

First video of 'dumbo' octopod hatchling shows that they look like mini-adults

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Researchers who've gotten the first look at a deep-sea "dumbo" octopod hatchling report in *Current Biology* on February 19 that the young octopods look and act much like adults from the moment they emerge from an egg capsule. Dumbo octopods are so named because their fins

resemble Dumbo the elephant's ears.

"Once the fins were observed while it was still in the bucket, it was clear that it was a 'dumbo' octopod," says Elizabeth Shea at the Delaware Museum of Natural History.

The researchers identified the octopod as a member of the Grimpoteuthis family, although the species identity remains unclear. Shea explained that's because species descriptions are typically based on mature adult specimens, often including features that are likely to change as an individual grows and matures.

Study co-author Tim Shank at Woods Hole Oceanographic Institution in Woods Hole, MA, was the first to see the hatchling in 2005 while serving as co-chief scientist of a Deep Atlantic Stepping Stones cruise, which used remotely operated vehicles (ROVs) to explore the New England and Corner Rise Seamount chains in the Northwest Atlantic. In the collected sample, he saw what looked like tan-colored golf balls attached to coral branches and collected several of them.

"With each successive collection, it became apparent that this was some sort of an egg case," Shank says. "The first few were open and empty, the next two contained a white gelatinous mass within, and the final collection yielded the specimen described in the paper."

When Tim first took the coral out of the ROV collection box and placed it in a 5-gallon bucket in the cold room, he noted that the egg case was tan-brown with a stippled texture and that the egg case was not broken. By the time he got the bucket out of the cold room and inspected the egg case, it was open and part of the hatchling was partially exposed.

At first, the hatchling wasn't moving much, if at all. But, after emerging fully from the egg case and being brought into the lab, the hatchling

swam for about 10 minutes, which the researchers captured on film (see video).

The researchers later used magnetic resonance imaging (MRI) to explore the hatchling's anatomy. Based on those findings, they were able to assign the specimen to the genus *Grimpoteuthis*.

"The virtual exploration and 3D reconstruction of the internal anatomy of this deep-sea creature was particularly revealing," says study co-author Alexander Ziegler from Rheinische Friedrich-Wilhelms-Universität Bonn in Germany. "I was impressed by the complexity of the central nervous system and the relative size of fins and the internal shell. However, for me as a zoologist, the most interesting aspect of our discovery remains the close interaction between the dumbo egg and the deep-sea coral host."

The observed behavior and advanced state of organ development showed that the hatchlings are fully formed from the start, with all the features required for fin swimming, visually and chemically sensing their environments, and capturing prey. An internal yolk sac gives the hatchlings a little time to successfully capture a first meal. Overall, they report, the evidence shows that dumbo octopods hatch as competent juveniles.

"We knew that adults are predominantly benthopelagic, that females lay [eggs](#) on the ocean bottom, and that octopod eggs come in a variety of sizes, colors, and textures," Shea says. "Our work connects the dots between a particular egg, a particular coral, and a particular octopod."

The researchers say these findings can now be used in visual explorations of the deep sea, as well as in physical explorations of museum collections.

More information: *Current Biology*, Shea et al.: "Dumbo octopod hatchling provides insight into early cirrate life cycle"

[www.cell.com/current-biology/f ... 0960-9822\(18\)30034-4](http://www.cell.com/current-biology/full-0960-9822(18)30034-4) , DOI: [10.1016/j.cub.2018.01.032](https://doi.org/10.1016/j.cub.2018.01.032)

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