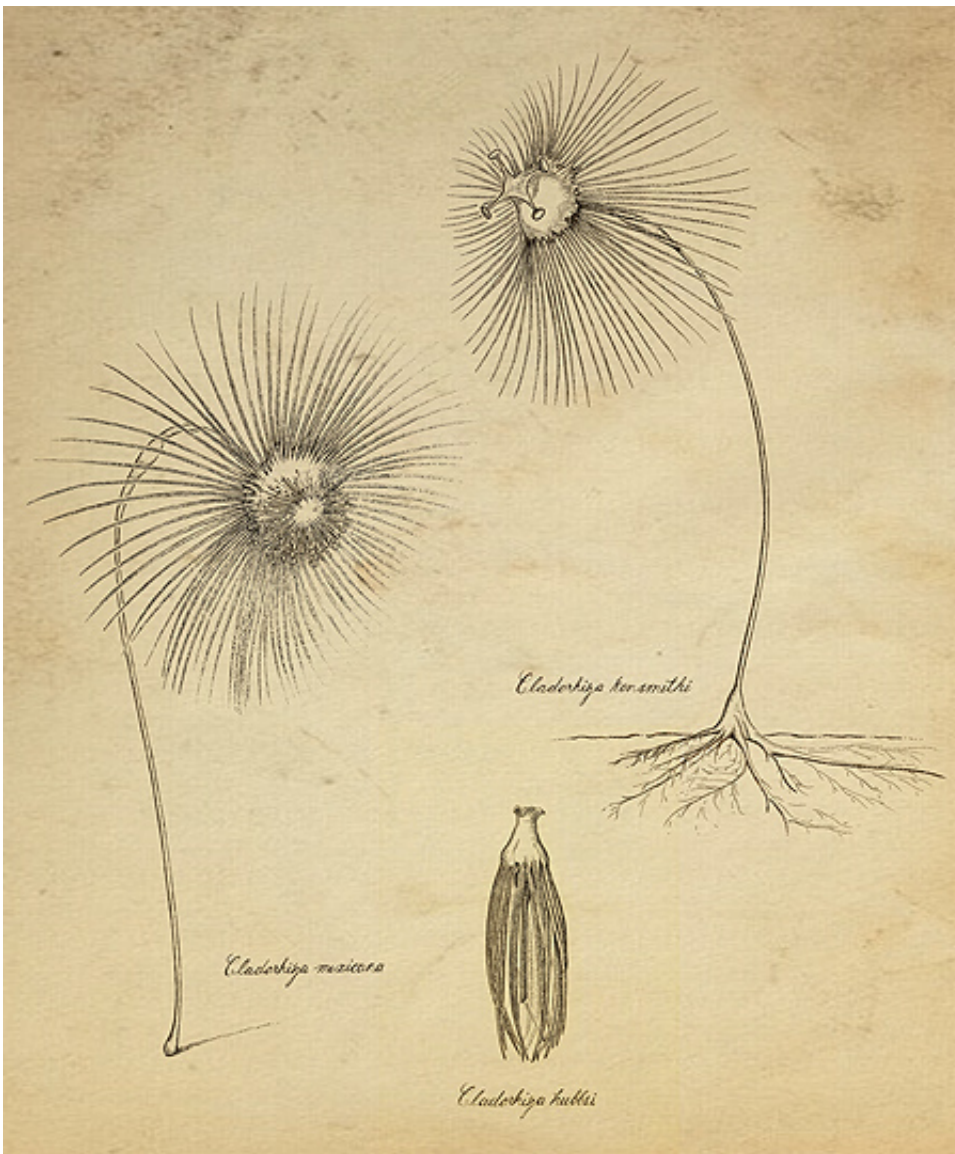


Newly described 'parasol' sponges are graceful but deadly (to small crustaceans)

September 6 2017, by Kim Fulton-Bennett



MBARI illustrator Kelly Lance created this image of the three newly named sponges in the style of illustrations made during the ground-breaking Challenger

