

## MARINE TURTLES: AN INDICATOR OF HEALTHY OCEANS AND COASTS

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The earliest known sea turtle fossils are about 150 million years old. In groups too numerous to count, they once navigated throughout the world's oceans. Marine turtles are some of the oldest surviving reptiles on the planet. Globally, there are seven species of marine turtles that exist today, of which six species are found in the Indian Ocean-South East Asian Region.

Scientists recognize the seven living species, which are grouped into six genera. Each sea turtle has both a scientific name and a common name. The scientific name identifies the genus and species, while the common name typically describes some characteristic of the turtle's body. Different species of sea turtles live on different kinds of food.

The conservation status of each of the seven species is listed below:

- Loggerhead (*Caretta caretta*) -Endangered
- Green turtle (*Chelonia mydas*)-Endangered
- Leatherback (*Dermochelys coriacea*) - Critically Endangered
- Hawksbill (*Eretmochelys imbricata*) - Critically Endangered
- Kemp's ridley (*Lepidochelys kempii*) - Critically Endangered
- Olive ridley (*Lepidochelys olivacea*) - Critically Endangered
- Flatback (*Natator depressa*) -Endangered

Sea turtles are large, air-breathing reptiles that inhabit tropical and subtropical seas throughout the world. The Olive Ridley usually weighs less than 100 pounds, while the Leatherback typically ranges from 650 to 1,300 pounds! Sea turtles come in many different sizes, shapes and colors, and while they have no teeth, their jaws have modified "beaks" suited to their particular diet. They do not have visible ears but do have eardrums which are covered by skin. They hear best at low frequencies, and their sense of smell is excellent. Their underwater visions are good. Their streamlined bodies and large flippers make them remarkably adapted to life at sea.

However, sea turtles maintain close ties to land. Females must come ashore to lay their eggs in the sand; therefore, all sea

turtles begin their lives as tiny hatchlings on land. Thousands of sea turtles around the world have therefore been tagged to help collect information about their growth rates, reproductive cycles and migration routes.

Only the females come ashore to nest; males rarely return to land after crawling into the sea as hatchlings. Nesting seasons occur at different times around the world. Most females nest at least twice during each mating season, some up to ten times in a season. A female will not nest in consecutive years, typically skipping one or two years before returning. Baby turtles spend their most vulnerable years floating around the sea in giant beds of sargasso weeds, where they do little more than eat and grow. Once turtles reach dinner-plate size, they appear at feeding grounds 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 over 100 years.

### Why you should Care about Sea Turtles:

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 man-made damage to the planet's oceans and beaches in the last few decades and killing of turtles for their parts.

In the past 100 years, demand for turtle meat, eggs, skin and colorful shells has dwindled their populations. 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 breeding 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. It is possible that a world in which sea turtles are unable to survive may soon become a world in which humans struggle to survive. This is explained below:

### Major Ecological Function of Sea Turtles

Sea turtles, especially green sea turtles, are one of the very few animals to eat sea grass. Like normal lawn grass, sea grass needs to be constantly cut short to be healthy and help it grow across the sea floor rather than just getting longer grass blades. Sea turtles and manatees act as grazing animals that cut the grass short and help maintain the health of the sea grass beds. Over the past decades, there has been a decline in sea grass beds. This decline may be linked to the lower numbers of sea turtles. Sea grass beds are important because they provide breeding and developmental grounds for many species of fish, shellfish and crustaceans. Without sea grass beds, many marine species that humans harvest would be lost, and it would lower the levels of the food chain. The reactions could result in many more marine species being lost and eventually impacting humans.

So if sea turtles go extinct, there would be a serious decline in sea grass beds and a decline in all the other species dependent upon the grass beds for survival. All parts of an ecosystem are important, if you lose one, the rest will eventually follow.

Beaches and dune systems do not get very many nutrients during the year, so very little vegetation grows on the dunes and no vegetation grows on the beach itself. This is because sand does not hold nutrients very well. Sea turtles use beaches and the lower dunes to nest and lay their eggs. Sea turtles lay around 100 eggs in a nest & lay between 3 and 7 nests during the summer nesting season.

