

# ANNUAL PROJECT REPORT

## Kiawah Island Turtle Patrol 2004

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.
2. Each nesting team consisted of a driver and usually three other volunteers. A team was on duty for four consecutive days and on those days patrolled the full length of the beach, this year a distance of about nine miles. Volunteers served one term of four days each, and drivers two such terms.

#### 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 a fatally high water table in the event of heavy rains. The coincidence of strong storms and high tides prior to 2002 caused severe erosion at the eastern end of the island causing the total loss of a number of nests from that area. During the year 2002, policy was adopted to relocate all nests from the two miles at the eastern end to the areas west of the Kiawah Island Beach Club. This policy was continued this year.
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 the erosion area at the east end 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"x2"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.
  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".
- D. Nest monitoring methods
1. Nests were monitored daily by the nesting patrol until the time that hatching patrols began their checking, 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 appraisal of the extent of any over wash was noted.

## II. Hatching

- A. Determining emergence activity
1. Forty five days after the nest was laid, the hatch patrols began checking the nest 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 was 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 was placed behind the exit hole. If emergence was not detected, an inventory of the nest was made after 75 or more days from the date the nest was laid.
- B. Method used to inventory nests
- An attempt was made to inventory all nests. At least three days after hatching was seen, the team members carefully dug down into the nest by hand – often wearing rubber gloves for protection. A count was 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. The only predator this year was raccoons - foxes were not a factor. Ghost crabs and ants also damaged nests.
  2. First night depredation by raccoons destroyed approximately 127 eggs from four nests and thirteen eggs were lost to ghost crabs from four different nests. One nest was raided by raccoons five days after it was laid, destroying 74 eggs; it was laid in zone 11.9 and mistakenly not screened. Another nest lost 71 eggs to a raccoon ten days after it was laid;

this nest was originally noted as a false crawl in zone 5.2 since probing was unsuccessful.

3. At hatching/emergence, no eggs were lost to raccoons, much better than the eight nests effected in 2003. Four nests were partially damaged by ghost crabs while only three nests had any ant activity, both much better than the 2003 numbers of 13 and 14 respectively.
4. All 12 nests in zones 10 and 11 with the exception of the nest at 11.9 mentioned in 2 above, were covered by 4'x4' 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 garden ties was sometimes employed. An additional 12 nests were screened in zones 12 to 40 with the 4"x4" screens.

#### B. Lighting

Three problems with lights remaining on during nighttime hours were reported during turtle nesting season. All were resolved quickly and satisfactorily. Two residences were unoccupied when the reports were received. With the assistance of Town Of Kiawah Island (TOKI) personnel, the property owners were notified via long-distance call and arrangements made to turn off the exterior lights. The third residence was occupied by renters who quickly complied with our requirements. Lighting at the Sanctuary will be addressed prior to the 2005 season as the delayed opening of the hotel eliminated potential problems this year.

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

1. Although there continued to be erosion in the unstable east end of the island this year, our policy of relocating all nests out of that region was completely successful in avoiding damage to nests. Three nests (7, 9, 24) in other areas of the island experienced overwash during storm driven high tides in August.

#### D. Crowd management

1. Observers during both nesting and hatching 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 nest to be inventoried was supplied.

#### E. Strandings

There were 10 strandings reported this season, two fewer than last year. Usually reports were made by the Town Beach Patrol, and most times the turtles were sighted during the patrol's first morning sweep of the beach.

There were some sightings later in the day. Some reports were made by members of the nesting patrol as they made their tour of the beach. The first stranding was in April and the last one in September.

Two of the strandings were taken by DNR staff to Ft. Johnson for further examination while seven were buried on the beach. Eight of the strandings were identified as Loggerheads and two as Kemp Ridleys. All of the animals appeared to be debilitated and emaciated.

For the first time in Kiawah's turtle patrol history, one stranded loggerhead was found to be alive although quite ill. It was transported to the SC Aquarium and rehabilitated for five months before being released on a neighboring island (we are still questioning the rationale of that decision!).

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 carcasses. The final step before burial by Beach Patrol personnel was to spray paint the carapace in the event the remains were rediscovered.

Genetic sampling of strandings began in June 2003 and ended in June 2004. Tissue samples were collected from each stranding and held for pickup by the Ft. Johnson staff.

#### **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. The first, a slide presentation and talk about sea turtles, with a description of turtle patrol activities, was conducted weekly on Tuesdays at 9:30 AM from June 8 to August 31 at the Nature Center. Two members from the Turtle Patrol gave these talks, attended by from 5 to 25 island visitors and residents. Concerns about lighting and beach activity were also discussed.

The second program was a nesting demonstration conducted weekly at 7:30 AM 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 special combined session of the presentation and the beach demonstration was given in late June for 15 teenaged residents of the Pineland Group Home in Summerville, SC.

