

COMMENTARY

What Do We Lose If We Lose the Frogs?¹

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KINGS PLAY CHESS ON FANCY GLASS STOOLS

Anyone know that sentence? It's a mnemonic device, a shorthand way of remembering the categories scientists use to classify all life on Earth. The first letters of each word are the keys:

KINGDOM, PHYLUM, CLASS, ORDER, FAMILY,
GENUS, and SPECIES

Now, if I said that half of an entire kingdom was going to become extinct in the next five years — say, the Animal Kingdom — there would be widespread global panic. Little wonder, as it would be the end of life on this planet as we know it. On the other hand, if I told you that we just lost another species, you might shrug your shoulders. You might figure that

losing a single species is a little like popping a rivet on an airplane. Planes have oodles of rivets. You wouldn't want to lose too many, and you wouldn't want to lose an important one — like the last rivet holding the wing on. But losing an occasional rivet isn't exactly catastrophic.

Where we have problems is toward the middle of our categories. For example, what if we only lose half a "Class" of animals? A Class isn't as broadly encompassing as a Kingdom or a Phylum, but it takes in a lot more than a species or a Genus. Is losing half a Class a catastrophe, or is it just another popped rivet?

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CAROLÉ SAUCIER

The Fire Salamander (*Salamandra salamandra*) is IUCN-Red-listed as being of "Least Concern" in view of its wide distribution, tolerance of a degree of habitat modification, presumed large population, and because it is unlikely to be declining fast enough to qualify for listing in a more threatened category. However, even such species need to be monitored carefully, as changes in status can occur rapidly.



JENNIFER M. GERMANO

The Maud Island Frog (*Leiopelma pakeka*) is endangered in New Zealand and listed as “vulnerable” on the IUCN Red List.

Well, we’re about to find out. In the next five to ten years, about half of the different kinds of animals that make up the Class known as amphibians probably will become extinct. There are about 6,000 known species in the class of amphibians: frogs, toads, and salamanders take in most of them. As I write this, 32 percent of those 6,000 are threatened, and another 23 percent are believed to be threatened (we don’t have quite enough data to make the call with absolute certainty).

Amphibians face many of the same problems that other threatened species face: Habitat loss, climate change, pollution, and so on. But they also face a unique challenge. There is a fungus, which was born in Africa, that is sweeping our planet. It’s called the chytrid fungus, and wherever it arrives, it kills about 80 percent of the amphibians in the area within a year. It is lethal only at certain altitudes, so it won’t destroy all of the world’s amphibians, but more than half is a pretty conservative estimate.

Scientists working with the St. Louis Zoo just confirmed that it’s here in Missouri. The fungus cannot be stopped in the wild. Our only hope is to get to the amphibians before the fungus arrives and bring them into zoos and aquariums for breeding and safe-keeping. The hope is that the fungus subsequently will run its course, after which the animals can be released again. Call it “protective custody.”

We do not know what the assault of the chytrid fungus means for the web of life that sustains us. Frogs and their kin are both predators and prey. They are critically important in sustaining the delicate balance of nature. But are they just another rivet or do they keep the wings on the plane? The skin of amphibians is more permeable than ours — things pass through it fairly easily — so they have developed some unique biological strategies to protect themselves. For example, their skin produces a wide variety of substances that kill microbes and viruses.



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The Southern Bell Frog (*Litoria raniformis*) is endangered in Australia and listed as such on the IUCN Red List. However, introduced populations in New Zealand currently are doing well — but may be susceptible to the chytrid fungus, which has been documented in New Zealand during the past decade.



JAN P. ZEGARRA

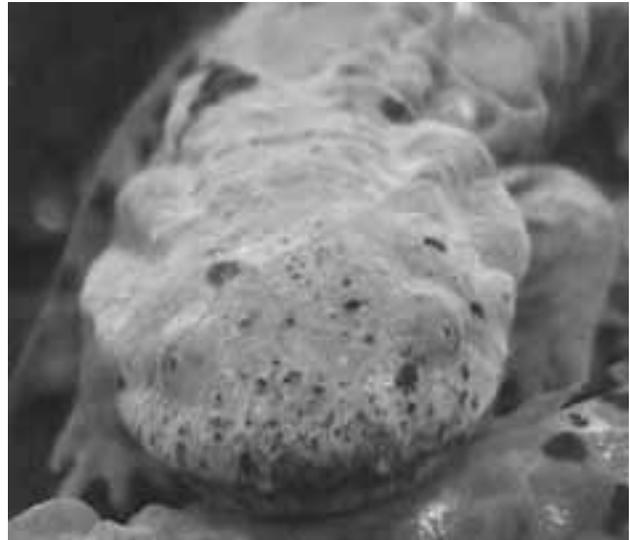


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Captive-breeding programs, including that at the St. Louis Zoo, are working to reestablish the critically endangered Puerto Rican Crested Toad (*Bufo lemur*) in its natural habitat.



THERESA GROW, MISSOURI STATE UNIVERSITY

This juvenile Ozark Hellbender (*Cryptobranchus alleganiensis*) at the St. Louis Zoo WildCare Institute is part of an effort to save this species. Declining populations throughout this “near-threatened” species’ range are attributable to habitat degradation, predation on eggs and larvae by exotic species, and agricultural run-off that might interfere with normal reproduction.

Last year, 14 of these substances, taken from just a handful of different frog species, were tested in a lab; three of the 14 showed a remarkable capacity to completely inhibit HIV infections. I was surprised that a discovery that shows such promise for inhibiting the mucosal transmission of AIDS didn’t make the news, but maybe I shouldn’t be: The fact that we’re going to have some very silent nights on this planet in just a few short years hasn’t attracted much attention, either.

Contemplating the silence that will replace the thunderous evening chorus of amphibians’ calls is bad enough. Even worse is that with the loss of those species, we will lose so many cures for so many things. And it is worse still to imagine what losing half of the world’s species of amphibians may mean as we struggle to keep our living airplane from disintegrating.

When I studied biology in high school, I had a delightful mental image of those Kings Playing Chess while sitting On those Fancy Glass Stools. Now it turns out that we are very much like those kings: Idling away our time when we should be responding to a horrible threat to our Kingdom. It is not too late to save many — perhaps most, maybe even all — of the amphibians. They are comparatively easy to find and keep healthy in zoos and aquariums until it’s safe to release them back into the wild.

The Saint Louis Zoo, for example, has returned thousands of Puerto Rican Crested Toad (*Bufo lemur*) tadpoles to the pools of their homeland. We also are working in Ecuador to create a survival center in Quito, and we have teamed up with other zoos to create a survival center in rural Georgia for amphibians of North America. And right here, at one of the centers of the zoo’s WildCare Institute, we are working to save Missouri’s rapidly declining population of Hellbenders (*Cryptobranchus alleganiensis*).

In this struggle, time is short, and we need your awareness and support. Call us at the St. Louis Zoo, and we’ll tell you how you can help.