Secrets of a Shark

Scientists unravel the mystery behind the hammerhead shark’s strange shape. Page 12
Scientists discover one reason hammerhead sharks look so strange

BY LIBBY TUCKER
It's easy to spot hammerhead sharks in the clear waters near Hawaii. Most sharks have a torpedo-shaped body with a pointed snout. But the hammerhead has a flat T-shaped head. "No other fish has a head that looks so weird," says Steve Kajiura (kah-jee-YER-uh), a marine biologist who studied sharks at the University of Hawaii at Manoa (MAH-no-uh). "So the question is: Why are they so different?"

At one time, many scientists thought the hammerhead's strange shape let this toothy fish "hammer" its prey to death. But now most scientists believe the hammerhead's wide face might improve the shark's senses. For instance, the 36-inch-long span between the shark's eyes helps it see other sharks creeping up from the side or the rear.

Kajiura thought there could be more to the shark's funny snout. He set out to study hammerheads and solve the mystery.

**Fast Catch**

Hawaii was the perfect place for Kajiura to do his research. Every year, thousands of hammerhead pups are born in Kaneohe (kah-nay-oh-hay) Bay, Hawaii. "It's one of the few places on Earth where you can go out and catch a baby hammerhead in less than five minutes," says Kajiura. He could easily grab sharks from the bay and bring them to a holding pen near his laboratory at the university.

Here Kajiura experimented with the live sharks. He compared the hammerhead's senses to those of their pointy-headed relatives. In particular, he focused on tiny holes that every shark has on its head, called ampullae (am-POOL-ee) of Lorenzini (lor-en-ZEE-nee). Scientists have long known that these pits help sharks find prey.
Energy Detector

All living things create energy. "A shark's favorite foods—fish, shrimp, and stingrays—create electric fields, like batteries in saltwater," says scientist John New of Loyola University in Chicago, Illinois. Ocean water conducts this energy through water.

Humans, with only five senses, can't detect this energy. But sharks—with their ampullae of Lorenzini—have a sixth sense. These special organs help sharks detect the electric fields around prey.

Shape Shocker

A hammerhead—with its big head—has more ampullae than a pointy-headed shark. Its holes are also spread over a wider space. Would this give hammerheads an edge when searching for food?

To find out, Kajiura put a wire coil in the sharks' holding pen. The wire sent out electrical signals like those given off by living things. All sharks—no matter how their heads are shaped—would detect the energy, think it was a fish, and swim toward it. Sure enough, hammerheads found the coil better than pointy-headed sharks. Kajiura's theory was correct. The hammerhead's big head helps it find food.

Far and Wide

Bob Hueter of the Center for Shark Research at Mote Marine Laboratory in Sarasota, Florida, compares the hammerhead shark's head to a metal detector that beachgoers swing over sand to find treasure. "The bigger the detector is, the more you can find on the beach," says Hueter. A hammerhead shark's large head can sweep over more of the ocean floor searching for food. One more mystery solved by science!

Words to Know

Marine biologist—a scientist who studies ocean life
Prey—organisms hunted or caught for food
Senses—awareness of one's surroundings; humans have five senses: sight, smell, taste, touch, and hearing
Pups—baby sharks
Electric field—the area around an object or organism in which its charge or energy can be detected
Conduct—to carry
Ampullae of Lorenzini—tiny holes on sharks' heads that help sharks detect electric fields

Deadly Dots: All sharks' heads have tiny holes to help them detect prey up to 2 meters (6 1/2 feet) away.