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Along a 20 mile stretch of beach on the east coast of Florida sea turtles lay over 150,000 lbs of eggs in the sand. Not every nest will hatch, not every egg in a nest will hatch, and not all of the hatchlings in a nest will make it out of the nest. All the unhatched nests, eggs and trapped hatchlings are very good sources of nutrients for the dune vegetation, even the left over egg shells from hatched eggs provide some nutrients. Dune vegetation is able to grow and become stronger with the presence of nutrients from turtle eggs. As the dune vegetation grows stronger and healthier, the health of the entire beach/dune ecosystem becomes better. Stronger vegetation and root systems helps to hold



the sand in the dunes and helps protect the beach from erosion. As the number of turtles declines, fewer eggs are laid in the beaches, providing less nutrients.

If sea turtles went extinct, dune vegetation would lose a major source of nutrients and would not be as healthy and would not be strong enough to maintain the dunes, resulting in increased erosion. Once again, all parts of an ecosystem are important, if you lose one, the rest will eventually follow. Sea turtles are part of two ecosystems, the beach/dune system and the marine system. If sea turtles went extinct, both the marine and beach/dune ecosystems would be negatively affected.

And since humans utilize the marine ecosystem as a natural resource for food and since humans utilize the beach/dune system for a wide variety of activities, a negative impact to these ecosystems would negatively affect humans.

**Why species are disappearing and extincting?**

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 -possibly because of a large volcanic eruption or because of a giant meteor hitting the earth.

Today, however, species are going extinct because of abrupt changes brought about by humans. Habitat destruction, pollution and over consumption 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, and a loss of diversity can make all life vulnerable.

**How can we save Sea Turtles?**

Influence elected officials and other leaders who are involved in making decisions 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.

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.

Take a personal interest in turtles or and become a member of the group to protect the sea turtles. Collect all the plastic trash you use in a 24-hour period. Think about how you and others can get through each day using less plastic and locate a local plastic recycle center -then do it and encourage others to reduce and recycle as well. Helium-filled balloons are frequently released into the sky to celebrate events. Like plastic trash, helium balloons end up in the ocean, especially when released near the coast. Sea turtles mistakenly eat the balloons and die. Many people use chemicals and fertilizers on their lawns and gardens. Used motor oil and paints are deadly to plants and animals if not disposed of correctly. Many of these chemicals get washed into coastal lagoons and wash up on beaches.

**Turtle Conservation and Protection Efforts in Pakistan:**

Pakistan is actively engaged to protect the habitats and breeding sites of marine turtles. Sindh and Baluchistan Forest & Wildlife departments, local NGOs & international organizations are taking practical efforts for the protection of the wild turtle populations and habitats. Government of Pakistan with support of IUCN Pakistan is preparing a "National Turtle Conservation Strategy" for the protection and conservation of marine turtles populations. Pakistan is a signatory to a number of global conventions and treaties for marine resources conservation, including the Indian Ocean and South-East Asia (IOSEA) Marine Turtle Memorandum of Understanding, an intergovernmental agreement that aims to protect, conserve, replenish and recover marine turtles and their habitats. In addition, Pakistan is also a signatory to the Convention on Migratory Species (CMS) and the Convention on Biological Diversity (CBD). Under these conventions it is mandatory for Pakistan to take minimum measures for the protection and conservation of wild population of



relevant species.

Positive behavioral change of local fishermen in Pakistan is a good sign for future turtle conservation efforts and projects. Increased use of a Turtle Excluder Device (TED), which is a specialized device that allows a captured sea turtle to escape when caught in a fisherman's net, is encouraging. Despite TED bring mandatory under WTO and Pakistan's marine fisheries regulations, only few fishermen use the TED in Pakistan at this time. Yet, it is hoped that TED is fully adopted by the fishing community with proper enforcement



and advocacy, thus eliminating the threat to marine turtles in Pakistani waters.

Capacity building programs of IUCN with fishing communities along the coast create positive impact and fishermen use the information and knowledge about the species importance, to protect marine turtles if these are entangled in the fishing nets. Turtles are an integral component of the coastal ecosystems and livelihoods. In Pakistan, the coastal communities have also been using turtles for non-commercial purpose such as income generation through turtle tourism, education & research. In Pakistan, sea turtles nest at Sandspit beach in Sindh province and a few beaches in Baluchistan such as Ormara, Tak and Daran.

If the involved stakeholders learn from their mistakes and begin changing their behavior, there is still time to save sea turtles from extinction. In the process, we will be saving one of the earth's most mysterious and time-honored creatures. By protecting our biodiversity, we might just be saving ourselves, too.