

Kemp's Ridley Research Continues

By Donna Shaver

Kemp's ridley sea turtle (*Lepidochelys kempi*) is the most endangered sea turtle species in the world; only about 400 nesting females remain in the population. In the last two decades, Padre Island National Seashore (PAIS) has participated in, and established, several projects to conserve, restore, and study this critically endangered species. Park programs have encompassed all life stages of Kemp's ridley turtles, from incubation of eggs to study and protection of adults.

Efforts to Establish a Secondary Breeding Colony

In 1978, agencies from the U.S. federal government, State of Texas, and Republic of Mexico began a cooperative program to restore and enhance the Kemp's ridley sea turtle population. Nearly all nesting by this species occurs along a 16 mile stretch of beach near the village of Rancho Nuevo, Tamaulipas, Mexico. However, sporadic nesting has been reported from Corpus Christi, Texas to Veracruz, Mexico. A portion of the restoration program was a 10-year experimental attempt to establish a secondary breeding colony of this species at PAIS through "imprinting" (Fletcher 1982, Shaver 1990).

During each summer, from 1978-1988, approximately 2,000 Kemp's ridley eggs were collected from Rancho Nuevo and shipped to the park for incubation and a large quantity of data, never previously collected for this species, was amassed (Shaver et al. 1989, Shaver and Chaney 1989). Of the 22,507 eggs received, 17,358 (77.1%) hatched (Shaver 1989a, 1990) and 15,875 hatchlings subsequently were shipped to the National Marine Fisheries Service Lab in Galveston, Texas for 9 to 11 months of captive rearing (termed "head-starting"). Overall, 13,454 of the head-started yearlings, experimentally imprinted to Padre Island, were released into the Gulf of Mexico.

Beach Patrols and Egg Incubation

To date, no turtles released from this project have been found nesting at PAIS or elsewhere. However, it is unknown how many survived after release. Additionally, it is uncertain whether any have attained adulthood yet, since at least 11-12 years may be required for females of this species to attain the minimum nesting size (Zug 1990).

A pair of mating Kemp's ridley sea turtles was sighted within the Mansfield Channel, located at the southern end of the park, on June 3, 1991 (Shaver 1992). This was the first documented observation of mating by this species in Texas waters. Unfortunately, the turtles could not be identified as either wild or head-started and no nests were found subsequent to the mating.

In an attempt to identify whether Kemp's ridleys are returning to nest at PAIS, seasonal beach patrols for nesting sea turtles, tracks, nests, and hatchlings were initiated in 1986. From mid-April through August, park and other local beaches are patrolled from 3-7 days per week. All-terrain vehicles, 4-wheel drive trucks, and surplus military vehicles are used to conduct these rigorous patrols. With the assistance of numerous dedicated volunteers, park staff patrol a 70-mile stretch of beachfront daily, with a total of approximately 6,500 patrol miles being logged each summer.

Beach patrollers also attempt to identify and protect nests laid by sea turtles that are not part of the restoration project. Kemp's ridley, loggerhead, and green sea turtles nest in small numbers along the Texas coast. Twelve confirmed nests were found from 1979-1992,



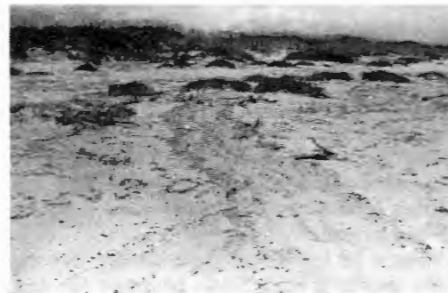
Kemp's ridley sea turtle hatchling being fed in the PAIS rehabilitation facility.

most at PAIS (Shaver 1989b, 1990, 1991). In fact, during the last decade, more Kemp's ridley nests have been located at PAIS than on any other beach in the United States. Because of the level of park personnel expertise in incubating sea turtle eggs, PAIS incubated or monitored 11 of the 12 nests laid along the Texas coast and all sea turtle eggs laid by captive turtles held in Texas.

