



## Natural History Notes



### Great White Shark (*Carcharodon carcharias*)

Great white sharks range throughout large regions of the world's oceans and are thought to be highly migratory. Centers of abundance for these large marine predators appear to be located along the coasts of eastern, western, and southern Australia; in coastal waters surrounding New Zealand and the Japanese archipelago; along the South African coast, particularly from Namibia to Natal; along the Atlantic and Pacific coasts of North America, particularly in the Long Island vicinity and from northern Oregon to Baja; the coastal waters of southern Mexico and central Chile; and in parts of the Mediterranean Sea, particularly in its west-central waters, the Tyrrhenian Sea, and near Sicily. They've also been recorded in the Caribbean Sea, and off the coasts of Brazil, the Hawaiian Islands, northwest Africa, the Azores, Sri Lanka, the Seychelle and Philippine islands, Gough Island, and the Chatham Islands. During recent El Niño events, a few 6-8 foot (1.8-2.4 meters) long individuals were caught in salmon nets in and near Alaska's Prince William Sound, and in September 2004, an individual estimated to be about 20 feet (6.1 meters) long was photographed off the coast of Yakutat in the northern Gulf of Alaska when it tried to take Pacific halibut (*Hippoglossus stenolepis*) from sport fishermen's lines.

Most adult great whites are about 12-16 feet (3.7-4.9 meters) long, but some adult females occasionally reach lengths of 19-20 feet (5.8-6.1 meters) or more and weights of 4,000-6,000 pounds (1,814-2,721 kilograms). A world record great white was caught in Australia in 1948 that was reported to be 21 feet (6.4 meters) long. However, an individual caught off of Kangaroo Island in Australia in 1987 was said to be about 23 feet (7 meters) long, and in 1997, a great white caught off the coast of Taiwan weighed in at about 5,500 pounds (2,500 kilograms) and was estimated to be 22-23 feet (6.7-7.0 meters) long.

Great whites probably live to be more than 20 years old. Recently, a large female caught in Gans Bay, South Africa was estimated to be about 22 years old. She was almost 17 feet (5.2 meters) long and weighed 2,664 pounds (1,208 kilograms).

Great white teeth are razor sharp and can reach 3 inches (7.6 centimeters) in length. They often break off when the sharks bite down on hard objects (e.g., bones of large prey, floating man-made items); however, the teeth are constantly being replaced, just as they are in most other shark species.

Sharks are known from fossilized teeth that are about 350 million years old—from a time before the end of the dinosaurs' reign. Indeed, one famous, ancient great white relative, "Megalodon" or "Meg" (*Carcharodon megalodon*), was an ultimate predator, reaching lengths of 50 feet (15 meters) or more. Fossilized teeth from *megalodon* have been found that measure more than 7 inches long! Sharks differ from fish because their skeletons are made from cartilage. This stiff flexible material is the same substance supporting your nose and ears. While it's not as hard as bone, cartilage is still quite rigid. However, it doesn't persist over time and leave fossil records like bone, so in most cases, the only remains of ancient sharks are their fossilized teeth.

Adult great white sharks have no natural predators and eat a variety of foods. They take fish, squid, other sharks, dolphins, and small whales, but seals and sea lions are their favorite prey. They also scavenge on the carcasses of large whales. These large ocean-going predators have developed the reputation of being man-eaters because they occasionally attack people; however, these events are relatively rare and it's now thought that most of these attacks result from the sharks mistaking people for marine mammals, particularly sea lions and seals.

Great whites are equipped with two powerful sensory mechanisms that help them locate food: a highly developed sense of "smell" and the ability to sense weak electrical fields. Because sharks rely on their gills for oxygen, their nostrils are used solely for tracking down prey. Their sense of smell coupled with their ability to tune in to faint electrical fields emanating from living creatures allow them to detect and distinguish prey types at great distances.

Because many species of sharks are being persecuted and heavily hunted just for their fins in many regions of the world, some populations are declining. Recently in the United States, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) began implementing management plans to conserve these valuable oceanic predators.

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