul	O47	CC	NO24	N	Day Use	0.2 miles S. of Ramp 68	23-Sep	85	97%	57
29-Jul	O49	CC	NO25	N	Day Use	0.5 miles S. of Ramp 67	22-Sep	96	86%	55
31-Jul	O50	CC	NO26	N	ORV	1.7 miles S. of Ramp 72	n/a	0	0%	59
3-Aug	O51	CC	NO27	N	ORV	0.7 miles N. of Ramp 67	29-Sep	70	86%	57
4-Aug	O54	CM	NO28	N	Day Use	3.0 miles N. of Ramp 67	Unknown	6	6%	65
6-Aug	O56	CC	NO29	N	ORV	0.6 miles N. of Ramp 67	30-Sep	28	29%	55
14-Aug	O66	CM	NO30	N	Day Use	2.2 miles N. of Ramp 67	14-Oct	2	2%	61
Bodie Island District										
2-Jun	B04	CC	NBH01	N	ORV	0.4 miles S. of Ramp 23	9-Aug	146	94%	68
6-Jun	B05	CC	NBH02	N	Village	1.6 miles N. of Ramp 23	15-Aug	46	57%	70
9-Jun	B06	CC	NBH03	Y	ORV	0.3 miles N. of Ramp 27	12-Aug	84	82%	64

Appendix B: 2006 Sea Turtle Nest Activity (Cont.)

Date	Act. #	Sp.	Nest #	Rel	Nest Site Type	Location	Hatch Date	Emerge	ES%	Incubated Days
Bodie Island District (Cont.)										
22-Jun	B08	CC	NBH04	Y	ORV	1.1 miles N. of Ramp 27	13-Aug	50	48%	52
2-Jul	B10	CC	NBH05	N	Village	0.4 miles N. of Rodanthe Pier	28-Aug	88	92%	57
5-Jul	B11	CC	NBH06	N	Village	1.5 miles N. of Ramp 23	5-Sep	111	92%	62
6-Jul	B12	CC	NBH07	N	Village	0.9 miles S. of Rodanthe Pier	30-Aug	80	80%	55
6-Jul	B13	CC	NB1	N	Day Use	0.5 miles N. of Ramp 2	n/a	0	0%	90
8-Jul	B15	CC	NBH08	N	ORV	1.0 miles S. of Ramp 23	1-Sep	124	97%	55
9-Jul	B14	CC	NBH09	N	Village	0.2 miles S. of Rodanthe Pier	7-Sep	68	76%	60
12-Jul	B17	CC	NBH10	N	ORV	0.1 miles S. of Ramp 27	7-Sep	19	15%	57
18-Jul	B20	CC	NB2	N	ORV	1.2 miles N. of Ramp 4	n/a	0	0%	92
18-Jul	B21	CC	NBH11	N	ORV	0.3 miles N. of Ramp 30	13-Sep	78	84%	57
20-Jul	B23	CC	NBH12	N	ORV	2.3 miles S. of Ramp 23	13-Sep	71	87%	55
26-Jul	B28	CM	NBH13	N	Village	0.8 miles N. of Ramp 23	n/a	0	0%	87
2-Aug	B29	CC	NBH14	N	ORV	1.5 miles N. of Ramp 27	3-Oct	82	94%	62
7-Aug	B31	CC	NBH15	N	ORV	0.9 miles S. of Ramp 27	n/a	0	0%	86
9-Aug	B32	CC	NBH16	N	Village	1.0 mile N. of Ramp 23	Unknown	5	7%	92
18-Aug	B33	CM	NBH17	N	ORV	0.1 mile N. of Ramp 30	19-Oct	111	93%	62

Date: date nest was located (nests laid before 12:00 AM were given the date of the following day / nests laid after 12:00 AM were given same date)

Act. # : CAHA Park-wide activity number

Sp.: species of sea turtle that laid nest (CC = loggerhead, CM = green, DC = leatherback)

Nest #: nest number by turtle management district

Rel: Y (yes) shows that nest was relocated, N (no) shows nest was left in-situ

Nest Site Type: type of beach that nest was laid on

Location: location of nest site

Hatch Date: date of first known hatchling emergence

Emerge: number of hatchlings known to have emerged on their own

ES%: emergence success of nest (# of emerged hatchlings / total number of eggs laid in nest)

Incubated Day: number of days eggs incubated before first known emergence (in incidents of unhatched nests, this number reflects the number of days between date laid and date excavated)

