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The Hairy Senses of Manatees

The sluggish manatee, an endangered mammal that lives in tropical waters, may use its sparse body hairs much like a cat uses whiskers--to sense the surrounding environment. Researchers have found that the hairs are connected to many nerves, forming a sensory network, which could help Florida manatees navigate by detecting water pressure changes. That would make it the first mammal known to be clad solely in these special hairs, called vibrissae.

Navigating through often dark and murky water is no easy task, and animals have evolved various methods to tackle the challenge. Fish employ a so-called lateral line, a strip of pores running along each side of their body, to detect electrical charges and water pressure shifts. Dolphins rely on echolocation, bouncing sound waves off anything nearby. Manatees have none of these abilities, and poor eyesight to boot, so scientists suspected they might be covered in vibrissae. Last year, Roger Reep of the College of Veterinary Medicine at the University of Florida, Gainesville, Chris Marshall, now at Texas A&M University in Galveston, and colleagues found nine kinds of vibrissae on the manatee's face and discovered that one type is used like fingers to manipulate food.

The group then looked for vibrissae elsewhere on manatees. They collected a total of 110 hair follicles sampled systematically from nine manatees that had been found dead in Florida waters. In a paper appearing in an upcoming issue of *Brain, Behavior and Evolution*, the researchers report that every follicle they examined displays key characteristics of vibrissae. For instance, the hairs were rooted in follicle capsules filled with blood. When moving water bends such hairs, the blood swishes around, applying extra pressure to receptors lining the follicle wall and amplifying signals sent to the brain. Reep and Marshall think their work could explain some of the manatees' uncanny behaviors, such as bobbing to the surface for air in unison without opening their eyes to check on their neighbors.

Although this is the first instance of an all-body array of vibrissae, other nearly naked aquatic animals could rely on the same gear, says sensory ecologist Guido Dehnhardt of Ruhr University Bochum in Germany. Dugongs, walruses, and even hippopotami could be using their body bristles in a similar fashion.

--KATHLEEN WONG

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