

## Mountaintop removal endangering salamander species native to Central Appalachia

The Rural Blog | Richard Conniff  
November 3rd, 2014

Mountaintop removal in Appalachia is endangering the region's freshwater species, especially the five salamander species native to the area, says a study by the University of Kentucky, Richard Conniff reports for TakePart. Researchers compared the number of salamanders downstream from mountaintop removal sites with the number of salamanders in undisturbed areas. They found 97 salamanders in 11 streams with mountain rubble and 807 in a dozen control streams. (Christian Oldham photo: Red salamander)

Tierra Curry, a senior scientist at the Center for Biological Diversity, told Conniff, "It makes sense that amphibians would be very sensitive to the water pollution from surface coal mining. It increases the saltiness of the water; it puts metals into the water." (Read more)  
[Continue reading](#) ☒

When most people think about a biological hot spot—a mother lode of species—the Amazon may come to mind, along with certain regions in West Africa and Southeast Asia. Hardly anybody thinks about the Appalachians. But more species of salamanders and freshwater mussels live in the streams and forests of this region, stretching from upstate New York to northern Alabama, than anywhere else in the world. Those temperate, deciduous forests are more diverse than anywhere else in the world, too, apart from those in central China.



Unfortunately, seams of coal also run through the Appalachian Mountains, often buried deep within the range. To extract it, coal companies have been literally blowing the tops off of these mountains in a practice called mountaintop removal coal mining. Not only does this method change the landscape and leave swaths of barren rock in place of forested mountainsides, but the mining companies also take the millions of tons of dynamited rock and dump them in the valleys next to the decapitated mountains. These valleys usually have streams in them, and those streams are where the salamanders, mussels, and other freshwater species of the region live. As you might imagine, these animals don't love having chunks of mountain dumped on their habitat.

A new study confirms that salamanders, in particular, fare poorly in these streams. Researchers from the University of Kentucky visited sites where mining companies had dumped the so-called "overburden"

(or “spoil”) and looked for salamanders just downstream of the dumped mountain debris, comparing the abundance of five salamander species in those streams with nearby streams that hadn’t been disrupted.

Overburdened streams averaged about half as many species of salamander, and far fewer individual salamanders, as the undisturbed streams. Across 11 streams with mountain rubble, researchers found just 97 salamanders, compared with 807 salamanders in a dozen control streams.

How do mining companies get away with it? The Surface Mining Control and Reclamation Act of 1977 requires miners to certify that these sites have undergone restoration and reclamation. The sites in this study were mined in the late 1990s and certified as “reclaimed” in 2007 by the Kentucky Department for Natural Resources. But all that really means, said Steven J. Price, a University of Kentucky professor and coauthor of the paper, is that the mining companies “were able to get some primarily nonnative grasses to grow on these sites,” preventing some erosion. “It’s not as if this is a highly diverse central Appalachian forest anymore,” he said.

As expected, being smothered under a broken mountain also wrecked the water quality of these mountain streams. Specific conductance—a general measure of the amount of electricity-conducting particles in water—was about 30 times higher in overburdened streams, and concentrations of sulfate ions were 70 times higher. Satellite imagery also showed that these streams had only about a quarter tree cover, compared with the thickly forested control streams.

With so many changes to the habitat, it’s hard to say for sure what exactly is causing the decline in salamanders, said Price. “The water quality issues seem to be really important,” he said. Two of the salamander species studied—the red salamander and the southern two-lined salamander—live in the forests during the non-breeding season, so deforestation would also hit them hard.

The practice of mountaintop removal began almost 40 years ago in Kentucky and West Virginia and has since spread to Tennessee and Virginia, destroying 450,000 acres of Appalachian countryside without much serious consideration of the effects on wildlife. “The study was long overdue,” said Tierra Curry, a senior scientist at the Center for Biological Diversity. “It makes sense that amphibians would be very sensitive to the water pollution from surface coal mining. It increases the saltiness of the water; it puts metals into the water.” Nor is it just stream-dwelling animals that suffer, she added. “In the last couple years, there’s been a ton of science coming out about health impacts of mountaintop removal coal mining on human communities,” she noted, including increased rates of lung cancer and heart disease.

“I love the Appalachian Mountains,” said Curry, who grew up in a mountaintop removal area of Kentucky. “I think that they’re the most beautiful place on Earth, and as a scientist, I’m aware of how precious they are. It’s really heart-wrenching to see the land that I love being blown to bits.” She called Appalachia a “sacrifice area” to satisfy the nation’s ravenous hunger for coal. “It wouldn’t happen anywhere else in the country,” she said. But the poverty rate in some parts of

the region is more than twice the national average, and the people there lack the political clout to stand up against the powerful forces behind the coal industry.

Curry detailed, with palpable frustration, the loopholes that have allowed mountaintop removal mining and the dumping of overburden on streams to continue. For instance, the Clean Water Act should protect these streams. But a 2002 regulatory change under the Bush administration specifically exempted the dumping of mining waste. The Endangered Species Act should protect species such as the hellbender, the giant salamanders that are quickly disappearing from their Appalachian habitats. But in 1996, said Curry, the U.S. Fish and Wildlife Service basically gave mining companies a free pass, requiring them only to meet the SMCRA reclamation requirements. "It's a ridiculously broad document," she said.

What will it take to stop mountaintop removal mining? In 2013, more than 20 members of Congress introduced the Appalachian Community Health Emergency Act, to "place a moratorium on permitting for mountaintop removal coal mining until health studies are conducted by the Department of Health and Human Services." But a similar bill died in committee in 2012, and the bill-tracking service GovTrack.us gives this one just a 4 percent chance of passing.

A coalition of groups called iLoveMountains.org continues to fight mountaintop removal mining. Getting individual investments out of coal, and fossil fuels generally, can be effective. But be aware that divesting is complicated for the individual. Some cities and

towns outside the region have also recently passed policies preventing power companies from buying coal or energy that comes from mountaintop removal. But big coal has well-paid lobbyists and plenty of campaign contributions to protect its privileged status. Against that kind of power, the only force strong enough to make a difference is an outcry from people everywhere that destroying a global heritage like the Appalachian Mountains is simply wrong.