

Sea Turtle Conservation Guide



Overview of Sea Turtles

Sea turtles are large, air-breathing reptiles that inhabit tropical and subtropical seas throughout the world. Their streamlined bodies and large flippers make them remarkably adapted to life at sea.

Sea turtles maintain close ties to the land. Females must come ashore to lay their eggs in the sand. All sea turtles begin their lives as tiny hatchlings on land.

Research on marine turtles has uncovered many facts about these ancient creatures. Most of this research has focused on nesting females and hatchlings emerging from nests, largely because they are the easiest to find and study.

After decades of studying sea turtles, much has been learned. However, many mysteries still remain. New technologies, such as satellite telemetry, are allowing scientists to monitor turtles in the oceans. The information gathered through satellite-tracking is answering many questions and helping conservation groups develop better strategies for protecting sea turtles in all their habitats.

General Description

Each species of sea turtle looks and behaves distinctly, but they do have several common characteristics. Their shells consist of an upper part (carapace) and a lower section (plastron). Hard scales (scutes) cover all but the leatherback turtle, and the number

and arrangement of these scutes can be used to identify each species. They do not have teeth, but their jaws have modified “beaks” suited to their particular diet.

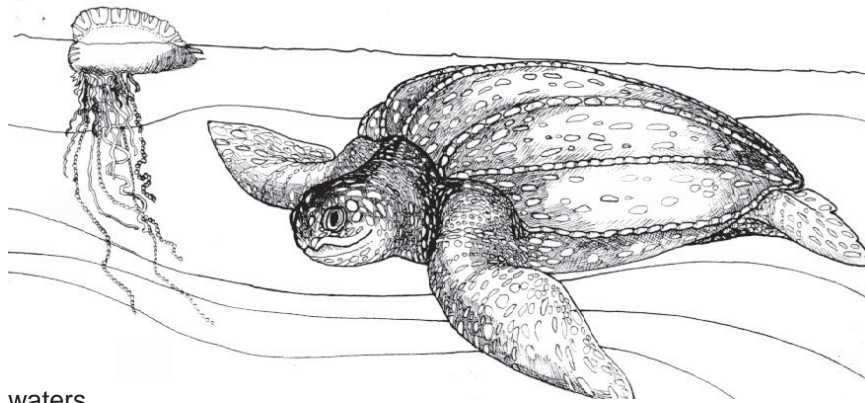
They do not have visible ears but have eardrums covered by skin. They hear best at low frequencies, and their sense of smell is excellent. Their vision underwater is good, but they are nearsighted out of water.

Reproduction

Only females come ashore to nest; males rarely return to land after crawling into the sea as hatchlings. Most females return to nest on the beach where they were born (natal beach). Nesting seasons occur at different times around the world, generally during the warm spring and summer months. Most females nest at least twice during each season; some may nest up to ten times in a season. A female will not nest in consecutive years, typically skipping one or two years.

Growth & Development

Researchers do not yet know how long hatchling sea turtles spend in the open sea or exactly where they go. It is theorized that they spend their earliest, most vulnerable years floating around the sea in giant beds of seaweed, where they do little more than eat and grow. Once turtles reach 12 to 14 inches in length, they appear at feeding areas in nearshore



waters.

They grow slowly and take between 15 and 50 years to reach reproductive maturity, depending on the species. There is no way to determine the age of a sea turtle from its physical appearance. It is theorized that some species can live more than 100 years.

Turtles and Humans

Sea turtles have long fascinated people and have figured prominently in the mythology and folklore of many cultures. In Nicaragua, the story of a kind "Turtle Mother," still lingers. Unfortunately, the spiritual significance of sea turtles has not saved them from being exploited for food and profit.

The earliest known sea turtle fossils are about 110 million years old. In groups too numerous to count, sea turtles once navigated throughout the world's oceans. But in just the past 100 years, demand for turtle meat, eggs, skin and colorful shells has reduced their numbers.

Destruction of feeding and nesting habitats, and pollution of the world's oceans are all taking a serious toll on remaining sea turtle

populations. Many populations have already become extinct, and entire species are being wiped out. There could be a time in the near future when sea turtles are just an oddity found only in aquariums and natural history museums — unless action is taken today.

