Kemp's Ridley Sea Turtle

Scientific Name: *Lepidochelys kempii*

Federal Status: Endangered, 12/2/70• State Status: Endangered

Description

The Kemp's ridley is the smallest member of the sea turtle family Cheloniidae. Adults have a carapace (upper shell) length of up to 28 inches and can weigh 75 to 100 pounds. Juvenile Kemp's ridleys have broad, heart-shaped, keeled carapaces that are serrated along the trailing edge. In adults, the carapace is round and can be wider than it is long. Hatchlings and juveniles have a dark-charcoal colored carapace, but as they age this color changes to olive-green or gray. The lower shell (plastron) is charcoal-colored in hatchlings and later changes to a light cream color. Adult males often have a concave plastron and long tails that extend beyond the rear of the carapace. Kemp's ridleys have large, somewhat triangular heads and powerful, massive jaws.

Kemp's Ridley turtle

Kemp's Ridley hatchling

Distribution and Range

Kemp's ridley adults are generally only found in the Gulf of Mexico. Juveniles have been reported most commonly in the northern Gulf of Mexico between Texas and Florida. Juveniles are also found along the eastern seaboard of the United States as far north as Nova Scotia, Canada. Apparently, drifting hatchlings and juveniles from the western Gulf enter the eastern Gulf Loop Current and are carried by the Florida Current and the Gulf Stream up the eastern coast of the United States. Some juveniles even cross the Atlantic and have been reported from Ireland and the Azores.

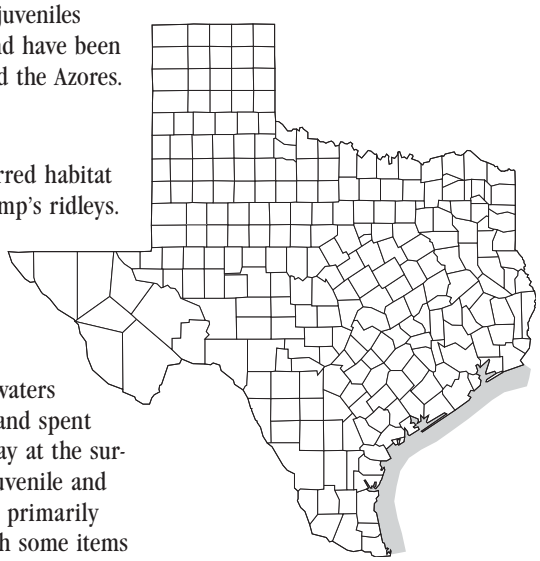
Habitat

Shallow waters are preferred habitat for juvenile and adult Kemp's ridleys. Satellite-tracked females migrating away from the nesting beach at Rancho Nuevo, Mexico and Padre Island, Texas, generally remained in near shore waters less than 165 feet deep, and spent less than an hour each day at the surface. It is thought that juvenile and adult Kemp's ridleys feed primarily near the bottom, although some items may be taken from the surface or water column.

Hatchlings spend many months as surface drifters in the open ocean (pelagic phase). Recent evidence suggests that they may be found in surface water areas where drifting material, such as floating marine vegetation and debris, accumulate. These areas are called convergence zones or drift lines. Little is known regarding how long they drift, what they eat, or how they get back to the coast. Studies have shown that, after the pelagic phase, body size of Kemp's ridley is related to water depth. For example, the smallest juveniles are found in shallow waters of bays or lagoons, often foraging in less than 3 feet of water, whereas larger juveniles and adults are found in deeper water.

Juvenile Kemp's ridleys studied in the Chesapeake Bay area used the estuary for summer feeding. They occupied shallow foraging areas over extensive seagrass beds and fed mostly on blue crabs. In Texas, Kemp's ridley and loggerhead sea turtles are thought to partition food resources: the ridleys forage on relatively fast blue and spotted crabs, whereas the loggerheads feed on seapens and slow-moving crabs.

The nesting beach at Rancho Nuevo, in the Mexican State of Tamaulipas, is the primary land habitat (used only for nesting) for Kemp's ridley. This remote stretch of beach along the Gulf of Mexico is located about 100 miles north of Tampico, Mexico. It is the only known major nesting beach for this species in the world. However, lower levels of nesting also occur every year on other beaches in Tamaulipas, the Mexican state of Veracruz, and in Texas, particularly in the southern part of the state. Nesting also occasionally occurs in other U.S. states along the Gulf and Atlantic coasts.



