The Appalachian VOICE

FREE

August/September 2014

Peeking into the Mysterious World of Mountain Bogs

Building New Opportunities for Appalachian Women

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The Appalachian VOICE
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A Note from Our Executive Director

A group of Appalachian citizens recently traveled to Washington, D.C., to tell officials how mountaintop removal coal mining is contaminating their drinking water, polluting the air and devastating the local economies. Judging by the reaction, their stories hit home with many of these decision-makers.

American democracy is grounded in the right of citizens to air grievances and pressure the government to take action. But it can be difficult to be heard above the megaphones of monied special interests. That is why a big part of our mission at Appalachian Voices is to ensure that citizen voices are heard.

We worked with The Alliance for Appalachia to facilitate this recent trip and arrange meetings with top agency officials and 24 congressional offices. As a result, ten more members of Congress will co-sponsor the Clean Water Protection Act, legislation that would prohibit coal companies from burying streams with mining waste.

Standing shoulder-to-shoulder with people who have the most at stake is at the heart of Appalachian Voices' philosophy. We're helping families impacted by the coal ash crisis in North Carolina influence decision-makers. We're teaching people living near mountaintop removal how to test local waters for coal-related pollution. And we're connecting rural homeowners with local businesses and electric cooperatives to promote financing for energy efficiency improvements.

The common denominator is engaging folks from all corners of our region and from all walks of life in speaking up together for our natural heritage, our families, and our kids' future. Thank you for adding your voice.

For the mountains,

Tom

Tom Cormons, Executive Director

N.C. Circumvents Supreme Court Ruling On Groundwater Contamination

By Kimber Ray

Lawsuits filed by citizens exposed to toxic tap water in Asheville, N.C., and Camp Lejeune Marine Corp Base, N.C., will now be able to move forward, thanks to legislation signed into law this July by North Carolina Gov. Pat McCrory. The bill clarifies that the state's deadline for filing personal injury claims does not apply to cases involving groundwater contamination.

This legislation was proposed in response to a June 9 decision by the U.S. Supreme Court, which ruled against 25 Asheville citizens kept unaware of their polluted water for more than a decade. Citing North Carolina's 10-year limitation on personal injury lawsuits, a 7-2 majority of the court barred residents from suing CTS Corporation for improperly disposing of toxic waste at the Asheville site from 1959 to 1986.

Because the CTS ruling could impact a separate case regarding contamination at Camp Lejeune, the U.S. Department of Justice had defended CTS. Following the Supreme Court decision, the federal agency unsuccessfully attempted to cite the Asheville case as grounds to dismiss the Camp Lejeune lawsuit.

Injustices Follow Elk River Chemical Spill

By Kimber Ray

For many in West Virginia whose water was contaminated by Freedom Industries this past January, the $11,000 fine issued against the company by federal officials in July demonstrated the failure of state and federal officials to demand corporate accountability.

In a Charleston, W. Va., prison, inmates are reporting that they had to choose between dehydration and drinking the contaminated tap water. Although the jail initially reported that inmates were supplied eight bottles of water a day, later investigation revealed that inmates sometimes had as little as a single bottle of water each day.

At press time, no action has been taken against jail officials.

Also in July, evidence emerged that the spill may have caused a greater health impact than initially indicated. Research funded by the National Science Foundation found that MCHM — the primary chemical that contaminated the water of 300,000 West Virginians — is significantly more toxic to aquatic life than the manufacturer had reported. The implications for human health are still being evaluated.

Cleanup of the Freedom Industries site is underway, and the public had a deadline of Aug. 1 to file claims against the company.

Quarry Opposition in Ky.

By Amber Ellis

Citizens in Powell County, Ky., are not taking kindly to the threat of a new rock quarry atop Furnace Mountain courtesy of Red River Materials.

More than 150 people discussed their questions and concerns at a public forum in April, but many left unsatisfied. They responded by creating a petition to stop the permit.

The Kentucky Division of Mine Reclamation and Enforcement processed the permit application and returned it to Red River for further hydrologic, geologic and cave and species mapping investigation, according to Mark Tarter, an agency official.

To read citizens' concerns, visit their petition at Change.org or their Facebook group, Save Furnace Mountain.

Winging into Appalachia

The *Cherokeea attakullakulla* now boasts a name of high distinction. A researcher first described the moth in the 1950s, but it was not until this summer that a team of scientists published a report recognizing it as an unidentified species native to North Carolina and Tennessee. Once a nameless moth drifting through Appalachia, its name honors the environmental stewardship of the Cherokee Nation.

Sharing the Road

Bicyclists in Virginia can breathe easier now that the minimum distance for passing motorists has increased from two to three feet. At the time of the law's passage, Virginia was number 18 on the annual ranking of bicycle friendly states by the League of American Bicyclists.

GET INVOLVED — environmental & cultural events

See more at appvoices.org/calendar

Rising Tide Continental Gathering
Aug. 22-24: Rising Tide network activists and allies from around the continent will be converging in Appalachia to support the struggle to end mountaintop removal. Free. Register: bit.ly/1ihEyxn Whitesburg, Ky. Visit: risingtidenorthamerica.org

Clear Creek Festival
Aug. 29-31: More than 50 artists in folk, hip hop, spoken word, storytelling and more. Activist arts, educational workshops, sustainable living demos and tours. $45, camping included. Volunteer for reduced entry. Clear Creek Festival Grounds near Berea, Ky. Visit: clearcreekfest.org

Summer Nature Film Camp and Festival
Aug. 30, 10 a.m.-4 p.m. & 9-11 p.m.: Produce animated nature films during the day, and watch an outdoor premier of the created film in the evening! Register in advance. $30/members, $40/non-members. Bring lunch. Roseland, Va. Visit: twnf.org or call (434) 325-8169

52nd Annual Fall Naturalists' Rally
Sept. 5-7: Informative lectures, guided hikes and bird watching, fellowship over dinner and more. Led by Friends of Roan Mountain. Free/members and children under 12, $5/mon-Members. Roan Mountain, Tenn. Visit: friendsofroanmtn.org or call (423) 543-7576

Harvest Conference
Sept. 5-6: Workshops focus on the fall growing season, harvesting, canning, cooking and more. Keynote address with author and naturalist Janisse Ray. $40-$70. Organic Growers School, Asheville, N.C. Visit: organicgrowersschool.org or call (828) 772-5846

Our Water, Our Future
Sept. 6-9: The toll of coal on water and people in Central Appalachia is increasing. Take action! Register or sponsor a participant. Cost varies by travel, lodging and food. Limited scholarships available. Washington, D.C. Visit: ilovemountains.org/mobilize-for-our-water-our-future

Helvetia Community Fair
Sept. 13-14: Come celebrate the harvest and Swiss heritage! Farm and craft exhibits and awards. Alpine parade, flower wagon, Swiss meals, folk dancing, singing, yodeling and square dance. Free. Helvetia, W. Va. Visit: helvetiawv.com/Events/Fair/Fair.htm

Yoga on the Clinch
Sept. 13-15: Enjoy yoga classes and water activities while learning about energy efficiency and conservation techniques. $75, includes 2 nights lodging, 2 meals Sat., and a float trip. Project of Appalachia CARES/AmeriCorps. Kyles Ford, Tenn. Visit: clinchriverecotourism.com or call Leslie Ellingburg at (865) 828-5927

Help Chart Virginia's Energy Future
Virginia is deciding whether to continue unearthing fossil fuels or develop clean energy solutions. Get involved! Learn how to support state renewable energy policies. All events, 6-8 p.m. RSVP and visit: vcnva.org
Aug. 19: Ernie Morgan Center, Norfolk
Sept. 9: Emmanuel Episcopal Church, Middleburg
Sept. 16: England Run Library, Fredericksburg
Sept. 23: Massanutten Regional Library, Harrisonburg

Appalachian Voices Community Gathering
Sept. 24, 6 p.m.: Join Appalachian Voices members and staff to discuss how community action can create regional and national change. Free. Boone Healing Arts Center, Boone, N.C. Visit: appvoices.org/calendar or call (828) 262-1500

8th Annual High Knob Naturalist Festival
Sept. 28, 9:30 a.m.-4 p.m.: Educational hikes expore wetlands, edible plants and more. Workshops on topics such as wild mushrooms and caves, 5K trail run and environmental activities. Free. Bark Camp Lake, Wise, Va. Visit: highknobnaturalist.org

Freshwater Folk Festival
Oct. 4th, 10 a.m.-4 p.m.: Celebrate our fish, wildlife and natural resources. Music, food, dance, crafts and environmental activities. Free. White Sulphur Springs, W. Va. Visit: freshwaterfolkfestival.org

Shady Valley Cranberry Festival
Oct 10, 5-7 p.m. and Oct. 11, 7 a.m.-4 p.m.: Fri., bean supper followed by an auction. Sat., pancake breakfast, parade, music, vendors, quilt displays and tours of the cranberry bog. Free. Shady Valley Elementary School, Shady Valley, Tenn. Visit: johnsoncountytn-chamber.org or call Olan at (423) 739-9242

About the Cover

Lou Murrey captured this image of tall grasses framing a mountain bog in Watauga County, N.C. She is a photographer from western North Carolina. To see more of her work visit: loumurreyphotography.com

Inset: Kelly Clampitt is a photographer and volunteer bog monitor with The Nature Conservancy, and took this picture of a critically endangered bog turtle while assisting with a stewardship project. View her work at: catchlightgallery.net/portfolio/kelly-clampitt/

Rural Broadband Access Expansion

By Amber Ellis

Rural America can look forward to a more connected future because a federal court in May upheld the Federal Communications Commission's decision to subsidize high-speed Internet service in remote areas.

