

**2002 SEA TURTLE SUMMARY  
BREEDING AND STRANDING ACTIVITIES  
CAPE HATTERAS NATIONAL SEASHORE**

**Breeding Activity**

Cape Hatteras National Seashore (CAHA) beaches were patrolled daily between June 1 and September 1, 2002 in search of turtle crawls. Volunteers In the Park, Student Conservation Association volunteers and Park staff monitored approximately 55 miles each day on Bodie, Hatteras and Ocracoke Islands.

**Nest Composition and Distribution**

There were 101 confirmed nests located in 2002 (Table 1). Of these, 73 nests (72%) were found on Hatteras Island, 24 nests (24%) were found on Ocracoke Island and 4 nests (4%) were located on Bodie Island. Hatteras Island had ten more recorded nests than last season, Ocracoke had 12 more, and Bodie Island increased from zero the previous year to four. The first known nest of the season was found on May 12 and the last nest was laid on August 7. This season had the highest number of nest on record since extensive monitoring began in 1987 (Chart 1, Table 2). This data does not include two sea turtle nests of unknown species reported on an exposed shoal off Cape Point. A local sport fisherman who frequently kayaked to the shoal discovered the nests. The shoal continued to build throughout the summer, staying above the high tide mark. Both nests evidently hatched since the same individual later reported seeing hatchling tracks originating from each nest site. Neighboring Pea Island National Wildlife Refuge on Hatteras Island reported 15 sea turtle nests. All were identified as loggerhead nests with the exception of one green sea turtle nest.

Three species of sea turtles were known to have nested on CAHA beaches in 2002. There were 96 loggerhead nests (*Caretta caretta*), three green nests (*Chelonia mydas*), one leatherback nest (*Dermochelys coriacea*), and one unknown (Table 1). This is the eighth year green turtle nests were recorded at CAHA in the past 22 years. This is also the third year a leatherback nest has been recorded here.

Nests were documented by patrols surveying the beaches beginning at dawn each day. However, it is believed that several nests were laid before regular monitoring began on June 1. In one case, volunteers **patrolling prior to June 1** discovered a previously laid nest only after a fox dug into the nest cavity. It is believed the nest had been laid a few days prior to this. There was one instance where park staff was informed of an unrecorded nest. In this case, a visitor observed hatchling emergence from a previously unknown nest (laid prior to turtle patrol). However, the nest site could not be located to confirm species or hatching success. The single leatherback nest found in the park was successfully discovered only after hatchling emergence, with the estimated date it was laid being in May, before morning patrols began.

## **Treatment**

Nests were either left in place or relocated for environmental reasons. Beaches used for most nest relocations were 1) Hatteras Lighthouse beach and 2) Haul Over ocean beach. Several nests, however, were relocated in areas other than the above locations closer to the original nest sites. In general, nest relocation has been discouraged the past three seasons under recommendations of the North Carolina Wildlife Resources Commission (NCWRC) and the U.S. Fish and Wildlife Service (USFWS); therefore, with few exceptions nest relocation was confined to nests that might be threatened by erosion or overwash.

In a situation where eggs were believed to be present but could not be found, the activity was categorized as a "dig". Rather than abandoning the site because staff could not locate eggs (recognizing the possibility of human error), these sites were treated exactly like nest sites, with all information recorded, poles labeled, and transponders inserted underground. A total of six digs were recorded. One dig was confirmed to be a nest when hatchling activity was discovered and eggs were located afterward. It should be noted that this dig site has been included in the nest numbers and calculations and the other five digs not confirmed as nests were not included in nesting data.

Of the 101 confirmed nests, 65 (64%) were protected at the original nest site and 36 (36%) were relocated (Table 3). Hatteras Island had 34 nests relocated and Bodie Island had 2 (Table 3). Of the 36 relocated nests, 32 (89%) were moved because of natural factors and 4 (11%) due to potential human disturbance. Nests were relocated due to high erosion rates, close proximity to the tide line or to an unstable, escarped dune line. Many beaches in CAHA are narrowing since the artificial dune line prevents natural overwash which would create additional beach habitat. CAHA attempts to leave nests in place, even within off road vehicle (ORV) areas, if the site appeared to be suitable habitat. A common human factor causing relocation occurs when nests are located within a mile of a fishing pier. Piers emit light pollution that attracts hatchlings, which then fall prey to fish congregating near the piers. The resource management division has submitted recommendations to the superintendent that would decrease light pollution generated by the three fishing piers within CAHA. The piers are concessions and operate under permits. Park Concessions and Resource Management Specialists suggested lighting modifications with the present owner of Avon Fishing Pier. Another artificial structure causing relocation is the groins in Buxton. Nests laid on the beach around the groins are very susceptible to sudden shoreline changes.