Life History

The diet of juvenile and adult Kemp's ridley turtles consists primarily of crabs, shrimp, snails, bivalves, sea urchins, jellyfish, sea stars, fish, and occasionally marine plants. Crabs are

a preferred food and several species are eaten. In some regions, the blue crab is the most common food item. Although feeding habits of hatchlings have not been observed in the wild, they are presumed to eat swimming and floating animal matter located at or near the surface of the open Gulf of Mexico and Atlantic Ocean.

Reproduction in Kemp's ridley differs from that of other sea turtles in four important ways. First, most female Kemp's ridleys, along with their sister species Olive ridleys (*Lepidochelys olivacea*), arrive at nesting beaches in large groups. These nesting events are called "arribazones." Many females gather in the waters near the nesting beach and emerge to nest simultaneously over a period of several hours or days. Second, Kemp's ridleys nest mainly during the daytime, whereas other sea turtles usually nest at night. Third, most nesting occurs on one stretch of beach, which is unique for sea turtles. Fourth, Kemp's ridley females nest every 1 to 3 years, with an average of every 2 years, whereas other sea turtles nest about every 2 to 3 years.

During the breeding season, female Kemp's ridleys migrate toward the nesting beach. A large portion of the adult male population may remain offshore from the nesting beach year-round. Courtship and mating occur in nearby offshore waters several weeks prior to and during the nesting period. Nesting usually occurs during April, May, and June, although it can occur in July and August if cool spring weather delays the onset of the reproductive period.

A well-defined and elevated dune area, above the tidal zone, is preferred for nesting. The female digs a hole in the sand, deposits her eggs, and returns to the sea, a process which takes about 45 minutes. Females generally deposit one to three clutches per season, laying an average of about 100 soft, leathery, white eggs per clutch. After about 45 to 55 days of incubation in the sand, the eggs hatch. The temperature of the incubating eggs during the middle third of the incubation period determines the gender of the developing embryo. Warmer temperatures produce primarily females and colder temperatures primarily males.

To escape a variety of land predators, hatchlings move quickly from the beach through the surf zone and into open waters of the Gulf of Mexico. Scientists think the baby turtles may remember or "imprint" on the particular smell, chemical make-up, or magnetic location of the beach where they hatched. Other predators await them in the water. Most breeding females return to the shallow waters of the western Gulf of Mexico to nest at the same beach where they hatched. Wild Kemp's ridleys require 10 to 20 years to reach sexual maturity.

Threats and Reasons for Decline

The Kemp's ridley population crash that occurred between 1947 and the early 1970's was probably a result of the combination of intensive annual harvest of eggs and mortality of juveniles and adults in shrimp trawl nets.

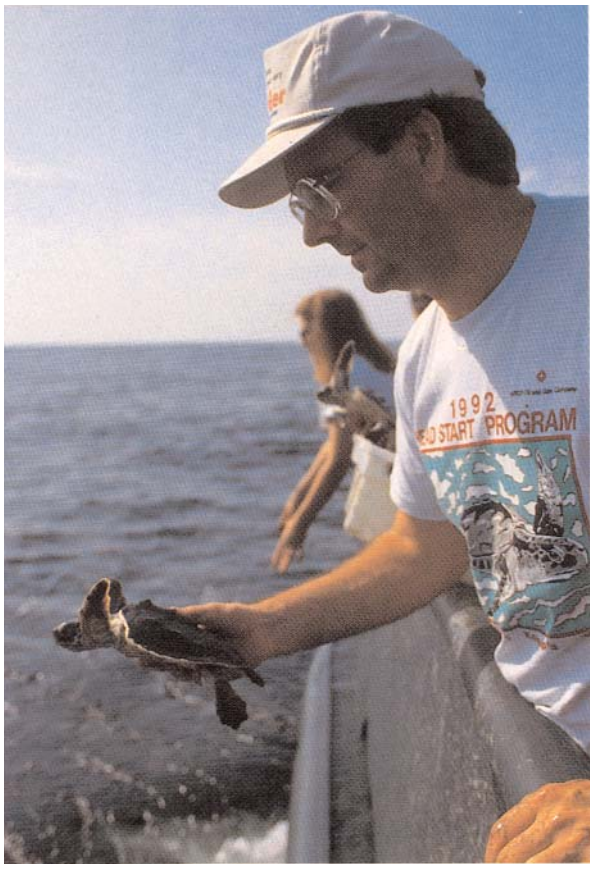
Kemp's ridley eggs were (and still are in many places) considered a delicacy. Between about 1947 and 1966 people dug up truckloads of eggs and sold them in the towns and cities of Texas and Mexico. Since many of the eggs were either taken by people or eaten by predators, there was a drastic decline in the turtle population. Also, prior to its being listed as endangered by the U.S. Fish and Wildlife Service in 1970, Kemp's ridleys, along with green and loggerhead turtles, were taken for meat by commercial fishermen in the northern and northeastern Gulf of Mexico. Human consumption of turtle eggs and meat has declined with national and international protection. Although nesting turtles and nests are protected at Rancho Nuevo, the harvest of eggs and slaughter of animals continue to be potential problems in other areas.