How You Can Help

There are many things each of us can do to help sea turtles survive. First, we must remember that we share the oceans and the beaches with many other species. Second, become informed about the things that are killing sea turtles or destroying their habitat. Elected officials and other leaders are making decision on issues that affect sea turtles almost every day. As an informed citizen, you have the power to influence the outcome of these issues by making your voice heard. Third, take personal responsibility for your actions. By simply reducing the amount of plastic garbage, using biodegradable chemicals and not leaving trash on the beach when you visit, you can help save sea turtles and protect coastal habitats.

Sea Turtle Species

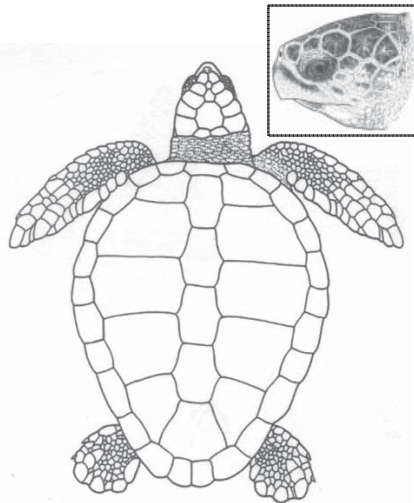
Most sea turtle scientists recognize seven living species of sea turtles, which are grouped into six genera.

Loggerhead (*Caretta caretta*)

Of all the sea turtles that nest in the US, the loggerhead is the one seen most often. All sea turtle species found in US waters are listed as endangered, except the loggerhead, which is classified as threatened. This means loggerheads are more numerous than the other species, but they are still in danger of going extinct.

Adults weigh up to 350 pounds (159 kg) and have a reddish-brown carapace and a dull brown to yellow plastron. Fully grown, their carapace is typically 32 to 41 inches (82-105 cm) long.

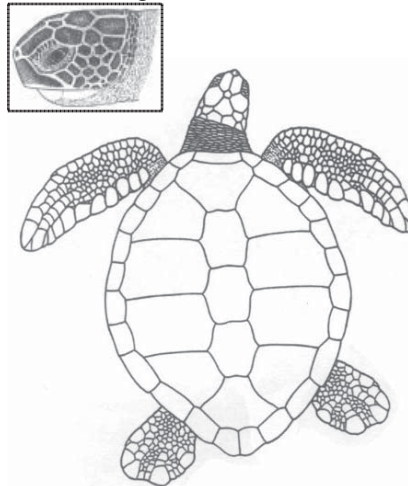
Loggerheads lay eggs at intervals of 2 to 3 years. They lay 4 to 7 nests per season, each about 14 days apart. Each nest of eggs (clutch) ranges from 100 to 126 eggs that incubate for about 60 days. Loggerhead nesting is concentrated in two main areas of the world -- Masirah Island, Oman, in the middle east and on the southeastern coast of the United States. The majority of nesting in the US takes place on Florida's Atlantic coast within the Archie Carr Wildlife Refuge.

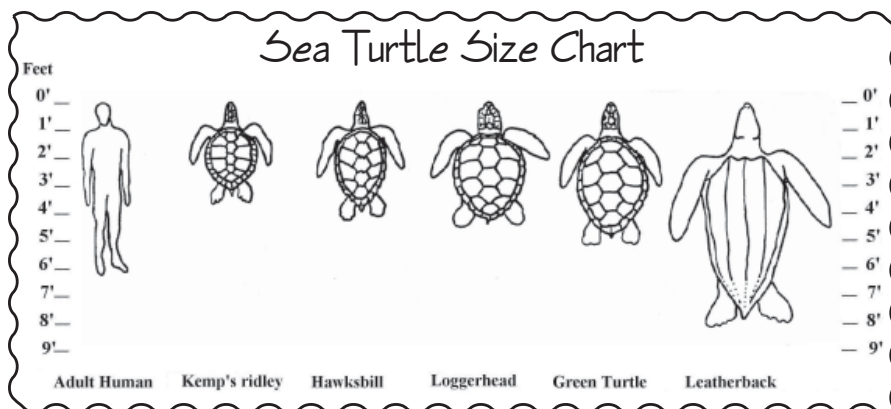


Green turtle (*Chelonia mydas*)

Green turtles are an endangered species around the world. They are easily distinguished from other sea turtles because they have a single pair of scales in front of their eyes rather than the two pairs other sea turtles have. The green turtle is the second largest sea turtle. Female green turtles are typically 42 to 48 inches (106-122 cm) in carapace length, and average about 350 pounds (159 kg) in weight.

