



NATIONAL AQUARIUM IN BALTIMORE.

Conservation Education Department
Pier 3, 501 East Pratt Street
Baltimore, MD 21202

Fast Facts

- ❑ Sharks range in size from 6 inches to 60 feet in length.
- ❑ Sharks have a skeleton made of cartilage, not bone.
- ❑ Over one million sharks are killed each year for their meat and fins, or as bycatch.

Key Terms

Ampullae of Lorenzini

Small pits in a shark's snout that detect small electrical signals.

Bycatch - Marine animals caught accidentally by fishermen who intended to catch another species.

Cartilage - Hard flexible tissue that forms a shark's skeleton.

Dermal denticles
Tiny tooth-like structures on a shark's skin.

Elasmobranchs - Fishes with skeletons made of cartilage, not bone.

Ask the Aquarium

Fact Sheets from the
Conservation Education Department

Sharks

There are probably no other animals on earth that people fear as much as sharks. Movies and books have made it seem that the world's oceans are full of hungry sharks waiting to attack every swimmer who enters the water. Most people also think of sharks as large, gray, torpedo-shaped animals. Neither view is completely true. Sharks can be short, fat, skinny, brown, and even spotted, with unusually shaped heads and tails. Sharks range in size from the 15-centimeter (6 inch) cigar shark to the whale shark, which may reach lengths of 18 meters (60 feet). However, about half of the 400+ different species of sharks are actually less than 1 meter (3 feet) long. Humans are not a normal part of a shark's diet. On occasion, sharks do mistake a person for a seal or sea turtle. Once it realizes its mistake, however, the shark will usually release the person. These incidents are also very rare; more people die from bee stings every year than from shark attacks.

No Bones About It

Sharks and their relatives- skates, sawfish, and rays- are elasmobranchs, fishes with skeletons made of cartilage, not bone. Cartilage is a tough flexible material, which can be found in human ears and noses. Sharks differ from bony fish in other ways. Sharks have five to seven clearly visible gill slits while bony fish have a hard covering over their gill slits. Instead of smooth scales, sharks have rough skin with tiny tooth-like structures called dermal denticles. Also, sharks lack the



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gas-filled swim bladder found in bony fish; they rely on their large, oily liver to stay afloat. Sand tiger sharks are the only species that gulp air; this trapped air acts as a swim bladder. Many sharks must swim constantly to keep fresh oxygenated water flowing over their gills, allowing them to breathe. Others use spiracles to pump oxygen over their gills when not swimming.

Efficient Predators

Sharks evolved over 400 million years ago, before the first dinosaurs, and have changed very little since. A number of specialized senses make sharks very efficient predators. A shark can "hear" prey from 914 meters (3000 feet) away. From a few hundred yards away, smell becomes useful as scents fill a sac-like nostril on either side of its snout. On each side of its body, a shark has a line of small holes, called the lateral line, which are sensitive to nearby movements. Small pits in the snout area, called ampul-

lae of Lorenzini, detect the small electrical signals that all animals emit. This sense works best at close range and can help to pinpoint an animal in dark, murky water. A mirror-like reflective layer of specialized cells (tapetum) behind the retina enables sharks to see in dim light.

The Tooth of the Matter

A shark's jaw is also made of cartilage, not bone. Teeth are loosely attached to the jaws and fall out easily. The inside of a shark's jaw has several rows of teeth that usually lie flat until the tooth in front of it falls out. When a tooth is lost, another rotates forward to replace it, much like a conveyor belt. This process may take between 24 and 48 hours. Sharks may lose tens of thousands of teeth in a lifetime. Different species of sharks have different shapes and sizes of teeth, specialized for the kinds of food they eat. For example, white sharks have narrow teeth in their bottom jaw used for holding and sharp serrated triangular teeth in their top jaws for cutting. Port Jackson sharks have flat, hard teeth for crushing crabs, clams, oysters, and other shellfish. Whale sharks have tiny, nonfunctional teeth- they filter-feed plankton through their gills. Some sharks, such as the nurse shark, have barbels, which are taste organs for probing bottom sediment for food.

Shark Babies

A few types of sharks lay eggs that have hooks that can catch onto sea plants. Most, though, bear live young, called pups, which are born fully formed and ready to hunt for their own food. The number of young varies by species. For example, tiger sharks may have as many as eighty pups at one time while

sand tigers have 1-2 young every two years.

Sharks and People

Despite their bad reputation, most sharks are shy and harmless, avoiding people and other large animals whenever possible. Only a dozen kinds of sharks are considered very dangerous to humans. On the other hand, people kill over a million sharks per year. Their rough skin and sharp teeth have been used historically for sandpaper and spears. Nowadays, the skin is used to make strong leather. Many sharks are hunted for their meat and cartilage, and others for their fins, for shark fin soup. Some sharks are also killed to make fertilizer or for research. Many sharks die as accidental bycatch, caught by fishermen who intended to catch another species. Shark populations are declining, and without protection, may not be able to sustain the pressures put on them by humans. Scientists who study sharks are working to find out more about these amazing animals and how to better protect their survival.

Sharks at the National Aquarium in Baltimore

You can come nose-to-nose with large sharks - if you dare! Sand tiger and nurse sharks encircle visitors in the 225,000 gallon Open Ocean exhibit.

For more information about sharks at the Aquarium check out www.aqua.org/animals.html