



**CARETTA  
CARETTA  
RESEARCH  
PROJECT**

**CUMBERLAND  
ISLAND  
NATIONAL  
SEASHORE**

The Loggerhead Marine Turtle (*Caretta caretta*) is one of only seven recognized species of marine turtles still in existence today. Fossil Marine turtles in the same families as the living species date back as far as seventy-five to one hundred million years ago.

The loggerhead is one of four species of sea turtles occurring in the Georgia waters and is the only species to regularly nest on the Georgia coast.

Adult female loggerheads weigh between two and four hundred pounds and the males can potentially exceed this limit. The head and upper shell (Carapace) are a dark, reddish brown and the flippers and lower shell (plastron) are light yellow. The outer layer of plates on the shell are called "scutes". The number and position of the scutes are used to distinguish the various species of marine turtles. The loggerhead has five pairs of lateral scutes, two pairs of prefrontal scutes, and its carapace scutes do not overlap. Its head can reach a size of 25 cm in width and its carapace length up to 120 cm in length. The loggerhead's name refers to the size of its head, which is larger in proportion to its body than other marine turtles. The jaw structure of the massive head is designed to accommodate its diet of snails, mussels, crabs, and other hard shelled marine animals.

Marine turtles spend 99% of their life cycle in the ocean only the adult female emerges at two to three year intervals in order to nest. To date research has been centered on the behavior of the nesting female. Mating takes place in early spring in the coastal waters. Adult females come ashore after sundown from mid-May to mid-August to nest, usually in a well drained dune area with clean sand.

After selecting her nesting site she begins to prepare the area for her nest by moving her body from side to side creating a body pit. Once the preliminaries (body pit) are completed she begins to excavate her nest by alternately digging with her hind flippers. As she removes the sand from the nest she discards it by tossing it with her flippers in an upward motion, which creates a pattern on her carapace that leaves only a triangular shaped portion at the rear of the carapace exposed. This pattern allows her to blend in with the dunes and conceal her activity, from predatory animals such as, raccoons, feral hogs, and humans.

She digs her nest approximately eighteen inches deep or as is observed, when her flippers no longer reach the bottom of the nest. After her nest digging is completed she begins to lay. An average clutch contains from sixty to one hundred and twenty spherical shaped eggs which have a soft leathery shell.

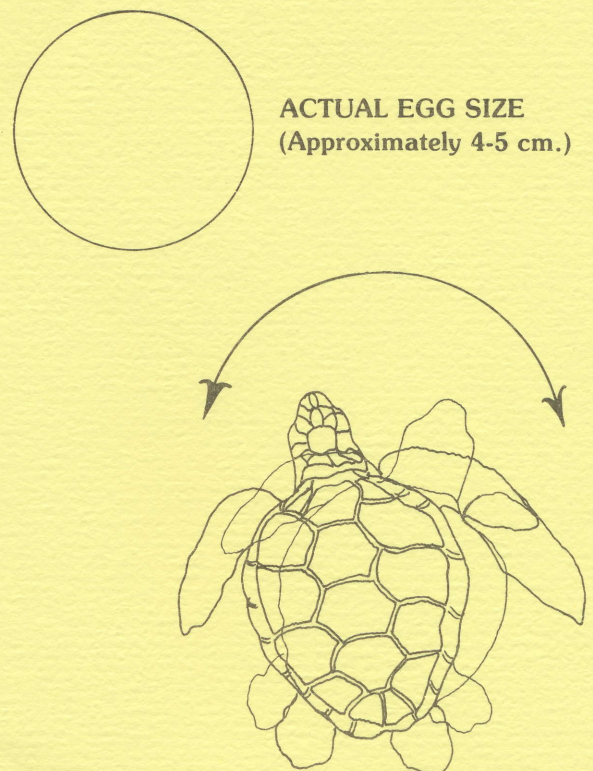
Once her laying is completed she begins to replace the sand over the eggs with her rear flippers moving in a kneaded fashion. Periodically she will raise and lower her body further packing the sand with her plastron, while she covers and conceals her nest. She uses her front flip-

pers to toss sand over the area and again moves her body back and forth to further disguise the location of the nest. The entire nesting process takes approximately fifty minutes. Once this process is completed she returns to the sea.