Strandings and Rehabilitation

In 1980, the Sea Turtle Stranding and Salvage Network was established to document, protect, and study sea turtles washed ashore on U.S. beaches. Since the inception of this network, the park has taken an active role and maintained records for all strandings documented on Texas shores.

The park recently took the lead in efforts to detect and protect sea turtle hatchlings stranded on local beaches. Since 1980, more hatchling sea turtles have been found stranded along the beaches of North Padre and Mustang islands than any other area in Texas. Significantly more were located during the summer of 1990 than during any previous summer from 1980-1989 (Shaver 1991) (Fig. 1). Forty (including 23 Kemp's ridley) hatchlings were found alive, but most were weak, injured, and in need of immediate care and stabilization. Beginning in 1990, the park instituted programs to address the three following concerns related to stranded hatchlings: (1) detection; (2) care and



Green sea turtle tracks shown here were found at Padre Island NS on July 14, 1992.

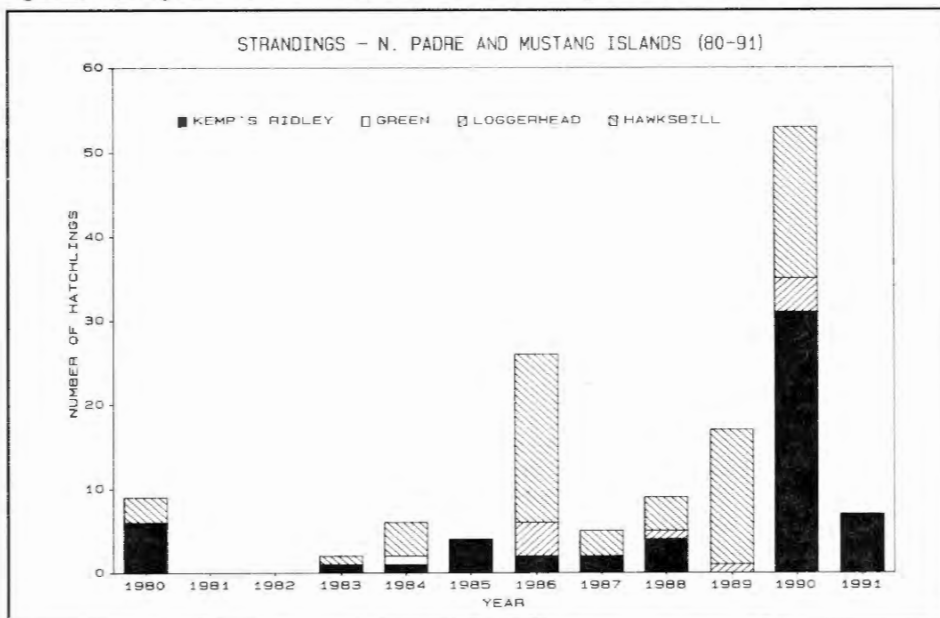


Sean Baker, Biological Technician, conducts a patrol for nesting sea turtles, tracks, and stranded hatchlings.

rehabilitation, and (3) study and determination of age/origin.

Stranded hatchlings are extremely small and difficult to detect. Ongoing beach patrols have been modified to facilitate location of these animals. During the hatchling stranding season, patrols are conducted at slower speeds and patrol efforts are concentrated in areas of known, previous hatchling strandings. Public education programs, ongoing to solicit public assistance with reporting of nesting turtles and tracks, have been modified to include messages about reporting stranded hatchlings.

Figure 1. Hatchling sea turtles stranded on North Padre and Mustang Islands, Texas, 1980-1991.



at Padre Island National Seashore

Unfortunately, in 1990, there was no suitable local facility available where the hatchlings could be taken for stabilization and rehabilitation. After coordination with John Miller (Chief, Resource Management PAIS) in early 1991, EXXON Corporation, USA donated funding for construction of a hatchling rehab facility at the park. This is the first in the world designed specifically for the rehabilitation of stranded Kemp's ridley sea turtle hatchlings. It has the capacity to hold 70 turtles, each in an individual 20 gallon aquarium. Local veterinarians assist with care of the hatchlings and those successfully rehabilitated are released into the Gulf of Mexico.

