

NOAA Fisheries

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## Species

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Leatherback Turtle (*Dermochelys coriacea*)

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## Status

**ESA Endangered** - throughout its range

## Taxonomy

**Kingdom:** Animalia

**Phylum:** Chordata

**Class:** Reptilia

**Order:** Testudines

**Family:** Dermochelyidae

**Genus:** *Dermochelys*

**Species:** *coriacea*



**Leatherback turtle**  
(*Dermochelys coriacea*)

Photo: Scott R. Benson, NMFS  
Southwest Fisheries Science Center

## Species Description

The leatherback is the largest turtle and the largest living reptile in the world. Mature males and females can be as long as six and a half feet (2 m) and weigh almost 2000 lbs. (900 kg). The leatherback is the only sea turtle that lacks a hard, bony shell. A leatherback's carapace is approximately 1.5 inches (4 cm) thick and consists of leathery, oil saturated connective tissue overlaying loosely interlocking dermal bones. The carapace has seven longitudinal ridges and tapers to a blunt point. Adult leatherbacks are primarily black with a pinkish white mottled ventral surface and pale white and pink spotting on the top of the head. The front flippers lack claws and scales and are proportionally longer than in other sea turtles; back flippers are paddle-shaped. The ridged carapace and large flippers are characteristics that make the leatherback uniquely equipped for long distance foraging migrations.

## Did You Know?

- The largest leatherback on record (a male) stranded on the coast of Wales in 1988 and weighed almost 2020 lbs (916 kg).
- Leatherbacks can dive deeper than 3900 ft (1200 m)!

Female leatherbacks lay clutches of approximately 100 eggs on sandy, tropical beaches. Females nest several times during a nesting season, typically at 8-12 day intervals. After 60-65 days, leatherback hatchlings with white striping along the ridges of their backs and on the margins of the flippers emerge from the nest. Leatherback hatchlings are approximately 50-77 cm (2-3 inches) in length, with fore flippers as long as their bodies, and weigh approximately 40-50 grams (1.4-1.8 ounces).



**Video: Leatherback Turtles- Pacific Upwelling & Jellyfish**  
NMFS Southwest Fisheries Science Center

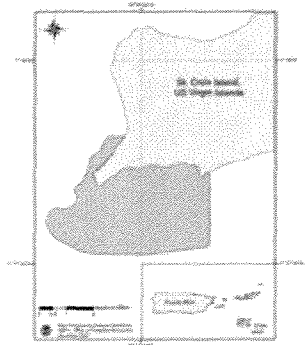
Leatherbacks lack the crushing chewing plates characteristic of sea turtles that feed on hard-bodied prey (Pritchard 1971). Instead, they have pointed tooth-like cusps and sharp edged jaws that are perfectly adapted for a diet of soft-bodied pelagic (open ocean) prey, such as jellyfish and salps. A leatherback's mouth and throat also have backward-pointing spines that help retain such gelatinous prey.

## Habitat

Leatherbacks are commonly known as pelagic animals, but also forage in coastal waters. In fact, leatherbacks

NMFS  
2009a

are the most migratory and wide ranging of sea turtle species. Thermoregulatory adaptations such as a counter-current heat exchange system, high oil content, and large body size allow them to maintain a core body temperature higher than that of the surrounding water, thereby allowing them to tolerate colder water temperatures. Nesting female leatherbacks tagged in French Guiana have been found along the east coast of North America as far north as Newfoundland. Atlantic Canada supports one of the largest seasonal foraging populations of leatherbacks in the Atlantic. Leatherbacks tagged with satellite transmitters at sea off Nova Scotia were tracked to waters adjacent to nesting beaches along the northeast coast of South America, the Antilles, Panama and Costa Rica (James et al., 2005).



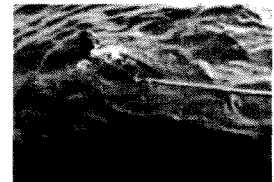
**Leatherback Turtle  
Critical Habitat**  
(click for larger view PDF)

Leatherbacks mate in the waters adjacent to nesting beaches and along migratory corridors. After nesting, female leatherbacks migrate from tropical waters to more temperate latitudes, which support high densities of jellyfish prey in the summer.

Critical habitat was designated in 1998 for leatherback turtles in coastal waters adjacent to Sandy Point, St. Croix, U.S. Virgin Islands. In 2007, NMFS received a [petition to revise the critical habitat designation \[pdf\]](#). NMFS published a [90-day finding on the petition \[pdf\]](#) in December 2007.

