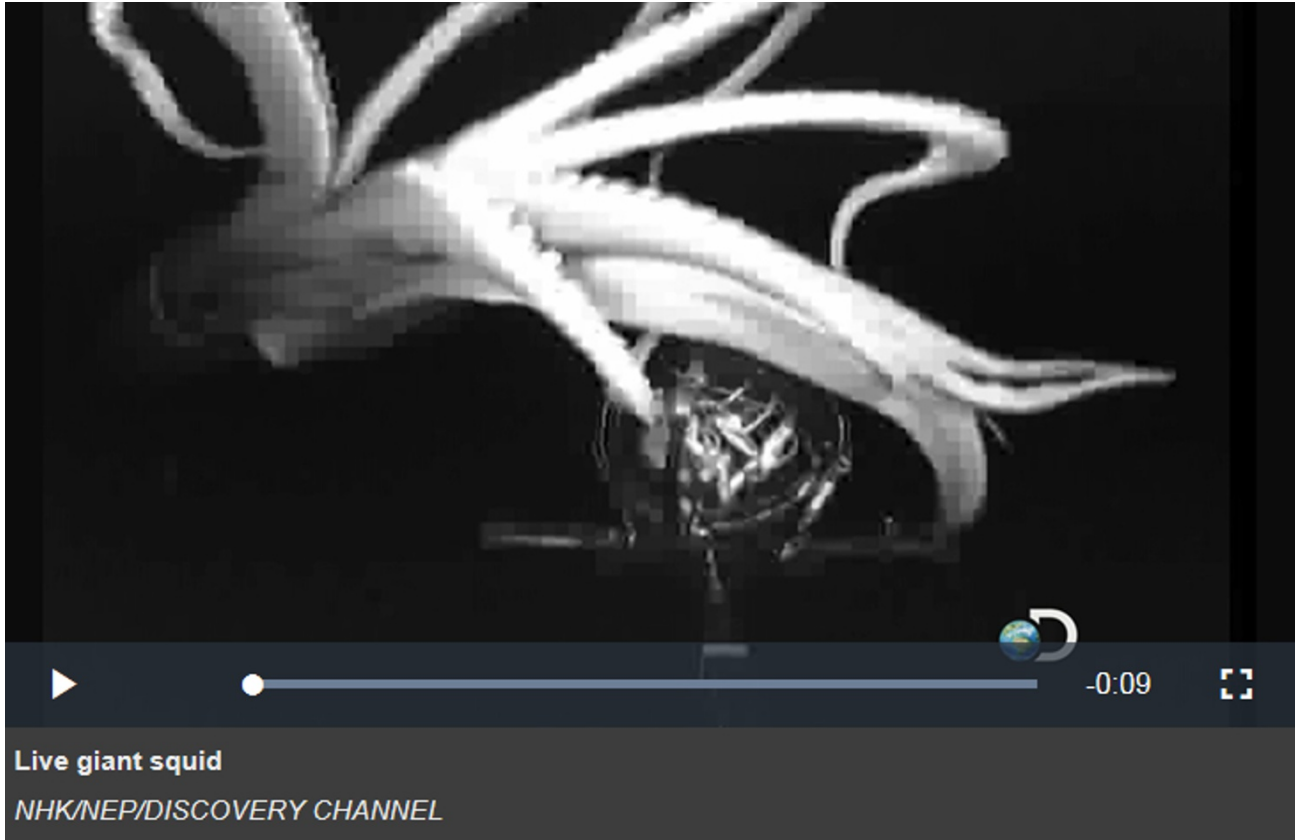


Giant squid filmed in its natural environment

Landmark achievement reveals clues to mollusc's behaviour.

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Ocean explorers have finally achieved one of their most alluring but elusive goals: video footage of the legendary giant squid (*Architeuthis dux*) in its natural deep-sea habitat. Scientists say that the spectacular film, captured during an expedition off Japan's Ogasawara archipelago, answers enduring questions about the enigmatic invertebrate.

The 6-week mission was funded by the Japan Broadcasting Commission (NHK) and the US Discovery Channel, and took place in July. It is only now being discussed publicly, as the two companies prepare to broadcast documentaries that include the footage later this month.

The squid was first glimpsed using a specialised camera system, called Medusa, which the team deployed from a ship and left suspended about 700 metres down in the water. Later, researchers came face-to-face with one while in a submersible. "It was so beautiful that I have no words to explain it," says zoologist Tsunemi Kubodera of Japan's National Museum of Nature and Science, who was in the submersible.

The camera system was developed by Edith Widder, a deep-sea explorer and founder of the Ocean Research and Conservation Association in Fort Pierce, Florida. She thinks that the key to its success was a focus on the squid's sense of sight. To avoid bright lights that might scare the squid away, the system uses a low-light camera with a dim red light, because few deep-sea animals see light with such a long wavelength.

Alluring success

In hopes of drawing the animals in, Widder used a different sort of light. Although very little sunlight penetrates to the deep sea, many deep dwellers produce a bioluminescent light. Past research by Widder suggests that the bioluminescence can act as a sort of burglar alarm, among other functions¹. The idea is that the bioluminescence produced by some prey when they are attacked may serve to

attract larger predators — such a giant squid — that will then eat the attacker.

Widder and her colleagues therefore fitted Medusa with an electronic device that mimicked the bioluminescence that jellyfish produce when attacked to serve as a lure. It worked: Medusa first encountered a squid during its second deployment, igniting jubilation on the ship. “I just was blown away,” says Widder, “I couldn’t have been happier.”

Medusa ended up encountering a squid five times, culminating with a full view of one apparently attacking the camera system in a manner consistent with the alarm hypothesis. The squid was about 4 metres long, although giant squid can grow as large as 10 metres or more.

During a dive about a week after the first Medusa success in their Triton submersible, Kubodera and pilot Jim Harris had a face-to-face encounter. Once they had taken enough low-light footage, they turned on the sub’s bright main lights, expecting to spook the squid. Instead, the animal continued to feed on bait tied to the sub. For 18 mesmerising minutes the pair watched as the huge animal’s skin shifted between unexpected gold and silver metallic hues.

Two previous expeditions, both of which involved Kubodera, have returned [still photographs of a giant squid in the deep](#)² and video footage of one at the surface. Numerous dead specimens have also been collected around the world. But, Kubodera says, the up-close, extended view was like seeing an entirely new animal. He believes giant squid hunt looking up, to detect faint silhouettes, so he attached one of the animal’s prey, a diamondback squid, to the front of the sub as an attractant, but also used a lighted squid jig.

Clyde Roper, a giant-squid expert and zoologist at the Smithsonian National Museum of Natural History in Washington DC, says that the encounters answer longstanding questions. For instance, the giant squid was thought to be fairly passive, but the vigorous bait attacks show that it is actually a very strong swimmer and feeder.

“This has gone a long, long way to helping us understand this animal,” says Roper, “They did just a marvellous job.”

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References

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2. Kubodera, T. & Mori, K. *Proc. R. Soc. B* **272**, 2583–2586 (2005).