

## Strange animal finds: Lungless frogs, crawling fish

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Courtesy Cell Press, University of Washington and [World Science](#) staff

Evolutionary biologists are still getting over their astonishment from two unrelated discoveries of remarkable species in the past week: a lungless frog and a bizarre, crawling fish.

The frog finding represents first case of complete lunglessness in a frog, according to a report in the April 8 issue of the research journal *Current Biology*. The aquatic frog *Barbourula kalimantanensis* apparently gets all the oxygen it needs through its skin, researchers said.

Previously known from only two specimens, two new populations of the aquatic frog were found during an expedition to Indonesian Borneo.



“We knew that we would have to be very lucky just to find the frog,” said David Bickford of the National University of Singapore, a member of the research team. “People have been trying for 30 years. But when we did and I was doing the initial dissections—right there in the field—I have to say that I was very skeptical at first [that they would lack lungs]. It just did not seem possible. We were all shocked when it turned out to be true for all the specimens we had from Kalimantan, Indonesia.”

Among tetrapods, or four-limbed animals, lunglessness is only known in amphibians. Complete loss of lungs in any species seems to have occurred only three times in evolution, Bickford said.

The discovery of lunglessness in a secretive Bornean frog supports the idea that lungs are a malleable trait in amphibians, the evolutionary sister group to all other tetrapods, according to the researchers.

*Barbourula kalimantanensis* lives in cold, fast-flowing water, they noted, so loss of lungs might be an adaptation to a combination of factors: a higher oxygen environment, the species’s presumed low metabolic rate, severe flattening of their bodies that increases the surface area of their skin, and negative buoyancy—meaning the frogs would rather sink than float.

The researchers said that further studies of this remarkable frog may be hampered by the species’ rarity and endangerment. They urged conservation of the frogs’ remaining habitats. “This is an endangered frog—that we know practically nothing about—with an amazing ability to breathe entirely through its skin, whose future is being destroyed by illegal gold mining by people who are marginalized and have no other means of supporting themselves,” Bickford said. “There are no simple answers to this problem.”

Separately, on April 2 a University of Washington researcher described a newfound fish that would rather crawl into crevices than swim, and that may be able to see in the same way that humans do.

Sighted in Indonesian waters off Ambon Island, the fish has tan- and peach-colored zebra-stripping, and rippling folds of skin that obscure its fins, making it look like a glass sculpture, said the university's Ted Pietsch. But far from being like glass, the bodies of these fist-sized fish are soft and pliable enough to slip and slide into narrow crevices of coral reefs. It's probably part of why they've typically gone unnoticed before, researchers said.

The animals are anglerfishes, said Ted Pietsch, an authority on anglerfish.

Husband and wife Buck and Fitrie Randolph, with dive guide Toby Fadirsyair, found and photographed an individual Jan. 28 in Ambon harbor. A second adult has since been seen and two more apparent juveniles were spotted March 26, off Ambon. One of the adults laid a mass of eggs. Reference books were consulted but nothing similar to the fish photographed in January was found. Seeking international fish experts eventually led them to Pietsch.

*Image; The leg like pectoral fin for walking reveals this newfound fish is an angler fish, an expert says, though it lacks the characteristic angler fish's lure on its head for attracting prey. (Credit: M. Snyder, [starknakedfish.com/divingmaluku.com](http://starknakedfish.com/divingmaluku.com))*