Incubation time for the nest is about sixty days depending upon weather conditions. After hatching the hatchlings (infant turtles) remain in the nest for several days in order to absorb their yolk sacs and to allow their shells, curved from being in the egg, to straighten. In a cooperative effort the hatchlings dig their way to the surface. This causes the sand to sift down through the mass of hatchlings and raise the floor of the nest allowing them to reach the surface.

Most hatchlings leave the nest in mass within two or three minutes to begin their crawl to the ocean. It appears that they are better able to orient themselves to the ocean if they make the crawl to the surf on their own. They also tend to emerge from the nest in the early evening after dark, however some may emerge on cool days with a cloud cover.

After the hatchlings enter the ocean human contact with them is lost and very little is known of their fates from this point until they reach sexual maturity, approximately twenty to twenty-five years. It is estimated that only one in ten thousand eggs survive to become adults.



**Side to Side Motion of Nesting Female During Preliminary Excavation of Nesting Site.**

## ENDANGERED SPECIES ACT

In 1978 the loggerhead marine turtle was added to the United States list of endangered and threatened species. The loggerhead is in the threatened category.

There are several factors that have contributed to the decline in population of the loggerhead. These factors include loss of habitat to coastal development, loss of nests due to natural beach erosion, predators, (such as raccoons, ghost crabs, feral hogs, and humans) and death (by drowning) in commercial shrimp trawl nets.

The primary concern on the Georgia Coast is the large number of sub-adults, that die in commercial shrimp trawl nets. The National Marine Fisheries Service along with several Commercial Fishermen have developed a Trawling Efficiency Device, T.E.D., which has shown an increase in shrimp catch, decreased by-catch, and improved water flow through the trawl, leading to reduced drag. This device allows the captured turtle to escape and congruently allows the fishermen to potentially meet her/his quota.

## CUMBERLAND ISLAND CARETTA CARETTA POPULATION STUDY.

The Cumberland Island Caretta Caretta Project is conducted jointly by the National Park Service and the Georgia Marine Turtle Co-operative. The project is part of a network of population studies being conducted on the Georgia Barrier Islands. Each of Georgia's Barrier Islands plays a significant role in providing information from which conservation programs can be designed.

The Cumberland Island Project, having completed its tenth year, is the third oldest, following the Little Cumberland Island Project, which is twenty years old and the Wassaw Island Project, which is eleven years old. The primary difference between the Cumberland Island Project and her sister island projects is that Cumberland observes natural hatching procedures with no intervention and the Little Cumberland and Wassaw Projects employ artificial hatchery techniques due to nesting beach erosion and natural predation.

The major impetus of the research being conducted on Cumberland and each of her sister island, is establishing a scientific data base, through a long term population study, from which effective conservation programs and marine turtle management plans, can be designed. The data collected from this type of study yields species kind and distribution; local and regional population sizes; classification of the types and distribution of existing coastal habitats, which are used by sea turtles; an assessment of human impact; and sociological impacts. All of these are significant factors in the design of effective conservation programs.

Cumberland Island's seventeen miles of beach provide prime nesting areas for the loggerhead. Yearly nesting of approximately 100 individual female turtles has been recorded on the island since 1973. The top five miles appears to receive the majority of the crawl activity and has been the focus of the seasonal research projects.

The National Park Service along with Island Residents have played significant roles in the protection of the beaches and the over all island ecology. Protection of Cumberland's well established dune system has provided and protected prime marine turtle nesting areas.

Public education is crucial to the success of any conservation program. The National Park Service through its Interpretive Staff is instrumental in the education of the visitors to the island. The interpretive staff in conjunction with the turtle research personnel work together to provide updated reports on the Cumberland Island Turtle Project.

