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Cover photo: Atlantic Ridley turtles tumble out of their shells and into Padre Island sand. (See story page 3).

Atlantic Ridley Turtle Reintroduced At Padre Island

By Milford R. Fletcher

The Atlantic Ridley Turtle (*Lepidochelys kempi*) has long been recognized as an endangered species, possibly the most endangered of all sea turtles. It was formally listed by the U.S. Fish and Wildlife Service (USFWS) in 1970 as evidence accumulated showing an alarming population decline. A 1947 film made from aircraft showed a nesting aggregation of approximately 40,000 females on an isolated Mexican beach. Estimates in the 1970s were considerably less than this number, and by 1981 indications were that there may be no more than 1,000 individuals of this species on the planet earth.

In 1977, a joint effort between the Audubon Society, the State of Texas, the National Marine Fisheries Service, the USFWS, the U.S. Coast Guard and a number of other private, State and Federal agencies, including the National Park Service and the Republic of Mexico, met to explore avenues to help this animal make a comeback.

In meetings with the world's leading turtle authorities it soon became evident that little was known about the biology of the Atlantic Ridley; obviously we were exploring new ground. However, officials of Mexico were eager to assist the turtle in its plight as were all contacted in the U.S.A. Thus, the Atlantic Ridley turtle restoration project began.

We began with several assumptions that are yet to be tested in a satisfactory manner. Some of these were:

1. It would be desirable to have a breeding population of the turtle in an area in the United States where they had been known to nest in historic times. The logical area was Padre Island National Seashore (NS) in south Texas where the animal was known to nest in the past, although infrequently. In addition, the NPS would be able to afford some protection in the event that a new breeding population became established. The animal is particularly susceptible to predation by humans since it is one of the few turtles to lay its eggs during the daytime.

2. Although the mechanism is unknown to us, even after four years of research, we believe that the turtles, in some way, imprint to the beach where they hatch and to which they return as adults to lay their eggs. We feel that this imprinting may be olfactory, as in salmon, which return to spawn in the stream where they hatched.

3. Mortality of hatchling turtles is quite high in other species studied. We assumed this would be so for the Atlantic Ridelys as well. It appeared that mortality would be greatly decreased if we could release turtles somewhat larger than hatchlings (which are about 1 1/2 inches in diameter.) Hatchling turtles are avidly sought by predators such as crabs and sea birds; mortality of yearling turtles appears to be primarily by sharks. Also, the eggs are highly prized; adult turtles are used as meat and their shells for jewelry.

With these things in mind, we began the project. Rather than enumerate the frustrations, lost tempers,

late permits, and other problems we faced and solved, I will outline the steps we now go through to raise a turtle to approximately one year of age.

First, Styrofoam boxes are filled with sand from Padre Island and relocated to the only known nesting beach which, in the Mexican State of Tamaulipas, is called Rancho Nuevo. We felt that if the imprinting process is olfactory, then the eggs should not be exposed to sand other than that from Padre Island. The turtle eggs are gathered in plastic bags from a laying turtle. The eggs are then transferred to the boxes of Padre Island sand and flown to Padre Island where they are placed in an insect- and predator-proof hatching facility. They are incubated in the Styrofoam boxes for approximately 50 days until they hatch.

The hatchlings then are transported a short distance to an isolated beach where they are released and allowed to make their way down the beach and a short distance into the surf. This is done to approximate the conditions that would exist if the animals actually had hatched on the Padre Island beach. As soon as they enter the surf, the young turtles are caught, placed in boxes, and flown to the National Marine Fisheries Service in Galveston, Texas. The U.S. Coast Guard has been most helpful in the transportation phase of this operation. The catching of the turtles in the surf is always attended by the news media and a host of visitors who appear to enjoy the activities immensely. The publicity has been favorable and the visiting public has been very supportive. The turtles are held at the laboratory in Galveston for approximately one year, during which time they reach dinner plate size.

