

FISH SENSES

By Dennis Segura, aquatic sport fishing education coordinator, Department of Game and Fish

Fish use their well-developed senses to help them perceive their environment and survive in their aquatic habitat. Fish use the same five senses humans do but have one additional sense. Human senses share some similarities with fish senses, but because people and fish live in different environments, land versus aquatic, there are obvious differences.

In addition to the senses of taste, smell, sight, hearing and feeling, fish have a unique sixth sensory organ, called the lateral line, which enables them to sense vibrations in the water. The lateral line is referred to as the sixth sense of fish and is an extension of their sense of hearing.

Having knowledge of how well-developed fish senses are can help you sharpen your fishing skills and improve your ability to find and catch fish.

TASTE

Fish have a sense of taste and use it, along with their other senses, to find food. Some fish, such as catfish, rely primarily on their sense of taste to locate something to eat.

Like people, fish have tongues containing thousands of taste buds. Some fish, such as walleye, also have taste buds on their lips and faces. A walleye can taste a fishing lure without ever opening its mouth.

Catfish and bullheads have taste buds on their bodies from head to tail. They also use “whiskers,” called barbels to taste. Barbels look like stingers, but they are not. They are actually soft, whisker-like structures above and below the mouth. Barbels are sensory structures containing many nerve endings, some of which are similar to the taste buds of humans. Catfish, carp and other “whiskered” fish drag their barbels along the lake or river bottom to find food.

SMELL

Fish have an amazing sense of smell—much better than a human’s—and most, if not all, other animals. Humans use their nose to smell and breathe, but fish use their noses exclusively for smelling and not for breathing. The two openings on either side of the snout are called nostrils, or nares.

Nares do not lead to the throat the way nostrils do in humans and other mammals, but open up into a chamber lined with sensory pads. The key to a strong sense of smell for fish is the ability to move water rapidly over these sensory pads.

A fish can smell food from great distances. The fish will swim to the source of the smell and use its taste buds to find out what's edible. Usually, the deeper or darker the water, the more fish have to use their sense of smell. Bottom dwellers, such as catfish, are notorious for being attracted to baits that smell bad. Fish use smell to sense danger and detect predators who feed on them as well.

Fish also use taste and smell for navigation. After swimming hundreds of miles to and from the sea, salmon use their senses of taste and smell to find the streams where they were born. They then swim up this stream to their spawning area to lay and fertilize eggs. In fact, many fish can smell people. They will swim away from any bait that smells like hand lotion, perfume, deodorant, tobacco, gasoline or insect repellent.

SIGHT

Fish do not see as clearly as people do. Even in clear water, most freshwater fish usually can see no further than 15 feet. Like people, fish can see movement, brightness and color. Some fish, such as shallow-water fish, can detect most colors seen by humans but many other fish cannot see a full range of colors. Light does not travel far in deeper water before it fades, especially if the water is very cloudy or dirty.

Unlike humans, fish lack eyelids. Their pupils are fixed and they remain the same size regardless of the amount of light. To protect their eyes from the bright sunlight, fish usually spend sunny days in deep water or in the shade of lily pads, stumps, trees, undercuts and rocks.

A fish can see in every direction except directly behind and below it. This is because its eyes are on the sides of its head and each eye moves independently of each other.

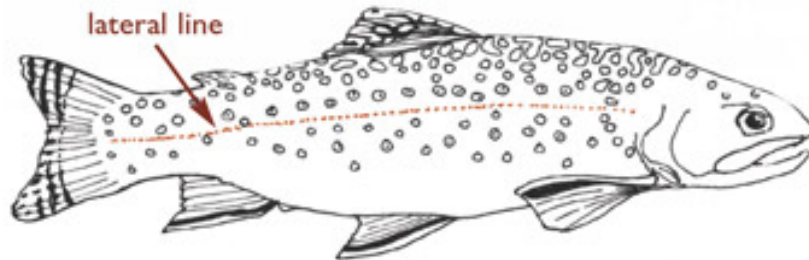
HEARING – HIDDEN EARS

Have you ever "felt" the rumble of thunder? If so, you were sensing sound vibrations. Fish have the ability to hear sound vibrations moving through the water in the same manner. Although fish have ears, they don't need ear openings on the outside of their bodies because sound travels much better through water than through air.

Fish ears are located under the skin, in the skull near the eyes. The structure of the inner ear is the same as a human's, and contains receptors for balance and hearing. The ability of fish to hear is so sensitive that they can hear a worm wiggling at the bottom of a lake. Even the faintest sound can spook fish and discourage the biting of bait. That's why it helps to remain quiet while fishing. Talking is fine, but sounds transmitted directly to water, such as wading in a stream or the banging of feet on the bottom of a boat or on the dock, can scare fish away.

LATERAL LINES

Fish have an additional sense related to hearing called the lateral line. This structure is a network of ultra-sensitive nerve endings that run along both sides of the fish from the gills to the tail.



A fish's lateral line consists of tiny pores containing hairs connected to many nerve endings underneath the skin. The sensitive hairs inside each pore detect the location and direction of vibrations in the water, allowing the fish to sense the movement of other fish and aquatic creatures around them in dark or murky water, or at a distance before they are visible.

Fish detect bait by sound and through water movement in the form of vibrations. They hear and feel their way to fishing lures with their ears and lateral lines. When they see the lure, they determine if it looks like something they usually eat. A fish might then smell or taste the lure before attempting to eat it.

A group of the same type of fish swimming together is called a school. Have you ever wondered how fish can swim so close together in a school without bumping into each other? Their lateral lines help them sense their location to one another by detecting instant vibrations in the water. The lateral line helps a fish find food by sensing when smaller fish are swimming nearby. The lateral line also helps a fish avoid becoming a meal by sensing the presence of lurking predators. The lateral lines also sense and detect water pressure and depth, currents and their speed and objects in the water such as rocks, stumps and debris.