

ANNUAL PROJECT REPORT

Kiawah Island Turtle Patrol 2006

Assembled by Art Zackrison

I. Nesting

A. Coverage

1. Nesting teams patrolled the beach each morning at first light in a four-wheel-drive Dodge Dakota truck with extended cab, or a Jeep Cherokee.
2. During a normal year there is one nesting team consisting of a driver and three other volunteers. The team is on duty for four consecutive days and on those days patrol the full length of the beach, a distance of about nine miles. Volunteers serve one term of four days each, and drivers two such terms. The east end renourishment program this year resulted in some changes. From the beginning of the season until the renourishment work began, there were no changes from the normal process. Once work began, the patrol was split into two parts – the primary patrol as described above covered the area from Captains Sam’s Inlet to the Kiawah Island Beach Club, while a second, one or two person team, covered the area from the Beach Club to the new cut near the end of the sand spit.

B. Locating/Relocating

1. Upon locating a crawl, the team made a visual analysis of the site, noting the incoming and outgoing crawls, and using the five standard nest criteria. When the most likely nest position had been determined, the driver or another experienced person carefully probed the area using a standard probe. When a soft area was located, the presence of eggs was verified by carefully digging with the hands.
2. A nest was relocated only if it was a) seaward of the spring high tide line, which had been marked at that time by the numbered distance posts located at 0.2 mile intervals, and by white posts midway between these distance posts; b) in an area of heavy foot or vehicle traffic; or c) in the zones at the extreme ends of the island, which experience has shown to be subject to either a fatally high water table in the event of heavy rains, or serious erosion probabilities. The coincidence of strong storms and high tides prior to 2002 caused severe erosion and/or overwash at the eastern end of the island causing the total loss of a number of nests from that area. During the year 2002, we adopted the policy of relocating all nests from the two miles at the eastern end to areas west of the beach club. This policy is still in force.

3. If possible, the artificial nest location was chosen near the original nest site, above the marked spring tide line, on a gently sloping dune face, and in an area as free as possible of vegetation. Nests from east of the beach club were relocated to the remaining six zones as evenly as possible to ease the load on hatching patrol volunteers.

C. Methods of marking nests

1. Each nest was marked with a 2''x 2''x 4' post, consecutively numbered and located two feet to the east of the nest center on a line parallel to the shore. The top of each post was painted orange and carried a laminated notice: "Turtle Nest. Do Not Disturb".
2. A 2.5" x 3.5" red plastic flag on a 15" wire stake was placed five feet directly landward of the nest post and labeled with the nest number. Other pertinent information was recorded in a permanent notebook. There were a few occasions in 2006 that the flag could not be located, probably due to drifting sand. A larger flag on a longer stake is being considered for use in the future.
3. If the analysis of the crawl suggested that a nest had been laid but none could be located by probing, the most likely spot was marked by a 1''x 2''x 18'' numbered stake, painted orange on top and carrying the laminated notice: "Turtle Nest. Do Not Disturb". These possible nests are referred to as 'short stakes' in the remainder of the document.
4. Nests that are deemed to be in danger from four-footed predators or human foot traffic are covered with a 4'x 4' metal screen with 2''x 4'' openings, and held in place by wooden posts. Near the end of the hatching season this year we began to evaluate the use of plastic screens with 2''x 2'' openings, held in place with plastic tent posts. This screening is a more 'volunteer safe' covering, is approved by SCDNR, and looks better on the beach. The evaluation of this new material will be continued in 2007.
5. We reserved posts numbered 1 to 25 to use for nests relocated from east of the beach club from early June when beach renourishment began to the end of the nesting season. Nineteen nests were relocated from the endangered area to the west end of the island.

D. Nest monitoring methods

1. Nests were monitored by the nesting patrol until the time that hatching patrols began their daily routine (refer to Section II below), and after that by the hatching patrols themselves. Problems noted by the nesting patrol are recorded in the daily logbook. Problems noted by the hatching patrol are listed on their daily log and weekly report.
2. If any depredation was observed, a count of the number of eggs destroyed and the type of the predator was recorded. The nest was then screened if not previously done.
3. The date and the extent of any over wash were noted.

II. Hatching

A. Determining emergence activity

1. Within forty five days after the first nest is laid in each zone, the hatching patrols begin checking each nest in that zone daily, usually beginning at dawn. These foot patrols also watch for wild nests as well as for predation of any nests along the route.
2. Hatching of a nest is indicated by hatchling tracks coming from the nest. In the absence of visible tracks, because of wind or rain, the exit crater could often be seen. A red flag is placed behind the exit hole. If emergence is not detected, an inventory of the nest is made 75 or more days from the date the nest was laid.