Because the Kemp's ridley sea turtle is a shallow water inhabitant, it is frequently caught in shrimp trawl nets that may drown or exhaust the turtle. There is strong evidence that shrimp trawling is a primary agent for sea turtle mortality today. The National Marine Fisheries Service estimated that, prior to the 1990 law requiring Turtle Excluder Devices (TEDs), about 12,000 sea turtles drowned each year in nets. The National Research Council's Committee on Sea Turtle Conservation estimated in 1990 that 86% of the human caused deaths of juvenile and adult loggerheads and Kemp's ridleys resulted from shrimp trawling.

Nesting female
© NPS D. J. Shaver

Marine debris ingested by Kemp's Ridley turtle
© NPS R. W. Wilder

Trash discarded at sea is another serious problem facing this species and other marine animals. Some of this debris never makes it to shore because it is eaten by fishes, sea turtles, birds, and marine mammals that mistake it for food. Postmortem examinations of sea turtles found stranded on the south Texas coast from 1986 through 1988 revealed 54% (60 of the 111 examined) of the sea turtles had eaten some type of marine debris. Plastic materials were most frequently ingested, and included pieces of plastic bags, Styrofoam, plastic pellets, balloons, rope, and fishing line. Non-plastic debris such as glass, tar, and aluminum foil were also ingested by the sea turtles examined. Much of this debris comes from offshore oil rigs, cargo ships, commercial and recreational fishing boats, research vessels, naval ships, and other vessels operating in the Gulf of Mexico. Laws enacted during the late-1980's prohibit the disposal of all types of plastics, and regulates the distance from shore that non-plastic debris may be discarded. However, enforcement of these laws is



Releasing "headstarted" Kemp's Ridley turtles
© TPWD Mario Gonzalez

National Park Service biologists with a nesting Kemp's Ridley turtle
© NPS P. Eubank

difficult over vast areas of water. In addition to trash, pollution from heavy spills of oil or waste products poses additional threats. Other sources of mortality include dredging, entanglement in drift and gill nets, collisions with boats, explosives used to remove oil rigs, entrapment in coastal power plant intake pipes, and cold stunning in waters off the northeastern U.S coast.

Only 50 years ago, Kemp's ridley was a very abundant sea turtle in the Gulf of Mexico. The most reliable measure of Kemp's ridley population size has been the annual count of adult nesting females at Rancho Nuevo. A film taken by a Mexican businessman in 1947, and discovered by scientists in 1961, shows an estimated 40,000 females nesting in one day on the single known nesting beach on the northeastern coast of Mexico. Despite nest protection efforts in Mexico which began in 1966, the number of nests found each year continued to drop to a low of 702 nests in 1985. Fortunately, increasing numbers of nests have been found during nearly every year since then. However, with only about 3,300 females nesting in one year in 2003, today all conservation efforts are desperately needed.

Recovery Efforts

Since the principal nesting beach is in Mexico, the continued, long-term cooperation of two nations is necessary to recover the species. A joint United States-Mexican management program is underway which includes nesting beach protection and incubation of eggs. The U.S. Fish and Wildlife Service has provided assistance at the Rancho Nuevo nesting beach since 1978. Continued assistance to Mexico is needed to ensure long-term protection of the major nesting beach, including protection of adult turtles and enhanced production and survival of hatchlings. Education efforts and beach nest protection work in Mexico is supported by a partnership which includes the Gladys Porter Zoo, U.S. Fish and Wildlife Service, Texas Parks and Wildlife Department, National Marine Fisheries Service and the seafood industry, along with others from the U.S. and Mexico. It is hoped that through education of children, the conservation message will be spread throughout local communities. In the United States, the U.S. Fish and Wildlife Service, National Marine Fisheries Service, National Park Service, Texas Parks and Wildlife Department, and Texas A&M Sea Grant conduct programs to educate the public about sea turtle conservation.