Park staff attempt to determine whether the hatchlings found washed ashore on local beaches emerged from undetected nests laid on south Texas beaches. All stranded hatchlings are measured and examined externally. Additionally, dead individuals are necropsied and gonads are removed for histological sex determination. We believe that some of the loggerhead and Kemp's ridley hatchlings found during the last decade may have emerged from nests laid on south Texas beaches. However, most of the larger Kemp's ridley and all of the hawksbill hatchlings probably originated elsewhere.

Future Program Efforts

Since 1978, the park has been involved in a continuum of research and conservation measures to help save the Kemp's ridley from extinction. By increasing the chances of survivorship of individual Kemp's ridley turtles, park efforts ultimately may aid the overall recovery of the species.

The NPS now is focusing efforts for this species on attempts to locate and protect nesting females (wild and head-started), nests, and stranded hatchlings. Staff members at PAIS are conducting extensive beach patrol and public education programs, both of which have been given high priority in the recently completed Kemp's Ridley Sea Turtle Recovery Plan. As directed by the Recovery Plan, Endangered Species Act, NPS mandates, and PAIS Sea Turtle Management Plan, these programs will continue for the foreseeable future.

Shaver is Supervisory Natural Resource Management Specialist at Padre Island National Seashore

Literature Cited

Fletcher, M.R. 1982. Atlantic ndley turtles reintroduced at Padre Island. *Park Science* 2(2):3-4.
Shaver, D.J., D.W. Owens, A.H. Chaney, C.W. Caillouet, Jr., P.M.

Burchfield, and R. Marquez M. 1989. Styrofoam box and beach temperatures in relation to incubation and sex ratios of Kemp's Ridley sea turtles. In: *Proceedings of the Eighth Annual Workshop on Sea Turtle Conservation and Biology*, Feb. 24-26, 1988, Fort Fisher, NC. pp. 103-108. B.A. Schroeder (ed.). NOAA Technical Memorandum NMFS-SEFC-214.

Shaver, D.J. and A.H. Chaney. 1989. An analysis of unhatched Kemp's ndley sea turtle eggs. In: *Proceedings from the First International Symposium on Kemp's Ridley Sea Turtle Biology, Conservation and Management*, Oct. 1-4, 1985, Galveston, TX, pp. 82-89. C.W. Caillouet, Jr., and A.M. Landry, Jr. (eds.). Texas Sea Grant Pub. TAMU-SG-89-105.

Shaver, D.J. 1989a. Results from eleven years of incubating Kemp's ridley sea turtle eggs at Padre Island National Seashore. In: *Proceedings of the Ninth Annual Workshop on Sea Turtle Conservation and Biology*, Feb. 7-11, 1989, Jekyll Island, GA. pp. 163-165. S.A. Eckert, K.L. Eckert, and T.H. Richardson (eds.). NOAA Technical Memorandum NMFS-SEFC-232.

Shaver, D.J. 1989b. Green sea turtle geographic distribution. *Herpetological Review* 20(1):14.

Shaver, D.J. 1990. Kemp's ridley project at Padre Island enters a new phase. *Park Science* 10(1):12-13.

Shaver, D.J. 1991. Padre Island National Seashore Kemp's Ridley Sea Turtle Project 1991 Report. NPS, Dept. of the Interior. 39 pp.

Shaver, D.J. 1992. Kemp's ndley sea turtle reproduction. *Herpetological Review*, 23(2):59.

Zug, G.R. 1990. Estimates of age and growth in *Lepidochelys kempi* from skeletochronological data. In: *Proceedings of the Tenth Annual Workshop on Sea Turtle Conservation and Biology*, Feb. 20-24, 1990, Hilton Head, SC. pp. 285-286. T.H. Richardson, J.I. Richardson, and M. Donnelly (eds.). NPAA Technical Memorandum NMFS-SEFC-278.