

# The incredible great white shark

Facts and Fun Stuff to Know About One of the Ocean's Most Feared and Most-Endangered Predators

## The Great White Sharks of the Farallones

Some of the largest great white sharks on the planet can be found patrolling the cold and murky waters surrounding San Francisco's Farallon Islands. The sharks travel to the islands to prey upon the local pinniped population. The rocky, teeth-shaped land masses lie about 25 miles off the coast of California, within California's Gulf of the Farallones National Marine Sanctuary.

The seasonal visitors start arriving as early as July or August and have been observed in the area as late as January. The months of September, October and November are considered to be the peak months for white shark sightings in San Francisco.

Researchers believe the sharks at the Farallones are older adults. Possible explanations can be found in NOAA's "*Status Review of the Northeastern Pacific Population of White Sharks (Carcharodon carcharias) Under the Endangered Species Act*". White sharks are known to exhibit a size-based dominance feeding hierarchy, with the presence of larger individuals causing smaller animals to leave the area. And, subadult sharks may be less likely to visit the area if they have not yet started feeding on marine mammals.



You Are More Likely To Be Killed By a Toaster than a Shark

## The Life Stages of Our Favorite Apex Predator

White sharks are fish, but they bear live young. When newborn sharks first emerge outside their mother, they're already about 4 to 5 feet long.

White sharks develop from eggs, while still within their mothers. In scientific terms, this process is known as "ovoviparous with internal fertilization". During the gestation period, the developing white shark embryos may feed on some of their "potential siblings". This egg eating is known as "oophagy".

Scientists believe female white sharks don't start having baby sharks until they're close to 15 years old. The pregnancy itself can last 14 or more months, which means sharks only give birth every other year. A female white shark gives birth to just five or so "pups" every other year. Their slow reproduction process makes white sharks vulnerable to extinction.

Scientists classify white sharks into five different life stages: Pups, Young of the Year, Juveniles, Subadults and Adults.

White sharks can grow to measure more than 20 feet in length and weigh over 5000 pounds. That's longer and heavier than a full-size Ford F-150 Pick-Up truck.



Females grow larger than males. Male sharks are believed to reach their sexual maturity starting around the age of 10, when they are generally from 11 to 13 feet long. Females tend to reach maturity a few years later, when they typically measure 14 to 16 feet long.

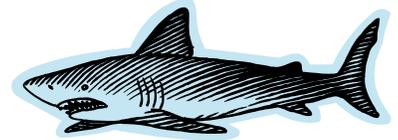
Sharks observed at the Farallones are older adults. No one knows for certain how old great white sharks live to be, but researchers believe they live 25 or more years.



# C a r c h a r o d o n c a r c h a r i a s

Member of the Family Lamnidae - Better Known as the White Shark or White Pointer

Smell + Hearing + Touch + Taste + Sight + Electromagnetism  
Six well-developed senses aid white sharks in their role as apex predators.



Their most acute sense is smell. A shark's nostrils are on the underside of its snout and lead to an organ called an olfactory bulb. The great white shark's olfactory bulb is reported to be the largest of any shark. (To learn more, read Leo S Demski and R Glenn Northcutt's study "The Brain and Cranial Nerves of the White Shark: An Evolutionary Perspective".)

Sharks ears are difficult to see. There are two small openings behind and above the eyes. Sharks pick up even tiny vibrations in the water and their ears have what's called an "ear stone" that responds to gravity and helps sharks know where they are in the water, as in head up or head down.

"The torpedo shape of the great white is built for speed: up to 35 mph (50 kpm). And then there are the teeth—300 total in up to seven rows."

Source: *Smithsonian Ocean Portal*  
<http://ocean.si.edu/great-white-shark>

White sharks are known to have great vision and for being visual hunters. Shark researcher Leo Demski, believes sharks are initially attracted to prey by their scent, much the way humans would be attracted to the kitchen by the smell of food. Once sharks are in the vicinity of prey, they rely on sight. White sharks are known to strike from below. A white shark quickly accelerates to the surface, simultaneously striking and biting its prey. The force of the predation often sends both the seal and shark flying

into the air in a spectacular breach.

Great white sharks have taste buds inside their mouths and throats that enable them to identify food before swallowing. Young sharks start out eating fish, but as they grow and age and their calorie needs increase, they start to prey on fatty seals and sea lions. Research indicates white sharks will also eat squid and other sharks. White sharks are known to be opportunistic eaters. At the Farallones, white sharks have been observed feeding on dead whales.

Humans are rarely bitten by sharks, while millions of sharks are killed by humans.

White sharks use their sense of touch to feel vibrations in the water. This allows them to detect the movement of prey. Scientists believe sharks use their ability to detect electrical fields to navigate the oceans.

*(Thanks to Dr Demski for his shark insight and the Smithsonian Ocean Portal.)*

## Where to Learn More About Sharks

Marine Bio Conservation Society  
[www.marinebio.org](http://www.marinebio.org)

Shark Research Committee  
[www.sharkresearchcommittee.com](http://www.sharkresearchcommittee.com)

Ryan Johnson Marine Explorer & Shark Expert  
[www.ryan-johnson.org](http://www.ryan-johnson.org)

Marine Conservation Science Institute  
[www.marinecsi.org](http://www.marinecsi.org)

ReefQuest Centre  
[www.elasmo-research.org](http://www.elasmo-research.org)

Tagging of Pacific Predators  
[www.topp.org](http://www.topp.org)



## California's Protection of Great White Sharks

In California waters, the take of white shark has been prohibited since 1994, with an exception for commercial gill nets and purse seines. In 2012, the California Fish and Game Commission (CFGF) received a petition to list white shark as threatened or endangered under the California Endangered Species Act (CESA). After reviewing the petition, the CFGF concluded that listing may be warranted and designated the white shark as a candidate species, effective March 1, 2013. The California Department of Fish and Wildlife (CDFW) is currently conducting a status review that will be presented to the CFGF in early 2014. After receiving the status review and public comment, the CFGF will decide whether to list white shark as threatened or endangered under CESA. At this time, the take of white shark is prohibited, without exception, without a CESA permit. Incredible Adventures operates its San Francisco shark diving expeditions under a CESA permit.