#### **Distribution**

Leatherback turtle nesting grounds are located around the world, with the largest remaining nesting assemblages found on the coasts of northern South America and west Africa. The U.S. Caribbean, primarily Puerto Rico and the U.S. Virgin Islands, and southeast Florida support minor nesting colonies, but represent the most significant nesting activity within the United States. Adult leatherbacks are capable of tolerating a wide range of water temperatures, and have been sighted along the entire continental coast of the United States as far north as the Gulf of Maine and south to Puerto Rico, the U.S. Virgin Islands, and into the Gulf of Mexico.

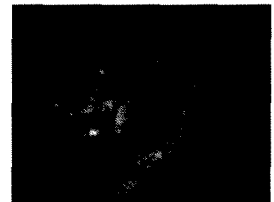


**Videos: Leatherback Turtles  
in the Pacific Ocean**  
NMFS Southwest Fisheries  
Science Center

The distribution and developmental habitats of juvenile leatherbacks are poorly understood. In an analysis of available sightings (Eckert 2002), researchers found that leatherback turtles smaller than 100 cm carapace length were only sighted in waters 26°C or warmer, while adults were found in waters as cold as 0 to 15°C off Newfoundland (Goff and Lean 1988).

#### **Population Trends**

The Pacific Ocean leatherback population is generally smaller in size than that in the Atlantic Ocean. Because adult female leatherbacks frequently nest on different beaches, nesting population estimates and trends are especially difficult to monitor. In the Pacific, the World Conservation Union (IUCN) notes that most leatherback nesting populations have declined more than 80%. In other areas of the leatherback's range, observed declines in nesting populations are not as severe, and some population trends are increasing or stable. In the Atlantic, available information indicates that the largest leatherback nesting population occurs in French Guyana, but the trends are unclear. Some Caribbean nesting populations appear to be increasing, but these populations are very small when compared to those that nested in the Pacific less than 10 years ago. Nesting trends on U.S. beaches have been increasing in recent years.



**Videos: Leatherback Turtles  
in the Solomon Islands**  
NMFS Southwest Fisheries  
Science Center

#### **Threats**

Leatherback turtles face threats on both nesting beaches and in the marine

environment. The greatest causes of decline and the continuing primary threats to leatherbacks worldwide are long-term harvest and incidental capture in fishing gear. Harvest of eggs and adults occurs on nesting beaches while juveniles and adults are harvested on feeding grounds. Incidental capture primarily occurs in gillnets, but also in trawls, traps and pots, longlines, and dredges. Together these threats are serious ongoing sources of mortality that adversely affect the species' recovery. For more information, please visit our [threats to marine turtles](#) page.

#### Conservation Efforts

Because leatherbacks are highly pelagic animals and make long migrations, they come into contact with people of many nations. Therefore, conservation efforts for leatherback populations in one country may be jeopardized by activities in another. Protecting leatherback turtles on U.S. nesting beaches and in U.S. waters alone, therefore, is not sufficient to ensure the continued existence of the species.



**Leatherback turtle hatchling**  
(*Dermochelys coriacea*)

Photo: S.R. Livingstone, University of Glasgow

Leatherback turtles are protected by various international treaties and agreements as well as national laws. They are listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), which means that international trade of this species is prohibited. Leatherbacks are listed in Appendices I and II of the Convention on Migratory Species (CMS) and are protected under the following auspices of CMS: the Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA) and the Memorandum of Understanding Concerning Conservation Measures for Marine Turtles of the Atlantic Coast of Africa. Leatherbacks are protected under Annex II of the Specially Protected Areas and Wildlife (SPA) Protocol of the Cartagena Convention. The U.S. is a party of the Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC), which is the only international treaty dedicated exclusively to marine turtles.

In the U.S., NOAA's National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) have joint jurisdiction for leatherback turtles, with NMFS having the lead in the marine environment and USFWS having the lead on the nesting beaches. Both federal agencies, and a number of state agencies, have promulgated regulations to eliminate or reduce threats to sea turtles. In the Atlantic and Gulf of Mexico, NMFS has required measures (e.g., gear modifications, changes to fishing practices, and time/area closures) to reduce sea turtle bycatch in pelagic longline, mid-Atlantic gillnet, Chesapeake Bay pound net, and southeast shrimp and flounder trawl fisheries.

NMFS has worked closely with the shrimp trawl fishing industry to develop turtle excluder devices (TEDs) to reduce the mortality of sea turtles incidentally captured in shrimp trawl gear. TEDs that are large enough to exclude leatherback turtles are now required in shrimp trawl nets. Since 1989, the U.S. has embargoed shrimp harvested in a manner that adversely affects sea turtles. The import ban does not apply to nations that have adopted sea turtle protection programs comparable to that of the U.S. (i.e., require and enforce the use of TEDs) or to nations where incidental capture in shrimp fisheries does not present a threat to sea turtles (e.g., nations that fish for shrimp in areas where sea turtles do not occur). The U.S. Department of State (DOS) is the principal implementing agency of this law, while NMFS serves as technical advisor. NMFS has provided extensive TED training throughout the world.