Expedition in the late 1870s. The new species are *Cladorhiza kensmithi* (upper right), *Cladorhiza hubbsi* (fragment; bottom), and *Cladorhiza mexicana* (left). Credit: Kelly Lance © 2017 MBARI

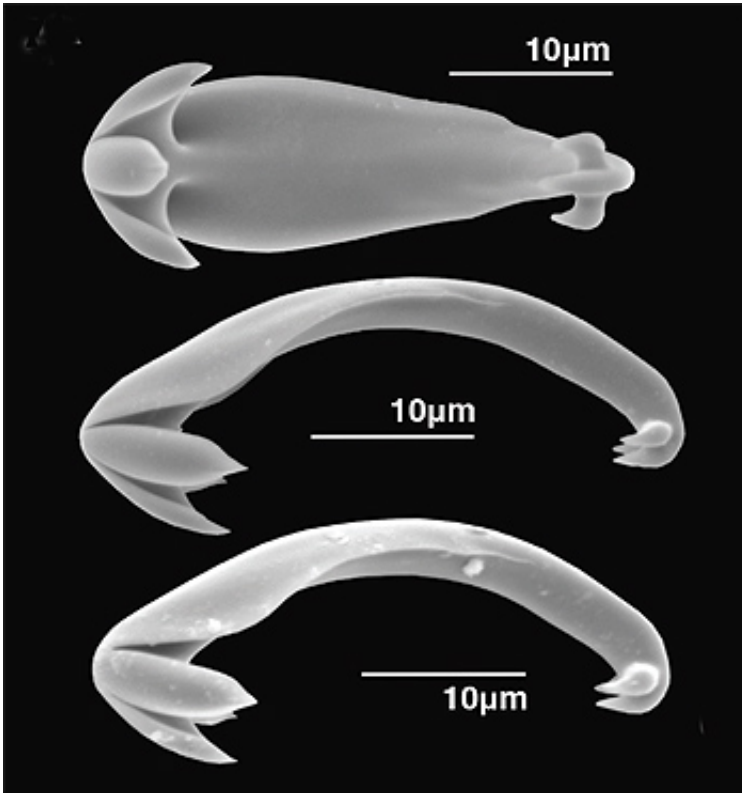
When most people think of sponges, they think of squishy, soap-filled kitchen sponges, or perhaps the graceful barrel sponges that grow around coral reefs. But in the dark depths of the ocean, some sponges have evolved into deadly predators, which trap and digest small, helpless prey. In a new paper in the journal *Zootaxa*, marine biologists describe three new species of predatory sponges that live in deep water off the coast of California and in the Gulf of California.

Most [sponges](#) are passive filter feeders, pumping seawater through their bodies and straining out microscopic single-celled organisms and bacteria. However, over the last 20 years, [marine biologists](#) have discovered that many deep-sea sponges are predators. These carnivorous sponges have adapted to food-poor habitats by ensnaring larger, more nutrient-dense prey.

Like tiny beach umbrellas sticking out of the deep-sea floor, the [new species](#) of sponges consist of thin vertical stalks capped by parasol-like disks with "numerous long filaments radiating in all directions from the parasol edge," according to the authors of the *Zootaxa* article.

Although the sponges' parasol-like structures are delicate and graceful to the human eye, they are death traps for tiny animals. Looking through a microscope at the filaments of collected sponges, the researchers observed dozens of miniscule, shrimp-like crustaceans embedded in small fluid-filled sacks called "cysts." Apparently, when one of these tiny crustaceans swims or drifts into a filament, it is trapped in a gauntlet of "chelae," which look like tiny, barbed fish hooks. The trapped prey

are then enveloped within the body of the sponge and slowly digested.