The $4.5 billion initiative previously provided telephone service subsidies to only high-cost areas, but the FCC identified broadband access as "a necessity for full participation in our economy and society," making internet access the highest priority. Dubbed the "Connect America Fund," this initiative is expected to provide broadband access to 18 million Americans and create 500,000 jobs.

Connect America is an important piece of a larger FCC program, Universal Service Fund, which seeks to provide telecommunication access for rural, isolated and low-income communities as well as public schools, libraries and healthcare providers.

Head in the Clouds, Feet on the Trail

By Amber Ellis

Come Oct. 4-5, folks from all over the United States and the world will be arriving in Pine Mountain, Ky. for the state's first 100-mile race.

The Cloudsplitter 100 is endorsed by USA Track & Field as an official mountain, ultra and trail-running championship. There will be accompanying races of 25, 50 and 100 kilometers as well as food, music, games and storytelling.

Cutting through Pike and Letcher counties, the race route follows the Pine Mountain Scenic Trail, "one of the most physically demanding trails in the East," and highlights the area's rugged beauty and nearly untouched landscape as a promising possibility for Kentuckian ecotourism. Visit: cloudsplitter100.com

National Attention on Pesticides

By Amber Ellis

A recent study from the University of California claims that pregnant women living within a mile of farms using popular agricultural pesticides were 60 percent more likely to have a child with developmental delays or autism. And new research indicates that pesticides are also a growing threat to pollinators and, by extension, our food supply.

Bees pollinate roughly 70 percent of human food crops. This spring, a Harvard University study found evidence that pesticides are responsible for their rapid decline. In June, President Obama signed a memorandum calling for research into the declining populations of bees and other pollinators and the possible connection to the use of pesticides. This Pollinator Health Task Force will include more than 14 federal agency representatives.

Concerns about pesticides are also floating around the monarch butterfly, whose population has plummeted during the past decade. Milkweed is the only plant that can support monarch caterpillars, but U.S. milkweed has declined by 21 percent since 1995 due to pesticide use on industrial farms. A recent study suggests that the decrease in milkweed is a significant driver of the concurrent monarch decline.

Southwest Virginia is for (Outdoor) Lovers

By Amber Ellis

On Sept. 13-14 in Abingdon, Va., the Appalachian Spring Initiative will host a regional expo to highlight southwest Virginia's outdoor recreational opportunities.

The initiative, which focuses on community development, has identified eight attractions as pillars of ecotourism in southwestern Virginia, including the New River, High Knob Recreation Area and the Daniel Boone Wilderness Trail.

The two-day expo in September centers on these "anchors," with the first day aiming to connect people with outdoor activities through area businesses and the second day devoted to off-site exploring and guided activities. The expo also offers interactive demos, educational information, live music and local beer. Cost varies based on activity. Visit: swvaoutdoorexpo.com.

Keeping West Virginia Wild

Lovers of outdoor recreation and stunning scenery can now permanently enjoy expanded public access to the popular Gauley River. The 665 acres in Gauley River National Recreation Area acquired by West Virginia Land Trust this spring includes a gorge once intended for development. According to Brent Bailey, executive director of the land trust, "The importance of this land to public recreation can't be overstated." Nearly 60,000 whitewater rafters visit the river each fall.

Home of the Brave

On July 4th, Appalachians and activists gathered at Stanley Heirs Park in West Virginia, home of the late Larry Gibson, for the 10th annual Kayford Mountain Music Fest to raise awareness about mountaintop removal coal mining. The event also served as West Virginia's first 100 percent solar-powered festival, thanks to panels provided by Mountain View Solar. Photo by Lynn Willis

Exploring Mountain Bogs

A closer look at some of Appalachia's rarest ecosystems

By Amber Ellis

If you take one of The Nature Conservancy's monthly hikes through Bluff Mountain Preserve in Ashe County, N.C., you'll experience a rare mountain fen firsthand. Walking along the trail, the trees suddenly give way to a clearing closely resembling a meadow of grasses and flowers. Meadows are rarely found at 4,500 feet elevation, however, and do not typically swallow your boots in mud.

Wetlands such as bogs and fens are some of the rarest natural communities across central and southern Appalachia. Bogs are defined by their nutrient-poor, acidic and saturated soil, and are usually found in depressions or low-lying areas filled by precipitation. Mosses and shrubs thrive while mature trees are rare.

A fen is essentially a bog fed by groundwater. This makes them slightly less acidic, more nutrient-rich and home to a wider variety of grasses than bogs, accounting for the characteristic meadow-like look of fens.

Functionally, however, fens and bogs are nearly identical. Because of this similarity, high-elevation, isolated wetlands are often collectively referred to as "bogs."

Although mountain bogs represent less than one percent of the southern Appalachian landscape, they are highly functional pockets of immense ecological and practical importance. Not only are the bogs biodiversity hotspots for rare and specially adapted species such as the mountain sweet pitcher plant and the Carolina northern flying squirrel, they also provide natural water-level controls for surrounding communities. Bogs act as buffers in times of both drought and flood, replenishing springs during dry spells and catching overflow during heavy rain.

In Ashe County, N.C., the oak forests of Bluff Mountain give way to a rare mountain fen. Photographer Kim Hadley, who captured this image, began volunteering with The Nature Conservancy to help care for the area in 2004.

This consistent water supply attracts critters such as the water shrew, a small mammal whose hairy hind feet allow it to run or glide across the water without getting stuck in the mud. Mountain bogs are also habitats to many game species as well as species of conservation concern. This means wildlife such as the wood duck and ruffed grouse live alongside rare plants and amphibians such as bunched arrowhead and numerous salamander species.

In North Carolina, the smallness and isolation of these mountain bogs is of particular importance in light of recently proposed wetland regulation updates from the state legislature. Although wetlands are generally protected under the federal Clean Water Act, regulation of isolated wetlands is left up to the state. The current draft legislation would increase the size required for a wetland area to trigger environmental protection. Given that mountain bogs are typically small, the proposed regulations would make them particularly vulnerable to development.

The importance of bogs has not gone unnoticed, however, and the proposed legislation makes conservation efforts all the more relevant. In 2012, the U.S. Fish and Wildlife Service began work on the Mountain Bogs National Wildlife Refuge to protect, restore and manage the unique wildlife habitats. Promoting these goals will involve connecting people to nature and developing landscape-level conservation and conservation partnerships. The proposed refuge would ultimately include as many as 23,000 acres spread across thirty sites in western North Carolina and East Tennessee.

According to Gary Peeples, the man spearheading the proposal from the Fish and Wildlife Service office in Asheville, N.C., the refuge is a chance to "make a big step forward when it comes to bog conservation … especially in the conservation of those federally threatened and endangered plants and animals."

Conservation areas for the project include the bog itself, the surrounding upland area, and when applicable,

Continued on next page

A volunteer with the U.S. Fish and Wildlife Service monitors the population health of the elusive and endangered Appalachian mountain bog turtle. Photo courtesy of Gary Peeples of USFWS

Mountain Bogs

Continued from previous page

an area upstream. The proposal has already received federal approval and widespread support from local nonprofits and private landowners, but, Peeples says, "the biggest limiting factor right now is money to purchase land."

This means the project will happen in pieces, with land parcels being bought as funding is approved by the federal Land and Water Conservation Fund. Peeples points out, though, that "the bigger picture here is the conservation of the bogs," and the U.S. Fish and Wildlife Service also works with landowners who wish to manage and conserve their privately owned bogs apart from the National Wildlife Refuge.