Appendix C: 2007 Sea Turtle False Crawl Activity

Date	Act. #	Crawl #	Sp.	Crawl Site Type	Location
Hatteras Island District					
28-May	H1	CH01	CC	ORV	0.4 miles S. of Ramp 49
28-May	H2	CH02	CC	ORV	1.7 miles S. of Ramp 45
10-Jun	H3	CH03	CC	ORV	0.3 miles S. of Ramp 49
20-Jun	H5	CH04	CC	ORV	0.1 mile S. of Ramp 44
20-Jun	H6	CH05	CC	ORV	0.9 miles S. of Ramp 44
20-Jun	H7	CH06	CC	ORV	Cape Point
24-Jun	H12	CH58	CC	ORV	0.9 miles S. of Ramp 45
28-Jun	H13	CH07	CC	Village	0.4 miles N. of Avon Pier
29-Jun	H14	CH08	CC	ORV	1.1 miles S. of Ramp 55
2-Jul	H18	CH09	CC	ORV	Salt Pond Road
3-Jul	H19	CH10	CC	ORV	0.5 miles E. of SPR
3-Jul	H21	CH11	CC	Village	1.9 miles N. of Ramp 55
3-Jul	H22	CH12	CC	ORV	0.2 miles N. of Ramp 45
3-Jul	H23	CH13	CC	ORV	Salt Pond Road
4-Jul	H24	CH14	CC	ORV	Cape Point
4-Jul	H25	CH15	CC	ORV	0.1 miles E. of Ramp 45
4-Jul	H26	CH16	CC	ORV	Salt Pond Road
4-Jul	H27	CH17	CC	ORV	0.1 miles E. of Ramp 45
6-Jul	H29	CH18	CC	ORV	0.3 miles S. of Ramp 44
6-Jul	H30	CH19	CC	ORV	0.6 miles S. of Ramp 44
6-Jul	H31	CH20	CC	ORV	Cape Point
7-Jul	H32	CH21	CC	ORV	0.4 miles E. of SPR
7-Jul	H33	CH22	CC	ORV	0.3 miles E. of SPR
7-Jul	H34	CH23	CC	ORV	Salt Pond Road
7-Jul	H35	CH24	CC	ORV	Salt Pond Road
7-Jul	H36	CH25	CC	ORV	0.5 miles E. of SPR
7-Jul	H37	CH26	CC	ORV	0.3 miles E. of SPR
8-Jul	H39	CH27	CC	ORV	0.3 miles E. of SPR
8-Jul	H40	CH28	CC	ORV	0.4 miles E. of SPR
9-Jul	H42	CH29	CC	ORV	0.7 miles S. of Ramp 44
9-Jul	H43	CH30	CC	ORV	0.3 miles E. of SPR
10-Jul	H44	CH31	CC	ORV	0.4 miles S. of Ramp 44
10-Jul	H45	CH32	CC	ORV	0.4 miles S. of Ramp 44
16-Jul	H47	CH57	CC	ORV	0.2 miles S. of Ramp 43
16-Jul	H48	CH33	CC	Day Use	0.3 miles N. of Ramp 43
17-Jul	H50	CH34	CC	ORV	1.5 miles N. of Ramp 49
17-Jul	H51	CH35	CC	ORV	0.2 miles S. of Ramp 49
17-Jul	H52	CH36	CC	ORV	0.9 miles S. of Ramp 55
18-Jul	H54	CH37	CC	ORV	0.6 miles S. of Ramp 44
18-Jul	H55	CH38	CC	Day Use	0.4 miles N. of Ramp 43
19-Jul	H60	CH39	CM	Day Use	0.9 miles S. of Frisco Pier
21-Jul	H63	CH40	CC	Village	0.6 miles S. of Avon Pier
21-Jul	H64	CH41	CC	Day Use	2.8 miles S. of Ramp 49
22-Jul	H66	CH42	CC	ORV	1.8 miles S. of Ramp 30
23-Jul	H67	CH43	CC	ORV	0.9 miles E. of SPR
23-Jul	H68	CH44	CC	ORV	0.7 miles E. of SPR

Appendix C: 2007 Sea Turtle False Crawl Activity (Cont.)