- 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](http://www.WelcomeToKiawah.com) and [www.KiawahTurtles.com](http://www.KiawahTurtles.com)).
- During the turtle season a column appears in “Kiawah Island Talk”, a monthly publication from the Kiawah Property Owners Group. (See attachments #2 through #7).
- D. Number of public awareness turtle walks/watches and hatchling emergences conducted  
In addition to the presentations and beach demonstrations described in item A above, nesting and hatching patrol volunteers interact regularly with interested beachgoers. Topics discussed range over the entire lifecycle of sea turtles.

## **V. Project Organization**

- A. Level of training  
An operating committee of five experienced members of the patrol organized the operation for the year. Each of these five was responsible for some phase of the program.
- Thirteen percent of the 110 volunteers were new this year. The more experienced members range from 3 to 15 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 are routinely watching for crawls, and all participate in the analysis of the crawl. Probing is done by the driver or 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 the report was done by the five members of the operating committee.

## **VI. Concerns and Recommendations**

### **A. Project concerns**

The continued severe erosion of the beach at the eastern end remains a major concern. The Town of Kiawah Island applied for a permit to fill in the existing cut between the inland pond and the ocean and to make a new cut around the point to the Stono River to alleviate the problem, but it was recently denied. The Town is now looking into a variety of ways to proceed.

### **B. Technical concerns and needs**

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

## **VII. Other Issues and Comments**

Our volunteer count increased by six individuals this year. While this is an improvement over the prior year where a loss of volunteers was experienced, the low level of nesting/hatching activity put a damper on the spirits of many volunteers which may lead to a decrease of returnees in 2005. In addition, a number of individuals 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. While this may not continue to be a problem in the future, we need to continue to step up our efforts to recruit additional volunteers to cover our patrol requirements.

## **VIII. Supplemental Information**

Sections I through VII constitute the information required by SCDNR, according to the outline required by them. However, there are additional data which may be of interest to volunteers.

### **A. The progress of the year**

The first nest was found on May 20<sup>th</sup>, the latest since the same date in 1998, and the last nest was laid on July 30<sup>th</sup>, the earliest in our recorded turtle history. The total nest count of 64 (58 staked nests, four marked as 'probables' that could not be confirmed by probing, and two wild nests) was lower than our prior record of 84 nests during the Hugo Year of 1989. The last nest was inventoried on October 6<sup>th</sup> making the entire length of the season 139 days, 25 days shorter than 2003.

The percent of nests laid on Kiawah in 2004 compared to 2003 (64 vs 225) is approximately 28 percent. This is comparable to the results seen in all the Loggerhead nesting sites along the eastern and gulf shores.

### **B. Distribution of nests**

Figure 1 on the following page shows the zone and mileage marker number where nests were found (laid) and where they ended up (total). For example, four nests were found in zone 1, marker 3 and none were left there. In zone 3, marker 11, four nests were found and nine were left (total), showing that five nests were moved into this area from elsewhere. Figure 2 is a zone summary of the same data. In both figures W represents a Wild nest and SS represents a Short Stake nest that hatched.

**MARKER DETAIL**  
Figure 1

<u>PATROL ZONES</u>	<u>MARKER NUMBER</u>	<u>FOUND NESTS/MARKER</u>	<u>TOTAL NESTS/MARKER</u>
Zone 1	E of 1	0	0
	1	1	0
	2	0	0
	3	4	0
	4	3	0
Zone 2	5	2	1
	6	1	0
	7	3	0
	8	0	0
	9	3	0 + 1 W
Zone 3	10	1	3
	11	4	9
	12	2	2
	13	0	0 + 1 SS
	14	2	2 + 1 SS
Zone 4	15	5	9 + 1 W
	16	2	4
	17	0	0
	18	1	2
	19	2	2
Zone 5	20	0	0
	21	1	2 + 1 SS
	22	2	2
	23	0	0
	24	0	0
Zone 6	25	3	3
	26	1	1
	27	0	0
	28	1	2
	29	0	0
Zone 7	30	2	2
	31	1	1
	32	1	1
	33	4	4
	34	2	2
Zone 8	35	2	2
	36	1	1
	37	0	1
	38	0	0 + 1 SS
	39	0	0
	W of 40	1	0
		<u>found</u>	<u>total</u>
	Totals	58	64

**ZONE DETAIL**  
Figure 2

<u>PATROL ZONES</u>	<u>FOUND NESTS</u>	<u>TOTAL NESTS</u>
Zone 1	8	0
Zone 2	9	1 + 1 W
Zone 3	9	16 + 2 SS
Zone 4	10	17 + 1 W
Zone 5	3	4 + 1 SS
Zone 6	5	6
Zone 7	10	10
Zone 8	3	4 + 1 SS
West of Zone 8	1	0
	<u>found</u>	<u>total</u>
	58	64



