



Frogs Are Like Books

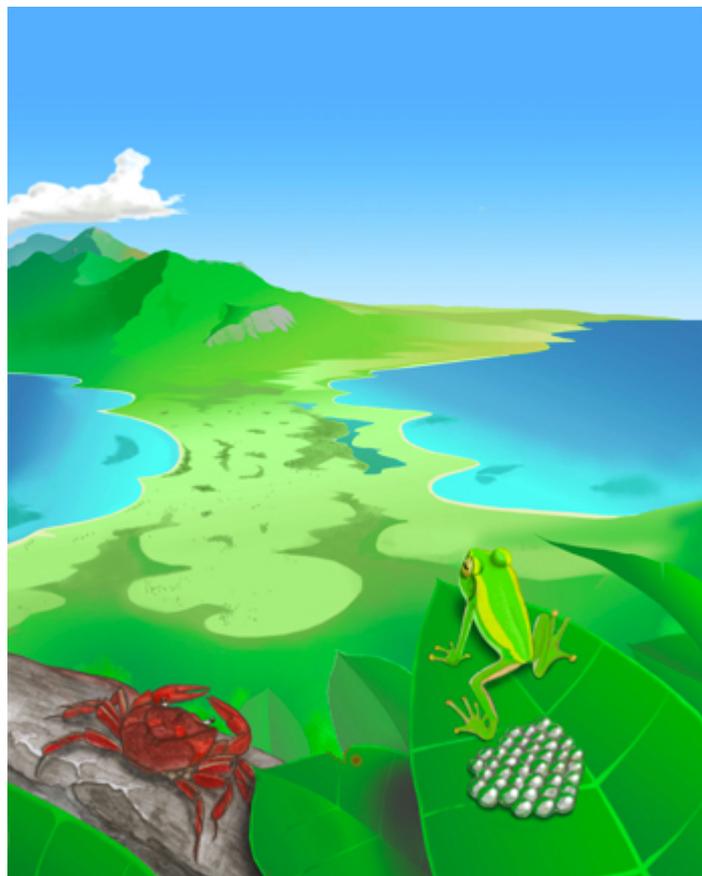
Like a book, you can't judge a frog by its cover. We all know what happens when you judge a book by its cover, but what's wrong with judging a frog by how it looks on the outside?

The problem, according to a new paper appearing in the 15 October issue of the journal *Science*, is that you could accidentally lump together frogs (and many other animals) that are similar on the outside but not so similar when you look inside at their genetic make-up.

Separating animals with different DNA even though they look alike is an important job for the scientists who catalog wild animals for the purposes of conservation. Knowing that an area has unique animals makes it easier to protect that area from human development.

Frank Bossuyt from Vrije Universiteit Brussel in Brussels, Belgium and colleagues compared the DNA sequences of freshwater crabs, shrimp and fish, as well as legless amphibians and shieldtail snakes from both southern India and nearby island of Sri Lanka. They found an unexpectedly large number of animal species native to Sri Lanka but not southern India, and vice versa.

It is especially important to know if similar-looking animals from Sri Lanka and southern India are the same or different, because



About 40 percent of today's biodiversity is concentrated on less than 2 percent of the Earth's surface, divided into 25 hotspots for conservation priority. A survey of six prominent animal groups within the India-Sri Lanka hotspot reveals very distinct faunas on both sides of the ocean, despite the frequent existence of a landbridge throughout the past 500,000 years. This undescribed treefrog (*Philautus sp.*) from the Western Ghats of India exemplifies why biologists have overlooked the differentiation between both faunas: it is the spitting image of a well-known species from Sri Lanka, but belongs to a distinct treefrog lineage. Since it is likely that

they are grouped together into one of the world's 25 wildlife "hotspots." These hotspots take up less than 2 percent of the Earth's surface but contain about 40 percent of today's wildlife diversity or "biodiversity."

By pointing out the many instances where animals from southern India and Sri Lanka are different, the scientists hope that the wildlife from both areas will be studied in detail and equally protected.

Some of the confusion about look-alike animals comes from past research showing that a few animals from southern India and Sri Lanka are the same. Southern India and Sri Lanka might even deserve to be split up into their own

Many of the animals from Sri Lanka did, in fact, come from southern India. They crossed bridges of land connecting the island to the mainland that emerged during periods of lowered sea-level. Once they made the trip, however, the animals changed over time and became new species. Some of the animals that stayed behind in India changed as well.

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Back to [Science for kids](#)

Science is published by AAAS, the non-profit science society.



similar patterns of highly structured endemism exist elsewhere too, further cutback of hotspot's habitats could result in the loss of entire clades of species, not just in the reduction of species' distribution ranges.

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Tree frog, *Philautus*.

[Image courtesy of Franky Bossuyt]

[back to top](#)