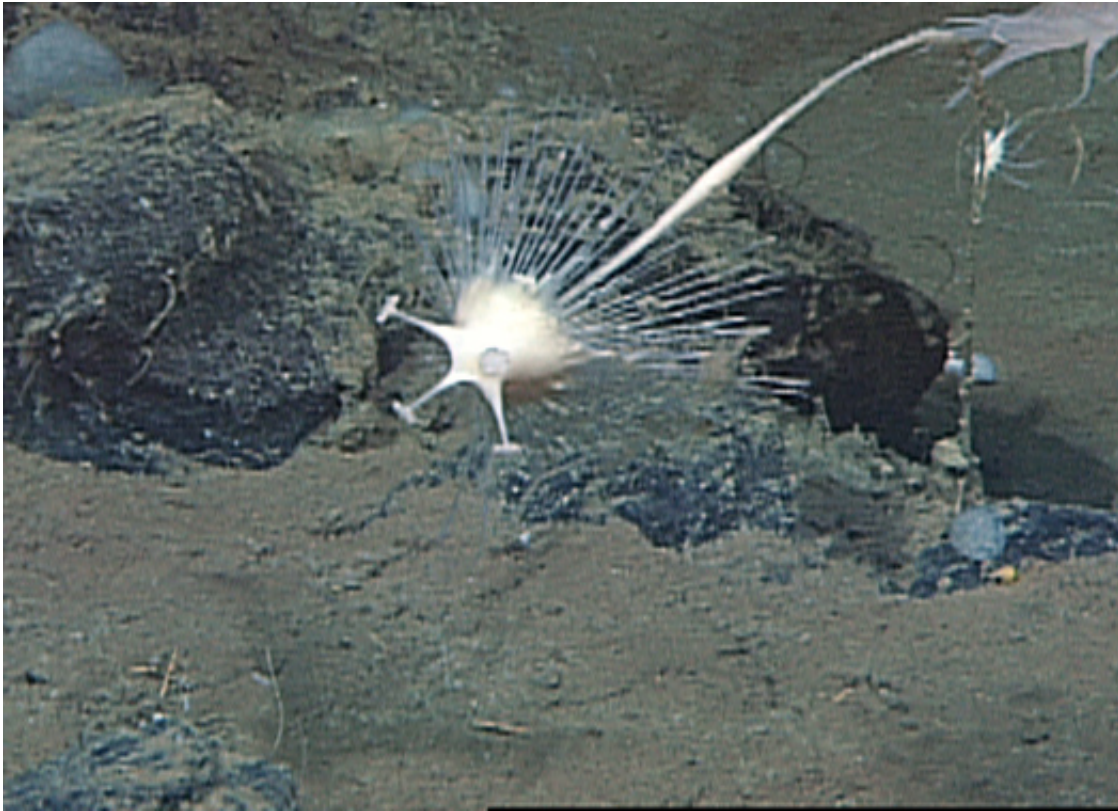
This scanning electron microscope image shows the tiny but spikey chelae that help carnivorous sponges ensnare small animals. Credit: MBARI

Some of the new sponges also have small stalks atop their parasols, with conspicuous knobs or disks on the end. Researchers believe that, in mature sponges, these "apical antennae discs" produce packets of sperm that are released into the surrounding water.

Two of the newly named sponges were recorded on videotape by MBARI's remotely operated vehicles (ROVs) at depths of about 2,500 to 4,100 meters. All three of the new sponges are members of the genus *Cladorhiza*. These three new species join three previously known species

of *Cladorhiza* sponges along the West Coast of North America.

One of the new sponges, *Cladorhiza kensmithi*, lives on the muddy seafloor off Central and Northern California. This sponge was named after MBARI deep-sea biologist Ken Smith, who has spent over 40 years studying deep-sea animals. A large number of *C. kensmithi* sponges were observed at "Station M," one of Smith's long-term research sites off the coast of Central California.