## **Hatching Success**

Hatching events at various nests either took place in one nightly episode or intermittently over several nights. All nests were examined after hatching to determine productivity rates. Nests were excavated at a minimum of 72 hours after hatching events. In cases where hatching events or dates were unknown, nest cavities would be unearthed 80-90 days after the laying date. A total of 7,850 known eggs hatched. Of these, 7,229 hatchlings emerged from the nest cavities. The season's overall hatching success at CAHA in 2002 was 70.14% (Table 4). Individual nest success ranged from 0% to 99%.

Overall in CAHA, relocated nests had a 69.75% hatch success while non-relocated nests had a 70.37% hatch success rate (Table 4). It is vital to state that the percentages are not directly

related to treatment. Hatch rates could most often be correlated with frequency of overwash and/or sand deposition.

### **Nest Protection**

Any single nest left in place, or relocated, was protected by an approximately 30' x 30' posted closure during the incubation period. At 55 days into incubation, these small closures were expanded to the surf line and to a width of 150' - 300'. Opposite the surf line on the upper end of the enclosure, the closed area was expanded to a minimum of 50' duneward from the nest. If present, 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. In several cases silt fence was used behind nests nearing hatching dates. Fencing was used to block light pollution from the villages and as an added safeguard in ORV areas. Larger signs were posted to notify drivers that the established closures included the surf line at all tides. Interpretive signs warned how vehicle traffic could harm eggs and hatchlings. Traffic detours behind the nest area were clearly marked with signs and reflective arrows. There were 21 of these partial closures in ORV areas in 2002. Once ORV tracks became well established along the detour route, compliance was high. Pedestrians often walked through the closure along the ocean's edge but footprints were seldom seen above the tide line. Signs were removed no earlier than 72 hours after hatching occurred, and after the excavation of the nest was complete.

In the 2002 season, there were 15 nest sites requiring complete closures during the expected hatching period in ORV designated beaches. These complete closures excluded all ORV traffic from dune to ocean at a width of 200'-300' parallel to shoreline. These temporary closures were necessary due to the nest location on the upper beach or in the dunes. There was not enough room behind the nests for ORV traffic to pass. These areas were well posted and large signs warned visitors at ORV ramps of "No through traffic to the next ramp". One of these 15 nests received heavy overwash throughout its incubation period. After Hurricane Gustav, the nest was situated below the high tide mark. Upon examination, the eggs were found to be undeveloped and no longer viable thus a beach closure was not necessary. An additional two nests, located in front of Avon village, required full closure only if the seasonal ORV closure was reopened to traffic as planned mid-September. Since these nests were located near the extreme southern and northern end of Avon, the Park did not reopen most of the Avon beach until hatching occurred in late September.

The public was notified of closures that would temporarily limit ORV traffic. A press release was sent to local and regional newspapers. Local tackle shops and ORV organizations were contacted when closures were established or reopened. A notice explaining that commercial fishing activities were not allowed in any of these posted areas were given out with annual commercial fishing permits. In addition, volunteers were stationed near some nests approaching hatching dates to protect emerging hatchlings and educate people in the vicinity. This volunteer activity occurred mainly at nest sites in front of villages.

### **False Crawls**

A total of 60 false crawls were found during the 2002-breeding season (Table 5). Of these, 15 (25%) were found in areas open to ORV use, and 31 (52%) were located in heavy day use areas such as lifeguard beaches and other sites serviced by parking lots. Nine (15%) false crawls were on beaches adjacent to village development, and three (5%) were located in areas within one

mile of a pier. It should be noted that the pier areas are also in the vicinity of village beaches, in Rodanthe, Avon, and Frisco, but were included in the pier data group. The remaining two (3%) were found on beaches which did not fall into the previous mentioned categories and thus had lower concentrations of human activity. The highest percentage of false crawls (57%) occurred on Hatteras Island.