B. Method used to inventory nests

An attempt is made to inventory all nests. At least three days after hatching is seen, the team members carefully dig down into the nest by hand – often wearing rubber gloves for protection. A count is made of hatched eggshells, unhatched eggs, dead hatchlings and live hatchlings.

C. Time of day inventories performed

Nest inventories usually were performed during hatching patrols that began soon after dawn.

III. Problems

A. Predators

1. Three nests were depredated by four-footed critters this year, all identified as raccoons by analysis of the surrounding foot/paw prints. Nest #30 was raided at a cost of 14 eggs three days after it was laid. The same nest was raided the next night, losing an additional 16 eggs, after having been double screened following the first raid. A quadruple screening prevented further raids. Nest #175 suffered a total loss (approximately 150 eggs) while 29 eggs were lost from nest #66. Ghost crabs did minor damage to a few nests and ants were not a factor this year.
2. Only one nest (#66) suffered first night depredation, a significant improvement over past years.
3. No baby turtles were lost to depredation at hatching/emergence.
4. All nests between mile markers 10 and 12 were covered by 4' x 4' wire screens with 2" x 4" openings, held down by wooden pegs at four corners. A second screen of 18" x 18" hardware cloth attached by plastic ties was sometimes employed. A few additional nests were screened between mile markers 12 and 40 with the 4" x 4" screens.

B. Lighting

Three residences were visited because lights remained on during nighttime hours. After an on-site inspection of the premises, the rental agency was contacted for the two rental houses in violation and immediate action was taken by their personnel. The third residence had been vacated by its out-of-state owner. The owners were contacted using information on the TOKI database and arrangements were made to have the lights turned off by property management personnel.

TOKI and all public organizations on the island as well as real estate rental companies support the 'lights out for turtles' program by actively advertising it to all visitors to the island.

C. Overwash and erosion

Although there continued to be erosion in the unstable east end of the island this year, our policy of relocating all nests found in that area was very successful in avoiding damage to nests. One nest east of the beach club (nest #10) was found as a result of erosion and relocated to the west several weeks after it was laid (as determined by the hatch date of the 68 eggs relocated; 29 of the eggs hatched; six eggs were deemed not viable and reburied at the original site).

One nest just west of the beach club (nest #182) was partially washed out of the dune during the September high tide but we were able to find the remains - 23 hatched eggs along with 17 unhatched eggs. Since it was an in-situ nest, we have no record of the original size, and therefore cannot quantify the loss of eggs from this nest.

A few other nests had minor overwash during the season due to the extremely high tides in early September and October but it did not seem to materially effect their hatch success rate.

D. Crowd management

1. Observers during both nesting and hatching activity were generally considerate of the need not to interfere with the patrols. No problems were encountered.
2. Usually the volunteer teams were large enough that one member could be talking to the observers while the other members completed the tasks required.
3. No general information was made available on nests due to emerge or be inventoried. When inquiries were made by phone (usually by friends or family of patrol members) or by visitors on the beach, information about nests to be inventoried was provided.

E. Strandings

There were eight strandings reported this season compared to six in 2005, ten in 2004 and twelve in 2003. The first stranding was on May 24 and the last one on August 4. One Loggerhead was alive when found on the beach in the early morning; SCDNR personnel transported the turtle to the SC Aquarium but it was too badly injured to be saved and had to be euthanized by Aquarium personnel (sigh!!). Five of the remaining strandings were identified as Loggerheads and two as Kemp Ridleys.

Three members of the patrol are permitted by DNR to examine, report to Ft. Johnson and complete the required paperwork documenting type, size, location and final disposition of the remains. The final step before burial by Beach Patrol personnel is to spray paint the carapace in the event the remains are rediscovered.

IV. Education

A. Types of educational programs conducted

Kiawah Island Resort sponsors two programs through the Nature Center that are presented by the Kiawah Island Turtle Patrol. Two members from the Turtle Patrol gave these talks, attended by island visitors and residents. Concerns about lighting and beach activity were also discussed.

The first, a slide presentation and talk about sea turtles, with a description of turtle patrol activities, was conducted weekly from June through August at the Nature Center. The second program was a nesting demonstration conducted weekly in the early morning on the beach. A faux nest is dug and eggs (ping-pong balls) are placed in it. A simulated crawl to the nest is made to demonstrate its appearance. Following a description of nesting activity, the beach and nest markers, the nest is probed and the eggs removed, usually with help from the observers. An explanation of post-hatching activity of the hatchlings concluded the demonstration.

