

Qualia

Deadly amphibian fungus found in crayfish

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Crayfish, like that pictured, can be infected by the chytrid fungus and pass it along to new amphibian populations (Image: by Gusmonkeyboy at en.wikipedia.com now in public domain)

Amphibians around the world are in trouble. In the late 1990s, scientists linked a chytrid fungus (*Batrachochytrium dendrobatidis*) to dramatic population declines and extinctions of amphibian species on several continents. The fungus causes the skin disease chytridiomycosis, which results in sporadic deaths in some amphibian populations and 100% mortality in others. Some scientists estimate 30% of the world's amphibian species are affected by the disease. Although the fungus has been identified, researchers are still racing against the clock to understand how it spreads and what makes it so deadly.

A [study published online December 17](#) in the *Proceedings of the National Academy of Sciences* sheds light on one of the mysteries surrounding the chytrid fungus: how it can persist in an ecosystem after all its amphibian hosts have been wiped out. The fungus is considered an amphibian specialist, but scientists observed the same peculiar situation again and again: If all the amphibians in a pond died of chytridiomycosis, and then new frogs recolonized the pond, they, too, would die — even though there were no frogs or other amphibians in the pond to harbor the disease.

Researchers from the University of South Florida, Tulane University, and the University of Colorado, Boulder suspected the fungus could infect other animals. In the new study, they looked at freshwater crayfish as possible hosts for the fungus because they are widespread, often live in the same ponds as amphibians, and their bodies are rich in keratin, a protein the fungus attacks.

In wetlands in Louisiana and Colorado, the team found crayfish infected with the chytrid fungus. In some areas, nearly a third of the crayfish were infected.

When the researchers exposed healthy crayfish to the fungus in the lab, the crayfish became infected. More than a third died within seven weeks, and most of the survivors harbored the

disease. In another experiment, the researchers put infected crayfish in the same water with healthy tadpoles. The tadpoles contracted the disease.

These results mean crayfish are likely reservoirs for chytridiomycosis, and there may be other non-amphibian hosts. It also suggests one way the fungus could be spread: Crayfish are sometimes moved between ponds as fish bait and are sold worldwide as food and aquarium pets. Managing crayfish, and looking for more potential hosts of the fungus, provides another avenue for saving at-risk amphibians.

Related Links:

- [Chytrid fungus *Batrachochytrium dendrobatidis* has nonamphibian hosts and releases chemicals that cause pathology in the absence of infection in *PNAS*](#)
- Our story about three [AAAS members trying to stop chytrid](#) and save the amphibians
- A [photo gallery of frogs](#) and the devastation caused by chytrid