

TORTOISE MARSH WALLOW?

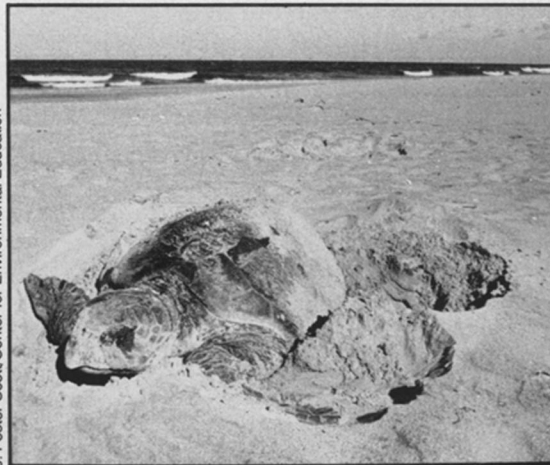
Research on a southeastern Georgian island challenges the prevailing theory of the loggerhead's 'lost year'

BY LINDA GARMON

In the Georgia sky one August midnight, Daniel Stoneburner crouched in the back seat of an airplane to track the voice of the loggerhead turtle. Before takeoff, he and colleagues of the University of Georgia Institute of Ecology had equipped 22 hatchlings with "voices" — tiny radio transmitters — and had watched the turtle tots break surf off the ocean side of Little Cumberland Island, beginning their first night-sea journey. Then, with the directional receivers tied to the airplane's landing gear feeding his earphones, Stoneburner guided the pilot according to the strength and direction of the transmitter signals. Each time he received a signal peak — indicating that the plane was directly over a radio transmitter — Stoneburner would tell the airplane's third passenger, Jerry Williamson of the Savannah Science Museum, to mark the location on a chart. The marks on that chart indicate that within an hour of the hatchlings' march to the surf, all radio transmitters had moved from the ocean side of Little Cumberland north around the point of the island into St. Andrews Sound. By morning, all radios signaled from the mouths of various salt marshes — most of which are opposite the ocean side of Little Cumberland Island.

That was last summer, and since then the Little Cumberland research results have sent ripples through the herpetologist community. Now, on the eve of a new turtle nesting season in the southeastern United States, the same research group is preparing a second experiment. This time the results may make waves, rocking an age-old tortoise boat that says the hatchlings first dash to the open ocean.

The ocean-dash theory attempts to explain where hatchling sea turtles disappear. That disappearing act — called the "lost year," though it lasts for many years — begins 60 to 65 days after the female loggerhead adults emerge from the sea to nest at the sites where they had hatched, and where their ancestors had hatched before them. The nesting season begins in late May when the first female turtles drag their more-than-250-pound bodies to sandy sites above the high tide mark, dig bulb-shaped nests with their flippers and drop a hundred or so eggs each. In August, the sand covering these egg clutches begins to sink, and the hatchlings scramble out of the bulbed nests, dashing to the sea. Unless entangled in fishing nets or kid-



J. Foster Scott/Center for Environmental Education

An adult loggerhead nests at Cape Hatteras National Seashore.



Andrew Young/Center for Environmental Education

Loggerhead hatchlings, Ossabaw Island, Ga.

napped by mats of seaweed that wash ashore, these silver-dollar-size loggerheads will not be seen again until they are at least pie-plate size. Observed also in green, ridley, hawksbill and leatherback turtles — which, like the loggerheads, are either endangered or threatened in their various habitats — this missing-year phenomenon is a major biological mystery. (Also see p. 215.)

The widely believed explanation for the southeastern U.S. turtle missing-year phenomenon is that the hatchlings immediately head for the Gulf Stream, living in the patches of sargassum weed, in an innate drive to reach the Sargasso Sea — about 100 miles off the Atlantic Coast. This theory is based on scattered finds of baby loggerheads amidst reddish-brown mats of seaweed washed onto Florida's Atlantic beaches. Hatchlings found in the stomachs of ocean-dwelling fish also support the ocean-dash theory.

But the theory was challenged several years ago when University of Georgia graduate students calculated that hatchlings carry only a third of the yolk energy needed to reach the Sargasso Sea. The research attracted the attention of Stoneburner, who believed it improbable that the herpetological youngsters could find enough food in floating mats of seaweed for a Sargasso journey. Stoneburner, who had been tracking adult turtle journeys by radio and satellite, decided to team up with Jim Richardson, director of the sea turtle program at the Institute of Ecology, to track hatchlings.

The major obstacle the two had to clear involved designing an appropriate transmitter for the two-inch-long turtles. "We tried putting something as small as a paper clip on them, and down they went," Richardson says. "They just can't carry anything." The problem was solved with a turtle transmitter-tow — a tiny radio-and-styrofoam-float combination trailed on a six-foot-long string of dental floss tied to a

hole punched in the margin of the hatchling shell.

Does towing affect hatchling behavior? "With a lot of animals, the answer would be yes — tremendously," says Richardson, "but sea turtles tend to be pretty persistent little buggers — even if they lose a flipper, they keep on going. I do not believe the radios had any effect." In addition, during the period of airborne tracking, the tides reversed, making it highly unlikely that all radio floats detached from the hatchlings and flowed with the current. Last year's tracking of the radios to the salt marshes, therefore, seems to challenge the ocean-dash theory for the missing year of the Little Cumberland loggerheads.

But the research continues. "It is important to keep in mind that we have not yet found any sea turtles in the marshes," Richardson says. "All we know is that the radio transmitters went into the marshes." As a result, Little Cumberland Island researchers have modified this year's turtle project: The trackers will attach styrofoam floats to hatchlings and follow them, one by one, in canoes.

Even if this summer's canoe follows last summer's airplane pattern north around the tip of the island into the marshes, the Little Island turtle project will be far from complete. A confirmation that the loggerheads prefer the marshes over the open ocean for their first maritime dip raises other questions. Are the loggerheads wallowing in the marsh to build up energy for an ocean odyssey? Are they imprinting for future returns to the island? Finally, says Richardson, "There are a lot of predatory fish and blue crabs in the marshes that would love to catch these hatchlings — so what are they doing back there?" □