Once acquired wetlands in the refuge are stable enough to allow public access, recreational activities such as hunting, birdwatching and wildlife photography will take priority. The goal is to ensure the health and survival of bog ecosystems for the sake of their inhabitants as well as for curious naturalists, eager to slog through the mud and discover one of the regions' rarest gems.

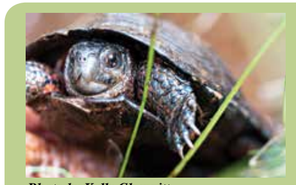


Photo by Kelly Clampitt

Bog Turtle

The mountain bogs of southern Appalachia are one of the bog turtle's few remaining homes. As North America's tiniest turtles, they are unfortunately prized in the pet world for their small size and distinctive coloring — particularly the bright orange patches on either side of their head.

Measuring between three to four and a half inches long, bog turtles feed mainly on seeds, insect larvae, beetles and millipedes and are much more concerned with avoiding predators than being one. Though bog turtles have multiple natural predators, human impact through poaching and habitat loss are responsible for their status as a critically endangered species.

Rock Gnome Lichen

High in the fog of lofty elevations, deep in the mists of river gorges, or nestled on damp mountainsides — these are some of the only places to find the rock gnome lichen, a fungus unique to Southern Appalachia. Clustering on vertical rock faces, the blue-gray lichen gets its nutrients from water and sunlight and reproduces asexually at a very slow rate. Trampling and soil erosion from hikers and rock climbers contribute to the rock gnome lichen's endangered status. Habitat destruction due to invasive insects killing trees that shade the lichen is another major contributor.

Photo by U.S. Fish and Wildlife Service

Photo by Gary Peeples of USFWS

Mountain Sweet Pitcher Plant

Found in only a few counties along border between southwestern North Carolina and South Carolina, the endangered mountain sweet pitcher plant is well-adapted to the low-nutrient environment of mountain bogs. Like most plants, the mountain sweet has photosynthetic leaves that convert the sun's energy into usable sugars. However, while most plants use their roots to gather additional nutrients from surrounding soil, a bog offers few freebies, so the mountain sweet opts for a more lively food source. Small, nectar-seeking insects are lured into the plant's pitcher organ — an upright, leafy tube lined with hairs — and greeted with a bath of enzyme-rich digestive fluids that break down their bodies into nutrients the plant needs. North Carolina has claimed the Venus fly trap as the state's official carnivorous plant, but the mountain sweet pitcher plant stands out as a regional treasure.

The Case of the Shrinking Salamanders

By Amber Ellis

This year marked the hottest May and June in global record-keeping history, and it seems like salamanders across Appalachia are withering in the heat.

A June study in *Global Change Biology* found that climate change may be having a negative effect on six Appalachian salamander species. According to the study, spells of hotter, drier weather puts extra strain on the cold-blooded amphibians, requiring more energy for them to live and grow.

Appalachia boasts the greatest salamander diversity in the world, and their prevalence and abundance makes them an integral part of regional ecosystems. Their shrinking population means less food for birds and small mammals, and has the potential to disrupt the entire food chain.

Climate change may be impacting the human food chain as well, according to sustainability nonprofit Ceres. The organization released a study this June asserting that climate change puts U.S. corn production and, by extension, the entire national food system at risk.

Bored to Death

By Amber Ellis

Originally from eastern Russia and northeastern Asia, the emerald ash borer found its way to southeastern Michigan through infested cargo ships in 2002 and quickly became North America's most destructive forest pest. Since then, the invasive beetle has plagued forests in 22 states, including most of Appalachia and, as of June, five more counties in East Tennessee.

The pest's larvae bores under an ash tree's bark, destroying the nutrient and water transport systems and starving the canopy until the entire tree dies. To contain the spread of the emerald ash borer and other invasive pests, experts urge residents and visitors to avoid transporting firewood of any kind.

Growing Sustainable Students

Across Appalachia, students are stepping up to push their colleges and universities to a greener level. Creative competitions, thoughtful partnerships and energy-efficient construction are helping campuses advance environmental stewardship from the ground up. *By Carvan Craft*

Students Fight Against Fossil Fuels

Students across the nation are working to persuade their academic institutions to withdraw their funds from fossil fuels as a way to show their opposition to the negative impacts of conventional energy.

Swarthmore College students claim to have started the college divestment movement in response to visiting a mountaintop removal site in West Virginia. Since 2010, 11 colleges and universities in the United States have committed to stop investing in fossil fuels, and approximately 300 campuses have a divestment campaign in place.

On Earth Day, students at the University of Tennessee-Knoxville joined with community groups to hold a divestment rally on campus. The crowd attempted to persuade Chancellor Jimmy Cheek to divest from fossil fuels. Photo courtesy University of Tennessee Coalition for Responsible Investment.

David Hayes, student leader of the University of Tennessee Coalition for Responsible Investment at UT - Knoxville, says that divestment is only new to the environmental movement, and that it has been used for a variety of social and political causes, such as the protest against racial apartheid in South Africa in the late 70s and early 80s.

The students at UT - Knoxville started their fossil-free divesting movement in January 2013, and have raised awareness through petitions, sit-ins and protests on campus; at a rally this past April, 60 people including local grassroots organizations, campus workers, and faculty took a stand for the cause. Although the Coalition for Responsible Investment's petition gathered nearly 2,000 signatures since 2013, the board of trustees refused to divest and the group has turned its attention to persuading the chancellor.

At the University of Virginia, students are more focused on the climate crisis in general, but divestment is a clear rallying point. According to Lia Cattaneo, leader of the school's Climate Action Society, while the students don't have a formal divestment movement, they push the administration to invest in green companies, pursue sustainable options and maintain transparency with the school's finances. Cattaneo explains that if a university divests from fossil fuels, it should also work to reduce its consumption of dirty energy.

The students at Clemson University, in the foothills of South Carolina, have also taken a strategic approach to the divestment movement by talking to the administration about reinvestment. Alex Ryan, manager of the student-run divestment campaign at Clemson University, says that the students are working with the school's investment committee to submit resources to explore the possibility of divestment through research. "This is a very complex financial issue," says Ryan, "It sparks the conversation [about the effects of fossil fuels], which is what we really need."

Colleges See Green With Loan System

The Billion Dollar Green Challenge is a network of more than 40 colleges and universities that have committed to investing a combined total of $1 billion in green revolving funds. Each school establishes its own investment fund, which is used to help further their campuses' sustainability endeavors such as lighting upgrades and building efficiency retrofits. The money saved through lower electric bills is used to replenish the fund. In Appalachia, Mars Hill University, Catawba College, Sewanee - The University of the South and Ferrum College are participating in the Billion Dollar Green Challenge.

Eco-Cleaning on Campus

University of Tennessee was the first university to switch to Green Seal Certified cleaning products in 2007. Green Seal is an environmental nonprofit that certifies eco-friendly products, such as paint and cleaning supplies. In the past few years, universities across Appalachia have been phasing out potentially toxic cleaning supplies for non-toxic alternatives. Some schools, such as West Virginia University, even encourage students to make their own homemade cleaning supplies. To learn more, visit: greenseal.org

Appalachian College Strives to Reforest Haiti

Sewanee students and Partners of Agriculture members monitor coffee tree saplings in their Haitian nursery. Photo by Charlotte Henderson

Sewanee - The University of the South, is a liberal arts school with a big heart. In 2005, Sewanee Outreach — a group of students and faculty devoted to service work — started taking trips to Haiti to provide medical and dental assistance. On these trips, associate professor of biology Dr. Deb McGrath saw how deforestation was damaging soil and water quality and decided to get involved. Every year since, students have visited Haiti to work with "Partners in Agriculture," a Haitian program working to restore the island's agricultural productivity by giving farmers an incentive to reforest their land with native seedlings.

The Sewanee project created a system that pays farmers for the ecological benefits of planting trees, since healthy forests remove carbon from the atmosphere. Seedlings planted through the initiative will help farmers and landowners to protect the land against erosion and take care of the surrounding rivers. McGrath hopes that once the seedlings start producing fruit and coffee the project will become financially self-sufficient.

The University of the South is familiar with forests. The school has a 13,000-acre campus filled with rare old-growth trees, meadows and caves. Along with their work abroad, Sewanee has a broad range of environmental initiatives on campus and is projected to be the fifth school in the nation to become carbon neutral by 2016.

