

New frog species found in troubled Indian habitat

May 8 2014, by Katy Daigle



In this Thursday, May 1, 2014 photo, University of Delhi professor Sathyabhama Das Biju, lead scientist of a project that has discovered 14 new species of so-called dancing frogs in the jungle mountains of southern India, displays one of the newly discovered species in his laboratory in New Delhi, India. The study listing the new species brings the number of known Indian dancing frogs to 24 and attempts the first near-complete taxonomic sampling of the single-genus family found exclusively in southern India's lush mountain range called the Western Ghats, which stretches 1,600 kilometers (990 miles) from the west state of Maharashtra down to the country's southern tip. (AP Photo/Saurabh Das)

Scientists have discovered 14 new species of so-called dancing frogs in the jungle mountains of southern India—just in time, they fear, to watch them fade away.

Indian biologists say they found the tiny acrobatic amphibians, which earned their name with the unusual kicks they use to attract mates, declining dramatically in number during the 12 years in which they chronicled the species through morphological descriptions and molecular DNA markers. They breed after the yearly monsoon in fast-rushing streams, but their habitat appears to be becoming increasingly dry.

"It's like a Hollywood movie, both joyful and sad. On the one hand, we have brought these beautiful frogs into public knowledge. But about 80 percent are outside protected areas, and in some places, it was as if nature itself was crying," said the project's lead scientist, University of Delhi professor Sathyabhama Das Biju.

Biju said that, as researchers tracked frog populations, forest soils lost moisture and perennial streams ran inexplicably dry. He acknowledged his team's observations about forest conditions were only anecdotal; the scientists did not have time or resources to collect data demonstrating the declining habitat trends they believed they were witnessing.

The study listing the [new species](#)—published Thursday in the *Ceylon Journal of Science*—brings the number of known Indian dancing [frog species](#) to 24.

They're found exclusively in the Western Ghats, a lush mountain range that stretches 1,600 kilometers (990 miles) from the western state of Maharashtra down to the country's southern tip.



This undated photograph shows one of the 14 new species of so-called dancing frogs discovered by a team headed by University of Delhi professor Sathyabhama Das Biju in the jungle mountains of southern India. The study listing the new species brings the number of known Indian dancing frogs to 24 and attempts the first near-complete taxonomic sampling of the single-genus family found exclusively in southern India's lush mountain range called the Western Ghats, which stretches 1,600 kilometers (990 miles) from the west state of Maharashtra down to the country's southern tip. (AP Photo/Satyabhama Das Biju)

Only the males dance—it's actually a unique breeding behavior called foot-flagging. They stretch, extend and whip their legs out to the side to draw the attention of females who might have trouble hearing mating croaks over the sound of water flowing through perennial hill streams.

The bigger the frog, the more they dance. They also use those leg extensions to smack away other males—an important feature considering the sex ratio for the amphibians is usually around 100 males to one female.



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"They need to perform and prove, 'Hey, I'm the best man for you,'" said Biju, a botanist-turned-herpetologist now celebrated as India's "Frogman" for discovering dozens of new species in his four-decade career.

There are other dancing frogs in Central America and Southeast Asia, but the Indian family, known by the scientific name Micrixalidae, evolved separately about 85 million years ago.



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Biju and his team had long been baffled about the frogs' mating patterns, after searching years around the forest floor for egg clutches without success. But one late October day in 2011 they witnessed a rare tryst, and saw the female immediately bury her eggs once fertilized. This confirmed the frogs were indeed breeding only after stream levels had come down, and underlined how vulnerable they might be to changes in rainfall or water availability.

These are tiny, delicate frogs—no bigger than a walnut—and can easily be swept away in a gushing mountain stream. So breeding happens only once the level of a stream levels drops to the point where the water babbles over boulders and stones, he explained. If streams hold less water or dry out too early, the frogs get caught without the right conditions to breed.