The summer of 1983 marked a tremendous growth in the coordinating and expansion of marine turtle research. Representatives from the Georgia Barrier Island projects along with representatives from eleven different nations, in the Caribbean area, attended the Western Atlantic Turtle Symposium held in San Jose, Costa Rica. The primary goal of the W.A.T.S. I symposium was to establish a centralized international data base for marine turtle research. The conference was the first step towards international co-operation in the design of effective marine turtle conservation programs.

## NESTING BEACH SURVEY

The methodology used in the population research on Cumberland is the nesting beach survey. Turtle researchers patrol the beach from sunset to sunrise (regardless of weather conditions with the exception of lightning) to record sea turtle activities and to measure and tag emerging females.

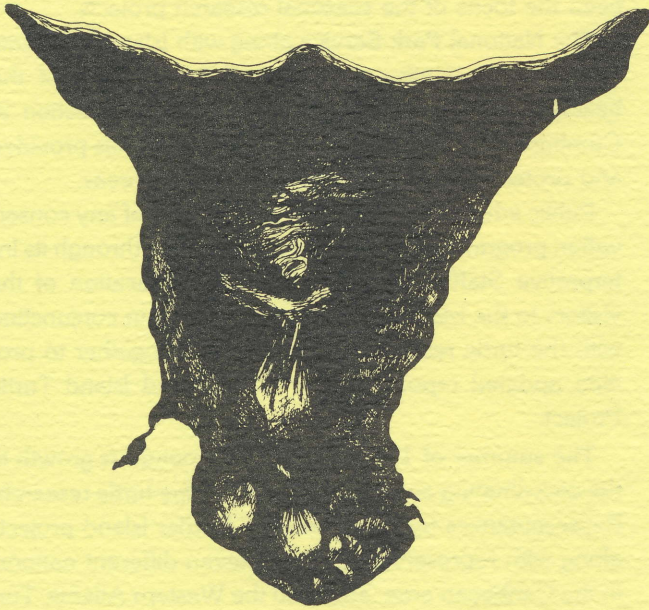
The nesting beach survey employed follows seven basic steps: 1. Species identification. 2. Number of turtles in each defined beach unit. 3. Number of nests. 4. Number of false crawls (turtle emerged but did not nest) 5. Turtle measurements. 6. Presence of any prior tags. 7. Data on new tags. (A Cumberland Island data sheet is included.)

Tag identification can potentially reveal many of the following: 1. Migratory paths and geographical range. 2. Breeding frequency. 3. How often an individual lays within a season. 4. How accurately she returns to a particular beach. 5. Longevity beyond the time when first tagged. 6. Growth rates. 7. Population size. Mrosovsky, N. *Conservation of Sea Turtles*, Page 14.