Five Schools Switch to Landfill Gas Power

Five colleges are putting the saying "one man's trash is another man's treasure" into practice with their initiative to use landfill gas for light and power. Hollins University, Emory & Henry College, Lynchburg College, Randolph College and Sweet Briar College are the first institutions in Virginia on track to meet all of their electricity needs with renewable energy.

Given our annual production of garbage, landfill gas is considered a renewable resource. The gas is approximately half methane and half carbon dioxide, which is harmful when it leaks into the air from a landfill. Methane has a global warming potential that is 23 times greater than carbon dioxide.

Burning landfill gas to generate electricity prevents much of this harmful methane from entering the atmosphere, but whether the gas is a truly clean energy source is disputed because it also produces air pollution.

Robert B. Lambeth Jr., president of the Council of Independent Colleges in Virginia, says that one of the college sustainability coordinators approached him with the idea of switching from conventional power to electricity generated by landfill gas. The Council embraced this idea and began working with the five participating colleges on the project in March 2013.

The schools collectively established an agreement with the green energy firm Collegiate Clean Energy — an affiliate of the landfill gas company IGENCO — to purchase their electricity directly from the firm. As part of the agreement, the schools signed a 12-year contract that they expect will save them between $3.2 million and $6.4 million during that period.

The electricity generated from the landfill gas is distributed on the local grid operated by Appalachian Power, and the schools receive Renewable Energy Certificates that represent their direct contribution to lowering greenhouse gas emissions from conventional electricity. These green energy credits can be put on the market to be bought and traded by other groups seeking to support renewable energy.

Lambeth believes this is an excellent educational opportunity for students to learn more about renewable power companies through potential internships and tours of the landfill gas facility.

Several schools are developing other green initiatives in addition to the methane project. Four of the colleges have solar panels, three use geothermal heat pump systems and Lynchburg College heats water with solar tubes on the roof.

"The colleges obviously have a strong commitment to sustainability, climate control and using renewable energy where possible," Lambeth says. "So this opportunity fits nicely with the goals of the colleges."

Campuses Compete for Gold by Being Green

Who said it can't be fun to help the environment? By capitalizing on the spirit of sports rivalries, these three competitions have prompted colleges and universities to recycle, reduce electricity use, get outside and pounce on their chance to win.

RecycleMania

Eleven Appalachian regional universities recently participated in an annual throwdown to see which school can recycle the most. Known as RecycleMania, this year's event had the greatest turnout since the competition began in 2001.

From Feb. 3 to Mar. 29, more than 5.3 million students from the United States and Canada recycled 89.1 million pounds of materials, preventing 126,597 metric tons of carbon dioxide from releasing into the atmosphere.

Antioch University in Seattle took top honors in the event, which has inspired more campuses to further reduce their waste, and to work towards a greener country.

Campus Conservation Nationals

This event is considered the largest water and electricity reduction competition for universities and colleges in the world. The Campus Conservation Nationals started with 38 campuses in 2010 and grew to more than 100 campuses this year, including eight campuses in Appalachia.

Western Carolina University and Appalachian State University created an energy conservation sub-competition called the Battle of the Plug. The regional rivalry between the two mountain universities created an incentive for the students to lower their energy use. While Appalachian State University won this year, both universities made the top 10 in the Campus Conservation Nationals' electricity competition. Through this contest, campuses have come together to reduce fossil fuel consumption.

Best Outdoor School

The Best Outdoor School is a voting competition, courtesy of *Blue Ridge Outdoors* magazine, that encourages students to take pride in their natural surroundings. This was the third year of the annual competition, with 32 colleges and universities across the mid-Atlantic and Southeast participating. Of these, 21 are in Appalachia.

The competition is set up like a sports championship bracket, and in each round students show their enthusiasm for their school's environment through their votes. The event also provides incoming students with the opportunity to choose a school that matches their passion for the outdoors.

As of press time, Western Carolina University and Garrett College had climbed to the top two spots, but the winner had not yet been announced. To find out who won, visit: blueridgeoutdoors.com

Greening the Ivory Tower

Smart institutions find smart ways to save energy

The grounds surrounding the Hocking College Energy Institute in Nelsonville, Ohio, are planted with native grasses that only need to be mowed once per year, and the vegetated roof provides insulation and reduces stormwater flow. Photo courtesy Hocking College

By Rachel Ellen Simon

Energy efficiency is a smart investment, so it makes sense that some of our smartest institutions — colleges and universities — are actively pursuing it. Schools across the nation are building "deep green" residence halls, updating old campus buildings, and implementing innovative heating and electrical systems to slash their carbon emissions and environmental impact. Read on to learn more about the greening efforts at five such colleges in Appalachia.

Berea College
(Berea, Ky.)

In August 2013, Good Housekeeping magazine dubbed Berea the sixth greenest college in America, and for good reason. That same month, Berea opened the Deep Green Residence Hall. From its 100-percent recycled brick exterior to the student-built, sustainably harvested wood furniture, the new student dormitory is "deep green" inside and out. The site also features a series of rain gardens, trees for increased shade and energy efficiency, and a permeable parking lot to decrease stormwater runoff.

Berea students also live in Ecovillage, a five-acre housing complex designed to consume 75 percent less energy and water than more traditional housing. Featuring passive solar design, high-insulation walls and windows, and rooftop solar panels, the intentional housing community is the first of its kind in the state.

Warren Wilson College (Swannanoa, N.C.)

Warren Wilson College is home to one of the top 10 greenest dormitories in the world, according to Mother Nature Network.

Open since 2003, EcoDorm was the first building on a college campus to earn LEED Platinum certification, the highest rating possible from the U.S. Green Building Council. Home to 36 students, EcoDorm features photovoltaic panels, solar hot water panels, high-efficiency boilers, and window overhangs for summer shade and winter sun. The building doesn't use air conditioning, and certain appliances are prohibited, including hair dryers and mini-refrigerators. All permitted appliances are EnergyStar rated for efficiency. A 10,000-gallon salvaged train tanker car collects rainwater, which is then used to irrigate the surrounding permaculture landscape or pressurized for flushing — for the toilets that require water, that is. This pioneering residence hall features two composting toilets.

Hocking College
(Nelsonville, Ohio)

Located in Appalachian Ohio, Hocking College is the state's only two-year college that offers degrees in alternative energy technologies. Students in these programs engage in hands-on learning at the LEED Platinum-certified Hocking College Energy Institute. Open since 2009, the institute uses 60 percent less energy than conventional structures of the same size and 15 percent of its electricity is supplied by photovoltaic panels. Students can see for themselves; the building's mechanical workings were left exposed to serve as a learning tool. The site also features electric vehicle recharging stations, stormwater detention ponds, and a 4,000 square-foot green roof planted with native Ohio vegetation.

In 2012, Hocking received a $440,000 grant from the U.S. Department of Energy to upgrade its heating and cooling systems campuswide, resulting in a reduction of carbon emissions by more than 600 metric tons per year.

Maryville College
(Maryville, Tenn.)

In early 2013, Maryville was selected to participate in the Energy-Right Solutions for Higher Education program. Sponsored by the Tennessee Valley Authority, the program provides funding to four Tennessee schools for energy efficiency projects and consulting, energy audit training, and stipends for student interns to implement the initiatives.

Maryville College previously teamed up with the TVA in 1982 when, along with the U.S. Department of Energy, they piloted a new wood waste steam heating system, which was showcased during the 1982 World's Fair in nearby Knoxville. Today, the plant provides heating across campus, including in Maryville's oldest building, Anderson Hall, which is currently under renovation. When complete, the building will feature custom-made double-coated windows for increased insulation and air handling units that use outside air to help regulate interior temperatures, reducing the load of the heating and cooling plants.

Ferrum College
(Ferrum, Va.)

Nestled in Virginia's Blue Ridge Mountains, Ferrum College is all about going green. This commitment is on prominent display at its English Biomass Energy and Research Complex.

The combined heat and power facility provides approximately 65 percent of on-campus heat and hot water, primarily through its main 1.0 megawatt boiler, which burns lumber industry by-products to produce steam for hot water. Excess steam from the boiler is diverted to an electric turbine that generates approximately 800 kilowatts of electricity for campus use. A smaller biomass boiler at the facility is used as a research and teaching tool for students to encourage continued innovation in alternative energy technologies.

Full Disclosure?

As North Carolina considers its first natural gas drilling rules, a survey of the region shows how states are — and aren't — regulating fracking

By Molly Moore

When Denise der Garabedian heard that fracking could come to the area near her home in the Smoky Mountains of Cherokee County, N.C., she began researching the controversial method of gas drilling and talking to neighbors who had seen the effects of the fracking boom in other states. The more she learned, the more determined she became to speak out against the practice.

