



> FOR MANY PEOPLE THE WORD 'SHARK' INSTILLS DREAD BY IMMEDIATELY CONJURING IMAGES OF A GREAT WHITE SHARK HUNTING A LONE SWIMMER WITH THAT OMINOUS "N...NA" THEME FROM THE MOVIE 'JAWS'. THE REALITY IS SHARKS ARE A DIVERSE AND FASCINATING GROUP THAT ARE INCREASINGLY ENDANGERED – THANKS TO MAN– WITH ICONIC SPECIES SUCH AS HAMMERHEADS, THRESHERS, TIGERS AND EVEN THE MIGHTY GREAT WHITE, AT REAL RISK OF EXTINCTION.

# APEX PREDATORS IN PERIL

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**S**harks are ancient creatures and have been around since at least 100 million years before the dinosaurs. They are so well adapted to their environment that, as a group, they've undergone relatively little change in this time. They're known as cartilaginous fish because their skeleton is made up entirely of cartilage, which is much lighter and more flexible than bone. There are over 500 species and they can be found in both marine and freshwater, but all do spend at least some of their life in the oceans. They range in size from just under a foot in length to the largest fish in the sea, the whale shark, at nearly 15 metres.

creates a much larger surface area for these pores, giving them a stronger detecting power than other sharks, allowing them to forage effectively on the sea floor.

The other five senses are equally important to a shark, since catching highly active prey in a three-dimensional medium such as the ocean isn't easy. Often the first sense to be used is hearing, since sound travels very well in water compared to land, covering over several miles. The range of shark hearing is much lower than of humans and probably relates to the noises generated by a struggling fish. Next smell is used, which

is most efficient over a scale of hundreds of meters. A large proportion of a shark's brain is set aside for sensing smell and its a fascinating fact that sharks can detect one part of blood in one million parts of water. Obviously a strong sense of smell is hugely beneficial for detecting injured prey that more visual predators might not notice.

Vision in sharks is not hugely dissimilar to humans, but due to a much greater number of rod cells in the eye their low light vision is much more acute than ours. They also have a membrane called a tapetum that reflects light onto the retina, similar to that

**IT TAKES ALL SORTS** Not all sharks are the stereotypical man-eater you might expect. They occur in all manner of body shapes and have diverse dietary requirements. Some species such as basking and whale sharks cruise the oceans in search of plankton, whilst others such as wobbegong and angel sharks bide their time on the bottom ready to ambush unsuspecting fish. Whichever method is used they exploit the amazing array of senses possessed by all sharks. Sharks have the same five senses as us (sight, touch, smell, hearing and taste) but they also have an extra sense allowing them to detect minute electrical and pressure changes in the water, such as those created by a struggling fish. Tiny pores covering the head and snout known as Ampullae of Lorenzini detect these electrical signals. The jelly-filled pores contain a hair that is stimulated by these impulses and since they cover the head there's a degree of directionality that allows the animal to establish where they're coming from. The unusual shape of a hammerhead's head



Main: The two tone colouration of great whites is infact camouflage to assist in ambush predation. From below the white belly blends into the bright surface and visa versa. Left to right: A great white shark above the deep blue abyss; The adult bamboo shark is uniformly grey in colour compared to the vividly striped juvenile; Whale sharks are the largest fish in the ocean but feed on some of the smallest creatures, plankton.

