

Mid-Atlantic Highlands Action Program and the Marcellus Shale: How Does Drilling Impact Our Forests and Local Communities?

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Overview

The Mid-Atlantic Highlands Action Program (HAP) is a federal, state, and community effort to protect and restore the forest and aquatic ecosystems of the Appalachian mountains, as well as the vitality and cultural heritage of the region and its people. In Pennsylvania, this region includes all but six southeast counties and three northeast counties of the state (Figure 1) and spans all three of Pennsylvania's major river basins: the Ohio River, Delaware River, and Susquehanna River watersheds (Figure 2). The HAP region encompasses nearly all of the Susquehanna River basin in the state, and therefore nearly all of the state's drainage that flows to the Chesapeake Bay.

Critical ecological "hubs" in this region include the Poconos in the northeast, the Wilds of north-central Pennsylvania, the ridge-and-valley central region, the South Mountain region (Michaux State Forest area), and the Laurel Highlands; as well as many small, but extremely valuable ecological "hot spots" (Figure 3). These areas are also important places for tourism and outdoor recreation, lumber and wood products, and industries that need large quantities of water for their operations. The HAP region includes more than 50 "Important Bird Areas" identified by the National Audubon Society, hundreds of headwater streams with reproducing native brook trout, and thousands of small, seasonal ponds that contain an important diversity of aquatic life not found in streams or other permanent water bodies.

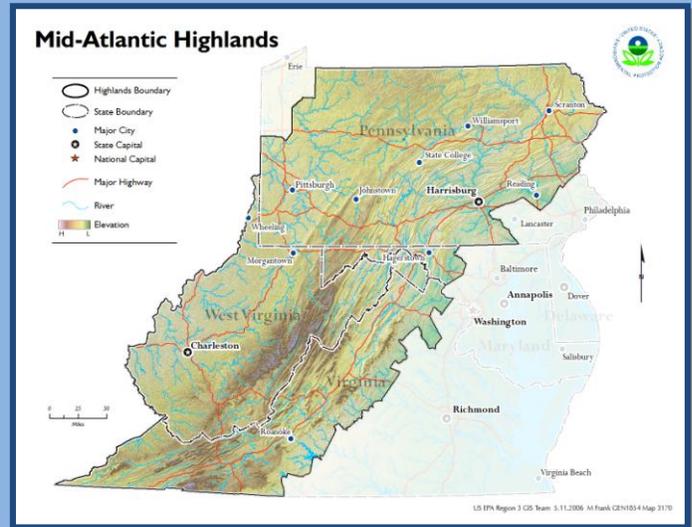


Figure 1. Location of the Mid-Atlantic Highlands Region.

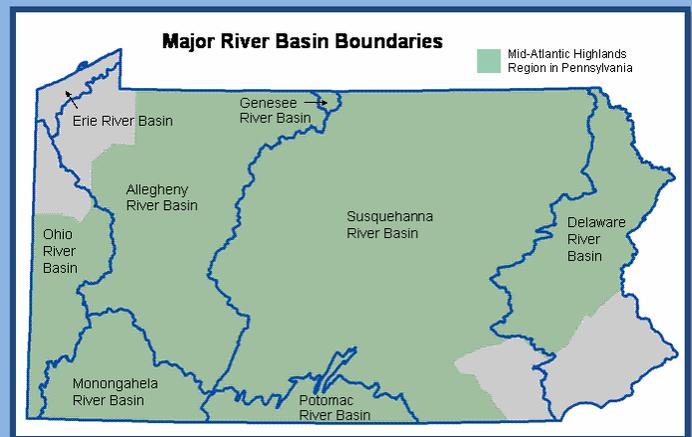


Figure 2. Several of Pennsylvania's major river basins overlap with the Mid-Atlantic Highlands region.