A minimum attendance of ten people was required to hold the nesting demonstration – two scheduled presentations were cancelled as the projected attendance was below that number. Attendance for both programs was down considerably from previous years. Nature Center personnel were cooperative and helpful.

B. Types of printed materials produced

The Town of Kiawah Island produces a printed brochure, “THE LOGGERHEAD TURTLE”, which is available to visitors at the Town Hall, the Nature Center and through the rental agencies. It is also handed out by the turtle patrol to observers on the beach. (see attachment #1)

- C. Types of media articles and TV spots produced
During turtle season, regular updates of the nesting and hatching activities were provided on two websites (www.WelcomeToKiawah.com and www.KiawahTurtles.com.)

A column also appears in “Kiawah Island Talk”, a monthly publication from the Kiawah Property Owners Group (see attachments #2 – 7), and occasionally in the monthly Town newsletter (see attachments #8 – 10).

- D. Number of public awareness turtle walks/watches and hatchling emergences conducted
In addition to the presentations and beach demonstrations described in item IV.A above, nesting and hatching patrol volunteers interact regularly with interested beachgoers. Topics discussed range over the entire lifecycle of sea turtles and how the turtle patrol supports that cycle,

V. **Project Organization**

- A. Level of training
An operating committee of six experienced members of the patrol organized the operation for the year. Each of these six was responsible for some phase of the program.

Fourteen percent of the 95 volunteers were new this year (compared to 15 percent of 103 volunteers in 2005 and 13 percent of 110 volunteers in 2004). The more experienced members range from 3 to 18 years of experience. A new volunteer is always accompanied by at least one experienced patrol member, and learns by participating and studying the SCDNR Guidelines. A new volunteer becomes 'experienced' in the judgement of the zone captain(s) and senior members of the team with whom he/she patrols. This 'promotion' seldom happens in less than two years and frequently extends longer depending on the level of turtle activity, the variety of situations experienced by the new volunteer and the abilities of the individual.

- B. Level of involvement
On nesting patrols all members routinely watch for crawls, and all participate in the analysis of the crawl. Probing is done by the driver or by another volunteer supervised by a highly experienced team member. All participate in moving eggs, under supervision of the driver. On hatching patrols a new volunteer is always accompanied by at least one experienced patrol member and learns to notice signs of emergence and to inventory nests by reading the guidelines and participating under supervision. Analysis of data and writing of this report was done by the members of the operating committee.

VI. Concerns and Recommendations

A. Project concerns

For several years we have experienced severe erosion of the beach and dunes at the eastern end of the island. In early June the Town of Kiawah Island was issued federal and state permits to mitigate the problem by filling in the existing cut between the inland pond and the ocean, making a new cut around the point on the sand spit, and widening the beach on the east end by 'relocating' 550,000 cubic yards of sand to the beach from the spit. The project was completed at the end of July and appears to be successful although it may take some time to confirm the final results. We will continue to closely monitor the situation and its effect on the turtle nesting program.

B. Technical concerns and needs

Our program is generously supported by the Town of Kiawah Island which fills our technical needs completely.

VII. Other Issues and Comments

Our volunteer count decreased by nine individuals this year to 95 (13 new folks minus 22 'retirements' from the program). While this is only a slight change over last year, it reflects a similar continuation from the prior season. Additionally, as happened in 2005 and 2004, a number of volunteers reduced their amount of time available on the beach which increased the time requirements for other volunteers. This has put an unusual burden on some of the more willing volunteers, and while this progression may not continue to be a problem in the future, it was a severe problem in some of our zones this year. We need to significantly step up our efforts to recruit additional volunteers to cover our patrol requirements. Suggestions (and additional volunteer time) are welcome.

VIII. Supplemental Information

Sections I through VII constitute the information required by SCDNR, according to the outline supplied by them. However, there are additional data of interest to volunteers, and of course to SCDNR, which are presented here in a random order to keep folks interested.

A. The progress of the year

The first nest was found on May 17th and the last nest was laid on August 12th (87 day nesting season). The total nest count of 201 (192 staked nests, six marked as 'short stakes - probable nests that could not be confirmed by probing but which did hatch - and three wild nests) was higher than our long-term average of 180-ish nests, higher than our total of 154 nests in 2005, and much higher than the disastrous season of 2004 when we had only 64 nests. The first hatch was recorded on July 12 and the last evaluation was October 31 (111 day hatching season), making the entire length of the season 166 (2005 = 146, 2004 = 139).

