

Introduction

Sea turtles are fascinating creatures. They navigate thousands of miles of open ocean and live for over a century. Equipped with streamline shells and large paddle-like limbs, each of the seven species have their own unique habitats and lifestyles. Sea turtles have roamed our ocean since the time of dinosaurs, and today capture the hearts of millions. Often noted for their beauty and grace, it is their role in the environment that makes them truly astonishing. Throughout their lives, marine turtles cycle nutrients, maintain balance in their food web, and provide home to other organisms. Despite their importance, and the admiration we have towards them, human activities threaten their existence. Habitat loss, global climate change, and destructive fishing methods stress sea turtle populations worldwide. Luckily, there are many things we can do to conserve and protect these amazing critters. In this article, we'll discuss the different types of sea turtles, interesting facts about sea turtles, why are sea turtles endangered, and how you can help struggling sea turtle populations.

FAQ

How long can sea turtles hold their breath?

At rest, a sea turtle can hold its breath for [up to seven hours](#)! While this amount varies between different types of sea turtles, they all do so by dropping their heart rate. A slower heart requires less oxygen and allows organisms to stay under longer. When sea turtles hold their breath, their heart beats only once every nine minutes. By reducing their heart rate, sea turtles stay at depth without getting stressed. When actively hunting, turtles cannot slow their heart rate, but still stay at depth for over an hour.

How much does a sea turtle weigh?

The [largest](#) sea turtle ever recorded weighed 2016 pounds and measured almost nine feet in length. A victim of entanglement, this massive leatherback was approximately a hundred years old when it died. Leatherbacks, typically weighing between [500 to 2000 pounds](#) are the largest species of sea turtle. Coming in at second are the green turtles which can reach [700 pounds](#). Loggerheads turtles are the third largest though individuals exceeding a thousand pounds have been documented. Of course, at only half a pound, [baby sea turtles](#) hatching are much smaller.

How many sea turtles are left?

Nobody really knows, but [estimates](#) range from one million to fewer than ten million. Since sea turtles spend most, if not all, of their lives at sea, they can be very difficult to measure. Our best guess is based on the number of nesting females. Sea turtle hatchlings are born at a 3:1 female-to-male ratio. This means that for every 3 females, there is one male. By counting the number of females, scientists can extrapolate the number of their masculine counterparts. These calculations predict that approximately [6.5 million](#) sea turtles remain in the wild. Of these, the most abundant are the olive ridley sea turtle while the Kemp's ridley and flatback turtles are the least common. [All](#) species are listed as threatened or endangered sea turtles.

What genetic adaptations do sea turtles have?

Compared to their terrestrial ancestors, sea turtles are well adapted to aquatic life. To propel through the water, turtles developed long front flippers, while their smaller back flippers help to paddle and steer. The shell of a sea turtle, called a carapace, is flatter than land turtles, providing streamlined transport. Another adaptation that differentiates sea turtles from land turtles is their lachrymal gland, located in the corner of each eye. This specialized gland removes excess salt, though it has resulted in numerous false reports of sea turtles "[crying](#)." Perhaps the most amazing adaptation of marine turtles is their ability to navigate thousands of miles, using only Earth's magnetic field for guidance. To do so, sea turtles get help from magnetobacteria, a type of bacteria that senses to magnetism. Scientists aren't sure exactly where in the turtles' bodies these [magnetobacteria](#) live, though they are likely associated with nervous tissue like the brain or eyes.

Sea Turtles: A Brief Overview

Testudine, the scientific name for sea turtles, emerged from other lineages of land turtles about 110 million years ago. For context, dinosaurs went extinct about 65 million years ago, making sea turtles a very old species. As their reptilian ancestors adapted to the sea, their legs became more flipper-like, and their shells became narrower. Through time, two families developed - the hard backs and the soft backs. Of the seven different species of sea turtles that exist today, all but the leatherback turtle are hard back. While these creatures have existed for millennia, human activity currently threatens their existence.

