

UF researchers name new cusk-eels useful for understanding environment

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(Phys.org)—A study by University of Florida and University of Kansas researchers describing eight new cusk-eel species provides data for better understanding how disasters like the 2010 Gulf of Mexico oil spill impact biodiversity and the environment.

The 60-year study appearing Tuesday in the [Florida Museum of Natural History Bulletin](#) provides a comprehensive taxonomic revision of one of the least-studied groups of cusk-eels, bony fishes distantly related to cod. Although abundant and widespread in the Americas, the fishes in the genus *Lepophidium* have previously been poorly known to biologists.

"With the recent Gulf of Mexico disaster, one of the first things that people started asking was what impact was had and on what animals, and a lot of biologists said, 'We don't know all the animals that are in the Gulf of Mexico because the area hasn't been studied enough,' " said study co-author Rob Robins, ichthyology collection manager at the Florida Museum of Natural History on the UF campus. "A number of these species are from the Gulf of Mexico, including some of the new ones, and this paper brings us closer to our ultimate goal of cataloguing the [diversity of life](#) so that when we need the information, it's available."

In addition to describing the new species, the study includes new descriptions of all members of the genus and elevates two sub-species to species, bringing the number of *Lepophidium* species to 23. The research included observations of the fish in the wild, X-rays of their internal anatomy and close examination of thousands of [museum specimens](#).

Lead author C. Richard "Dick" Robins, University of Kansas curator emeritus, completed much of the fieldwork and collected many examples of cusk-eels as a professor of [marine science](#) at the University of Miami. Miami's fish collection was later transferred and is now part of the Florida Museum's ichthyology collection, one of the five largest in the nation.

"I think it's amazing that there is a group of fishes that is really common in shallow water that had so many undescribed species," Dick Robins said. "It just shows the state of the art is really poor and unfortunately, I think it's really typical. I'd hate to hazard a guess about how many undescribed species of fish there are in really shallow waters, but people don't seem to work on them that much."

The genus *Lepophidium* includes smaller species of cusk-eels that live on the Continental Shelf, from shallow coastal water to about 600 feet deep.

"Since these are soft-bottom fishes and some of these occur in shallow waters, you're dealing with man's effect on the environment, what pollution does to some of these environments and how it affects the animals that live there," said California Academy of Sciences research associate Robert Lea, a marine biologist who specializes in another genus of cusk-eels. "Some of these are going to be [Gulf of Mexico](#) species and probably many of these are going to be indicators of environmental quality also."

Because they are benthic, meaning they live near the bottom, and burrow in sand, cusk-eels are particularly difficult to collect, Lea said.

"This is a group that we've needed additional knowledge on, and this study provides a tremendous amount of information for people studying soft-bottom fishes in the Americas," Lea said. "This is a milestone work because it's a lifelong study and it answers a lot of questions. It's the end

of a chapter for that group of animals."

Cusk-eels are plainly colored, typically with a beige body and some degree of black pigment in the fins. They also have a rostral spine, a sharp point found on their snout. Major differences in the cusk-eels include features of their internal anatomy, such as number of vertebrae or gut color. Fin ray counts are also important for distinguishing the various species.

"This is not a case of just working with specimens in a museum – it's important to know these animals and where they live," Dick Robins said. "I think it's important that we know about the animals that we share this planet with."

Cusk-eels may reach 6.5 feet in South America, where they are an important food source in some regions, but the *Lepophidium* species, which do not exceed 1 foot, are generally too small for human consumption, researchers said. Dick Robins became interested in studying cusk-eels in the early 1960s because he encountered so many undescribed species, he said.

"This was a group of fish that turned me on at some point and nobody else was working on them," Dick Robins said. "The more I worked, the more undescribed [species](#) I found. So I just got more and more involved with it. I'm very happy to have this opportunity to bring it all together in this paper."

Florida Museum volunteer Mary Brown is also a study co-author.

Provided by University of Florida

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