### **Factors Influencing Nest Success**

The dynamic nature of CAHA beaches affected many nests this year. Although spared from the direct force of hurricanes this season, the offshore passing of Tropical Storm Gustav along with other weather related events took a toll on nests. A low-pressure systems coupled with new moon tides at the end of July and beginning of August caused frequent overwash, erosion, and sand deposition to several nests. During the end of August and beginning of September, another low-pressure system along with heavy rains caused many nests to receive overwash. Tropical Storm Gustav passed offshore September 9th and continued through September 11th with heavy storm surf causing erosion along east facing beaches. Nests remaining during this time once again were affected by overwash, sand deposition, and erosion. One nest received about four feet of sand deposition. One nest was completely washed out in during this storm event. Nests receiving frequent overwash and sand deposition did not hatch. When excavated, eggs were found to be undeveloped, or in a state of arrested development. Of the nests that did hatch, many dead hatchlings were found in the nests in sand compacted by water. Standing water was found in the nest cavity of several nests upon excavation following Tropical Storm Gustav. Several nests subjected to less frequent overwash did hatch though hatch rates were not always as high as those receiving no overwash.

Aside from storm activity, this season's turtle nests were targeted by red fox (*Vulpes vulpes*). The first documented instance of fox predation on a sea turtle nest within the CAHA was in 1999 at Bodie Island. Reports of red fox on Hatteras Island did not surface until winter 2000-2001. The summer of 2002 documented fox tracks 19 times within posted nest closures. Animals were seen four times within closures. A Hatteras Island law enforcement (LE) ranger observed one fox in close proximity to a sea turtle as she was laying her nest. The other sightings occurred when estimated hatching dates approached. The first nest to be disturbed was dug into shortly after the nest was laid. Eleven eggs were damaged and removed. Forty-one of the remaining eggs hatched and 110 did not hatch. It is likely that bacterial or fungal growth from traces of albumen and yolk seeped down into the cavity before the damaged eggs were removed, resulting in the low hatching success of this nest. No other fox problems arose until nests approached the hatching window. Fox dug into four nests following hatching events. In another case, fox tracks, scat, and urine was found in the fresh body pit made by the nesting female. When this nest approached its hatching date, fox tracks were found within the closure and the nest were dug into the day after it began hatching. Two nests on Bodie Island were protected from fox predation by a wire screen with 2" x 4" openings anchored over the nest. This precaution was taken when fox tracks were noted nearby and fox were seen at night in the vicinity of the nests.

The Park has little information on localized impacts of ghost crab predation. As in past years, ghost crab burrows were observed near some nest cavities this season. Hatteras Island had 11 documented cases of ghost crab presence in or on top of nest areas, while Bodie Island had two, and Ocracoke reported four. In one case on Hatteras Island, a volunteer arrived shortly after

hatching and found crabs attacking twelve hatchlings. All were rescued and released but one appeared to be seriously injured. Another nest was burrowed into by a ghost crab, allowing water off the dunes to drain into the nest cavity. This may have affected hatching success. Upon excavation, 35 live hatchlings were found in compacted sand and 37 dead hatchlings were found partially out of their shells.

### **Human Disturbance**

It is unknown how often nesting attempts are aborted due to human disturbance. In the 2002 breeding season there was one reported incident where visitors disturbed a nest before turtle patrol arrived. The nest was covered with a large amount of sand piled over the nest area completely obliterating the tracks and body pit, making it impossible to locate the nest. No evidence of hatching was later found. Since eggs were not initially confirmed, it is not known if this was in actuality, a false crawl or if humans tampered with the eggs. In addition, waves from Tropical Storm Gustav heavily overwashed this site possibly arresting development of any existing, if present. A second nest was tampered with during its incubation period. Human footprints and digging were found inside closure. No damage was found to the nest or eggs. A local resident reported having seen a group of people in the closure. LE rangers investigated the incident though no charges were made. Park volunteers who were stationed at nests in the Avon area after dark reported several incidents of visitors entering the posted closure, shining flashlights inside the filter fenced area, constructing beach fires or setting off fireworks adjacent to the closures.

Closures were periodically damaged or tampered with. In three separate occasions, signs posted to protect nests were intentionally pulled out of place, stolen, or turned in such a way that other visitors would not be able to read them. On six additional occasions, strategically placed poles used to help staff relocate nest cavities were removed.