Hydraulic fracturing, also known as fracking, involves drilling a well into shale rock formations and injecting a mixture of water, sand and chemicals at high pressure to fracture the rock, prop open the fissures, and then withdraw the natural gas and more than half of the fracking fluids. The rest of the fracking brine remains underground, where some scientists are concerned that it could migrate into groundwater.

The relative abundance of natural gas has made it a cheap source of power. But as shale gas production has skyrocketed — from 169,026 million cubic feet in 2007 to 902,405 in 2012 — concerns about water contamination have grown.

In January, an Associated Press investigation of water contamination in Ohio, Pennsylvania, West Virginia and Texas found that some states have confirmed a connection between oil and gas drilling and well-water contamination.

Independent research points to similar conclusions. "A range of studies from across the United States present strong evidence that groundwater contamination occurs and is more likely to occur close to drilling sites," states a compendium of research on fracking's environmental and public health effects assembled by the Concerned Health Professionals of New York in July. Last year, a Duke University study in northeastern Pennsylvania found that higher levels of methane in wells near gas drilling sites were linked to shale gas extraction.

Proponents of fracking point to alternate studies — such as one conducted by the drilling company Cabot Oil and Gas — that they say disprove the conclusions draw from other scientific research.

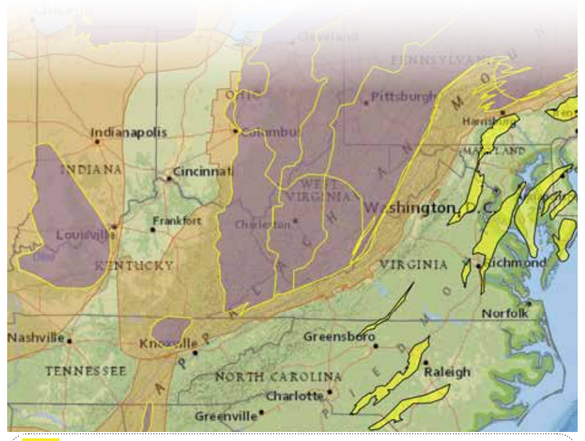
Still, there is no overarching scientific statement on how frequently fracking affects drinking water supplies or how those chemicals impact public health. In 2010, Congress ordered the U.S. Environmental Protection Agency to conduct a comprehensive study on how fracking affects groundwater, but the release date for that study was pushed back from 2014 to 2016.

While they wait for answers, Appalachian states are moving ahead with fracking, their paths determined by a mix of geological happenstance, political will and citizen pressure. State-level decisions are even more important given a lack of federal oversight — fracking is exempt from federal laws that typically protect water, air and public health, such as the Clean Water, Clean Air, and Safe Drinking Water Acts. The industry is even exempt from Department of Transportation rules that set safety standards for the number of hours truck drivers can work. When states begin fracking, they venture into the Wild West of regulation.

Entering the Fracking Frontier

In 2012, the North Carolina legislature overturned the state's fracking moratorium and created the Mining and Energy Commission to draft the state's first natural gas drilling rules. Now, as the legislature accelerates the rulemaking process, the commission is at the center of a statewide debate.

"When the MEC formed and set out on this path they said they were going to make the strongest and most restrictive rules in the nation and since then everything they've done has been a step back from that," says Mary MacLean Asbill, a North Carolina attorney with the nonprofit Southern Environmental Law Center.



The MEC proposals, released in July, would prohibit gas companies from injecting fracking waste underground, but would allow open waste pits. In fact, Asbill says, the draft rules don't adequately address many areas of concern, including air emissions, liability for spills and baseline water quality testing to determine whether any water pollution problems are pre-existing.

The fracking industry's exemption from the Clean Water Act also means that companies are not federally required to disclose the chemicals used in the fracking process. Instead, states have discretion to set chemical disclosure standards. North Carolina's MEC proposals provide some safeguards on this front, but in June the state legislature passed a law making it a misdemeanor for anyone to reveal fracking chemical trade secrets, including doctors who would be granted access to the information in case of emergency.

In August and September, the commission is planning to hold public hearings to solicit input on the draft rules. Three hearings are scheduled in the Piedmont, and, after pressure from western North Carolina residents, the commission agreed to hold a fourth in the mountain town of Cullowhee.

Attention is centered on the natural gas potential of the Deep River and Dan River basins, where test drilling could begin this fall, but the state environmental agency also plans to test for indications of gas in seven western counties.

In the meantime, a recently formed grassroots organization called Coalition

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Seeding Dreams with Self-Esteem

Revealing Opportunity in Rural Appalachia

By Kimber Ray

Black tendrils of smoke waved into the sky above Richmond, Ky., on a warm day in late June, marking where a careless cigarette butt had been tossed to the ground. When Karla Nunn got a call informing her that flames were engulfing the side of her home, she raced from her job in Berea, Ky., and sped down the rural highway connecting the two small cities, hoping that somehow, her dogs would be okay.

And they were. The fire only had time to damage the outside of the apartment before it was extinguished. It was a silver lining in what had already been a trying month for Karla — she had recently lost both her job as a cashier and her financial aid for school, effectively putting on hold her ambition of obtaining a degree in fashion design and merchandising.

"How successful a woman is, it's about personal motivation and engagement, plus whatever else life deals them," says Celeste Collins, the executive director of OnTrack Financial Education and Counseling in Asheville, N.C. "Those life traumas, maybe a fire or losing a job, they're already tough, but they're much more of a big deal for low-income women. It helps to have a network when that happens."

In this science class at New Beginnings, campers conduct an experiment to test the caloric value of foraged plants. Photo by Molly Moore

As a 2012 graduate of the New Opportunity School for Women, Karla does have such a network. This three-week residential program — with campus locations in Berea, Ky., Banner Elk, N.C., Bluefield, Va. and Maryville, Tenn. — is dedicated to improving the lives of Appalachian women over age 30 who face educational and economic disadvantages. At no cost to participants, women attend classes in mathematics, writing, computers and self-esteem, participate in paid internships hosted by local community organizations, and receive a free makeover and business clothing.

"This program is more than just three weeks," says Karla, who applied shortly after the 2011 death of her husband of five years. "I didn't have any self-esteem before I came here, my husband had me convinced that I couldn't work. I thought my life was over. These women are my saviors, they're my second family."

In the wake of the fire, an unexpected car pulled into sight bringing two very welcome visitors. Lori Sliwa and George Ann Lakes, worried that Karla might have lost everything, arrived to offer embraces and support — they had planned to help Karla replace her computer, clothes and furniture, if needed.

Karla says this recent shake-up in her life is just a "rough patch." That optimism about her future was not always so quick, but the women from New Opportunity helped Karla challenge her fears. In her mid-40s, she discovered that she had the courage to leave her isolated hometown of Booneville, Ky., population 81, and move to Richmond. She renewed her job search and returned to school.

"[New Opportunity women] realize there's something more out there," says Mary Absher, a 2005 graduate from the school. "They may lack work experience or education, but they gain a chance to work on themselves. They discover themselves, and learn they're smarter and better than they'd thought."

The New Opportunity School sometimes accepts mature women who are under age 30. Here, a staff member carries out a birthday cake to celebrate a student turning 25. She said it was her first birthday celebration. Photo by Molly Moore

Untangling a Persistent Problem

The challenge of discouragement, low education and underemployment is shared by many southern and Appalachian women. In rural Hillsboro, W. Va., High Rocks Academy for Girls works to address these issues among local junior high and high school girls.

Once accepted into High Rocks, the girls have a wide range of programs available to them throughout the year. They are encouraged to organize volunteer projects in their communities, such as river clean-ups and poetry readings. Small tutoring sessions are hosted once a week, and there is also post-graduation planning support.

Interns at the New Beginnings camp meet in the afternoons to plan for upcoming days and discuss how to resolve conflicts between the campers. Photo by Kimber Ray

But the heart of the High Rocks experience can be traced to the free two-week residential summer camps, which the girls themselves help manage. Rising 8th graders attend New Beginnings and spend half their day in experiential academic classes that emphasize hands-on learning over lectures. Older girls can apply to be junior counselors, or to Camp Steele, which offers several themed academic tracks. Every High Rocks girl attends at least one of the two summer camp sessions and, for most, it starts at New Beginnings.

Fifteen years ago, Renae Anderson saw herself in a very different place than she is today. "Before I came to High Rocks, I had no interest in my future," Renae says. "My goal in life was to be a waitress and serve food."