Life as a sea turtle is not for the faint of heart. As soon as baby sea turtles emerge from their leathery shells, they must fight to survive. Crawling from their nest towards sea, defenseless hatching must ward off predators like raccoons, dogs, crabs, and birds. Human activity has made this journey even more challenging by altering nesting grounds through beach development and light pollution, which may confuse disoriented hatchlings. Once at sea, young

turtles must continue their battle as they ward off predators, forage for food, and find shelter. Many cling to rafts of algae until they are large enough to fend for themselves, typically reaching sexual maturity after a decade or two. For turtles, the struggle to survive is a tough one, with only [one in a thousand](#) hatchlings making it to adulthood. Once a male sea turtle enters the ocean as a hatchling, he never leaves. Females, on the other hand, will eventually return to the exact same beach to lay their eggs, when the time comes. Exactly how females find their exact beach of birth remains unknown, though it is believed they navigate using Earth's magnetic field.

The Seven Species of Sea Turtle

Of the seven different types of sea turtles, leatherbacks, loggerheads, and green sea turtles are the most common and well known. To accommodate the wealth of information on these species, we will cover them separately. Here we focus specifically on the hawksbill sea turtle, the Kemp ridley and olive ridley sea turtles, and the flat back sea turtle. Perhaps the most [popular with divers](#) and snorkelers are the hawksbill, typically found in the coral reefs of the Pacific, Atlantic, and Indian Ocean. Hawksbills reach up to 35 inches in length and weigh between 100 to 150 pounds. They get their name from the unique, V-shaped jaw which resembles a hawk's beak. A pair of claws on each flipper differentiates them from other sea turtle species. Currently listed as endangered, [Hawksbill](#) were nearly driven to extinction over the beauty of their shells. Because they tend to nest in small numbers on remote beaches, hawksbill populations are difficult to study, but scientists believe

Named for their discoverer Richard M. Kemp, [Kemp's ridley sea turtles](#) were first identified in 1906. Found mainly in the Gulf of Mexico and the Atlantic coast of the U.S, adults stay in shallow coastal areas sustaining mostly on crabs. With a triangular shaped head and slightly hooked beak, the shells of Kemp's ridleys are typically greenish grey in color. Of the different species of turtles, the Kemp's ridley is the smallest, reaching just one hundred pounds and growing slightly over two feet in length. A close relative to the Kemp's ridley is the [olive ridley](#), the most abundant of all marine turtles. Compared with the Kemp's ridley, the olive ridley displays a slightly smaller head and shell and is only found in warmer waters

Both types of ridley sea turtles nest in synchronized groups called [arribadas](#). In these aggregations, nesting females gather offshore before all coming ashore at once. At their largest nesting site in Rancho Nuevo, Mexico, up to 42,000 nesting females have been documented in a single day! Arribadas, Spanish for arrival, are unique to these two species. Scientists believe arribadas provide strength in numbers, protecting the nesting turtles from predators. Females lay about 100 eggs at a time, which hatch after 50 to 60 days. While their early years are a bit of a mystery, juveniles likely grow and develop at sea in the safety of floating sargassum algae. After a year or two, or at approximately 8 inches in length, Kemp's ridley move closer to the coast where they mature.

Of All the sea turtle species, [flatbacks](#) have the smallest range and lowest abundance. As you might've guessed, they're named for the relative flatness of their shells, which are also

smooth and waxy. Unlike other species of sea turtle, flatbacks do not make long and lengthy migrations across the sea. They are only found in the waters off northern Australia and New Guinea, where they can weigh up to 220 pounds and grow up to 37 inches in length. Flatbacks forage for jellyfish and sea cucumbers, but due to their low abundance little is known about the health of their population. Like all species, commercial fishing, climate change, and habitat loss threaten flatback sea turtles.

Loggerhead Sea Turtles

Of all the different types of sea turtles spotted in the U.S., the loggerheads are the most common. They are also found in all subtropical and temperate oceans and are abundant in the Mediterranean Sea. Named for their massive heads, loggerheads have powerful jaws to crush clams, snails, and urchins. They typically weigh about 250 pounds, although loggerheads exceeding a thousand pounds have been documented. Spending much of their life in the open ocean, Loggerheads are extremely vulnerable to harmful fishing practices. Commercial fisheries use large nets and long lines which loggerheads become entangled in. Sea turtles caught in nets often drown or become by-catch, the unintended or accidental catch. Turtles that are mistakenly caught in nets are often too debilitated to recover. Sea turtle by-catch, along with development of nesting beaches, are the primary threat to loggerhead populations.

