

Sea Turtles

Of the six sea turtle species that are found in U.S. waters or that nest on U.S. beaches, all are designated as either threatened or endangered under the Endangered Species Act. *Endangered* status means a species is considered in danger of extinction throughout all or a significant portion of its range; *threatened* means it is likely to become endangered.

Six of the seven sea turtle species are listed as endangered or threatened: green, Kemp's ridley, olive ridley, hawksbill, loggerhead and leatherback sea turtles. Only one species, the flatback sea turtle, is not considered threatened with extinction at this time. Overharvest of eggs for food, intentional killing of adults and immature turtles for their shells and skin, and accidental drowning in commercial fishing gear are primarily responsible for the worldwide decline in sea turtle populations. In addition, coastal residential and resort development has degraded nesting habitat, and pollution of oceans threatens foraging habitat.

Sea turtles are among the largest living reptiles. They have scales and a bony shell, are cold-blooded, breathe air, and lay their eggs on land. Sea turtles are long-lived, although scientists are uncertain exactly how long they live because there is no known way to determine their age.

Unlike the land turtles from which they evolved more than 150 million years ago, sea turtles spend almost their entire lives in the sea. They glide gracefully through the water with flipper-like forelimbs and a streamlined shell. Sea turtles frequently come to the surface to breathe when active, but they can remain underwater for several hours while resting. Leatherbacks can dive to more than 3,000 feet below sea level.

Though most sea turtles live in warm tropical and subtropical waters, leatherbacks are the exception. They travel as far north as Labrador, Canada, and Alaska and as far south as the Cape of Good Hope in Africa and southern New Zealand.

Adult green turtles are *herbivores* (plant-eaters), while all other sea turtles are

carnivores (meat-eaters) or *omnivores* (plant and meat-eaters). Sea turtles do not have teeth; instead, they use their powerful jaws to tear and crush their food. Each species prefers certain food items.

During the nesting season, which in the continental United States occurs between March and October, female sea turtles come ashore to lay their eggs. Females excavate pits using their fore and rear flippers to remove the upper layer of dry sand. Then, with their bodies in the pit, they use their rear flippers to dig egg chambers in moist sand. Females lay from 50 to 160 white eggs, about the size of ping-pong balls, cover the eggs with sand, and return to the water.

The eggs incubate for about 50 to 70 days before hatching at night. The sea turtle hatchlings make their way up through the sand to the surface and then scurry toward the water. Hatchlings spend several days swimming offshore until they reach safety within the protective masses of floating seaweed in areas where ocean currents meet. These areas, called *driftlines*, are rich in food and provide hiding places that conceal juvenile turtles from predators. They drift there for a year or more until they reach a certain size or age at which time they return to nearshore waters. As adults, female sea turtles return to the same beaches where they hatched to lay their eggs, often navigating across great expanses of water.

Today there are still many threats to sea turtles. Sea turtle nests can be destroyed by natural events, such as tidal surges or hurricanes, and the eggs can be lost to predation by raccoons, ghost crabs, and other animals. Although adult sea turtles have few natural predators, sharks and killer whales are known to prey on them. Unlike land turtles, sea turtles cannot protect themselves by pulling their head inside their shell.

Human activity is the primary cause of the decline in sea turtles. Modification to nesting areas can have a devastating effect on sea turtle populations. In many cases, prime sea turtle nesting sites also are prime real

estate. If a nesting site has been disturbed or destroyed, female turtles may nest in inferior locations where the hatchlings are less likely to survive, or they may not lay any eggs at all.

Artificial lighting from developed beachfront areas often disorients nesting females and hatchling sea turtles, causing them to head inland by mistake. This leaves them vulnerable to predation, exhaustion, desiccation or being crushed by vehicles. Adult females also may avoid brightly lit areas that would otherwise provide suitable nesting sites.

Beach driving is another major threat to sea turtles. Headlights and movement of vehicles on the beach at night can deter female turtles from coming ashore to nest. Often, vehicles collide with turtles at night. Also, vehicles on the beach can leave tire tracks in the sand deep enough to prevent hatchlings from taking a direct route from the beach to the ocean and leaving them vulnerable to depredation, desiccation and exhaustion. Vehicles running over nests may harm egg development.

Activities in the open water also threaten sea turtles. Sea turtles may become entrapped in commercial fishing nets and shrimping trawls and caught on hook and line fishing gear. Although turtles can hold their breath for long periods, stress and activity from trying to escape from fishing gear shortens this time and often results in death. Sea turtles surfacing to breathe may be killed or injured by ships, small boats and jet skis.

Commercial exploitation of sea turtles for food and leather products has led to the collapse of many populations. International trade in sea turtle shells has been a major factor in the decline of hawksbill populations around the world. Between 1970 and 1989, more than 1.2 million hawksbills were killed for their shells, which are used to make combs, brushes, jewelry and other ornamental items.

