Scientists' Discovery in the Deep Casts Some Squid Mothers in a Brighter Light

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With their slimy tentacles and big, unblinking eyes, squids have, over the centuries, acquired a bad reputation.

Monterey Bay Aquarium Research Institute

Jules Verne's squid attacked a submarine. Peter Benchley's dined on children.

The squid has fared little better in the world of science, with researchers concluding that, unlike octopuses and some fish, squids are inattentive parents, depositing eggs on the seabed and letting them grow or die on their own.

But a team of ocean scientists exploring the inky depths of the Monterey Canyon off California has discovered that at least one squid species cares for its young with loving attention, the mother cradling the eggs in her arms for months, waving her tentacles to bathe

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Mommie Deepest: A female Gonatus onyx holding an egg mass, top; and releasing her hatchlings, above.

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Watch the squid (MPG File; Courtesy of the Monterey Bay Aquarium Research Institute)

the eggs in fresh seawater. The scientists suspect that other species are doting parents, too, and that misperceptions about squid behavior have arisen because the deep is so poorly explored.

"Our finding is unexpected because this behavior differs from the reproductive habits of all other known squid species," the scientists wrote in the Dec. 15 issue of Nature, the weekly science journal. "We expect it to be found in other squids."

Brad A. Seibel, a biologist at the University of Rhode Island and the Monterey Bay Aquarium Research Institute, who led the research, said in an interview that the insight began in 1995. Then a graduate student, he pulled up a trawl bucket from the dark midwaters of the Monterey Canyon, which is as deep as two miles, and found a mass of squid eggs. Nearby in the bucket lay a female of the species Gonatus onyx, which grows to a length of about 10 inches.

The next year, the same thing happened again, except this time the young were hatchlings, just emerging from their eggs.

Recalling his previous catch, Dr. Seibel theorized that he had stumbled upon something that amounted to heresy. It seemed that the females had been brooding their eggs. In 2000, he proposed the idea in print, prompting skeptical rejoinders.

The breakthrough came in 2001, when Dr. Seibel and his colleagues at Monterey sent a car-size robot into the depths of the canyon. There, more than a mile down, the robot's lights and camera spied the heresy in action - a female brooding her eggs.

"I was delighted," Dr. Seibel recalled, and "surprised that we found them."

Since then, he and teammates exploring the canyon's deep waters have discovered five female squids holding their eggs, gently protecting and nourishing them. The attentive females extend their arms every 30 to 40 seconds, moving water through the masses of 2,000 to 3,000 eggs.

This action, the scientists wrote in Nature, probably serves to aerate the eggs in the canyon's oxygen-poor waters. The scientists estimate that the squid, in the class of animals known as cephalopods, which also includes the octopus and the cuttlefish, broods its eggs for as long as nine months.

The other researchers are Bruce H. Robison and Steven H. D. Haddock of the Monterey Bay Aquarium Research Institute, in Moss Landing, Calif.

The attention and nurturing, Dr. Seibel said, surely promotes survival. "It's very successful," he noted, Gonatus onyx being one of the most abundant cephalopods in the Pacific Ocean.

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