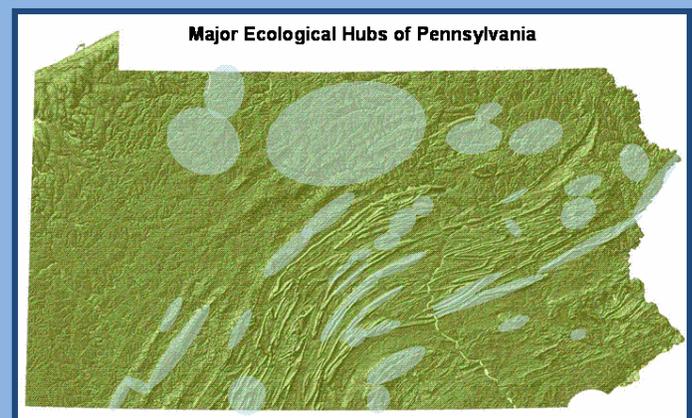


Figure 3. Several of Pennsylvania's critical ecological "hubs" overlap with the Mid-Atlantic Highlands region.

Forest Health and Marcellus Shale

The Appalachian region of Pennsylvania is primarily forested; these forests are extremely valuable from an ecological perspective to the Mid-Atlantic region of our country. Forests are the best ecosystem for slowing the runoff of precipitation and recharging underground water supplies. Healthy forests are also best for cleansing water that has been polluted with too many nitrates and phosphates from manure running off of farms, sewage that has not been treated properly, or industrial operations. These nutrients are the major problem for the health of the Chesapeake Bay, and Pennsylvania's nutrient runoff only gets worse as forested headwaters or stream-side woodlands are removed.

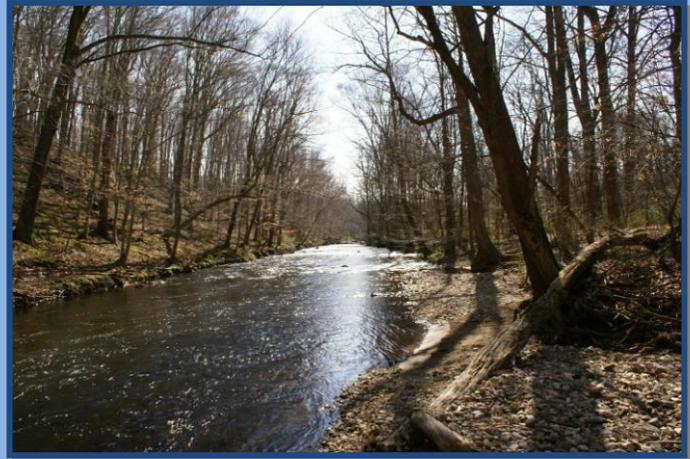


Figure 4. Stream-side forests, like the one shown above, provide many benefits to the aquatic ecosystem beneath their shady branches. Photo credit: Chris Robinson.

Large blocks of healthy un-fragmented forests located in the Highlands region are home to many wildlife “specialists” – that is, species of birds and other wildlife that cannot adapt to living in smaller forest blocks and will not survive if too many roads and blocks of forest are removed. Each Marcellus gas drilling site is typically 5 acres of cleared land, plus wide corridors cleared for roads and pipelines to connect the well sites together. With more than 5,000 wells proposed for Pennsylvania by the end of 2010, and many thousands more expected in the next few years, the potential impact on Pennsylvania's forests and waterways could be enormous.

When five-acre parcels of land are cleared for the drilling pad, trucks, holding tanks and heavy equipment, as well as the large reservoirs of fracking water, they are scraped bare of vegetation. The land is then sprayed with oil to reduce dust from all the trucks and construction activity, and becomes heavily compacted from the trucks and equipment. The native ecosystem that existed in that five acres is thus destroyed for generations to come. Once the drilling is completed and the site eventually abandoned, it will most likely be taken over by non-native plants that out-compete native plants and grow very well in severely disturbed sites.

