

Sea Turtle Survey: Cooperative Effort in the Mansfield Channel

by Donna J. Shaver

According to numerous historical accounts, large numbers of green turtles (*Chelonia mydas*) once occupied Texas inshore waters (bays, estuaries, and passes). In the mid-1800's, these waters were the site of a green turtle fishery. During peak years of operation, more than 500,000 pounds (230,000 kilograms) of sea turtles were taken from the area each year. Over-harvesting and severe freezes in the late-1800's apparently decimated the area's green turtle population. Today, all five sea turtle species occurring in Texas waters — the green, Kemp's ridley (*Lepidochelys kempii*), loggerhead (*Caretta caretta*), hawksbill (*Eretmochelys imbricata*), and leatherback (*Dermochelys coriacea*) turtles — are federally listed as either Threatened or Endangered. Current human-related threats to sea turtles in this area include take incidental to dredging, boating, and fishing activities.

In June 1989, the Padre Island National Seashore initiated the first systematic field survey of sea turtles in Texas inshore waters. Funding has been provided by the U.S. Fish and Wildlife Service (FWS), National Park Service, Southwestern Parks and Monuments Association, and National Biological Survey. These agencies hope the survey will aid in development of protective measures for sea turtles present in the Mansfield Channel, which is located at the southern end of Padre Island National Seashore. This channel is one of only two direct passages that connect the Laguna Madre and the Gulf of Mexico.

One day per month since June 1989, researchers have placed a 100 yard (91 meter) long tangle net at the mouth of the Mansfield Channel to capture turtles for tagging and temporary study. Data on species composition, seasonality, residency, temporal patterns, size classes, growth, and several other topics have been collected. Blood samples

have been removed from many of the turtles to determine gender and breeding colony of origin.

During 565 hours of netting from June 1989 through December 1993, 56 green turtles were caught, some more than once, and one hawksbill turtle was captured once. The estimated capture rate calculated for this study was similar to those recorded during previous netting studies conducted in Florida waters identified as green turtle developmental habitat (Guseman and Ehrhart 1990). All of the green and hawksbill turtles captured in Texas were juveniles. Twenty-four of the 56 green turtles (43 percent) were caught more than once, and the mean interval from the first to the last capture of these 24 individuals was 5 months. Green turtles were caught during all months of the year except January, and no turtles were caught when the average daily water temperature was below 59.5°F (15.5°C).

No Kemp's ridley sea turtles were netted in the Mansfield Channel, but a copulating pair of this critically endangered species was sighted 6.1 miles (9.8 km) west of the netting location in June 1991 (Shaver 1992). This sighting was the first documented observation of mating Kemp's ridleys in Texas waters, and one of only a few records of this species in the Laguna Madre and the two connecting passageways to the Gulf of Mexico.

The data gathered during this study reveal the importance of the Mansfield Channel as habitat for green turtles along the Texas coast. Transient and seasonally resident green turtles apparently use the Mansfield Channel for foraging and resting habitat during the spring, summer, and fall months, but leave the area during winter in favor of deeper, warmer waters. Green turtles may stop at the Mansfield Channel before they pass through to access feeding areas, after they exit inshore feeding areas, or prior to continuing their trav-

els in offshore waters. Based on high recapture rates, it appears that many of the turtles that arrive at the Mansfield Channel in spring and summer become residents for a few months. These individuals may use the area as an intermediate developmental habitat between their pelagic and lagoonal stages.

In 1992, the National Park Service and National Marine Fisheries Service used data from the survey to formulate recommendations for minimizing sea turtle take during dredging in the Mansfield Channel. The information is also being used by the FWS during development and implementation of sea turtle recovery plans. Information from this study should continue to help guide management decisions affecting protection of sea turtles in Texas inshore waters.

References:

Guseman, J.L., and L.M. Ehrhart. 1990. Green turtles on Sabellariid worm reefs: initial results from studies on the Florida Atlantic coast. pp. 125-27 in T.H. Richardson, J.I. Richardson, and M. Donnelly, compilers. Proceedings of the Tenth Annual Workshop on Sea Turtle Conservation and Biology. NOAA Technical Memorandum NMFS-SEFEC-278, Miami, Florida.

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

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