Sea turtles often mistake balloons, plastic pieces and other debris for food they normally eat. Consuming this marine debris

can lead to nutritional problems and death. Many sea turtles, particularly those in Florida and Hawaii, are afflicted with a disease called *fibropapillomatosis*. This disease can cause large tumors on the turtle's skin, eyes and mouth, and sometimes affects internal organs. Turtles with heavy tumor burdens become debilitated and die. Although the disease primarily affects green turtles, it is emerging as a serious threat to loggerheads and has been documented in several other sea turtle species as well. Scientists believe that the environmental alteration of sea turtle foraging habitat by pollution and contaminants may also play a role in this disease

The 1973 Convention on International Trade in Endangered Species regulates the import and export of endangered and threatened species. More than 100 CITES member nations pledged to monitor and reduce trade in sea turtle products.

To protect sea turtles in the southeastern United States, Congress established the Archie Carr National Wildlife Refuge in 1989. Located on two barrier islands off

Florida's eastern shore, the 500-acre refuge includes more than 9 miles of beach. Large numbers of loggerhead and green sea turtle nests are laid in this area, and it also provides nesting habitat for leatherbacks.

The U.S. Fish and Wildlife Service, with the assistance of state conservation agencies, educates beachfront property owners about the threats to sea turtles and their nesting sites and some communities now restrict or prohibit beachfront lighting during sea turtle nesting season.

Since many sea turtle species swim through international waters and nest on beaches outside the U.S., sea turtle conservation requires global cooperation. For example, Kemp's ridleys and loggerheads often are caught in shrimp trawls in the Gulf of Mexico. Currently, U.S. and Mexican regulations require all shrimpers to use turtle excluder devices, which provide an escape hatch for trapped turtles.

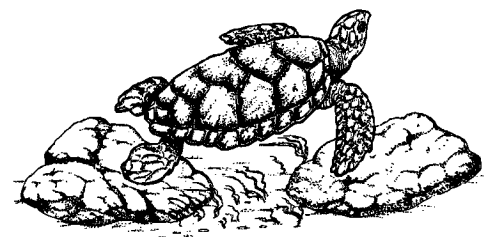
Cooperation between the U.S. Fish and Wildlife Service, National Marine Fisheries Service and the Mexican government now

protects the only major Kemp's ridley nesting site in the world. This beach is located along the Gulf of Mexico near the village of Rancho Nuevo. While nearly 40,000 female Kemp's ridley sea turtles came ashore on this beach in 1947, only 200 were observed nesting by 1978. Today, because of protection of nesting females and their nests and the use of turtle excluder devices in the shrimp fisheries of both Mexico and the United States, there are an estimated 1,500 nesting females.

Biologists once relied on tagging as a means to determine where and how far sea turtles migrate. Metal or plastic tags, placed on a flipper or on the shell, included instructions for reporting the date and location of a sighting. Today, researchers use satellite tracking devices to study migration. Sea turtles are outfitted with a small transmitter that sends a signal to a satellite orbiting the earth. Computers on board the satellite calculate the location of the turtle and send the data back to the earth for researchers to study.

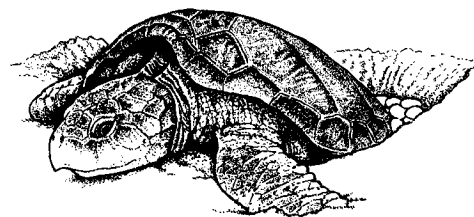
Loggerhead turtle

The loggerhead turtle is the most abundant nesting sea turtle in the southeastern U.S. It is reddish brown to yellow in color and has a large head. The adult loggerhead is 2½ to 3½ feet long and weighs 150 to 400 pounds. Loggerheads feed primarily on mollusks and crustaceans.



Kemp's ridley turtle

The Kemp's ridley turtle, the rarest and most endangered of all sea turtles, is also the smallest with adults reaching 2 to 2½ feet in length and weighing 80 to 100 pounds. The Kemp's ridley has an oval shell and is usually olive-gray in color. Its diet consists primarily of crabs. Unlike most other sea turtle species, the Kemp's ridley nests primarily during the daytime.



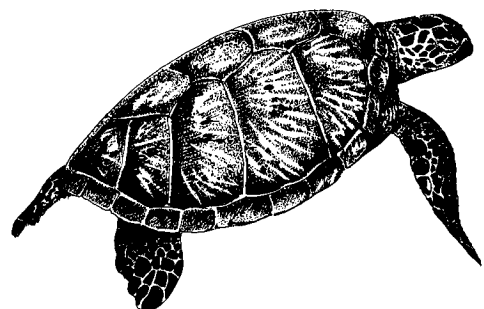
Hawksbill turtle

The hawksbill turtle has a distinctive hawk-like beak and a patterned top shell with overlapping scales. As an adult, it may reach up to 3 feet in length and weigh 100 to 200 pounds. It is able to climb over reefs and rocks to nest in beach vegetation. The hawksbill feeds primarily on sponges and is most often associated with the coral reef community.



Green turtle

The green turtle can reach more than 3 feet in length and weigh 300 to 400 pounds as an adult. Though brownish in color, its name comes from the greenish color of its fat, called calipee, which was used to make turtle soup. Hatchling green turtles eat a variety of plants and animals, but adults feed almost exclusively on seagrasses and algae.



Leatherback turtle

The leatherback, at 4 to 8 feet in length and 700 to 2,000 pounds as an adult, is the largest of the sea turtles. Its shell is composed of a mosaic of small bones covered by firm, rubbery skin with seven longitudinal ridges or keels. Jellyfish are the main staple of its diet.