Green turtles nest at intervals of 2 years. They lay an average of 3 to 5





ests per season, with about 12 days between each nesting. Each clutch contains about 115 eggs that incubate for about 60 days. The largest nesting site in the western hemisphere is at Tortuguero, Costa Rica.

Leatherback (*Dermochelys coriacea*)

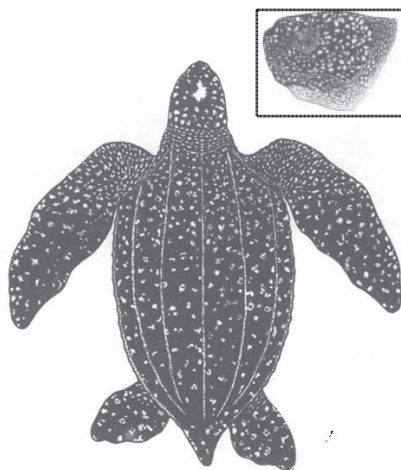
Leatherbacks are also endangered worldwide. The leatherback is the champion of sea turtles. They grow the largest, dive the deepest, and travel the farthest of all sea turtles. Mature leatherbacks typically reach about 4 to 8 feet (121-243 cm) in length and weigh from 650 to 1,300 lbs (290-590 kg).

The leatherback is the only sea turtle that does not have a hard shell. It is named for its large, elongated shell which is composed of a layer of thin, tough, rubbery skin, strengthened by thousands of tiny bone plates. Seven narrow ridges run down the length of the carapace, which is typically black with many white spots. The lower shell is whitish to black and 5 ridges.

The body of a leatherback is barrel shaped, tapering at the rear to a blunt point. With this streamlined body shape and powerful front flippers, a leatherback can swim thousands of miles.

Leatherbacks feed almost exclusively on jellyfish. It is remarkable that this large, active animal can survive on a diet of jellyfish, which are composed mostly of water and appear to be a poor source of nutrients. Young leatherbacks in captivity can eat twice their weight in jellyfish each day.

Leatherbacks approach coastal waters only during breeding season. Leatherbacks nest every 2 to 3 years, laying 6 to 9 nest per nesting



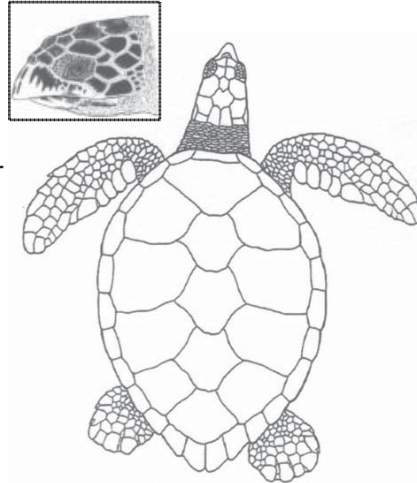
season. Each clutch contains approximately 80 fertilized eggs the size of billiard balls and 30 smaller, unfertilized eggs. There is an average of 10 days between nestings. The eggs incubate for approximately 65 days.

Hawksbill (*Eretmochelys imbricata*)

Hawksbills are critically endangered due to people killing them for their beautiful shells, which are used to make jewelry and other products.

The hawksbill is one of the smaller sea turtles, measuring 30 to 36 inches in carapace length (76-91 cm) and weighing 100 to 150 pounds (40-60 kg).

Hawksbill turtles nest at intervals of 2 to 3 years. An average of 2 to 4 nests are laid per season approximately 15 days apart. Each clutch contains an average of 160 that incubate for approximately 60 days. Although they nest on beaches throughout the world, they are no longer found anywhere in large numbers.

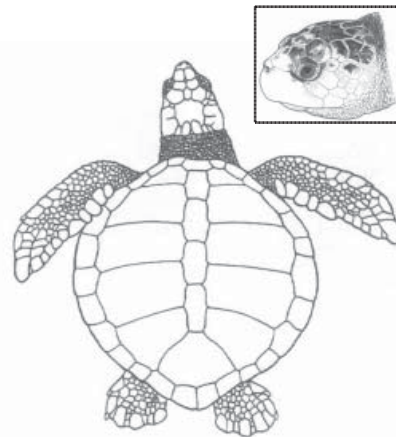


Kemp's Ridley (*Lepidochelys kempii*)

Kemp's ridleys are the most endangered of all sea turtles; they are also the smallest. Adults measure 24 to 28 inches (62-70 cm) in carapace length and weigh between 77 and 100 pounds (35-45 kg). The carapace of is olive green and the plastron is yellowish.