Loggerhead turtles travel great distances and play important roles in their environment. Satellite tracking data reveal that loggerheads even cross the Pacific Ocean, nearly an 8,000 mile journey! As they move about, they provide home to other species and shuttle nutrients from one ecosystem to the next. Loggerheads eat mostly clams, snails, and other invertebrates that live in shells. Seashells are made of calcium, a nutrient that is plentiful near shore but scarce in the open ocean. Turtles cannot digest shells and instead excrete them in the open ocean, far from their source. In this manner, loggerheads supply calcium and other essential elements to nutrient-deficient regions of the sea. Along with nutrients, organisms may also catch a ride, including barnacles, crabs, plants, and algae. Up to [hundreds of different species](#) have been found living on loggerhead shells, enjoying a free ride and vital habitat. Compared to other nonliving floating debris, sea turtles improve the survival rates of their hitchhikers. An increase in foraging and dispersal of attached organisms has also been observed.

Green Sea Turtles

Named for the color of their skin, green sea turtles have brownish, heart-shaped shells and can weigh up to 700 pounds. There are two different types of green turtles, the Atlantic green turtle, and the Eastern Pacific green turtle. Dubbed for their places of origin, Eastern greens are known to come ashore to bask in the sunlight, making them one of few marine turtle species to do so. Currently, scientists are unsure if these groups are just different populations or a separate species. Regardless of their location, all green sea turtles are listed as endangered and are still hunted for their meat and eggs.

Unlike different types of turtles, green turtles are completely herbivorous, existing on a diet of seagrass and algae. Since most organisms will not eat seagrass, green sea turtles [play a key role](#) in these ecosystems. Seagrass beds provide food and shelter to numerous organisms. They also remove pollutants and serve as a nursery habitat for juvenile species. Acting as lawn mowers of the sea, green turtles keep seagrass beds in check. By foraging just an inch or two from the tip of the seagrass, these herbivores remove dead grass and prevent overgrowth. Accumulation of seagrass can shade the bottom, block currents, or reduce food web productivity. Grazing green turtles increase nutrient content and productivity of seagrass blades, benefiting the entire ecosystem. If green turtle populations decline, food webs become unbalanced. In the Caribbean, a drop in greens is leading to a loss of the economically valuable, commercially fished species which results in less food and lower incomes. In the Gulf of Mexico, seagrass die offs of the 1980's were directly linked to the extinction of green turtles in the area.

Leatherback Sea Turtles

Leatherbacks are the king of sea turtles. They travel the furthest, dive the deepest, and can weigh up to a ton! Fueled by a steady diet of jellyfish, leatherback turtles have the widest global distribution of any marine turtle. They can also dive to a depth of 4200 feet, where they may remain up to 85 minutes. Reptiles are cold blooded, but leatherbacks have the unique ability to maintain a warmer body temperature in cold water. Using its large body size and thick layer of fat below its shell, leatherbacks can create and retain body heat, allowing them to visit cooler waters. Leatherback populations in the Atlantic Ocean may be increasing, but the opposite is occurring in the Pacific. Here, egg harvest, bycatch, and coastal development has led to an alarming decline of leatherback sea turtles. Leatherbacks also fall victim to plastic pollution, mistaking plastic bags for nutritious jellies. Some individuals have been found with nearly 11 pounds of plastic in their bodies.

As leatherbacks wander the sea grazing on jellyfish, they play significant roles in their environment. Consuming up to 440 pounds of jellyfish a day (or the weight of an adult African lion), leatherbacks keep jelly populations in check, balancing the food web. Ya see, jellyfish eat fish eggs and fish larvae. If too many jellyfish exist in an ecosystem, fish populations can decline rapidly. Jellyfish often snack on commercially fished species, whose populations are already overfished. Overfishing results in fewer fish and less competition for jellyfish, only increasing jelly populations and further reducing fish populations. In simple terms, a growing jellyfish population can send an entire ecosystem into a death spiral. Leatherbacks are important because they prevent this from happening. Increasing jelly populations are already proving harmful to fish stocks, making the protection of leatherback turtles more important now than ever.

