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Leatherback Sea Turtle

Dermochelys coriacea



Photo credit: Life of Sea, blogspot.ca

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The leatherback sea turtle is the largest of all sea turtles in the world, in fact it is the largest of all reptiles by weight. Unlike other sea turtles, leatherbacks have a special layer of fat under their skin which protects them from cold temperatures. They also have a thick rubbery hard outer shell that is slightly different from other sea turtles. Leatherbacks may be the most widely found reptile in the world because of their habit of following drifting jellyfish, their primary food source. They are found in tropical and temperate waters of the Atlantic, Pacific and Indian Oceans and are currently on the endangered species list.

Characteristics

The leatherback sea turtle, named for its smooth, rubbery shell, is the largest of all sea turtles, growing up to 2.4 meters (6 feet) long and 1.6 meters (4 feet) wide. They weigh on average 400 kilograms (880 pounds). The largest leatherback on record was a male found stranded in Wales in 1988, weighing 916 kilograms (2015 pounds). Leatherbacks live between 30 and 50 years and sometimes much longer. They swim further (up to 12,000km) and dive deeper (1200 m) than any other sea turtle.

The leatherback has a brown to black smooth, elongated barrel-shaped shell (also called a carapace) that comes to a point above the tail. The shell is decorated with small, white or yellow scattered blotches. The turtle's head and neck are black or dark brown with scattered white, yellow or pink blotches. The nose of the turtle is blunt and its jaw includes a beak-like structure on each side. Male and female leatherback sea turtles are differentiated by the shapes of their shells, the amount of pink coloring on their heads and the lengths of their tails. The males' shells are more concave than the females. Males also have longer tails and less pink on their head than the females.

There are two known subspecies of the leatherback: the western Atlantic leatherback (*Dermochelys coriacea coriacea*) and the Pacific leatherback (*Dermochelys coriacea schlegelii*). The western Atlantic leatherback has longer forelimbs in comparison to the length of its body, a shorter head and is darker in color with fewer markings on its back, lower jaw and

throat. The Pacific leatherback has shorter forelimbs, a longer head and is paler with more markings on the back, lower jaw and throat. There is a possible third subspecies but very little is currently known about it.

Since they are very distinctive from other sea turtles, Leatherbacks belong to their very own separate family of reptiles called *Dermochelys*. Reptiles are normally characterized for being cold blooded, the leatherback sea turtle, however, has a unique ability that enables them to change their body temperature so that they can survive in very cold temperatures. There are layers of fat under the turtle's skin which insulate them from the cold and a specialized circulatory system that minimizes heat loss. The leatherback is also different from other sea turtles because it does not have a hard shell. Instead, it has a thick layer of cartilage strengthened by thousands of tiny bones that create a rubbery texture. Leatherbacks also have the amazing ability of traveling across oceans without relying on currents in the water for direction.

The leatherback sea turtle is often confused with other marine (sea) turtles that also grow to be six feet long and 1.6 meters wide. The front flippers of the leatherback are also the same length among all sea turtles.

Lifecycle

The mating process of these giants occurs in three phases with the mating occurring between the second and third phases. The first phase involves nesting which may occur between April and July for Atlantic Leatherbacks and November to January for Pacific Leatherbacks. During the second phase of nesting, the turtles follow drifting schools of jellyfish, their primary source of food, from tropical to temperate waters. In the third phase of nesting, the turtles migrate back to the tropics as a result of cooling water temperatures and shortened amounts of daylight. The Western Atlantic Leatherback nesting areas occur in northern South America, Central America, Caribbean Islands and parts of the United States including Padre Island in Texas, Florida and Georgia. The Eastern Leatherback nesting areas include Ecuador, Panama, Costa Rica, Guatemala, and Mexico. Leatherbacks may also nest in temperate waters off Atlantic Canada and in the Pacific Ocean off Alaska and British Columbia. Leatherbacks favor easily accessible beaches for nesting so they can avoid damage to their soft plastron (underside of the shell) and flippers. Nesting on open beaches can be dangerous because seasonal changes in wind and wave direction result in many eggs laid on the beach being lost.

Leatherbacks dig nests in the sand like other sea turtles but often lay more eggs. In one nesting season, a female turtle may lay as many as twelve groups or clutches of eggs with 65 to 85 eggs in each group resulting in a total of between 780 and 1020 eggs. Unfertilized eggs are laid among fertilized eggs to allow air circulation in the nest.

The eggs are equal to the size of a billiard ball and have soft shells. The total nesting process is believed to take approximately two hours after which the eggs undergo incubation for approximately 65 days. The nest is completely covered in sand in order to disguise it from predators. Leatherbacks nest an average of six times every two to three years. It is the only time that the turtle will return to land after hatching.

At birth, baby turtles (also called hatchlings) are mostly black with white stripes on the back and covered with tiny scales. They use a sharp tooth called a caruncle, or egg tooth, to break out of their egg. This egg tooth falls off shortly after the hatchling digs itself out of the nest, a process which may take several days. They are normally 61.3 millimeters long and weigh 45.8 grams. The underside of the hatchling is scattered with pinkish white and black blotches. Hatchling turtles emerge out of their nest as a group, usually during a rainstorm or at night and head immediately toward the sea, guided by the reflected light off the water's surface. This is the most dangerous part of in a young hatchlings life as it can easily be preyed upon by birds or crabs. It may also lose its way as a result of being distracted by the bright lights of civilization. Losing its way may result in the hatchling being exposed to dehydration and death. Little is known about the leatherback's growth rate after hatching or the age at which it reaches sexual maturity.