Unlike other sea turtles, Kemp's ridleys nest annually. They lay about 2 nests per season, about 25 days apart. Each clutch contains an average of 105 eggs, which incubate 55 days. The only major breeding site of the Kemp's ridley is Rancho Nuevo, Mexico. Kemp's ridleys nest in mass, synchronized nestings called *arribadas* (Spanish for "arrival").

In 1942, a Mexican architect filmed an estimated 42,000 ridleys nesting at Rancho Nuevo in one day. Twenty years after the video was filmed, the largest arribada measured was just 5,000 individuals. Nesting numbers at Rancho Nuevo have been slowly increasing since monitoring, and protection efforts, began in the 1970s.

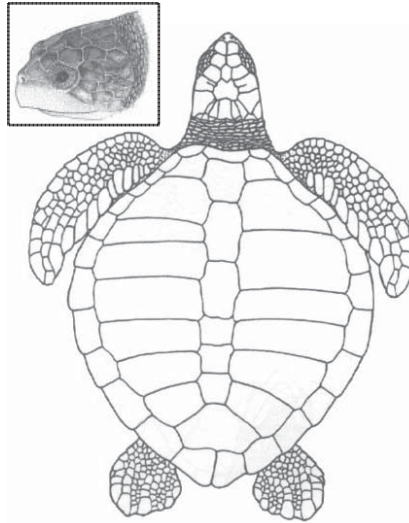


Olive Ridley (*Lepidochelys olivacea*)

One of the most common of all sea turtles found worldwide, their numbers are in decline from the direct harvest of adults and eggs for consumption, incidental capture in fisheries, and loss of nesting habitat.

Adults measure around 30 inches (70 cm) in carapace length and weigh close to 100 pounds (45 kg). Adult carapace is without ridges, has large scutes, and is grey green. The plastron is yellowish.

Similar to the Kemp's ridley, the olive ridley nest annually and in arribadas. They lay about 2 nests per season, about 25 days apart. Each clutch contains an average of 110 eggs, which incubate from 52 to 58 days.

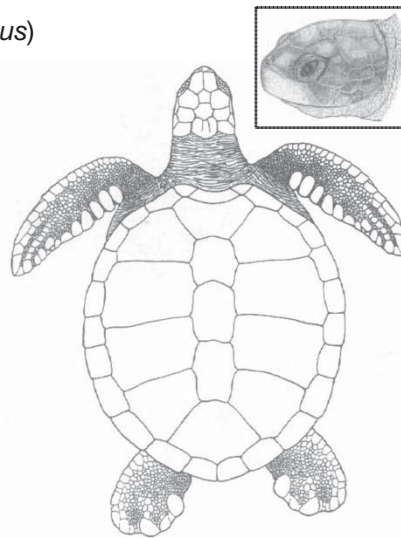


Australian Flatback (*Natator depressus*)

The Australian flatback is limited to the waters around Australia and Papua New Guinea. Adults grow to just over 36 inches (99 cm) in carapace length and weigh an average of 200 pounds (90 kg). The carapace of adults has large, non-overlapping, scutes and is olive-grey with pale brown and yellow tones along the margins.

Adult females will nest 4 times per season. The eggs are quite large for their body size. Each clutch contains an average of 50 eggs, which incubate for about 55 days.

They are threatened with capture, harvesting of eggs, destruction of nesting beaches, ocean pollution, oil spills and entanglement in fishing nets.



Threats to Sea Turtles

Only an estimated one in 1,000 to 10,000 hatchlings will survive to adulthood. The natural obstacles faced by young and adult sea turtles are staggering, but it is the increasing threats caused by humans that are driving them to extinction.

Harvest for Consumption

In many coastal communities sea turtles provide a source of food. During the nesting season, turtle hunters often take both eggs and adults for meat. People also use other parts of the turtle for products, including the oil, cartilage, skin and shell. Many countries forbid the taking of eggs but enforcement is lax and poaching is rampant.