Since there is an increase in many types of visitor use after dark, other cases of human disturbance likely occurred but went unreported. Beach fires are more frequently seen, especially near the villages, day use areas, campgrounds and ORV ramps. These are a source of artificial light known to disturb nesting females and attract emerging hatchlings. In 2001, a total of 773 beach fires were documented during the sea turtle nesting season and this problem still exists. Beach fires remains are a hazard to visitors as well as turtles. Large smoldering pits containing broken bottles, burnt cans, and nails from burnt lumber were commonly left behind. Fireworks are sold locally and are commonly used, although illegal, on CAHA beaches. ORVs are permitted to operate on CAHA beaches after dark.

Most pedestrians respected the posted areas. Thirty-three incidents of human tracks were documented. Numbers of tracks recorded in each case varied from one to "heavy pedestrian traffic". In addition to these reports, there was one instance where beach furniture had been placed within a sea turtle closure.

As in previously discussed cases, many but not all beach drivers respected marked turtle areas (See **Nest Protection**). In total, 40 sets of vehicle tracks were noted within closures, often along the tide line. This is likely a conservative number since observers were not present at all sites at all times. Additionally, evidence of tire tracks washed away with each high tide. ORVs drove

through areas where signs and reflective arrows clearly marked established detours behind the closures. Most ORVs drove in front of the nest areas during periods of low tide. Signs could not be placed in the low tide area, since they would wash away with the approach of each high tide and accompanying waves. Signs placed at the high water mark did state the surf line was closed at all tides. Also, PVC pipes were driven into the sand from the signs to the low tide line and marked with string and flagging emphasizing the tidal closure. In addition, there were at least ten documented incidents of vehicles driving through the posted areas well above the high tide line, and four incidents documenting ORVs driving directly over nests. There were seven cases reported of vehicles causing property damage to signs, posts and twine protecting sea turtle nests. An area where vehicles frequently ignored full closures was between Ramp 55 and Hatteras Inlet where there were four dunes to surf closures at various times throughout the hatching period. Daily maintenance was high at these sites replacing signs and smoothing out ruts. At another full beach closure on Hatteras Island, hatchling tracks were found in tire tracks made by vehicles violating the closure. It is unknown if any hatchlings were driven over by other passing vehicles using the same tracks. Though the seasonal ORV closure in front of Avon was extended through September, some vehicles continued to drive past the "No ORV" signs. Fearing hatchlings would be injured or killed additional signs denoting the closure were posted along the beach. On two evenings, a Park volunteer observed a CAHA patrol vehicle driving in front of two extended closures. These were in the Avon area where it was closed to public driving. The problem was immediately identified and was due to poor communications. Rangers were kept abreast of all other turtle hatching closure locations whether in or out of ORV designated areas.

One crawl was so obscured by ORV tracks that staff had difficulty locating the body pits and nest cavity. Either the ORVs were driving at night or early morning, before the patrol was able to reach the site. Nests are likely missed each year hidden by vehicle tracks or in some cases heavy pedestrian tracks.

Artificial lights have misdirected hatchlings in past seasons. Filter fencing is used to block lighting from villages, piers, and areas of high nighttime ORV use. Fencing is often buried and/or removed by high tides and strong winds and often damaged in the process. Therefore, the use of filter fencing requires daily maintenance of the site. Maintenance is time consuming, often requiring entire sections of fencing to be unearthed and repaired before being put in place again. With an increase in nighttime activities and village development, the use of this filter fence has increased dramatically this year compared to the past. Certain sections of beach required filter fence to block artificial light during hatching events that in previous years did not require such precautions. For example, hatchlings from several nests between the Cape Hatteras Lighthouse and Ramp 43 crawled away from the ocean towards light sources. The increased lights from Buxton village and the US Coast Guard station have now necessitated the use of filter fencing. Lights from the nearby Cape Point Campground, no longer blocked by a dune line, may have caused some hatchling disorientation.

### **Dog/Cat Disturbance**

Dog tracks were documented within closures on 19 different occasions. Dog tracks were repeatedly documented inside a closure at Coquina Beach day use area on Bodie Island. On one occasion it could be seen where a dog had dug in the sand directly over the nest site. In addition, there were four occasions where dogs were observed off leash and running through closures. A

pet leash law, carrying a \$100 fine, exists at CAHA. The regulation is not consistently enforced in all areas of the Park. Many dogs on the beach are not leashed or only leashed by their owners as Park vehicle approaches. Dogs can be a serious threat by digging up incubating eggs.