Research is underway to fill in gaps in knowledge that will result in better management of these sea turtles. Research priorities include determining distribution and habitat use for all life stages, migration routes and foraging areas of adults, critical mating and reproductive behaviors and physiology, and survivorship of hatchlings.

Regulations went into effect in the United States in 1990 and in Mexico in 1993 which require commercial trawlers to install Turtle Excluder Devices (TEDs) on their boats. This device guides turtles and other large objects out of the net through an escape opening in the net. Hopefully, the use of these devices in the Gulf of Mexico by the shrimp fleets of the United States and Mexico will substantially reduce mortality associated with net entanglement. Additionally, in 2000, Texas Parks and Wildlife Department revised their shrimp fishery management plan to include measures that should, as a side-benefit, enhance sea turtle survival through a reduction in entanglement death.

Finally, during each summer from 1978 to 1988, approximately 2000 Kemp's ridley eggs were shipped to Padre Island National Seashore from Rancho Nuevo, Mexico in an attempt to establish a secondary breeding colony of this species through "experimental imprinting." Eggs were incubated by the National Park Service at Padre Island National Seashore. Hatchlings that emerged from these eggs were transferred to the National Marine Fisheries Laboratory in Galveston and held for 9 to 11 months before being released into the Gulf of Mexico. It was hoped that the larger size of the turtles after "headstarting" would increase survival in the wild, and that imprinting on Padre Island beaches would establish a nesting colony at some time in the future. Additionally, a few thousand hatchlings were taken directly from Mexico for headstarting from 1978 through 1992. Some headstarted turtles have been recorded nesting in the wild since 1996, with most nests found at Padre Island National Seashore. Kemp's ridley is a native nester on the Texas coast and both wild and headstarted turtles are now nesting there. Attempts to search for nesting of these turtles in Texas and in Mexico continue. Now in Phase II, the Kemp's ridley headstart project is looking for evidence that headstarted turtles are reproducing. The project has produced useful information on sea turtle behavior, husbandry, and

physiology. However, until the results of this experiment are better known, it is not yet considered to be a long-term management technique for species recovery.

How You Can Help

Visit Padre Island National Seashore or the Texas State Aquarium in Corpus Christi to learn more about sea turtles. You can also contact the National Marine Fisheries Service office in Galveston (409) 766-3500.

If you see a sea turtle or its nest on the beach, do not disturb it. Report beach sightings of live or dead turtles to 866-TURTLE5 (866-887-8535), Padre Island National Seashore (361) 949-8173, ext. 226, or Texas Parks and Wildlife Department Law Enforcement Office in Corpus Christi (361) 289-5566. Nesting turtles and nests should be reported immediately so that they can be protected and documented as quickly as possible.

Do not discard trash of any type, especially plastics, in the bays or Gulf. If you catch a sea turtle on a hook and line, contact one of the agencies listed above and wait for a representative to pick up the turtle. If you can't call or wait, remove the hook if you can, or cut the line as close to the hook as possible, since ingested fishing line and hooks are often deadly to sea turtles.

Commercial fisherman can contact the National Marine Fisheries Service (409) 766-3500 or the Texas A&M Marine Advisory Service (979) 345-6131 for technical assistance with design and use of TEDs.

For More Information Contact

Texas Parks and Wildlife Department
Wildlife Diversity Branch
4200 Smith School Road
Austin, Texas 78744
(512) 912-7011 or (800) 792-1112
or
U.S. Fish and Wildlife Service
Ecological Services Field Office
10711 Burnet Road, Suite 200
Austin, Texas 78758
(512) 490-0057
or
U.S. Fish and Wildlife Service
Corpus Christi Ecological Services Field Office
c/o TAMU-CC, Campus Box 338
6300 Ocean Drive, Room 118
Corpus Christi, Texas 78412
(361) 994-9005

Nesting habitat

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Funds for the production of this leaflet were provided by the U.S. Fish and Wildlife Service, under Section 6 of the Endangered Species Act.