Illegal Sea Turtle Shell Trade

Hawksbill sea turtles, recognized for their beautiful shells, have been hunted for centuries to create jewelry and other items. As a result, these turtles are now listed as critically endangered. Scientists estimate that hawksbill populations have declined by 90% during the past 100 years.

Commercial Fishing

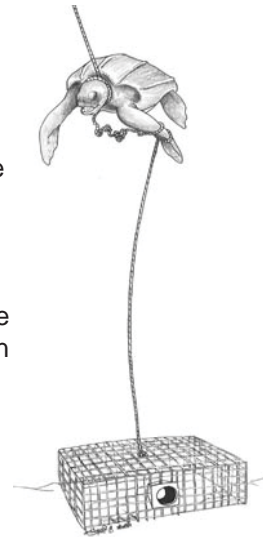
Each year hundreds of thousands of adult and immature sea turtles are accidentally captured in fisheries around the world. Global estimates of annual capture, injury and mortality are staggering — 150,000 turtles killed in shrimp trawls, and more than 200,000 loggerheads and 50,000 leatherbacks captured, injured or killed by longlines.

Marine Debris

It is estimated that more than 100 million marine animals are killed each year due to plastic debris in the ocean. It flies away from landfills into our seas. As a result, thousands of sea turtles accidentally swallow these plastics, mistaking them for food. Leatherbacks especially, cannot distinguish between jellyfish and floating plastic bags.

Artificial Lighting

Nesting turtles depend on dark, quiet beaches to reproduce successfully. Today, these turtles compete with tourists, businesses and coastal residents to use the beach. Artificial lighting on the beach can discourage female sea turtles from nesting and can cause hatchlings to become disoriented. Instead of heading towards the ocean, they wander inland where they often die of dehydration or being run over on coastal streets.



Coastal Armoring

Coastal armoring structures such as sea walls, rock revetments and sandbags are being built to help protect coastal property from natural erosion. These structures interrupt sea turtle nesting by reducing nesting habitat and pushing nesting to less optimal areas.

Beach Nourishment

Beach nourishment consists of pumping, trucking or otherwise depositing sand on a beach to replace what has been lost to erosion. While beach nourishment is often preferable to armoring, it can negatively impact sea turtles if the sand is too compacted for turtles to nest in or if the sand imported is drastically different from native beach sediments, thereby potentially affecting nest-site selection, digging behavior, incubation temperature and the moisture content of nests. If renourishment is allowed to proceed during nesting season, nests can also be buried far beneath the surface or run over by heavy machinery.

Beach Activities

Human use of nesting beaches can result in negative impacts to nesting turtles, nests and hatchlings. The most serious threat caused by increased human presence on the beach is the disturbance to nesting females. Nighttime human activity can prevent sea turtles from emerging on the beach or cause females to stop nesting and return to the ocean.

Beach Furniture and other recreational equipment (e.g., cabanas, umbrellas, hobie cats, canoes, small boats and beach cycles) can reduce nesting success and increase false crawls on nesting beaches.

Beach Driving, either at night or during the daytime, can negatively impact sea turtles. Nighttime driving can disturb nesting females, disorient emerging hatchlings, and crush hatchlings attempting to reach the ocean. Tire ruts left by vehicles can extend the time it takes a hatchling to reach the ocean and increase their chance of being caught by a predator.

Marine Pollution

Marine pollution can have serious impacts on both sea turtles and the food they eat. New research suggests that a disease now killing many sea turtles (fibropapillomas) may be linked to pollution in the oceans and in near-shore waters. When pollution enters the water, it contaminates and kills aquatic plant and animal life that is often food for sea turtles. Oil spills, urban runoff from chemicals, fertilizers and petroleum all contribute to water pollution.

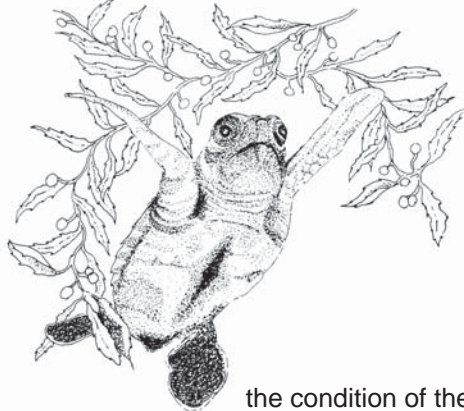
Climate Change

Because sea turtles use marine and terrestrial habitats, climate change is likely to have a devastating impact. A rise in water levels will shrink nesting beaches. Higher temperatures could result in more female sea turtles being born, decreasing genetic diversity.

