

Snake uses tentacles to 'see' in the dark

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Tentacled Snake ([i]Erpeton tentaculatum[/i]). Image: Wikipedia

(PhysOrg.com) -- A new study of a snake with tentacles on its snout has found it has a unique system for sensing prey: its tentacles allow it to "see" in murky water.

The aquatic [snake](#) (*Erpeton tentaculatum*) lives in slow-moving rivers and murky lakes in South-East Asia, and is the only snake with tentacles. Biologist Ken Catania of Vanderbilt University in Tennessee became fascinated by the reptiles when he saw them in a zoo, and decided to study them.

The research team led by Catania found the snake hunts [fish](#) by forming a J shape with its lower midsection when a fish swims by. This alarms the fish and it darts off in the opposite direction, straight into the snake's

mouth.

The researchers originally thought the tentacles were fish detectors, since the snake eats fish almost exclusively, but when they used fluorescent dye to mark the nerve fibers in tentacles of dead snakes and examined them under the microscope, they found many more embedded in the center of the tentacles than at the surface where nerve cells for touch and taste would be expected. This implies most of the [nerve cells](#) sense movement of the whole tentacles rather than sensations on their surface.

Intrigued by their findings, the team experimented on live snakes, monitoring [electrical activity](#) in their brains while stroking the tentacles with tiny hairs and generating motion in the water using a small vibrating sphere. The tentacles responded to even the slightest deflection of their upper-lip tentacles, which suggests they would also respond to tiny currents made by fish movements. The experiments also showed that touch sensations on the tentacles stimulated a part of the brain involved with sight, which Catania said means the snakes are putting the two pieces of information together.

To test the snake's tentacles separately, the team placed the snakes and small fish in a tank in a dark room. They monitored the tank using infrared cameras and found the snakes caught the fish in complete darkness even when they were several centimeters away, although they struck out less often than in the light. They tested the eyes separately by placing the snakes in a clear-bottomed tank and displayed a movie of fish swimming under it. The snakes struck accurately at the fish even with no input from the tentacles.

Catania said it was not rare for predators to have two good senses. For example, barn owls have great hearing and sight and they use them under different conditions. The snakes appear to be similar, he said, with the tentacles being the greatest help in dark conditions such as at night or in

murky water.

The research paper was published in *The Journal of Experimental Biology* on 1st February.

More information: Function of the appendages in tentacled snakes (Erpeton tentaculatus), *Journal of Experimental Biology* 213, 359-367 (2010). [doi:10.1242/jeb.039685](https://doi.org/10.1242/jeb.039685)

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