Now 26 years old, she has a degree in Social Science and balances her work as the development coordinator at High Rocks with taking care of her one-year-old daughter. But in many ways, the odds were stacked against her.

In Renae's West Virginia home state, eight out of ten minimum wage workers are women, according to the nonprofit National Women's Law Center. And the American Association of University Women reports that "In nearly every line of work, women face a pay gap."

Add "southern" or "rural" to an average woman's description and her economic outlook is even worse. Of the nation's most persistently poor counties, notes the United States Department of Agriculture, an overwhelming majority are rural southern counties. And of those counties, Appalachia and the Mississippi Delta regions have long borne a disproportionate concentration of the nation's underemployed and undereducated. Women in particular have often found that the road to financial independence is littered with obstacles.

"The Appalachian region has old-fashioned southern traditions," remarks Mary Absher, a New Opportunity School graduate. "We're raised and taught to be wives and mothers."

Traditional gender views may discourage women from entering typically male-dominated fields. But as both High Rocks and the New Opportunity School teach, the solution is not about forcing women into science or construction and banning stay-at-home mothers. It's about "the girls figuring out who they are instead of who they think they should be," says Maddie Baker, a junior counselor at High Rocks.

Captain Ken Clark, a Berea Police Department officer, says that throughout the 15 years since the department began hosting interns from New Opportunity, he has seen the program transform women's self-esteem. "It lets them know that they have worth," he says, "and that they need to quit listening to people who say otherwise, because look where that got them."

Recognizing their worth is often a challenge for women, especially those from low-income backgrounds. Rates of depression are approximately 40 percent higher in women, and nearly three times higher for those below the poverty level, according to the Centers for Disease Control. And in everything from education to work and family to social life, countless studies have concluded that depression limits success.

"I thought I was stupid and not able to do anything," says Karla. "Without this program, I don't even know where I'd be right now. I might not even be alive today."

Taking the First Step

Both the New Opportunity School and High Rocks aim to change that trajectory of low self-esteem and depression that interferes with building a satisfying life. Though they select women from very different stages in their lives, both programs look for the same thing: maturity and the courage to take control of their future.

Since 1996, High Rocks has served more than 250 girls from three main counties in southeast West Virginia. Now a junior counselor at New Beginnings, Casey Griffith remembers how intrigued she was by the High Rocks application when she applied five years ago. "You need to answer deep questions," she recalls. "Like 'What is a dream you have?' or 'How do you want to change your community?'"

High Rocks girls — and the honorary "High Rocks boy" — maintain a garden that supplies healthy and fresh food for campers' meals. Photo by Molly Moore

Acceptance to High Rocks is not contingent on income because, as Executive Director Sarah Riley states, "Diversity brings strength to the program." But nonetheless the girls reflect the demographics of the community: approximately 70 percent of High Rocks girls receive free or reduced-price school lunches as part of a national program for low-income families.

Income and education are, however, key factors for admission to the New Opportunity School. The school has served more than 700 women across Appalachia — none of whom had a college education — since opening its doors in 1987. And with approximately 80 percent reporting a family income of less than $10,000, the majority of attendees are either under- or unemployed.

Debra, who asked not to be identified by her real name, applied to the program after she was laid off from her service job and unable to find new employment. A friend recommended New Opportunity and, when she was contacted for an interview, she was asked what she wanted to accomplish for herself.

"And to be honest," she says, "I wasn't sure. But sometimes you need to take a step back from things in order to really get a look at where you're at, and where you're going."

A volunteer at the New Opportunity School's clothing boutique arranges a mannequin display. The boutique supplies the school's graduates with free business appropriate outfits, and also employs graduates from the program. Photo by Molly Moore

A Refocused Solution

"There's transformational work you can do when at camp, or on a trip or a journey, that you can't do when you're at your house," says Sarah Riley, executive director of High Rocks. "It's a different experience to step away from your life while working on defining yourself and your relationships with others."

At New Opportunity, a trio of women seated at a large U-shaped table debate this same idea over lunch. "It's tough to be away from my family for so long," states one of the students. Another woman comments, "But this is the first time I can remember really just focusing on myself."

Basic math, computer training and punctuation review are among some of the classes at New Opportunity. The school helps the women with professional appearance too, teaching professional etiquette and offering a free outfit from the donation-supplied clothing boutique. After the women graduate, the boutique is always open to them, and one of the staff members keeps a close eye out for new job openings to share with the alumnae.

Maya Todd, a front desk agent with Berea Tourism, works with one of the interns from the New Opportunity School. "She was so quiet when she came in," Maya says. But

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by the end of the program, the intern was confidently bustling behind the desk, and even asked her coworkers to listen as she practiced her three-minute graduation speech.

"It's not that she didn't have the skills," Maya notes. "She just needed the encouragement and the opportunity. She's perfectly capable of answering phones, doing some office work and learning to use the computer."

The school begins undertaking this transformation of confidence even before the women arrive for the program. Attendees are mailed a bundle of books with themes that relate to their own heritage and struggles — books such as "The Tall Women," by Wilma Dyke, which explores the strength of Appalachian women. New Opportunity Office Manager Susan Jordison says the school wants the women to realize that "it's okay to be proud of their culture," which has been historically associated with a wide array of stereotypes, such as "hillbilly," "backwards," and "needy."

Female and Appalachian identity is also cast in a new light by professional women from the region who visit to speak with the students at New Opportunity. But there is one woman in particular who remains in everyone's memory the longest — and not just because she works part-time in the school's office. Her name is George Ann Lakes, and she's a '92 graduate from the New Opportunity School.

In defiance of biases based on age or background, George was 45 when she earned her GED and enrolled in the New Opportunity School. By the time she was 61, she had earned her Master's degree in Social Work. Many at New Opportunity connect to her story of tenacity.

Hanging on a wall in one of the school's classrooms are quilts composed of about a dozen squares, each tile telling the story of the woman who made it. One is from Karla's 2012 class, who named themselves "the phoenixes" since "We've been rising out of the ashes pretty much all our lives." Every class makes a quilt together and, during the program's storytelling component, the women share their stories of endurance — the experiences that led them to New Opportunity School.

Experiential Growth

Afternoons at the High Rocks New Beginnings camp are a time devoted to art, dance, hammocks and conversations exploring self-identity. As they rock beneath the trees or stretch out on the grass, the girls take time to reflect and write in their journals. Many have a lot on their mind, since journaling is scheduled right after "Girl's Group."

Participants might explore everything from their hopes for the future to their opinions on abortion. "It's a place to say what they honestly think," explains Development Coordinator Renae Anderson, who helps organize the collective meeting of staff, campers, junior counselors and interns. "And there's no wrong answer," Renae adds.

Finding the level of comfort and trust to share their views with one another can be a difficult task, but is well worth the effort. High Rocks staff member and alumnae Hannah Ormsbee-Walker comments "Before I came here, I didn't talk much or have an opinion. I had no leadership skills."

Today, Hannah is serving her second year at High Rocks through the national service program AmeriCorps, which helps provide a living stipend for individuals to work at nonprofits and public agencies. She helps coordinate High Rocks programs and acts as a mentor. "Seeing these girls, and how they weren't afraid to be themselves, it helped bring me out of my shell too and not have others' opinions rule what I do," she says.

"It's about more than riding, that's for sure," explains Nancy Williams, an instructor for the "connected riding" horse class at High Rocks, where the girls learn to be aware of body language. "If we can't get the lesson through verbally, the horses do it in a non-verbal way." Photo by Molly Moore

As campers grow confident in the right to their own opinions, they also become more comfortable with being assertive and standing up for themselves. The girls help manage all levels of the camp, and daily chores range from litter pickup to cleaning the outhouse. But, especially among the newest campers, shared spaces may be treated carelessly.

During dinner, one of the girls stands up to make an announcement: "Stop leaving your trash in the shower house. This is our camp and we need to respect it." Asked if she would have felt comfortable making this demand from a group before she came to High Rocks, she replies "No."

Girls also discover their capabilities in the experiential classes, which encourage them to actively engage, question and problem-solve. The New Beginnings classes cover math, science, creative expressions and "Connected Riding" on horses, which teaches girls to heed non-verbal cues in order to ride a horse without stirrups.

From a table set up on a sunny field, the New Beginnings science class is using leaves to delay the chemical reaction between vinegar and baking soda held in film cannisters. Pop! As the chemicals meet, the lid shoots across the grass, demonstrating an acid-base chemical reaction. Erica Marks, a science teacher at High Rocks for eight years, says many girls who are now pursuing a science major tell her they attribute this decision to her summer camp classes.