What You Can Do

Why Care About Sea Turtles?

Species have been going extinct for millions of years; it is a natural part of the evolutionary process. For example, most of the species that existed during the time of dinosaurs have perished. Many probably went



extinct because of sudden geological or climatic changes.

Today, however, species are going extinct because of abrupt changes brought about by humans. Habitat destruction, pollution and overconsumption are causing species to decline at a rate never before seen in history. This loss of species is eroding the diversity of life on earth.

Much can be learned about the condition of the planet's environment by looking at sea turtles. They have existed for over 100 million years, and they travel throughout the world's oceans. Suddenly, however, they are struggling to survive -- largely because of things people are doing to the planet's oceans and beaches. What does this mean for humans?

It is possible that a world in which sea turtles cannot survive may soon become a world in which humans struggle to survive. If, however, we learn from our mistakes and begin changing our behavior, there is still time to save sea turtles from extinction. By saving one of the earth's most mysterious and time-honored creatures, we might just be saving ourselves.

Actions You Can Take to Help Protect Sea Turtles and Their Habitats:

Reduce the Amount of Plastic Garbage You Produce

Check out how much garbage your family collects at home in a 24-hour period. Discuss how you can get through each day using less plastic—then agree to do it.

Write a Letter to the Editor of Your Local Newspaper

Find out how to submit a "Letter to the Editor" to your local paper. Inform your community about the plight of sea turtles. Letters can ask for support for the purchase of land to protect nesting habitat or the Endangered Species Act. Visit our website, conserveturtles.org, for current issues affecting turtles and their habitats.

Tell People How Helium Balloons Harm Sea Turtles

Helium-filled balloons are frequently released into the sky to celebrate events and often end up in the ocean. Sea turtles mistakenly eat the balloons and die. When you hear of a planned balloon release, tell them it can injure sea turtles. Ask them to consider another attention getter.

Write Letters to or Call Your Elected Officials

There are a number of ongoing issues affecting sea turtles that are being debated by Congress. You may also find issues in your state or region that affect sea turtles or their habitat. Sign up for STC's e-newsletter to keep informed on issues affecting sea turtles. www.conserveturtles.org

Fishing and Boating

When you are on the water, make sure you don't litter! If you fish, don't throw tangled line into the water. Try your best to get all of it out of the water and safely dispose of it.

Reduce the Amount of Chemicals You Use

Many people use chemicals and fertilizers. Used motor oil and paints are deadly to the environment if not disposed of correctly. Many chemicals end up in coastal lagoons and on beaches. Find biodegradable lawn and garden products and facilities to properly dispose of toxic chemicals.

If visiting or living on a sea turtle nesting beach

* Don't walk on the beach with a flashlight or shine a light in a sea turtle's eyes. The light may cause female turtles to stop nesting, or discourage other sea turtles nearby.

* Don't take pictures using flashes. This high intensity light can be even more disturbing than flashlights.

* Stay out of sight of the turtle; otherwise you may scare her back into the sea. For your safety, stay away from the turtle's head. Sea turtles have very strong jaws and can harm you if provoked.

* Don't handle eggs or put any foreign objects into the nest. You could introduce bacteria to the nest or injure the eggs.

* Don't handle or ride the sea turtle. In addition to being illegal, you may injure the turtle or cause her to leave without finishing nesting.

* Don't disturb tracks left by turtles. Researchers use the tracks to identify the type of turtle that nested and to locate and mark the nests.



Front Cover Photo: David Schrichte.

Back Cover Photos: David Godfrey (green), Karen Christopher (loggerhead), Steve S. (hawksbill), Daniel Evans (leatherback), Sharla Knoll (Kemp's ridley), Sebastian Troëng (olive ridley), Kellie Pendoley (flatback).

Sea Turtle Species of the World



Green



Loggerhead



Leatherback



Hawksbill



Kemp's Ridley



Olive Ridley



Flatback



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