

THE EYES HAVE IT

Have you ever wondered what the world looks like to a fish? They've made some amazing adaptations when it comes to their eyes. Take it from us: seeing is believing!

By Natalie Gillis

WALLEYE

Like many nocturnal animals, the walleye has special night-vision eyes. It has a reflective coating on the back of its eyeballs that helps concentrate any light that enters its eyes. This lets the walleye see clearly, even when there's just a little bit of moonlight. This gives it a big advantage over prey fish that don't see well in the dark.

GIANT PACIFIC OCTOPUS

The giant Pacific octopus is the largest octopus in the world. It can grow up to five metres from arm-tip to arm-tip. Like all octopuses, its eyes are complex and can focus on images like human eyes can. It can't see in colour, but this species of octopus can see polarized light — the kind of light that causes glare when you look at a lake or ocean on a sunny day. We have to wear polarized sunglasses to cut through the glare, but the giant Pacific octopus doesn't. Its eyes have special cells that help it see through the light reflecting off the silvery scales of fish. This helps the giant octopus see its potential prey — and its potential predators.

FISHY FACTS

Octopuses have square pupils that change shape to a narrow rectangle in bright light.

A musky will eat almost anything that fits in its mouth. Its main diet is fish, but it also eats crayfish, frogs, ducklings, snakes, and small mammals and birds.

Because it spends most of its time in water, the beluga has oily "tears" that coat its eyes to protect them from parasites.

Because their eyes are sensitive to bright light, walleyes usually hide during the day. They take cover in deep or cloudy water, in weed beds or under sunken trees.

CLOCKWISE FROM TOP LEFT: ISTOCK, ISTOCK, JEFF ROTMAN / NPL / MINDEN PICTURES, GORD PYZER

MUSKELLUNGE

BELUGA WHALE

GIANT PACIFIC OCTOPUS

WALLEYE

BELUGA WHALE

A member of the dolphin family, the beluga whale has eyes that can see in both air and water. In water, the beluga uses its spherical lenses for focusing. Above the water, where the light is brighter, it squeezes its horseshoe-shaped pupils into two slits that focus the image — just like a pin-hole camera. The beluga is near-sighted in water so it can see the fish it's trying to eat. It's far-sighted in air so it can see birds circling in the distance. That helps it know that a school of fish could be swimming below.

MUSKELLUNGE

Muskellunge (MUSS-ke-lunge) are usually called "muskie," for short. They are Canada's second-largest freshwater fish and use keen eyesight to stalk prey. Because its eyes are on opposite sides of its head, a muskellunge can see in almost all directions. Imagine if you could see all around yourself: it would be much harder for something to sneak up on you. Having eyes on each side of its head means a musky has a blind spot in the middle of its forehead. It can't see its prey in the last moments of an attack. Instead, it has to rely on other senses, like special scales that sense vibrations, called "lateral lines."

SEE FOR YOURSELF!

If you're in Montreal this June 17-19, come check out the Canadian Wildlife Federation tent at the Eureka! Festival. You can try our "Fish-D" goggles and see how different aquatic animals see their world.