

## Teens, Frogs & Climate Change

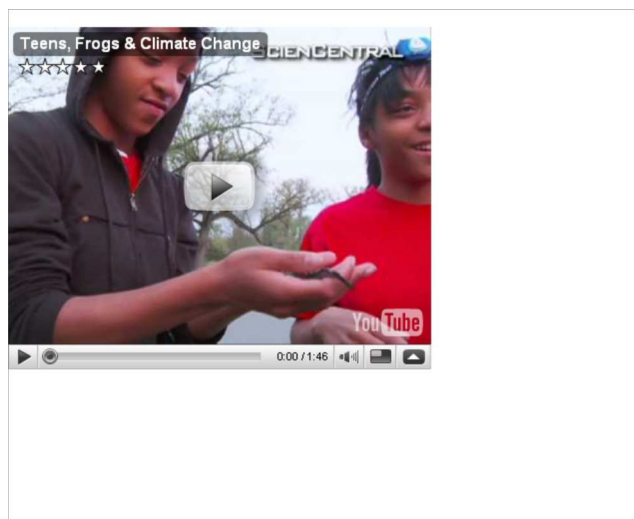
by [Joyce Gramza](#)| May 21st, 2009 | Published in [All](#), [Animals & Life Science](#), [Featured](#)

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With frogs and other amphibians already dying in large numbers, a group of teenagers is joining other amateur scientists nationwide to gather information on the problem. They're doing so even as new research shows climate change is likely to worsen the threat. This ScienCentral News video explains.

[If you cannot see the flash video below, you can [click here](#) for a high quality mp4 video.]



Interviewees: Amber Burgett, Washington University, St. Louis and  
Andrew Blaustein, Oregon State University  
Produced by Joyce Gramza– Edited by Christopher Bergendorff  
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### Leaping into Science

For James Davis and his fellow students, holding a frog is a brand-new experience.

"Cup your hands," says Washington University graduate student [Amber Burgett](#) as she hands him the frog. "Don't squeeze."

"It feels weird," Davis remarks, but the next feeling is even more startling as the creature springs, only to be safely caught on the fly.

"That was a good catch!" laughs Burgett.

But while holding an amphibian – or trying to– is new, Davis and nine other St. Louis teenagers have clearly done their homework. "Is that a tree frog?" one asks. "Yes, it's a grey tree frog," Burgett confirms. "They've just started breeding recently."

These urban teens have been spending their Saturday nights all spring long visiting a local pond to study how frogs, toads and salamanders, already declining worldwide, are now being affected by [climate change](#).

It's part of a "[citizen science](#)" project run by the [St. Louis Science Center](#), which in turn is part of a [national effort](#) by science museums to involve regular citizens in monitoring local indicators of climate change, funded by the [National Science Foundation](#).

After trading their sneakers for mudboots, donning headlamps, and grabbing an audio recorder and a water-testing device, the students head to the pond to listen for mating calls.

"They can tell us a lot just because of the way their breeding dynamics work," Burgett says. "So for amphibians, especially

frogs, we have the unique ability to be able to go to a pond, and during breeding season we can quickly assess whether or not species are at the pond."

The teens will contribute their observations to a nationwide citizen science website called "[Frogwatch USA](#)," which compiles data submitted from all over so that scientists can use it in their research.

Oregon State University zoologist [Andrew Blaustein](#) says monitoring amphibians is important because they are especially sensitive to environmental changes. They have no hair or feathers and their eggs have no shells, and they also have to survive both on land and in water— what Blaustein calls, "a double-whammy."

As a result, they are already experiencing mass extinctions.

"There are extinction events that occur naturally throughout the history of our planet, but at this point the extinction events are unprecedented," Blaustein says. "The rates [among amphibians] are higher than we've ever seen."

Blaustein believes that's been due to the combination of a host of environmental insults, including pollutants both on land and in the water, habitat loss, increased ultraviolet radiation, invasive species and pathogens.

But global climate change could make matters much worse. "If the climate changes just a little bit, the eggs don't develop, the amphibians don't develop. Not only that, if it gets too extreme, amphibians just die," he says.

#### Hit Hardest First

Blaustein says researchers have just begun to study the impacts of climate change on amphibians. He co-authored a [study](#) in the journal "Ecology," that's among the first.

The researchers used 30 different well-established climate models to predict impacts on amphibians, birds and mammals over the next century. They then tested the predictions against current observations. They found that even the lowest greenhouse-gas emission scenarios predicted extinctions or range shifts in at least 10 percent of species over North and South America. But amphibians will see the biggest changes by far. Blaustein says some impacts are already evident.

"There's some evidence in Spain, some in England now, some evidence in North America and tropical America, that as the climate changes, certain types of water molds and fungi are also spreading," he says. "These are some virulent pathogens that cause lots of populations to crash."

He points out that that doesn't mean birds and mammals are safe— rather, that amphibians will be hit hardest first.

"Amphibians are like canaries in the coal mine. What happens to amphibians now is a symbol of what's going on on the planet," Blaustein says.

#### In Our Backyards

Burgett says the students themselves have noticed how temperature changes can affect amphibians in their own "backyard" — [St. Louis's Forest Park](#).

"There was a big warm bout really early in February, and so what happened was the frogs and salamanders actually started to migrate to the ponds," she explains. "A week later we had a big drop in temperature. It went back below freezing, we had snow, and so it really kind of confused a lot of the amphibians that had come out... It can really mess with when they're getting into the pond, laying their eggs."

SLSC educator Kerri Stevison says contributing real data to a real project is the ultimate in "immersive" experiences.

"Teenagers especially like to feel that their work is purposeful and that they're needed," she says. "And knowing that it's part of a project that real scientists will look at is something that motivates them more."

Blaustein says more observations are needed in many areas. "Essentially what we want to know is whether or not amphibians are calling, whether they're breeding, where they see these amphibians, and if there's any overt problem," he says.

At the [Frogwatch USA](#) website, you can learn species calls by listening and taking quizzes, then go out to the nearest pond and start making observations.

One thing to be aware of that the students learned the hard way: bugs are attracted to headlamps.

This research was published in Ecology, March 2009, and funded by the David H. Smith Conservation Fellowship Program, US Geological Survey and US Department of Energy.

#### Elsewhere on the Web:

"[Climate Change Drives Widespread Amphibian Extinctions](#)" from the National Science Foundation

[Amphibiaweb](#)

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