Why Are Sea Turtles Endangered?

Despite their importance to the environment, human activity threatens all the different types of turtles. Perhaps the most sweeping impact is [climate change](#), the observable increase in global average temperatures. A direct result of the warming ocean is sea level rise, which swallows up sea turtle nesting grounds. These sensitive habitats are also being wiped away by beach erosion, brought upon by the more frequent storms of climate change. Increasing ocean temperatures may also alter ocean currents, impacting food availability and potential predation. Climate change not only impacts a turtle's habitat but can also affect the turtle itself. Like all reptiles, the sex of a turtle is determined by its incubation temperature. Eggs that develop deep in the sand, under cooler temperatures, produce males. Conversely, females develop under the warmer temperatures found closer to the surface. As temperatures increase, fewer males are born, leading to a potential shortage of male turtles. The changing climate also alters the food web, reducing food availability and increasing competition for resources. The swiftly changing environment poses a risk for all different species of sea turtles.

Along with the existential threat of climate change, unsustainable fishing methods also threaten sea turtle populations. Spending most of their time in the open ocean, sea turtles are at risk from today's commercial fishing practices. Every year, [hundreds of thousands](#) of sea turtles are accidentally caught in the nets or long lines of commercial fishing. By-catch, the unintentional catch collected by fisheries, is one of the major challenges facing turtles today. Sea turtles easily become entangled in large fishing nets and drown. Those that survive are often too rehabilitated to recover. In the U.S., fishing boats are required to use [Turtle Excluder Devices](#), or TEDS, which allow for escape from large nets.

Like all marine animals, sea turtles are subject to pollution, [marine plastics](#), and oil spills. Pollutants such as toxic metals, PCBs, fertilizers, untreated wastes, and industrial runoff can cause harm if consumed. Over time, these compounds build up in tissues of sea turtles, causing illness and disease. Eating food contaminated by oil spills also impacts turtles, and many dead hatchlings [have been found](#) with tar balls in their bellies. Research also shows that plastic waste is [exists in 52%](#) of marine turtles, which can lead to starvation and death. Even just [one piece of plastic](#) can kill a turtle and this material is having detrimental impacts on their populations. Aside from ingestion, pollution also harms sea turtles by degrading their habitat and numerous turtles become entangled in marine debris.

How can you help?

Thankfully, there are numerous ways you can help vulnerable sea turtle populations! Since turtles often fall victim to commercial fishing, ask about where your seafood is coming from, and make sure to always eat [sustainable seafood](#). Sea turtles are also vulnerable to plastic pollution, specifically bags and balloons that resemble jellyfish. Carry reusable bags and other reusable items, like [alternatives to plastic straws](#), to reduce plastic waste. Also, make sure to cut those pesky 6-pack holders which turtles can become entangled in. Honestly, anything you can do to reduce your impact on the environment will make a difference.

You can also get directly involved with sea turtle conservation. Participate in a [clean-up](#) or [volunteer](#) to collect valuable information about turtles. For you avid boaters out there, download the [TURT](#) app to help track different species of turtles in real time. You may also adopt a sea turtle through nonprofits like [The Sea Turtle Conservancy](#), [The World Wildlife Fund](#), [The National Wildlife Federation](#), or The [Loggerhead Marinelife Center](#). Donations are always appreciated too, especially at [The Turtle Hospital](#), which works to rehabilitate injured and sick turtles. You can also purchase items from groups like [4Ocean](#), which uses their profits to clean the seas. When traveling, stay at [turtle friendly resorts](#) by [asking](#) if your hotel uses turtle friendly lighting, removes furniture from the beaches, and participates in sustainable practices. If you live near a coast, you can also check with local conservation groups to see if they offer any volunteer opportunities.