"Compared with other frogs, these are so sensitive to this habitat that any change might be devastating for them," Biju said. "Back in 2006, we saw maybe 400 to 500 hopping around during the egg-laying season. But each year there were less, and in the end even if you worked very hard it was difficult to catch even 100."



In this Thursday, May 1, 2014 photo, University of Delhi professor Sathyabhama Das Biju, lead scientist of a project that has discovered 14 new species of so-called dancing frogs in the jungle mountains of southern India, looks through an electronic microscope as he studies a frog at his laboratory in New Delhi, India. The study listing the new species brings the number of known Indian dancing

frogs to 24 and attempts the first near-complete taxonomic sampling of the single-genus family found exclusively in southern India's lush mountain range called the Western Ghats, which stretches 1,600 kilometers (990 miles) from the west state of Maharashtra down to the country's southern tip. (AP Photo/Saurabh Das)

The Western Ghats, older than the Himalayas, is among the world's most biologically exciting regions, holding at least a quarter of all Indian species. Yet in recent decades, the region has faced a constant assault by iron and bauxite mining, water pollution, unregulated farming and loss of habitat to human settlements.

A 2010 report by India's Environment Ministry also said the Ghats were likely to be hard-hit by changing rainfall patterns due to climate change, and more recent scientific studies have also suggested monsoon patterns will grow increasingly erratic.



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India's government has been working to establish a vast environmental protection zone across the Ghats to limit polluting industrial activities and human encroachment, but it put the latest proposal on hold earlier this year.

Meanwhile, as India's population has grown to a staggering 1.2 billion, at least 25 percent of the forests have vanished from the Ghats, which is now home to more than 325 of the world's threatened species of plants, birds, amphibians, reptiles and fish.



This undated photograph shows a frog couple from one of the 14 new species of so-called dancing frogs discovered by a team headed by University of Delhi professor Sathyabhama Das Biju in the jungle mountains of southern India. The study listing the new species brings the number of known Indian dancing frogs to 24 and attempts the first near-complete taxonomic sampling of the single-genus family found exclusively in southern India's lush mountain range called the Western Ghats, which stretches 1,600 kilometers (990 miles) from the west state of Maharashtra down to the country's southern tip. (AP Photo/Satyabhama Das Biju)

Many of these newly discovered frogs could soon be joining them, Biju said. Many of the 24 known Indian dancing frog species lives only in a single, small area. Seven were in what Biju described as highly degraded habitats where logging or new plantations were taking over, while another 12 species were in areas that appeared in ecological decline.



In this May 1, 2014 photo, University of Delhi professor Sathyabhama Das Biju, lead scientist of a project that has discovered 14 new species of so-called dancing frogs in the jungle mountains of southern India, talks during an interview in his laboratory in New Delhi, India. The study listing the new species brings the number of known Indian dancing frogs to 24 and attempts the first near-complete taxonomic sampling of the single-genus family found exclusively in southern India's lush mountain range called the Western Ghats, which stretches 1,600 kilometers (990 miles) from the west state of Maharashtra down to the country's southern tip. (AP Photo/Saurabh Das)

Biju's determination, or even obsession, with documenting as many new frog species as possible stems from his fear that many will vanish as "unnamed extinctions" before scientists ever learn they exist. Scientists believe Earth has about 8.7 million distinct plant and animal species, but they have documented only 1.5 million.

Amphibians are particularly vulnerable. At least one-third of the world's known 6,000 frog species are threatened with extinction from habitat

loss, pollution, changing temperatures or exotic diseases spread by invasive animals and pests, according to Global Wildlife Conservation.



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Sonali Garg one of the study's co-authors, said her family initially thought she was crazy for wanting to study frogs. "But slowly, they're becoming aware of how important and special frogs are," she said. "Slowly, I'm converting them."

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Citation: New frog species found in troubled Indian habitat (2014, May 8) retrieved 20 April 2024 from <https://phys.org/news/2014-05-frog-species-indian-habitat.html>

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