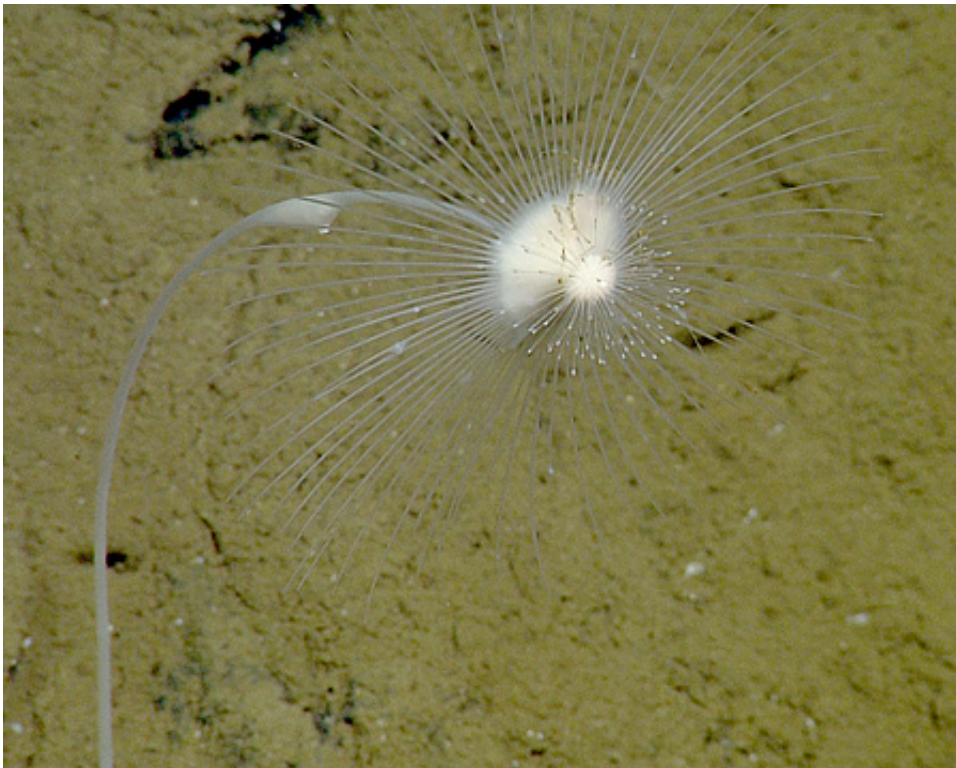
The carnivorous sponge *Cladorhiza kensmithi*, about 3,200 meters below the ocean surface on the Gorda Ridge, offshore of Northern California. Credit: MBARI

Cladorhiza kensmithi sponges are about 20 centimeters (8 inches) tall,

and use root-like rhizoids to secure their stalks to muddy bottom. When they were first observed during MBARI ROV dives, researchers gave them the nickname "Sputnik sponges" because their filaments and large, conspicuous antennae disks looked like antennae on a satellite.

Adult *C. kensmithi* sponges are widely distributed across the flat, muddy abyssal plain at Station M. However, smaller (and presumably younger) *C. kensmithi* sponges often grow in clumps on top of another type of sponge (a "plate sponge") that also lives in this area.

In contrast to the muddy habitat of *C. kensmithi*, the new sponge *Cladorhiza mexicana* was observed living on deep-sea lava flows at the southern end of the Gulf of California. This species can grow to at least 30 centimeters (one foot) tall.



Researchers named this delicate sponge *Cladorhiza mexicana* because it was discovered in Mexican territorial waters near the entrance to the Gulf of

California. Credit: MBARI

A third new species, *Cladorhiza hubbsi*, was identified from a single specimen dredged up from the seafloor off Southern California in 1969 by researchers at the Scripps Institution of Oceanography. Only the top portion of this sponge was recovered, but that was enough to identify the sponge as a new species.

The researchers hope to follow up on this research by conducting more detailed studies of *C. kensmithi* sponges, which are relatively abundant at Station M. They suggest that using ROVs to study the feeding, growth, and reproduction of these sponges at Station M "would yield a wealth of novel information."

More information: LONNY LUNDSTEN et al. Three new species of *Cladorhiza* (Demospongiae, Poecilosclerida, Cladorhizidae) from the Northeast Pacific Ocean, *Zootaxa* (2017). [DOI: 10.11646/zootaxa.4317.2.3](https://doi.org/10.11646/zootaxa.4317.2.3)

Provided by MBARI

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