

## Tidepool Originals: **VOICES**

### **Climate change is pulling the trigger**

**New research links the extinction of frogs to global warming**

by [MICHELLE NIJHUIS](#) | posted 01.26.06

I once spent an entire summer catching frogs. Most people, I gather, do this in elementary school: I was in my early 20s, with a supposedly marketable college degree. I guess I should have done something a little, well, more mature.

But I had an excuse. I'd been hired by the U.S. Geological Survey to spend several months wading through the lakes and streams of the northern Sierra Nevada. I set out each morning with my work partner, waders and butterfly nets in tow, and we caught, weighed, recorded and released every slippery frog, toad and salamander we could find.

During those long summer days, we tromped through miles of mud and thickets of weeds, got lost, got frustrated, and, along the way, saw some of the loveliest spots in the Sierra. We even got paid. At the time, I couldn't have asked for a better job.

Ultimately, though, ours was a tragic task. The stacks of data sheets we mailed to our boss each week told a tiny part of a global tale, and the story wasn't a good one. Throughout the world, many species of amphibians are in dramatic decline, and those in the mountains we surveyed were no exception to the trend.

Our boss, herpetologist Gary Fellers, had already documented what he called a "collapse" of frog populations in the Yosemite area: Over the previous century, he and a colleague had found, most native frogs and toads in and around the park had declined, and one species had disappeared entirely. Fellers had then begun an ambitious statewide survey of frogs and other amphibians throughout California; by the time I and my fellow fieldworkers played our modest part in the survey in the mid-1990s, he'd found that the situation throughout the state was similarly grim.

The passage of time hasn't improved the outlook for the world's amphibians. A little over a year ago, in 2004, a global assessment of frog, toad, and salamander populations showed that nearly a third of known amphibian populations are in danger of extinction.

Theories for the global decline have abounded for decades, and clues continue to crop up, but proof is frustratingly scarce. Are scientists witnessing the effects of pesticides and herbicides? Habitat loss? Exotic predators? Ultraviolet radiation? Disease? Global warming? The only thing most observers can agree on is that the problem isn't simple: More than one factor is likely to blame.

Last week, a study in the journal *Nature* presented evidence for an ominous new argument.

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Researchers looked at amphibian survey records from about 50 different sites in Central and South America, charting the timing of extinction for about 70 different species of harlequin frogs. They found that these disappearances occurred in lockstep with warming global temperatures.

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The biologists argue that warming temperatures created clouds, which -- ironically -- cooled temperatures on the ground in some places, making conditions more favorable to a fatal fungus and hurrying the frogs' journey to extinction.

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"Disease is the bullet killing frogs, but climate change is pulling the trigger," ecologist Alan Pounds, an author of the study, told the journal. The casualties could be widespread, since the disease in question -- known as chytrid fungus -- already bedevils frogs in many other regions of the world, including North America.

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This finding doesn't settle the scientific debate. It's still likely that a whole host of factors are causing amphibian declines, with different causes leading the way in different places. But the study makes a powerful case that global warming influences disease outbreaks, and, in turn, leads to species extinctions.

I know: This is just More Bad News. You've heard enough to last a lifetime. But this is bad news worth knowing, and not only if you happen to like frogs. Biologists have long argued that amphibians, with their delicate, porous skins, are the proverbial canaries in the coal mine, the species most sensitive to global environmental change. What happens to them could, down the road, happen to us, and the sooner we can tease apart the reasons, the more time we have to foresee and head off the consequences.

So in an age when ecologists, and other people who keep an eye on the natural world, are often outshone by their colleagues in more glamorous scientific fields, it's worth remembering that humble observation can yield some very useful information. The world is changing in ways we can't imagine; we need a lot of reliable witnesses.

I'll bet that the legions of footloose young biologists who survey frogs in Latin America also love their long seasons in the forest, and are often saddened by what they find. Now they, and we, have at least one explanation.

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