

Bullfrogs may help spread deadly amphibian fungus, but also die from it

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Bullfrogs can carry a fungus that is killing amphibians around the world, but they also die from it themselves. Credit: Megan Cook, courtesy of Oregon State University

Amphibian populations are declining worldwide and a major cause is a deadly fungus thought to be spread by bullfrogs, but a two-year study shows they can also die from this pathogen, contrary to suggestions that

bullfrogs are a tolerant carrier host that just spreads the disease.

When researchers raised the frogs from eggs in controlled experimental conditions, they found at least one strain of this pathogen, *Batrachochytrium dendrobatidis*, also called Bd or a chytrid fungus, can be fatal to year-old juveniles. However, bullfrogs were resistant to one other strain that was tested.

The findings, made by researchers at Oregon State University and the University of Pittsburgh, show that bullfrogs are not the sole culprit in the spread of this [deadly fungus](#), and add further complexity to the question of why amphibians are in such serious jeopardy.

About 40 percent of all [amphibian species](#) are declining or are already extinct, researchers say. Various causes are suspected, including this fungus, [habitat destruction](#), climate change, pollution, invasive species, increased UV-B [light exposure](#), and other forces.

"At least so far as the chytrid fungus is involved, bullfrogs may not be the villains they are currently made out to be," said Stephanie Gervasi, a zoology researcher in the OSU College of Science. "The [conventional wisdom](#) is that bullfrogs, as a tolerant host, are what helped spread this fungus all over the world. But we've now shown they can die from it just like other amphibians."

The research suggests that bullfrogs actually are not a very good host for the fungus, which first was identified as a novel disease of amphibians in 1998. So why the fungus has spread so fast, so far, and is causing such [mortality rates](#) is still not clear.

"One possibility for the fungal increase is climate change, which can also compromise the immune systems of amphibians," said Andrew Blaustein, a distinguished professor of zoology at OSU and international

leader in the study of amphibian declines. "There are a lot of possible ways the fungus can spread. People can even carry it on their shoes."

The average infection load of the [chytrid fungus](#) in bullfrogs, regardless of the strain, is considerably lower than that of many other amphibian species, researchers have found. Some bullfrogs can reduce and even get rid of infection in their skin over time.

While adult bullfrogs may be carriers of some strains of Bd in some areas, the researchers concluded, different hosts may be as or more important in other locations. International trade of both amphibian and non-amphibian animal species may also drive global pathogen distribution, they said.

The findings of this study were published in *EcoHealth*, a professional journal.

Provided by Oregon State University

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