The Junior Counselors at High Rocks have their own class — an intensive writing course — in addition to their responsibility to help manage the camp. But the full extent of their job lasts the entire day. "We have to hang out and deal with the girls, we can't just hang out with each other," comments one junior counselor. "So we learn to deal with the girls on a professional level, and to be a mentor and role model."

After high school, planning support is available to help the girls set long-term goals and, if that goal is college, High Rocks assists with SAT preparation and school applications, and also takes small groups on regional college visits. Staff member Renae was active in High Rocks throughout high school, and she says the program helped her get into college. But after Renae had finished her degree, during the economic downturn, she was working at a local gas station.

"When did you get back into town?!" was the first thing that Executive Director Sarah Riley exclaimed when she ran into Renae. The second was "Come work with us!" and so Renae applied for an AmeriCorps position. She was accepted and, after serving for two years, Renae was hired into her current position. If not for the continued support and encouragement that she received from High Rocks, remarks Renae, "I don't think I would have opened my eyes to all these opportunities out there."

An Uncertain Portrait

Methods to track success in the two programs are variable, but in surveys conducted after each residential session the women consistently rate their experience highly. In end-of-camp evaluations from High Rocks, all the

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girls say the summer camp was transformative, and 68 percent find math and science more engaging, and learn more at the summer camp than they do in school.

New Opportunity women also report improvements in math, with the recent class of 15 women rating the helpfulness of the math class an average of 4.5 out of five. More broad end-of-session evaluations are unavailable from New Opportunity. The four campus locations currently do not pool their data and, until a fire destroyed the initial Berea school building in 2011, these evaluations were only maintained as paper copies.

This informal craft activity guided by a New Beginnings camper is an example of the High Rocks holistic education experience where, as Executive Director Sarah Riley says, "To be educated is to be a thinker, a dream and a doer. And we don't have enough adults in the world who are all three of those things at once." Photo by Kimber Ray

The school does have extensive data on graduates, who are surveyed every two years. After repeated calls, New Opportunity's most recent 2012 survey of all available graduates had a response rate of 36 percent. Among those who respond, the school has achieved remarkable results.

Approximately 80 percent of New Opportunity graduates complete some form of continuing education, and the same number confirm current employment or school enrollment. More than 80 percent report improved personal circumstances and self-esteem. At High Rocks, staff did not disclose how data is collected for graduates, but report that 86 percent of their graduates go on to college, while the remaining 14 percent join the military, take a gap year, or work to earn money for college.

Maintaining funding for these types of programs is a major struggle. "We have a business model that doesn't work, because it's free," says High Rocks Executive Director Sarah Riley. "The better we are at our job, the more demand there is for our services, the less resources we have."

She notes a similar program in West Virginia, the Lincoln County Girl's Resiliency Program, that was highly successful from 1997 to 2007. After receiving a large grant, the program neglected to diversify its funding and shut down during the economic downturn.

Both High Rocks and the New Opportunity School have been able to support a diverse set of funding. In 2012 alone, the Appalachian Regional Commission awarded New Opportunity $125,000, while groups including the Women's Fund of East Tennessee and Oprah's Angel Network have also bestowed sizable donations. This past year at High Rocks, the Commission for National and Community Service awarded the program a competitive $200,000 grant to sponsor and train AmeriCorps members, and the program has consistently received tens of thousands of dollars from West Virginia's county and state agencies.

Providing data to prove success and attract funding can be challenging, because some measures of success are more difficult to record. "The program's not just about going to college," states Renae. "It's about if you are setting a goal for your future that you really want, and then you're making that future happen."

The Appalachian Regional Commission noted this challenge in a 2004 report analyzing the success of programs — including New Opportunity — in empowering and transforming struggling communities. And as is the case today, low response rates from graduates were a problem for staff. Beyond unachieved contact, the commission noted that failed goals stemming from poor health and depression left some women reluctant to answer the survey. Quoting a staff member from the school, the commision wrote "'We all want to talk about our successes — but not our failures.'"

Yet despite the difficulty of quantitatively capturing some outcomes, the commission and other funders believe in the worth of these programs. At both High Rocks Academy and the New Opportunity School, women continue to attest to the progress they've experienced, eager to share their stories of transformation.

"How empowered they feel, to realize they're worth something and their opinions matter, that's something that you can't really measure," Sarah says. "But once that happens, they're infinitely more likely to achieve success."

This story was made possible in part by funding from the Solutions Journalism Network.

Bridging the Economic Divide

Women aspiring to further their education and careers may find their path obstructed by a number of barriers, including domestic violence, biased gender expectations and low confidence. The programs listed here are a small sample of efforts to create more fair and sustainable communities by helping women move past these obstacles.

The Nest — Center for Women, Children and Families (Lexington, Ky.)

When the Lexington Child Abuse Council and the Women's Center of Central Kentucky united in 1977, the result was The Nest, a nonprofit organization dedicated to promoting healthy, stable families. The four main programs — offered free-of-charge — are temporary day care services, domestic violence counseling, parent education classes and crisis care support. These services assist parents confronted with hardship, including separation and job loss, the opportunity to recover. Visit: thenestlexington.org

HandMade in America's Appalachian Women Entrepreneurs program (western N.C.)

In clay, wood, glass, metal and more, participants in the Appalachian Women Entrepreneurs program build their story — and make a living. The AWE program connects women craft artists to markets and resources, including professional and technical training workshops. Despite the often limited job opportunities available in rural western North Carolina, the women in AWE are creating small businesses that support sustainable economic solutions. Visit: handmadeinamerica.org/awe.html

Full Circles Foundation (Raleigh, N.C. & Lexington, Ky.)

Growing healthy connections between the self, neighbors and earth is the focus of this rising empowerment program for K-12 girls in the southeast. Since launching in 2011, the organization's summer camps and workshops have encouraged girls to be strong community members by building social and technical skills. There is also a recently established "green apprenticeship" program in Raleigh. Visit: fullcirclesfoundation.org

Sew Fine! (Claiborne Co., Tenn.)

The Sew Fine! program, funded this spring by a grant from the East Tennessee Foundation Women's Fund, is stitching together education and work skills development for low-income women. Religious nonprofit Servolution will assist women with completing high school diplomas, and offer classes in sewing, knitting and business skills. The first round of participants will be women in transitional housing provided by Mending Hearts. According to grant finalist listings from the women's fund, Sew Fine! expects to employ all who complete the program. To learn more, contact Servolution at (276) 445-1067

Hiking the Highlands

Camp Creek: Gateway to West Virginia Wonders

Visitors can reach Mash Fork Waterfalls by an easily accessible route or a challenging hike. Photo courtesy WVExplorer.com

By Molly Moore

Just two miles away from busy Interstate 77, visitors to West Virginia's Camp Creek State Park trade the hum of passing traffic for birdsong and the rushing chatter of waterfalls.

"As soon as you come through the mountains and to the park, you enter a very vast, remote part of the country here, just a beautiful, vast forest with lots of things to do," says Park Superintendent Frank Ratcliffe.

Convenient access to the interstate makes the park a handy stopover for travelers, and the broad range of recreational options marks it as a destination in its own right. The park is open year-round, and visitors can hike, fish, hunt, splash in the creek or bring their horses and mountain bikes. Of the roughly 36 miles of trails, about six miles are for hiking only, while the others are also open to equestrian and bike use.

The 5,500-acre Camp Creek State Forest abuts the 500-acre state park, giving the park's trail system more room to roam and providing access to public hunting areas. The park and forest also include two creeks, where anglers can find ample trout in winter and early spring, and might even catch enough trout in midsummer for a hearty dinner.

The camping facilities also reflect the park's broad appeal. Accommodations range from a modern campground outfitted with wi-fi to rustic camping, a horse-friendly campground and a new backcountry site. The latter two are the only horse and backcountry camping areas in the West Virginia state park system.

Double C Campground, the creekside camping area shared by hooved explorers and their riders, provides access to 25 miles of horse trails and cements Camp Creek's place as an equestrian jewel.

Similarly, Ratcliffe hopes to draw more mountain bikers to the park with a new backcountry campsite. The site is tucked near the center of the park's trail system, three miles from the main office parking area along a new path, Almost Heaven Road and Trail, named for its scenic views of the Allegheny mountain range. From here, mountain bikers of all levels can devise their own routes.