Because of a conflict between the turtles and the Texas shrimping industry, the first two releases of yearling turtles were made off the west coast of Florida. Shrimp trawlers operating off the Texas coast had frequently caught adult sea turtles, which sub-



Hatchling turtles being released on Padre Island beach to make their way to the surf.

stantially interfered with their operations. Recently, the National Marine Fisheries Service and the Texas Department of Parks and Wildlife, working with shrimping industry, has tested "excluder nets" that allow shrimp but not sea turtles to enter. Because of the progress and the good faith evidenced in this effort, yearling turtles were released in the spring of 1981 off Padre Island. The University of Texas Marine Station at Port Aransas provided use of its research vessel for this release.

To date, nearly 5,000 yearling turtles have been released in the Gulf of Mexico. Each turtle is tagged for identification purposes, in the event of future recovery. Numerous turtles have been re-caught, from the east coast of Florida to Chesapeake Bay. The following table indicates the number of eggs received and hatching success:



Surf imprint is made on this tiny hatchling, under careful human supervision.

SUMMARY OF ATLANTIC RIDLEY TURTLE PROJECT

Year	Number of Eggs Received from Mexico	Hatching Percent at Padre Island	Number of Hatchlings Released
1978	2191	88.1	2019
1979	2053	85.7	1439
1980	2976	84.1	1530
1981	2284	83.3	

The many unknowns that still exist in this project may influence our actions in the future. For example, we are still not sure at what age these turtles reach sexual maturity. Speculations range from 8 to 14 years. We are far from sure that the animals will return to Padre Island NS to nest and, if they do, whether we will be able to protect them. The State of Texas has an open beach law, and one very popular pastime is driving 4-wheel drive vehicles on the beach at Padre Island. It is conceivable that we may have to close the beach to vehicles for a period of two or three months, which is certain to cause some controversy, although

the public has been very supportive of the project to date.

Research on Green and Pacific Ridley turtles indicates that the temperature at which the eggs are incubated greatly influences the sex of the hatchlings. It appears that the early part of the middle third of the incubation period is critical in determining the hatchlings' sex. If the temperature at this critical time exceeds 29.5 degrees Celsius (85 degrees F.), there seems to be a preponderance of females hatched. If the temperature is less than 29.5 degrees Celsius during this critical period, the preponderance of hatchlings will be males. Sometime in the future, if this proves true of Atlantic Ridleys, we may decide to take advantage of this phenomenon. On the surface, it seems that adding females to the wild population would be advantageous, but this must be approached with great care since so little is known about the breed-

ing biology of Atlantic Ridleys. In the wild, females seem to nest twice each season with an average of about 100 eggs per clutch. Males do not come ashore during the breeding season, so little is known about their behavioral role in the breeding process.

Outstanding cooperation and support of numerous agencies and individuals has spelled the success so far of this project. Four National Park Service regional directors and three Padre Island superintendents have staunchly supported the reintroduction. Republic of Mexico officials and U.S. Federal, State and private organizations have shown a spirit of cooperation that is astonishing, with so many agencies involved. The Southwest Parks and Monuments Association has generously donated funds to support travel of officials from Mexico to the U.S. for strategy meetings. Without the continuing support of all these organizations, the project would have failed.

Numerous agencies are committed to continue this project but funding is always uncertain. Indications are that the National Marine Fisheries Service may undergo budget cuts which could reduce the "head start" program. The USFWS and NPS are under tight budget constraints which also could affect the program. Ultimately, our objective is to reintroduce enough turtles to establish another breeding population of the animals and provide another habitat in which they can breed and reproduce.



That's enough for now, say these NPS employees as they catch the hatchling and transfer it to the Galveston-bound box.



After their taste of ocean, these hatchlings are on their way to the Galveston laboratory for a year of growing up.



Dinner plate size, these year-old Atlantic Ridley turtles are now big enough, it is hoped, to keep from winding up as the main course on some larger critter's dinner plate. Here they are released in the wild.