

Louisiana researchers ID 14 new shrew species on Sulawesi

December 26 2021, by Janet McConnaughey



In this image taken by doctoral student Heru Handika and provided by Louisiana State University, shows a field camp from which scientists and students worked to collect shrews in April 2018 on the Indonesian island of Sulawesi. A decade of trips to a dozen mountain and two lowland areas on the island enabled the group to identify 14 newly recognized species of shrews in one genus on the island, tripling the previously known total. Credit: Heru Handika/Louisiana State University via AP

Louisiana researchers have identified 14 new species of shrews on an Indonesian island where seven in that genus were previously known.

There were so many and some look so similar that after a while Louisiana State University biologist Jake Esselstyn and his colleagues began hunting for Latin words meaning "ordinary."

"Otherwise I don't know what we would have named them," said Esselstyn, who also named the seventh known species of the pointy-nosed insect-eating mammals on the island of Sulawesi.

That's why shrews whose species names mean such things as "hairy-tailed" and "long" have been joined by "*Crocidura mediocris*," "*C. normalis*," "*C. ordinaria*," and "*C. solita*"—the last of those meaning "usual."

The 101-page paper will be "super valuable for all current and future students of mammal biodiversity," said Nathan S. Upham, assistant research professor at Arizona State University's School of Life Sciences and lead creator of the American Society of Mammalogists' online [Mammal Diversity Database](#).

He was not involved in the study, which was published Dec. 15 in the *Bulletin of the American Museum of Natural History* and also involved researchers from the Indonesian Institute of Sciences, Museums Victoria in Australia, and the University of California.



This image taken by associate professor Jacob Esselstyn and provided by Louisiana State University, shows an area where shrews live about 1.5 miles up Mt. Gandang Dewata on May 2, 2012, in Sulawesi, Indonesia. A decade of trips to trap shrews in 14 parts of the island enabled scientists led by Esselstyn to identify 14 new species of shrews in one genus on an island where seven were previously known. Their research was published Dec. 15, 2021 in the Bulletin of the American Museum of Natural History. (Jacob Esselstyn/Louisiana State University via AP0

It's been 90 years since this many new species were identified in one paper, Esselstyn said. The 1931 paper by George Henry Hamilton Tate identified 26 possible [new species](#) of South American marsupials, but 12

were later found not to be separate species for a total of 14 new ones, he said.

Esselstyn led a decade of trips to the Indonesian island of Sulawesi to collect the animals, which are relatives of hedgehogs and moles. All weighed less than a AA battery, ranging from about 3 grams—just over one-tenth of an ounce, or about the weight of a pingpong ball—to about 24 grams (0.85 ounces). The largest species had bodies averaging 95 millimeters, or about 3.7 inches long.

At the start, he was hoping to clarify how the six species then known in the genus *Crocidura* had developed. "I was interested in questions about how shrews interacted with their environment, with each other, how local communities were formed," he said.

But he quickly realized that species had been sorely undercounted.



In this image taken by Heru Handika and provided by Louisiana State University, shows researchers from LSU, Indonesian Institute of Sciences, Museums Victoria in Australia, and the University of California in a camp on Mount Torompupu in central Sulawesi, Indonesia, on Dec. 2, 2017. A decade of trips to collect shrews on the island enabled scientists at LSU and other institutions to identify 14 previously unknown species of shrews, tripling the number of shrews in that genus on the island. Credit: Heru Handika/Louisiana State University via AP

"It was overwhelming because for the first several years, we couldn't figure out how many species there were," he said.

Five had been identified in 1921 and a sixth in 1995. Esselstyn's team identified the seventh species, the hairy-tailed shrew, in 2019.

For this paper, they examined 1,368 shrews, more than 90% of them collected by Esselstyn's group, which trapped the animals on a dozen mountain sites and two in the lowlands of Sulawesi.

The island is shaped rather like a lower-case letter k with the top of the stem bent sharply eastward.

That odd shape has contributed to species diversity, Esselstyn said. "There are consistent boundaries between species ... whether you're looking at frogs or macaques or mice. It suggests some sort of shared environmental mechanisms."

Researchers have found at least seven such zones—roughly, the island's central mass, the three "legs" of the k, and three zones on the long bent neck.



This image taken by doctoral student Heru Handika and provided by Louisiana State University, shows some of the terrain on Oct. 30, 2016, through which

scientists and students trekked to collect shrews on Mt. Bawakaraeng in Sulawesi, Indonesia. The mountain was among 14 sites on the island where a decade of collecting trips allowed the team to identify 14 new species in one genus on the island. The article published Dec. 15, 2021, tripled the known total. Credit: Heru Handika/Louisiana State University via AP



In this image taken by Kevin Rowe of Museums Victoria in Melbourne, Australia, and provided by Louisiana State University, a shrew, one of 14 species newly identified on the island of Sulawesi, Indonesia, crawls around. A team led by an LSU scientist named this species *Crocidura pallida* because it has pale feet. Credit: Kevin Rowe of Museums Victoria/Louisiana State University via AP

Genetic analysis may indicate how long ago or recently similar [species](#) split apart and whether they've been in regular contact with each other since then, Esselstyn said.

"It's a difficult problem. But I think we can do it now that sequencing genomes is relatively low-cost," he said. "A few years ago we couldn't have done it but it's relatively feasible now."

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