CUMBERLAND ISLAND  
NESTING BEACH SURVEY

CUMBERLAND ISLAND  
NATIONAL SEASHORE

Backcountry Map



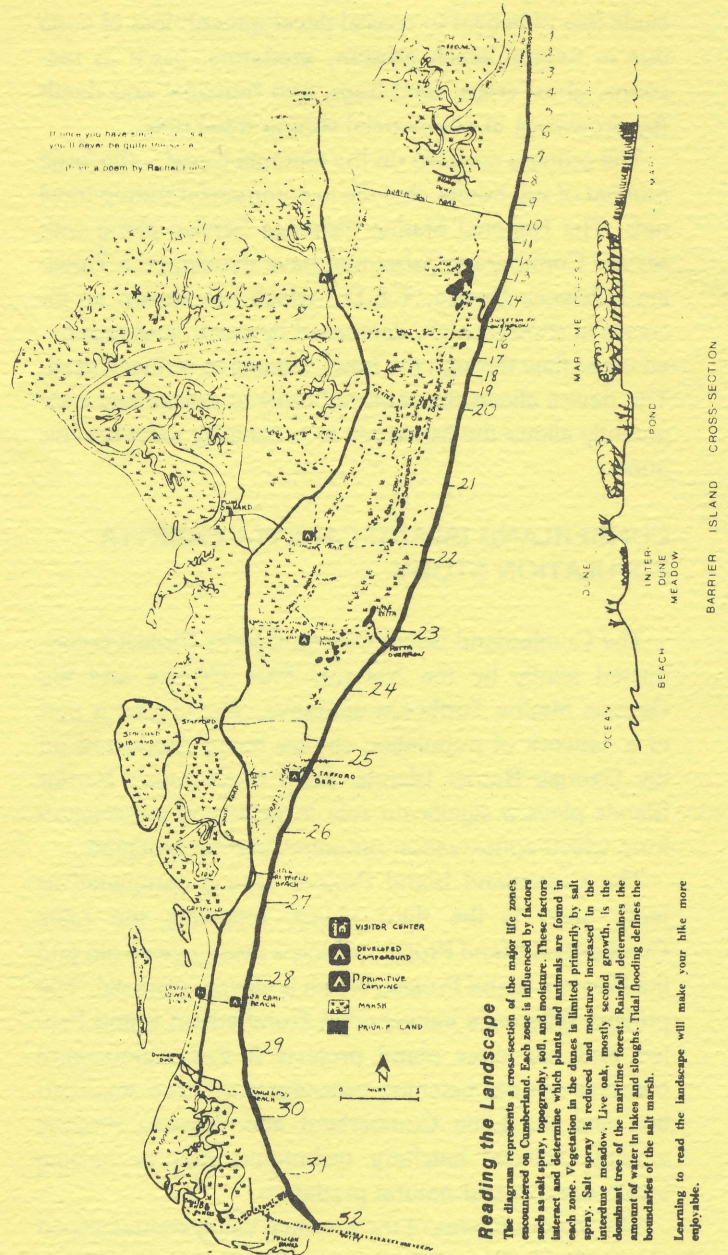
PATROL AREA

The seventeen miles of beach were divided into thirty two units. Zero point began at Long Point, on the north end of the island, and terminated at the Jetties (Sec. 32) on the south end of the island.

The primary study area, covering the top five miles of the island, was divided into quarter mile units, which were marked consecutively from one to twenty. Sections twenty - one through thirty - two were divided into one mile units.

The top twelve miles of the island were divided into three patrol areas: 1. Long Point (Section 1) -- North Cut Road (Section 10) This unit was the northern one half of the study area. 2. North Cut Road (Section 10) -- One and one quarter mile south of South Cut Road (Section 20) This unit was southern one half of the study area. 3. One and one quarter mile south of South Cut Road (Section 20) -- Little Greyfield Entrance to the Beach (Section 27). The beach survey team conducted fifty minute patrol runs in the above divisions. A fifty minute time interval was used since this is the approximate length of time the entire nesting process consumes.

The bottom five miles of beach, Little Greyfield Entrance to the Beach (Section 27) ---Jetties (Section 32), was patrolled three times during a night patrol. This area had a decrease in crawl activity with a total of 26 recorded crawls and 15 nests for the entire season. Refer to Cumberland Map.



Reading the Landscape

The diagram represents a cross-section of the major life zones encountered on Cumberland. Each zone is influenced by factors such as soil, topography, soil, and moisture. These factors help determine which plants and animals are found in each zone. Vegetation in the dunes is limited primarily by salt spray. Salt spray is reduced and moisture increased in the inter-dune meadow. Live oak, mostly second growth, is the dominant tree of the barrier forest. Barndall determines the amount of water in lakes and sloughs. Tidal flooding defines the boundaries of the salt marsh.

Learning to read the landscape will make your hike more enjoyable.

STUDY AREA  
1-20

AREA PATROLED EVERY  
50 MIN.  
20-27

AREA PATROLED 3 TIMES A NIGHT  
27-32