B. Unless someone demands – and wins – a massive nest recount, Kiawah has reclaimed its number two position in nest count in South Carolina. The nest totals received from the state indicate the top four beaches in the state are (drum roll please!!):

1221 - Cape Fear / Lighthouse
201 - Kiawah Island
185 - Hilton Head
148 - Botany Island

Maybe WE should request a recount of Cape Fear ... 1221??????

C. Below is a summary of interesting numbers from the detailed Kiawah Island nesting / hatching spreadsheet that we provide to SCDNR for their official state statistics (the detailed spreadsheet also is attached to this document):

201 – number of nests
23923 – number of eggs laid
18782 – number of eggs hatched
674 – number of live hatchlings
93 – number of nests relocated
108 – number of nests left in-situ
119 – average number of eggs per clutch
79.7 – hatching success (percent of eggs hatched) – in situ nests
78.9 – hatching success (percent of eggs hatched) – relocated nests

D. The one momma turtle that laid a nest on the spit this year flipped into a great situation. She found a man-made body pit (a tire track about 2 feet wide and 1 foot deep) left by one of the humongous sand movers. So, without expending the effort of creating her body pit she just dug her nest about 12 inches deep and did her thing. Would that they all be so lucky!

E. As most of us are aware, the beach renourishment project was completed at the end of July 2006. In 2005, TOKI was requested by the Fish and Wildlife Services to provide turtle nesting information in that area for the past several years and this data was included in last year's report for your delight and amusement. We have updated that report to include data for 2006 in the table below.

	total #	# nests laid east	percent of nests laid
Year	nests laid	of marker # 10	east of marker # 10
2006	201	34	16.9
2005	154	22	14.3
2004	64	17	26.6
2003	225	60	26.7
2002	181	65	35.9
2001	156	43	27.6
2000	211	Unrecorded	-----
1999	262	95	36.3
1998	187	53	28.3
1997	167	59	35.3
1996	209	49	23.4
10 year summary (w/o 2000)	1806	497	27.5

There are also now four years of detailed data on false crawls. A summary of that data is included in the following table:

	total #	# false crawls	percent of false
year	false crawls	east of marker # 10	crawls East of marker # 10
2006	122	20	16.4
2005	142	58	40.8
2004	54	22	40.7
2003	157	47	29.9
4 year summary	475	147	30.9

E. Distribution of nests

Figure 1 shows where nests were found (laid) and where they ended up (total). For example, five nests were found in zone 1, marker 4 but all were moved. In zone 4, marker 15, six nests were found and nine were left, showing that three nests were moved into this area. Figure 2 is a zone summary of the same data. In both figures W represents a Wild nest and S represents a Short stake nest that hatched.

MARKER DETAIL Figure 1				ZONE DETAIL Figure 2		
<u>PATROL ZONES</u>	<u>MARKER NUMBER</u>	<u>FOUND NESTS/MARKER</u>	<u>TOTAL NESTS/MARKER</u>	<u>PATROL ZONES</u>	<u>FOUND NESTS</u>	<u>TOTAL NESTS</u>
Zone 1	E of 1	1	0	Zone 1	8	0
	1	0	0	Zone 2	26	0
	2	1	0	Zone 3	19	27 + 1 S
	3	1	0	Zone 4	20	26 + 2 W
	4	5	0	Zone 5	33	37
Zone 2	5	4	0	Zone 6	21	23 + 4 S
	6	5	0	Zone 7	32	35 + 1 W
	7	10	0	Zone 8	32	43 + 1 S
	8	3	0	West of Zone 8	1	1
	9	4	0	Totals	192	192 + 3 W + 6 S
Zone 3	10	3	4			
	11	5	9 + 1 S			
	12	7	7			
	13	2	4			
	14	2	3			
Zone 4	15	6	9			
	16	5	5			
	17	4	6 + 1 W			
	18	3	4			
	19	2	2 + 1 W			
Zone 5	20	5	8			
	21	12	12			
	22	5	5			
	23	6	6			
	24	5	6			
Zone 6	25	5	7 + 1 S			
	26	0	0 + 1 S			
	27	6	6			
	28	5	5			
	29	5	5 + 2 S			
Zone 7	30	12	15			
	31	6	4 + 1 W			
	32	5	5			
	33	6	6			
	34	3	5			
Zone 8	35	14	16 + 1 S			
	36	6	8			
	37	3	10			
	38	5	5			
	39	4	4			
	W of 40	1	1			
	Totals	192	192 + 3 W + 6 S			