Date	Act. #	Crawl #	Sp.	Crawl Site Type	Location
Hatteras Island District (Cont.)					
23-Jul	H69	CH45	CC	ORV	0.3 miles E. of SPR
23-Jul	H71	CH46	CC	ORV	0.1 miles E. of SPR
24-Jul	H74	CH47	CC	ORV	0.2 miles E. of SPR
24-Jul	H75	CH48	CC	Day Use	0.5 miles N. of Ramp 43
24-Jul	H77	CH49	CC	Day Use	0.9 miles N. of Ramp 43
1-Aug	H80	CH50	CC	Village	0.3 miles N. of Frisco Pier
1-Aug	H81	CH51	CC	ORV	0.8 miles N. of Ramp 49
4-Aug	H83	CH52	CM	Village	0.5 miles S. of Ramp 34
4-Aug	H84	CH53	CM	ORV	0.9 miles N. of Ramp 34
8-Aug	H85	CH54	CC	ORV	0.2 miles E. of SPR
8-Aug	H86	CH55	CC	ORV	0.5 miles E. of SPR
8-Aug	H87	CH56	CC	ORV	0.7 miles E. of SPR
Ocracoke Island District					
29-May	O2	CO01	CC	ORV	0.1 miles S. of Ramp 70
29-May	O3	CO02	CC	Day Use	Lifeguard Beach
1-Jun	O5	CO03	CC	Day Use	1.6 miles N. of Ramp 67
11-Jun	O6	CO04	CC	Day Use	2.0 miles S. of Ramp 68
11-Jun	O7	CO05	CC	Day Use	At Ramp 68
13-Jun	O8	CO06	CC	Day Use	3.0 miles N. of Ramp 67
14-Jun	O9	CO07	UNK	Day Use	2.8 miles N. of Ramp 67
23-Jun	O15	CO39	CC	Day Use	1.2 miles N. of Ramp 70
23-Jun	O17	CO08	CC	ORV	At Ramp 67
25-Jun	O18	CO09	CC	ORV	0.4 miles N. of Ramp 72
26-Jun	O19	CO10	CC	ORV	1.1 miles N. of Ramp 67
27-Jun	O21	CO11	CC	Day Use	3.7 miles N. of Ramp 67
28-Jun	O22	CO12	CC	Day Use	4.5 miles N. of Ramp 67
30-Jun	O24	CO13	CC	Day Use	6.8 miles N. of Ramp 67
30-Jun	O25	CO14	CC	ORV	0.2 miles N. of Ramp 55
6-Jul	O28	CO15	CC	ORV	0.6 miles S. of Ramp 72
6-Jul	O30	CO16	CC	Day Use	1.3 miles N. of Ramp 70
6-Jul	O31	CO17	CC	Day Use	1.6 miles N. of Ramp 70
6-Jul	O32	CO40	CC	Day Use	1.4 miles N. of Ramp 70
8-Jul	O33	CO18	CC	Day Use	5.7 miles N. of Ramp 67
19-Jul	O37	CO19	CC	Day Use	1.7 miles S. of Ramp 68
19-Jul	O38	CO20	CC	Day Use	1.7 miles S. of Ramp 68
19-Jul	O39	CO21	CC	Day Use	1.8 miles N. of Ramp 70
19-Jul	O40	CO22	CC	Day Use	0.5 miles S. of Ramp 68
23-Jul	O46	CO23	CC	Day Use	5.5 miles N. of Ramp 67
28-Jul	O48	CO24	CM	Day Use	3.7 miles N. of Ramp 67
4-Aug	O52	CO25	CM	Day Use	1.4 miles N. of Ramp 67
4-Aug	O53	CO26	CM	Day Use	2.4 miles N. of Ramp 67
5-Aug	O55	CO27	UNK	ORV	0.5 miles S. of Ramp 67
6-Aug	O57	CO28	CC	ORV	1.1 miles N. of Ramp 67
7-Aug	O58	CO29	CC	Day Use	3.8 miles N. of Ramp 67
7-Aug	O59	CO30	CC	Day Use	5.8 miles N. of Ramp 67
8-Aug	O60	CO31	CC	ORV	1.0 mile N. of Ramp 72

Appendix C: 2007 Sea Turtle False Crawl Activity (Cont.)

Date	Act. #	Crawl #	Sp.	Crawl Site Type	Location
Ocracoke Island District (Cont.)					
10-Aug	O61	CO32	CM	ORV	0.8 miles N. of Ramp 72
11-Aug	O62	CO33	CM	Day Use	0.9 miles S. of Ramp 68
11-Aug	O63	CO34	CM	Day Use	2.8 miles N. of Ramp 67
11-Aug	O64	CO35	CM	Day Use	2.8 miles N. of Ramp 67
12-Aug	O65	CO36	CC	ORV	0.8 miles S. of Ramp 72
17-Aug	O67	CO37	CC	ORV	2.5 miles S. of Ramp 72
31-Aug	O68	CO38	CC	Day Use	3.3 miles N. of Ramp 67
Bodie Island District					
20-May	B1	CB01	CC	Day Use	0.1 miles S. of Ramp 2
1-Jun	B2	CBH01	CC	Day Use	0.1 miles N. of Ramp 23
1-Jun	B3	CBH02	CC	ORV	0.3 miles S. of Ramp 23
21-Jun	B7	CB02	CC	ORV	0.2 miles S. of Ramp 2
25-Jun	B9	CBH03	CC	ORV	1.6 miles S. of Ramp 23
16-Jul	B19	CBH05	CC	Village	2.1 miles N. of Ramp 23
19-Jul	B22	CBH06	CC	Village	0.3 miles N. of Ramp 23
20-Jul	B24	CBH07	CM	ORV	3.0 miles S. of Ramp 23
21-Jul	B25	CBH08	CC	ORV	0.3 miles N. of Ramp 30
22-Jul	B26	CBH09	CM	Village	0.5 miles N. of Ramp 23
22-Jul	B27	CBH10	CC	ORV	0.1 miles S. of Ramp 23
8-Aug	B30	CBH11	CM	ORV	0.4 miles N. of Ramp 30

Date: date false crawl was located (crawls that occurred before 12:00 AM were given the date of the following day / crawls that occurred after 12:00 AM were given same date)

Act. # : CAHA Park-wide activity number

Crawl #: false crawl number by turtle management district

Sp.: species of sea turtle that made crawl (CC = loggerhead, CM = green, DC = leatherback)

Crawl Site Type: type of beach that crawl was located on

Location: location of false crawl