

Timber harvest impacts amphibians differently during life stages

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University of Missouri researchers found that removing all of the trees from a section of the forest had a negative effect on amphibians during their later life cycles, but had some positive effects during amphibians' aquatic larva stages at the beginning of their lives. Credit: Photo courtesy of Dr. Semlitsch.

Frogs are croaking in clear-cut forests, but not exactly in their traditional manner. University of Missouri researchers found that removing all of the trees from a section of the forest had a negative effect on amphibians during their later life cycles, but had some positive effects during amphibians' aquatic larva stages at the beginning of their lives. To lessen the negative effects during the later life stage, Semlitsch recommends partial or selection cuts to forests rather than completely removing trees from an area. Removing only a portion of trees and canopy allows amphibians to persist better.

The ultimate goal is not to stop the harvest of trees, but to find techniques that can sustain economically valuable timber harvests and protect [forest ecosystems](#), including many species of amphibians, said Ray Semlitsch, Curators' Professor of Biological Science in the College of Arts and Science. Amphibians may be critical for the transfer of nutrients, such as nitrogen from ponds and streams into the uplands for consumption by plants and other forest creatures.



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"Amphibians are good bio-indicators of the health of an environment," Semlitsch said. "When amphibians aren't doing well, it's a warning that the rest of the ecosystem isn't doing well. They are sensitive to

temperature and water loss and take on the same temperature as the area around them. Because of their sensitivity, amphibians are the most endangered of the vertebrates. About one-third of the species worldwide are in danger of extinction. "

In the study, researchers examined how clear-cutting and timber harvest techniques affect amphibians during different life stages. Surprisingly, researchers found that timber harvest has a positive effect on the aquatic stage of the amphibian's life. Without shade over the pond, algae grew faster in direct sunlight and productivity in the pond increased. The larval amphibians ate the increased algae and grew larger and faster. However, this benefit was temporary; when amphibians left the pond, they were more likely to die.

"The trouble starts for amphibians the moment they walk out of the pond," Semlitsch said. "When you remove all the trees from the forest, it has devastating effects on the [amphibian](#) population. Without a canopy above, open areas basically cook amphibians."

The study was a coordinated effort during a five-year period in three different locations in Maine, South Carolina and Missouri. Researchers were able to cross reference what was happening to the same types of frogs and salamanders in the three locations. Prior studies have been conducted on amphibians in clear-cut environments, but this was the first to compare data during different stages of life across multiple regions.

Source: University of Missouri-Columbia ([news](#) : [web](#))

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