There were 15 separate incidents of cat tracks in turtle nest areas this year. Most were likely feral cats. It is unknown if any hatchlings fell prey to cats that may have been present during hatching events. There was one documented case of a dead hatchling and eggshells found outside of the nest with ghost crab tracks and cat tracks over the nest area. Though no definitive link could be made here, cats remain a potential threat. Predation on green turtle hatchlings has been documented off the coast of Australia.

### **Predator Removal**

Red fox populations have been expanding their range southward in CAHA. They were first reported on Bodie Island in 1996 and on Hatteras Island in 2000. The new Hatteras Island fox population likely used the Boner Bridge as a corridor to the island last year. Melvin Covey, a Buxton resident, observed a red fox moving south on the bridge in 1999. This route may be continuing. Kris Fair of Pea Island Wildlife Refuge observed a dead red fox on the bridge approximately 100 yards from the northern terminus in October, 2002. There are no historical records of red fox on Hatteras Island. Fox destroyed several sea turtle nests and emerging hatchlings in 2001. Based on the continued and growing danger fox present to threatened species, CAHA decided to trap fox. Funds were procured with the help of U.S. Fish and Wildlife Service. Professional trappers from the US Department of Agriculture (USDA) made two trips to the area in late June and July. Twelve fox were removed from Hatteras Island between Cape Point and Hatteras Inlet in June. An additional twelve animals were removed from the dunes adjacent to the Bodie Island spit flats and the Bodie Island "bone yard," near the Bodie Island Light Station. In July an additional four fox were taken from Bodie Island, all from the same dune field area near the inlet flats. No fox could be trapped on Hatteras Island in July. USDA believes that there may be one adult fox left along the South beach area, southwest of Cape Point. They also believe a den or two may be located at the north end of Hatteras Island possibly within Pea Island Wildlife Refuge or the three northern villages of Rodanthe, Waves and Salvo. Numbers of red fox still remain on Bodie Island. Additional removal efforts were recommended for 2003.

### **Stranding Activity**

In 2002, 93 stranded sea turtles were documented along shores of CAHA (Table 6, Chart 2). This represents a 26% increase from 2001. Annual totals between 1996 and 1998 ranged between 47 and 98 turtles, and increased significantly in 1999 and 2000. This number decreased in 2001 and then rose slightly in 2002. This year's strandings increased on ocean beaches as well as on inshore (sound side) beaches compared 2001. Fifty (54%) turtles were recovered from the ocean beach and 43 (46%) on the soundside. Hatteras and Ocracoke reported the highest stranding numbers. Park wide, 52 (56%) were identified as loggerhead, 30 (32%) were green, 10 (11%) were Kemp's ridley and 1 (1%) was unknown. No leatherback turtles were reported. As in past years, the majority of stranded turtles were subadults.

Nineteen turtles (20%) were alive when discovered. Most were transported to Roanoke Island Animal Hospital. Veterinarians made health assessments and if possible the animals were then transported to holding tanks at the local NC Aquarium in Manteo. Network for Endangered Sea Turtles (NEST), a volunteer group based in the Nags Head area, continue to care for them until they can be released. Eighteen of these animals were victims of hypothermia when sound side water temperatures suddenly plummeted in response to a cold fronts. One live turtle stranded for unknown reasons. Due to the high numbers of live turtles recovered at CAHA and surrounding communities in late 2002, many had to be sent to other NC Aquariums at Bogue Banks and Ft. Fisher. The U.S. Coast Guard has assisted in releasing several recuperated turtles in Gulf Stream waters.

Seventy-four (80%) turtles were dead when found. Though carcasses were found throughout the year, there were three peaks in strandings. The first occurred in January, with 16 documented strandings comprised of loggerhead, green and Kemp's ridley turtles. Hypothermia was believed to be the main cause of the deaths. The second peak occurred between April and May, with 13 sea turtle strandings documented primarily loggerhead. This peak occurred statewide and no cause was identified. CAHA staff has documented stranding events in the spring to early summer for six consecutive years. The largest episode with 270 stranded sea turtles occurred in 2000. The third 2002 peak in strandings coincided with the rapid drop in water temperatures offshore beginning in late November and lasting through December of 2002. A total of 19 turtles, green, loggerhead and Kemp's ridley stranded at CAHA with many additional turtles found in the surrounding villages. Hypothermia was the likely the main cause. This is in comparison to the 30 that stranded in 2001 and 80 that stranded in 2000 during the same time interval. The high 2000 count was believed to have been fisheries related.