Initial Record				Relocated Nests										In Situ Nests														
Nest No.	Additional Data	Trial Nest X	Date Laid (A.M.)	No. of Eggs Laid	Negative			Emergence		Inventory Data					% Hatch Success O/E x 100	Negative			Emergence		Inventory Data					% Hatch Success AB/AA x 100		
					Eggs Lost to Probing	Depredation X	Storm Inundation or Erosion X	Date of First Emergence (A.M.)	Incubation Duration I minus D	Date Inventoried	Unhatched Eggs	Dead Hatchlings	Live Hatchlings	Total Live Hatchlings E - (F+L+M)		Eggs Lost to Probing	Depredation X	Storm Inundation or Erosion X	Date of First Emergence (A.M.)	Incubation Duration T minus D	Date Inventoried	No. of Shells	Unhatched Eggs	Dead Hatchlings	Live Hatchlings		No. Eggs Laid Q + W + X	Total Live Hatchlings AA - (Q+X+Y)
40	25		7/4/2004					N/A				0	#DIV/0!				8/28/2004	55	8/31/2004	97	8	2	0	105	95	90.48		
41	11		7/6/2004	158			08/24/04	49	8/27/2004	9	6	2	143	90.51					N/A					0	0	#DIV/0!		
42	11		7/6/2004	110			08/24/04	49	8/27/2004	16	1	2	93	84.55					N/A					0	0	#DIV/0!		
43	16		7/7/2004	116				N/A	9/19/2004	5	0	0	111	95.69					N/A					0	0	#DIV/0!		
44	10		7/9/2004					N/A				0	#DIV/0!				9/3/2004	56	9/6/2004	111	4	0	0	115	111	96.52		
45	14		7/10/2004					N/A				0	#DIV/0!	1			9/5/2004	57	9/8/2004	108	15	14	1	124	94	75.81		
46	33		7/11/2004					N/A				0	#DIV/0!					N/A	9/25/2004	76	26	0	0	102	76	74.51		
47	11		7/12/2004					N/A				0	#DIV/0!					N/A	9/22/2004	67	0	0	0	67	67	100.00		
48	11		7/14/2004					N/A				0	#DIV/0!				9/14/2004	62	9/17/2004	91	43	26	27	134	65	48.51		
49	15		7/15/2004	125			09/12/04	59	9/29/2004	4	1	1	120	96.00					N/A					0	0	#DIV/0!		
50	21		7/16/2004	109			09/12/04	58	9/15/2004	17	1	0	91	83.49					N/A					0	0	#DIV/0!		
51	33		7/17/2004	101	5		09/14/04	59	9/17/2004	10	0	4	86	85.15					N/A					0	0	#DIV/0!		
52	16		7/17/2004	106				N/A	10/1/2004	6	0	0	100	94.34					N/A							#DIV/0!		
53	16		7/18/2004					N/A				0	#DIV/0!				9/11/2004	55	10/1/2004	120	15	2	0	135	118	87.41		
54	18		7/23/2004					N/A				0	#DIV/0!				9/20/2004	59	9/23/2004	111	2	0	0	113	111	98.23		
55	15		7/23/2004					N/A				0	#DIV/0!				9/19/2004	58	9/22/2004	93	9	1	0	102	92	90.20		
56	15		7/27/2004	41			09/29/04	64	10/2/2004	3	0	0	38	92.68					N/A					0	0	#DIV/0!		
57	33		7/28/2004	86				N/A	10/6/2004	3	0	0	83	96.51					N/A					0	0	#DIV/0!		
58	35		7/30/2004					N/A				0	#DIV/0!					N/A	10/4/2004	140	8	1	2	148	139	93.92		
59	38		6/3/2004					N/A				0	#DIV/0!				7/30/2004	57	8/9/2004	75	19	2	0	94	73	77.66	SS1	
60	14		6/14/2004					N/A				0	#DIV/0!				8/8/2004	55	8/11/2004	127	5	0	0	132	127	96.21	SS2	
61	21		6/25/2004					N/A				0	#DIV/0!				8/18/2004	54	8/21/2004	96	2	6	19	98	90	91.84	SS3	
62	13		6/27/2004					N/A				0	#DIV/0!				8/21/2004	55	8/24/2004	119	6	0	1	125	119	95.20	SS4	
63	9							N/A				0	#DIV/0!					N/A	8/12/2004	61	54	14	0	115	47	40.87	Wild	
64	15							N/A				0	#DIV/0!					N/A	8/28/2004	85	11	1	11	96	84	87.50	Wild	
								N/A				0	#DIV/0!					N/A						0	0	#DIV/0!		
64		0		3072	9	5	1					395	129	49	2539						2863	763	76	229	3627	2787		

BEACH SUMMARY	
Total No. of Nests Laid	58
Beach Hatch Success	79.50
Beach Nest Success	98.28
Total Eggs Lost to Probing	10
Total Nests Depredated	6
Total Nests Storm Inundated/Eroded	1

RELOCATED NESTS SUMMARY	
No. Nests Relocated	26
No. Hatched with 10% Success	26
Relocated Hatch Success	82.65
Relocated Nest Success	100.00
No. Nests Completing Incubation	22
Average Incubation Duration	57.64
Average No. of Eggs per Clutch	118.15

IN SITU NESTS SUMMARY	
No. Nests In Situ	32
No. Hatched with 10% Success	31
In Situ Hatch Success	76.84
In Situ Nest Success	96.88
No. Nests Completing Incubation	21
Average Incubation Duration	56.14