Habitat

Leatherbacks may be the most widely distributed reptile in the world because of its habit of following drifting jellyfish. They are found in the tropical and temperate waters of the Atlantic, Pacific and Indian Oceans. Leatherbacks are pelagic creatures meaning that they prefer to live in the open sea rather than near the shore. They are sometimes found in shallow waters off bays and estuaries. Leatherbacks are carnivorous creatures that eat invertebrates (animals that do not have

backbones). Their diet is comprised mainly of jellyfish, but they may also eat sea urchins, octopi, squid, snails, crabs, small fish, other baby turtles, algae and floating kelp.

Behaviour

Apart from their nesting pattern, very little is known about the behavior of leatherbacks. The exact hours of feeding are not known but leatherbacks spend most of their time near the surface of the water in the morning between nine and twelve. They sleep while floating on the surface. Leatherbacks are very powerful swimmers as a result of a synchronized beating of the turtle's forelimbs. Leatherbacks can swim at a maximum speed of 5 km/hour but they have been recorded swimming at speeds of up to 9.3 km/hour, allowing the turtle to travel great distances whether for migration or random trips. Leatherbacks usually travel on their own but have been recorded traveling in groups. Leatherbacks can be very aggressive when captured. They flail their flippers and may even bite. When threatened in the wild, Leatherbacks will dive to escape their predators. They may also make sounds when distressed and swim away from harm very quickly.

Threats

Leatherback sea turtles are listed as endangered on the Species at Risk List in Canada and the Endangered Species List in the United States. Today, there are only an estimated 30,000 left in the world, compared to 115,000 in 1998. The numbers of nesting females continue to rapidly decline. The Pacific Leatherback is facing immediate extinction while the western Atlantic Leatherback is being destroyed at a very rapid rate from being caught unintentionally in shrimp fishing nets. Leatherbacks are facing extinction mainly as a result of human interaction with their environment. Nesting sites are often disturbed by tourism or commercial development and by poachers who steal the eggs for food. Development of beachfronts may prevent or discourage nesting females from getting to nesting sites as well as washing out nests. The artificial lights of construction sites also pose a threat to leatherbacks by causing disorientation to both adults and hatchlings. Turtles are attracted to light so they may come out of the ocean towards it which may result in death or injury. The use of off-road vehicles on beaches also poses a serious problem because it can result in decreased hatchling success due to sand compaction or in worse cases, the killing of hatchlings. Ruts in the beach caused by the vehicles may also make it difficult for the turtles to nest. Adult turtles are sometimes captured for food and their body parts are used FOR various products such as traditional medicines. Leatherbacks may also be injured or killed in collisions with boats or by mistakenly swallowing garbage as food. Leatherbacks are also affected by oil spills which affect their respiration, skin, blood chemistry and salt gland functions.

The survival of leatherbacks is also threatened by predators such as crabs, lizards, gulls, turnstones, plovers, sandpipers, vultures, opossums, raccoons, coatis, feral dogs, mongooses and pigs who eat their eggs. Once born, hatchling are preyed upon by crabs, gulls, crows, vultures, birds, hawks, owls, cuttlefish, octopi, sharks and other large fish. Predators of adult turtles include humans, jaguars who attack nesting females, large sharks and orcas.

What Can We Do to Help?

Efforts on the part of governments and non-government agencies and private individuals such as the Center for Marine Conservation, Greenpeace and National Audubon Society have helped to increase public awareness of sea turtle conservation efforts. They have distributed audio-visual aids and printed materials about sea turtles including booklets, bumper stickers and decals, coloring books, video tapes and full color identification posters for turtles. Fishing companies have included Turtle Exclusion Devices (TEDs) in their nets which allow turtles to escape the nets when they are caught. In Canada, the Nova Scotia Leatherback Turtle Working Group (NSLTWG) has been instrumental in helping fishermen to recover the Leatherback population. Conservation efforts in Canada have also been assisted by research conducted at the Bedford Institute of Oceanography and Dalhousie University. Nest protection efforts have been increased in Mexico, Costa Rica and the United States. National parks have been created to help prevent further commercial construction and the theft of eggs by poachers. Leatherbacks have also been fitted with satellite tracking devices which help conservation efforts by determining where the turtles go and how many are left in the ocean.

There are many helpful websites available that provide information on leatherbacks and other sea turtles and what each individual can do to help:

- North Atlantic Leatherback Turtle Working Group: www.seaturtle.ca
- Turtle Trax: www.turtles.org
- World Wildlife Fund: www.panda.org/species/leatherback
- Leatherback Task Force: www.euroturtle.org

Bibliography

Ernst, Carl H., Jeffrey E. Lovich and Roger W. Barbour. Turtles of the United States and Canada. Washington: Smithsonian Institution, 1994.

Fisheries and Oceans Canada

http://www.mar.dfo-mpo.gc.ca/masaro/english/Species_Info/Leatherback.html

Office of Protected Resources. National Marine Fisheries Service.

http://www.nmfs.noaa.gov/prot_res/species/turtles/leatherback.html

“The Leatherback Turtle”

<http://www.turtles.org/leatherd.htm>

Vancouver Aquarium – Aqua Facts

<http://www.vanaqua.org/education/aquafacts/leatherbacks.html>

Nova Scotia Leatherback Turtle Working Group

<http://www.seaturtle.ca/>