For the third consecutive year, biologists worked in cooperation with NMFS to monitor the fall flounder fisheries impacts on sea turtles. This was in response to high numbers of strandings that occurred during the fall of 1998 and 1999. A ban on using deep-water gill nets was adopted in the fall of 2001, in attempts to reduce sea turtle by-catch and mortality. Similar to the past four years, most strandings during this period in 2002 were found on Hatteras and Ocracoke Islands. Cold stunning was responsible for some of the strandings when water temperatures

### **Conclusions and Recommendations**

Breeding activity was fairly active this season. Hatching success higher than found in recent years. This was most likely due to a fairly warm, dry summer keeping sand temperatures warm and constant. Incubation periods were shorter as a result. Incubation period in North Carolina averages 63 days. Some nests at CAHA hatched ten days earlier than their expected hatch date. Hatching was also benefited by the lack of tropical storms and other low-pressure systems during the period. Much of the hatching had taken place by the time Tropical Storm Gustav arrived. Fox predation was greatly reduced by the trapping efforts prior to the main hatching period. Trapping efforts need to continue. False crawls constituted 37% of sea turtle activity this season. It is unknown how many nesting attempts were aborted due to natural or human disturbances.

Narrow beaches are becoming increasingly common. The presence of artificial dune lines along the Seashore inhibits natural overwash processes. Future storms and rising sea levels will eventually push back the man-made dunes, creating nesting habitat. Until then, beaches will



only continue to erode towards the artificial dune line resulting in a decrease of suitable nesting habitat. Quality habitat will not develop in areas where North Carolina Department of Transportation (NCDOT) continues to rebuild and maintain the existing dunes for Highway 12 protection. This further emphasizes the need for NCDOT to build causeways or relocate the road whenever possible.

CAHA is reducing the number of nests relocated due to potential human disturbances. Though compliance was fairly good, there were still a significant amount of drivers who disregarded the posted closures. Violations were most common in high ORV use areas where closures temporarily restricted through traffic. Nests in high visitor use sites need to be more closely monitored to protect eggs and hatchlings. This aspect has been improved with a Biological Science Technician working throughout the nesting season and with the addition of "nest watch" volunteers. Closures in certain sites may need to be modified or enlarged to better serve their purpose. Law enforcement presence needs to increase. Efforts made to educate the public through the media should continue. In the 2002-breeding season, two press releases about the sea turtle program were issued to local and regional newspapers. Local bait and tackle shops were notified of all beach closures and any changes in these closures.

Nighttime activities potentially impacting breeding activities need to be continually examined at CAHA. These include beach driving, village light pollution and campfire activity. It is also essential to make sure no NPS facility is producing light pollution. NPS needs to work with Park concessionaires to reduce nighttime lights. In the future it is hoped that a portion of the concessionaire franchise fees may be used to help fishing piers purchase "turtle friendly" lights

### **Stranding Activity**

For the past several years, turtle mortality has been high at CAHA compared to other North Carolina sites. While stranding numbers decreased this year compared to the record high in 2000, it is likely many strandings on the soundside go unreported due to limited accessibility. NCWRC Stranding Network and NEST volunteers were of great assistance to park staff. Efforts to document threatened and endangered sea turtle strandings need to continue. Sick and injured animals rescued are often successfully rehabilitated. Valuable information is also collected from dead stranded sea turtles and made available to other Federal and State agencies responsible for the protection and recovery of these species.

