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What a Fish Knows: The inner lives of our underwater cousins – Evergreen Audubon

6-7 minutes



Did you know that a bright-orange Midas cichlid returns repeatedly to be stroked, picked up, and tossed back into the water by a person?

Did you know that a Bahamian grouper named Larry swims over to be petted whenever the researcher descends to his reef?

Did you know that you can train a young stingray to learn that an 8-inch plastic pipe contained food, and it could get to the morsel by creating a water suction to suck it out?

Did you know that evolutionary biologist, Giacomo Bernardi, filmed an orange-dotted tusk fish pick up a clam and carry it over to a rock 30 yards away to smash it open? When researcher Culum Brown put together a group of guppies, they learned to

recognize at least 15 of their fellows in less than two weeks.

Turns out that there has never been a study of fish society where the researchers didn't find that fish are able to recognize individual fish, even other species.

What a Fish Knows, Jonathan Balcombe's thoroughly researched account of the lives of numerous species of fishes, is simply amazing, effectively countering the long-held assumption that fishes are "unfeeling, dead-eyed feeding machines."

Balcombe is the director of animal sentience at the Human Society Institute for Science and Policy. He has a PhD in ethology from the University of Tennessee, and he's written four other books about animals. You can visit his very interesting website at jonathan-balcombe.com.

I found it to be great fun to read *What a Fish Knows*. It's a combination of information about scientific studies and fantastic anecdotes.

We learn, for example, about the experiences of Cristina Zenato, a world-renowned expert on reef sharks. She has made a special friend over five years of an elderly Caribbean reef shark she named "Grandma." Grandma likes to be petted and touched by Cristina, even when there are other humans around.

She has also befriended three black groupers who each have very different personalities. Peanut is the extrovert who has learned Cristina's hand signals signaling when it is his turn to eat. Secret Agent always keeps just outside Cristina's field of vision. Whisperer, the shyest, never allows Cristina to touch her.

One of the most interesting accounts describes the work of the

cleaner fishes. These fish groom other fish, nipping off parasites, dead skin, algae, and blemishes. The clients benefit from the spa treatment; the cleaners get food.

A large number of species in both fresh and salt water have taken up the cleaning trade. They set up shop at specific locations and signal when they are open for business. A researcher from the University of Queensland, Australia, found that the typical cleaner removed 1,281 parasites per day from its clients. So important are the cleaners that even sharks and moray eels refrain from eating their service providers.

Balcombe reports that “the cleaner-client fish mutualism phenomenon represents one of the most complex, well-studied social systems in nature.” Apparently, an individual cleaner wrasse can recognize more than 100 individual fishes of different species.

The interspecies interactions point to a critical role for communication and social skills among fishes. We learn that groupers and moray eels will partner to hunt prey. Groupers seek out eels to collaborate with them. The groupers in the Red Sea use a headstand to point to the location of a hidden prey. The eel goes into the crevice to push the prey out so that both can eat.

What Balcombe describes is the intricate and interesting lives of creatures we generally don't consider being intelligent and perspective. We learn that fishes are observant; they see, feel, and smell with great acuity. They perceive their worlds both physically and emotionally. They are individuals capable of recognizing others and able to learn from experience.

Consider the spraying characin that deposit their eggs in the air, on overhanging leaves. The parents line up under a chosen leaf. At some split-second cue, the leap upward together to deposit eggs and sperm on a leaf. After the eggs are laid, the male has to keep them moist, which he does by firing a jet of water onto the eggs.



Or, think about the four-inch-long archerfish that squirts a jet of water up to ten feet into the air to catch a beetle or grasshopper. The archerfish squirt just the right amount of water depending on the size of the insect. Young archerfish have to learn the skill, only becoming proficient after lots of practice and watching the experts. They are able to take into account the optical distortion of the transition from water to air, making them skilled underwater quarterbacks.

All the children I interact with know about Nemo, the clownfish who hides in the anemone.





What they may not know is that clownfish can change their sex. Among a group of clownfishes, there is a breeding pair who are the largest individuals. If the breeding female dies, the head male changes to a female and the next largest fish moves up to head male. That means when Nemo lost his mother, his Dad should have become his new mother.

Ultimately, Balcombe hopes that this book will change how we think about fishes, the most heavily exploited creatures on earth. He hopes that we will consider that these creatures think, feel pleasure, and feel pain. He finds that modern fishing practices present a terrible problem, with huge numbers of fish killed to provide fish food for other animals or simply discarded as by-catch. Balcombe hopes that we consider the ethics of actions like cutting fins off sharks and tossing them back to bleed out. He hopes we will consider better, kinder ways of dealing with the fast but seriously declining world of creatures that live in water.