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New shape-shifting 'punk' frog knows how to blend in

A frog found in the cloud forest of Ecuador has a neat trick -- it can change the texture of its skin, and it's the first vertebrate known to do so.



Sci-Tech

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by **Michelle Starr**
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We've seen **octopodes that can change shape**. We've even seen some frogs and reptiles that can change the colour of their skin. But, for the first time, researchers have observed a vertebrate that can change the shape of its skin to better blend in with its surrounding environment.



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The newly described *Pristimantis mutabilis*, or mutable rainfrog, was found in in 2009 in the Reserva Las Gralarias, a nature reserve in the western Andean cloud forest in the Parish of Mindo, in north-central Ecuador originally created to help protect endangered birds.

It's almost a wonder that the frog was spotted at all. At a maximum of around 23 millimetres in length, it is very small and its colouring is the mottled greens and browns of the forest. Yet, one evening in July 2009, Case Western Reserve University PhD student and her husband, a projects manager

at Cleveland Metroparks' Natural Resources Division -- Katherine and Tim Krynak -- spotted the frog sitting on a leaf, about a foot from the ground.

Although the Krynaks had taken several annual trips to survey animals in the reserve -- Tim since 2001 and Katherine since 2005 -- they had never seen this particular frog before, so they scooped it into a cup for later study, nicknaming it the "punk rocker" for its spiny skin.

Yet, when Katherine went to **examine the frog more closely** the next day, she was dismayed to find a smooth-skinned amphibian waiting in the cup, and concluded she must have somehow managed to pick up a different frog.



One frog, two looks.

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"I put the frog back in the cup and added some moss. The spines came back... we simply couldn't believe our eyes, our frog changed skin texture! I put the frog back on the smooth white background. Its skin became smooth," Katherine said.

"Discovering a new species is incredible enough. You wouldn't think anything could top that. And then you discover that it also changes shape, suddenly growing spines that then disappear. I just kept asking 'did that really just happen?'"

Together with a team of researchers from Reserva Las Galarias, Universidad Indoamérica and Tropical Herping, the Krynaks studied the new frog, and found that it could change its skin in a matter of just three minutes.

"The spines and colouration help them blend into mossy habitats, making it hard for us to see them," Katherine said. "But whether the texture really helps them elude predators still needs to be tested."

Following the discovery of *Pristimantis mutabilis*, the team also discovered that another Ecuadorian frog, ***Pristimantis sobetes*** -- a species endangered by habitat loss -- demonstrates the same skill. These discoveries, they believe, have broad implications in the way species are identified.



Zoological Journal of the Linnean Society

"The discovery of these variable species poses challenges to amphibian taxonomists and field biologists, who have traditionally used skin texture and presence/absence of tubercles as important discrete traits in diagnosing and identifying species," the paper reads.

The next step in the research is to determine how many other frogs have this ability. The Krynaks have also helped create **Las Galarias Foundation**, a partner of the Amphibian Survival Alliance, to help support the work of the reserve in protecting the species therein, and will continue to study the behaviour of the frogs.

"These types of new discoveries, those that defy -- and improve -- our understanding of the natural world, are only possible as long as we protect the most biodiverse corners of our planet," **said Robin Moore** of Amphibian Survival Alliance. "If we close the door to new discoveries, we may never be able to fully understand the extent of what we've lost."

The full study, published in the Zoological Journal of the Linnean Society, **can be found online**.

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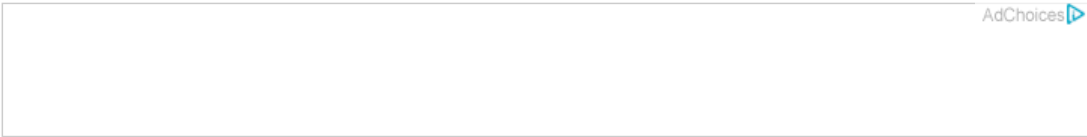
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