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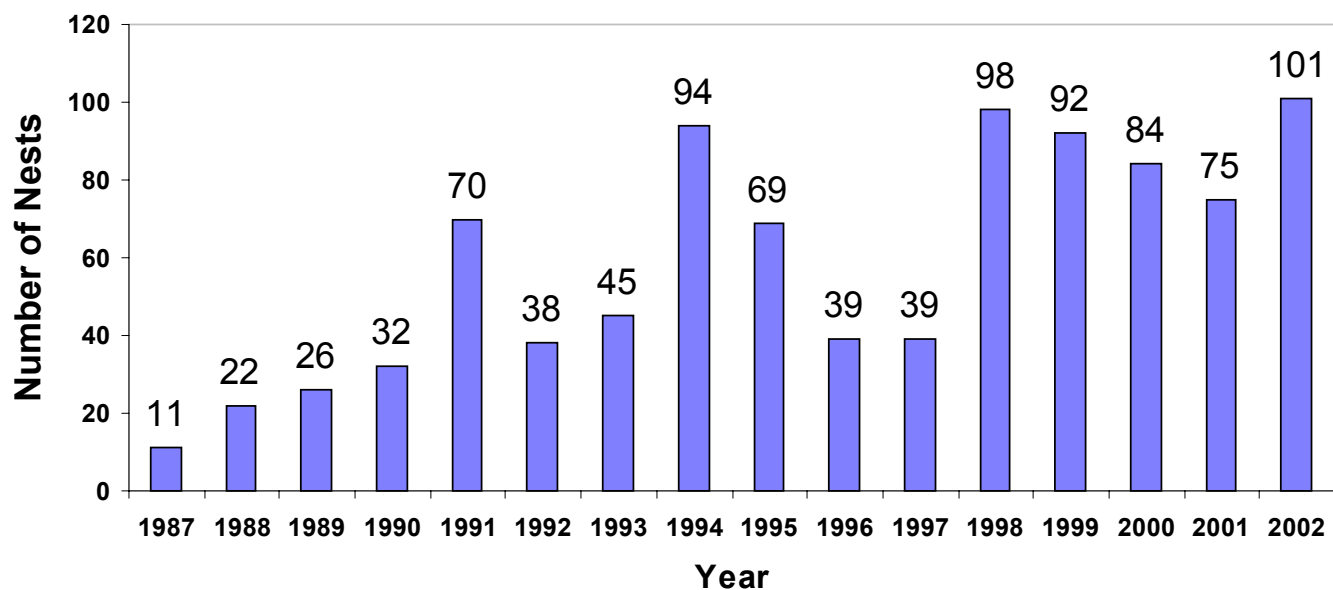
**Table 1. Sea Turtle Nests at  
Cape Hatteras National Seashore 2002**

<b>Species</b>	<b># of Nests</b>
Loggerhead	96
Green	3
Leatherback	1
Unknown	1
Total	101

**Table 2. Sea Turtle Nests 1987-2002**

<b>1987</b>	<b>1988</b>	<b>1989</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
11	22	26	32	70	38	45	94	69	39	39	98	92	84	75	101

**Chart 1. Cape Hatteras National Seashore  
Sea Turtle Nests 1987-2002**



**Table 3. Relocated Nests at Cape Hatteras National Seashore 2002**

<b>Total for CAHA</b>				
	Relocated nests		36	36%
	Non-relocated nests		65	64%
	Total		101	
<b>HATTERAS ISLAND</b>				
	Relocated nests		34	47%
	Non-relocated nests		39	53%
	Total		73	
<b>OCRACOKE ISLAND</b>				
	Relocated nests		0	0%
	Non-relocated nests		24	100%
	Total		24	
<b>BODIE ISLAND</b>				
	Relocated nests		2	50%
	Non-relocated nests		2	50%
	Total		4	

**Table 4. Hatch Success at Cape Hatteras National Seashore 2002**

	<b># of Nests</b>	<b>Hatch Success (%)</b>
Relocated Nests	36	69.75%
Non-Relocated Nests	65	70.37%
<b>Total Nests</b>	<b>101</b>	<b>70.14%</b>

**Table 5. Number of False Crawls by Area Type  
Cape Hatteras National Seashore 2002**

<b>Area Type</b>	<b># of False Crawls</b>
ORV use	15
Day use	31
Village	9
Pier	3
Other	2
<b>Total</b>	<b>60</b>
ORV use - beaches opened to off road vehicles	
Day use - beaches adjacent to day use parking lots (also used after dark)	
Village - beaches bordering village development	
Pier- areas within one mile on either side of a pier	
Other - beaches on which there is not a high volume of human activity	

**Table 6. Sea Turtle Strandings  
Cape Hatteras National Seashore 1996-2002**

Year	Stranding Totals	Species Composition*					Location	
		CC	LK	CM	DC	uk	Oceanside	Soundside
1996	47	26	8	10	3			
1997	98	64	17	10	3	4	62	36
1998	85	45	25	12	2	1	53	32
1999	226	149	55	22	0	0	138	88
2000	332	226	31	43	2	2	245	87
2001	69	41	11	11	4	2	46	23
2002	93	52	10	30	0	1	50	43

\*

CC = Loggerhead  
 LK = Kemp's ridley  
 CM = Green  
 DC = Leatherback  
 uk = unknown

Strandings