This fragmentation and ecosystem damage will occur in a checkerboard pattern throughout the Marcellus Shale drilling region, along with connector roads and pipelines that also destroy long corridors of habitat. Each drilling site results in a forest block that has lost its ability to function ecologically; and, even if some vegetation returns, the natural, complex habitat is destroyed for native insects, birds, mammals, amphibians and reptiles. In addition, it can no longer hold onto precipitation to slow runoff, nor can it function to recharge groundwater. Constructing only a few of these drilling sites in small watersheds will result in degradation to the many tributaries of the Susquehanna, Ohio or Delaware rivers, ultimately impacting the bays and estuaries downstream.

Habitat Focus: Vernal Pools

Activities in or near vernal pond sites will be particularly destructive. Vernal ponds or pools are temporary bodies of water that are created by spring melting or high spring water tables, that ultimately dry up by late summer.

Their short life, however, provides habitat for a rich mix of salamanders, toads, frogs, fairy shrimp, and a host of other animal species that cannot survive in permanent ponds where they would be eaten by fish. Unfortunately, not every land development company conducts a thorough ecological assessment before bringing in bulldozers, and many vernal ponds are destroyed every year by careless or willfully destructive developers. Even if the ponds themselves are spared, many amphibians find that their ecological corridors between ponds for migration and finding mates now have a wide, busy road cutting through.



Figure 5. Spotted salamanders, like the one pictured above, are common in Pennsylvania. They lay their eggs and rear their young where fish won't find them, in the many seasonal vernal pools found throughout the Commonwealth. Photo credit: Pennsylvania Fish and Boat Commission.

Community Action

Many communities in the Appalachian region of Pennsylvania are still suffering from past ecological abuse and resource extraction. Lumbering, then coal and other mining has created “boom-and-bust” towns that grew quickly during the extraction frenzy, then dwindled when the industries took what they wanted and left. In many cases, waste products were left behind that are still polluting water today. Some of these same communities are looking to the Marcellus Shale drilling boom as an opportunity to bring jobs and renewed economic life back to the region. Industry officials estimate that this drilling has the potential to create more than 250,000 jobs in Pennsylvania over the next decade.

Problems have been surfacing, however, for some residents who have had faulty wells drilled through their well-water supply causing contamination. Illegal storage or leaking reservoirs of the “chemical soup” that makes up the fracking water has also some resulted in contamination of groundwater. Other impacts include: 24-hour traffic of noisy trucks, the smell of burning gas, and loud noises and bright flames when excess gas is flared at the sites. Safety concerns have risen with the numerous heavy, long trucks carrying water, sand or chemicals as they wind along narrow roads in all kinds of weather.

Due to citizen concerns, the Pennsylvania Land Trust Association (PALTA) reviewed all of the violations accrued by 43 Pennsylvania Marcellus Shale drillers for 2 ½ years from January 2008 through July 2010, and issued a report in August 2010. PALTA found a total of 1435 environmental violations, with 952 of

the violations viewed as having the potential for endangering the environment and/or the safety of communities.

Despite all the potential environmental and health problems with drilling for Marcellus Shale gas, when people are out of work and their local economy is suffering, it's hard for community leaders and other elected officials to think about the needs of wildlife or watershed ecology. Fragmented forest habitat, the loss of migratory songbirds, and the disruption of amphibian reproduction do not cause widespread concern in these communities. One concern that does get attention, however, is the potential for polluted drinking water.

Due to tremendous public concern about drinking water, the U.S. Environmental Protection Agency launched a comprehensive study in 2010 on hydraulic fracturing's effect on groundwater. It will take several years for the agency's study to be concluded, but by then thousands more wells will be drilled in Pennsylvania alone. Some communities are choosing to err on the side of caution by enacting restrictions that will prevent drilling in the most sensitive and important headwater and groundwater recharge areas that supply drinking water.

This method of drilling for natural gas is going to be with the Mid-Atlantic Highlands states for decades to come, with even deeper gas deposits as yet untapped. It is important that we understand all of the environmental implications of this modern day "gold rush" so we don't repeat our past mistakes. Shale drilling is getting a lot of people very excited about the potential money that can be made with this industry moving into our states. Will our grandchildren and great-grandchildren be as excited with the world we hand over to them when we're finished extracting all of the gas?