In 2003, NMFS developed the Strategy for Sea Turtle Conservation and Recovery in Relation to Atlantic and Gulf of Mexico Fisheries (Strategy) to evaluate and address domestic sea turtle bycatch comprehensively across jurisdictional (i.e., state and Federal) and fishing sector (i.e., commercial and recreational) boundaries on a per-gear basis in fisheries of the Atlantic and Gulf of Mexico.

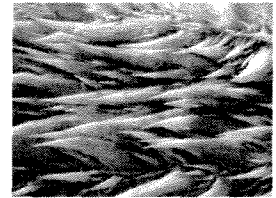
NMFS is currently involved in cooperative gear research projects designed to reduce

sea turtle bycatch in the Gulf of Mexico and Atlantic pelagic longline fisheries, the Hawaii-based deep set longline fishery, the Atlantic sea scallop dredge fishery, the Chesapeake Bay pound net fishery, and non-shrimp trawl fisheries in the Atlantic and Gulf.

#### Regulatory Overview

The leatherback turtle was listed under the Endangered Species Act as endangered in 1970.

In 1992, NMFS finalized regulations to require TEDs in shrimp trawl fisheries to reduce interactions between turtles and trawl gear. Since then, NMFS has modified these regulations as new information became available on increasing the efficiency of TEDs (e.g., larger TEDs are now required to exclude larger turtles).



**Leatherback turtle  
esophagus**

(*Dermochelys coriacea*)  
Photo: Karumbé, Sea Turtles  
of Uruguay

In 1998, NMFS designated critical habitat for leatherback turtles to include the coastal waters adjacent to Sandy Point, St. Croix, U.S. Virgin Islands. In 2007, NMFS received a petition to revise the critical habitat designation [pdf]. NMFS published a 90-day finding on the petition [pdf] in December 2007.

NMFS implements measures to reduce sea turtle interactions in fisheries by regulations and permits under the ESA and Magnuson-Stevens Fishery Conservation and Management Act. Since the early 1990s, NMFS has implemented sea turtle conservation measures including, but not limited to, TEDs in trawl fisheries, large circle hooks in longline fisheries, time and area closures for gillnets, and modifications to pound net leaders. Click here for a list of NMFS regulations to protect marine turtles.

#### Key Documents

(All documents are in PDF format.)

Title	Federal Register	Date
90-Day Finding on a Petition to Revise Critical Habitat Designation for the Leatherback Sea Turtle	72 FR 73745	12/28/2007
<u>Petition to Revise the Critical Habitat Designation for the Leatherback Sea Turtle</u>	n/a	09/26/2007
<u>5-Year Review</u>	n/a	08/31/2007
Virginia Pound Net Fishery Regulations	71 FR 36024	06/23/2006
<u>Recovery Plan - U.S. Pacific</u>	63 FR 28359	05/22/1998
<u>Status Review of Sea Turtles Listed Under the Endangered Species Act of 1973</u>	61 FR 17	01/02/1996
TED Regulations for Shrimp Trawls	57 FR 57348	12/04/1992
<u>Recovery Plan - U.S. Caribbean, Atlantic, and Gulf of Mexico</u>	n/a	10/29/1991
<u>Critical Habitat - Sandy Point, St. Croix, U.S. Virgin Islands</u>	44 FR 17710	03/23/1979
o Proposed Critical Habitat	43 FR 12050	03/23/1978
ESA Listing Rule	35 FR 8491	06/02/1970

#### More Information

- Kids' Times: Leatherback Sea Turtle [pdf]
- NMFS Southwest Fisheries Science Center Videos: Leatherback Turtles
- NMFS Sea Turtle Recovery Planning
- NOAA's National Marine Sanctuaries Encyclopedia
  - Cordell Bank Sanctuary Leatherback Species Card
  - Hawaiian Islands Humpback Whale Sanctuary Leatherback Species Card

- [Northwestern Hawaiian Islands Sanctuary Leatherback Species Card](#)
- [U.S. Fish and Wildlife Service Leatherback Turtle Species Profile](#)
- [Marine Turtle Related Links](#)

#### Literature Cited

- Eckert, S.A. 2002. Distribution of juvenile leatherback sea turtle, *Dermochelys coriacea*, sightings. Marine Ecology Progress Series 230: 289-293.
- Goff, G.P. and J. Lien. 1988. Atlantic leatherback turtles (*Dermochelys coriacea*) in cold water off Newfoundland and Labrador. Canadian Field Naturalist 102 (1):1-5.
- James, M.C., C.A. Ottensmeyer and R.A. Myers. 2005. Identification of high-use habitat and threats to leatherback sea turtles in northern waters: new directions for conservation. Ecology Letters 2005(8):195-201.

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