For those who prefer a refreshing mountain stream, Campbell Waterfalls and Mash Fork Waterfalls are popular wading areas and are both a short jaunt along the Turkey Loop Road and Trail from the park's two main campgrounds.

CAMP CREEK STATE PARK & FOREST

Directions: From Interstate 77, take exit 20 for US-19 toward Camp Creek. Turn onto US-19 South. In .3 miles, turn right on Camp Creek Road for 2.2. miles.

Contact: (304) 425-9481

Visit: campcreekstatepark.com

Mash Fork Magic

Hikers looking for a more secluded journey to Mash Fork Waterfalls can link to hiking-only footpaths from the multi-use paths marked "road and trail." One invigorating foray combines Farley Ridge Road and Trail with the Mash Fork Trail for a 1.6 mile loop that's more challenging than its mileage suggests.

From the main office parking area, hikers follow the Farley Ridge Road and Trail as it climbs uphill — sometimes steadily, sometimes abruptly. The trail's shade eases the strain of elevation gain, and the surrounding forest sports an array of rainbow-hued mushrooms and seasonal wildflowers. Look for trillium and columbine in spring, admire rhododendron blossoms around the 4th of July, find bright red cardinal flowers along the creek in late summer, and keep an eye out for asters in fall.

After .6 miles on Farley Ridge, the trail meets the hiking-only Mash Fork Trail. The intersection evokes Robert Frost's reference to "the path less traveled," with the narrow dirt path to the left breaking off from the wide gravel one.

On this seemingly less-traveled path, the Mash Fork Trail descends a series of switchbacks for 1.1 miles, gradually becoming steeper until it reaches the waterfall. Those who continue on Farley Ridge Road and Trail will soon reach the namesake ridge, which the path follows for about two relatively level miles before intersecting Almost Heaven Road and Trail.

Hikers who trek to the falls will be greeted with the sight of Mash Fork Creek tumbling off a broad rock ledge. The falls form a captivating cascade when the water level is high and spill across the mossy stone in several smaller fountains when the stream is shallow. Below, a wide pool provides an opportunity to dip trail-weary feet.

From the waterfall, return to the parking area without stepping on asphalt by turning left on a short section of Turkey Loop Road and Trail and taking another left on a brief section of the horse bypass trail.

This Mash Fork loop offers a taste of the possibilities at Camp Creek State Park and Forest, but visitors needn't stop at the parking area — there are many more miles to discover.

Full Disclosure?

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Against Fracking in Western North Carolina is organizing town hall meetings and urging local governments to take a stand against the practice. In July, several local governments stated their opposition to fracking, beginning with the Swain County Commission and the town of Webster in Jackson County. The North Carolina law passed in June invalidates local ordinances regarding fracking, but in other parts of the country such ordinances are gaining ground. New York's top state court recently ruled that towns could use zoning laws to ban fracking near their borders.

As citizens in the western counties of North Carolina prepare for the public comment hearing in September, Denise der Garabedian will keep encouraging her neighbors to pay attention during the rulemaking process and beyond. "I know I can't save the world, but I might be able to save my backyard and my neighbors' maybe," she says.

Science of Setbacks

Along with New York and Pennsylvania, West Virginia has been at the epicenter of fracking in the Eastern United States for a half-dozen years. The Associated Press reported that from 2009 to 2013, the state received roughly 122 complaints that drilling contaminated water wells and found that "in four cases the evidence was strong enough that the driller agreed to take corrective action."

To address the boom, West Virginia passed a new set of rules in 2011 that environmental and property-rights groups criticized as being too weak; the West Virginia Citizens Action Group called them a "Christmas gift to drillers."

Among their concerns, critics said that the buffer zones — designed to protect residents and water supplies from air and water pollution — were insufficient. In a 2013 study, Dr. Michael McCawley, a chairman at West Virginia University's School of Public Health, found contaminants such as the carcinogen benzene in the air at seven drilling sites. Based on his research, he advised the DEP to stop relying on the boundary zones and instead conduct direct air quality monitoring near the sites.

His study was undertaken because of the 2011 law which required the West Virginia Department of Environmental Protection to research several aspects of the oil and gas industry, including air pollution, and then use the results to implement additional rules if necessary. After reviewing McCawley's findings, however, the DEP reported to the legislature that no rule changes were needed. McCawley then took his concerns directly to state legislators in the fall of 2013, where he says he received an encouraging response. He is continuing to pitch the idea to decision-makers in West Virginia and neighboring states.

Wastewater Worries

Although Kentucky and West Virginia share a long border of similarly rolling mountain ridges, their geology is distinct enough that the Bluegrass State hosts far fewer hydraulic fracturing wells. But that may be changing. Recently, successful tests in the state's northeastern corner have led to more fracking in the area, and applications to drill are increasing.

Tim Joice, water policy director at the nonprofit Kentucky Waterways Alliance, notes that the state's oil and gas drilling regulations are decades old and do not consider how modern processes could allow gas or fracking fluids to migrate into aquifers or wells.

Essentially, the existing regulations were written to address nitrogen-foam fracturing, not hydraulic fracturing. In much of the state, hydraulic fracturing doesn't work very well because the high clay content in some of the state's shale formations absorbs water. So, beginning in 1978, eastern Kentucky drillers began to combine nitrogen and comparatively small amounts of water — roughly 120,000 gallons — with other chemicals and sand to create a briny foam that is then injected underground at high pressure.

Nitrogen-foam wells have the advantage of using less water and producing less chemical-laden brine for disposal. Yet whether a well is fracked with nitrogen foam or hydraulic fracturing fluid, the resulting toxic waste needs to go somewhere. Often, it's injected back underground in designated wastewater wells, but companies have also dumped the waste into streams and gullies near drilling sites.

When Kentucky Waterways Alliance requested information about complaints of improper disposal of fracking brine from the state, the Kentucky Division of Water responded with a spreadsheet of 360 incidents between January 2012 and May 2014, six of which have resulted in formal violations.

The 200,000-Gallon Question

In Tennessee, the greatest problem with regulations is simple — the rules don't apply to most drilling operations in the state. Fracking rules the Tennessee Department of Environment and Conservation passed in 2012 only apply to wells that use more than 200,000 gallons of water. The relatively sparse fracking happening in Tennessee uses the nitrogen process, which uses far less water than the limit, so most operations are exempt from the rules.

"It's a partial regulatory scheme but they don't apply it most of the time, so what we're left with is virtually nothing," says Anne Davis, an attorney with the Southern Environmental Law Center who had recommended stronger regulations. "If you frack with nitrogen you're not doing more than 200,000 gallons."

Operations that use more than 200,000 gallons must issue public notice of new fracking operations, test nearby water wells and provide monitoring reports. Fracking operations using less water still need to file a permit stating their intention to frack, but no public notice is required and the permits are not available online. Once drilling is complete, operators are obliged to disclose the chemicals they use, but this requirement only applies to those chemicals that aren't classified as trade secrets.

Reviewing Regulation

In Virginia, as part of an ongoing review of fracking, a state regulatory advisory committee recently agreed to recommend that the Virginia Gas and Oil Board change state regulations to require full public disclosure of all ingredients in fracking fluids. In their ongoing meetings, the committee also discussed whether baseline groundwater sampling should be required before the agency can authorize drilling and fracking.

As the rules review continues, several natural gas proposals are keeping the issue in the spotlight. Oil and gas companies are interested in fracking the Taylorsville Basin in eastern Virginia, and one Texas company has already leased 84,000 acres. In the George Washington National Forest, which overlies part of the Marcellus Shale formation, the U.S. Forest Service is considering whether to limit hydraulic fracturing in the area.

New pipelines to carry natural gas from the Marcellus Shale through Virginia have also generated controversy. Routes for the three pipeline proposals aren't final, but some nearby communities are already organizing to express concerns about oil and gas leaks. And Dominion Resources' proposed 450-mile project would transport natural gas through the George Washington National Forest, which environmental organizations such as Wild Virginia say endangers natural areas and drinking water supplies.

Efforts to expand fracking and natural gas infrastructure in Appalachia are forcing residents and decision-makers to confront basic questions about the role of natural gas in the region. Whether the industry grows will depend on how strongly states adopt energy efficiency and renewable sources of power and how citizens respond to new fracking and pipeline proposals. If the growing movement in western North Carolina is any indication, the future of fracking in Appalachia will be continue to be fraught with controversy.

Seleni-what?

A little-known pollutant has big implications for the health of Appalachian streams

By Eric Chance, Water Quality Specialist for Appalachian Voices

Most people have probably never heard of selenium, but for coal operators and fish it is a big deal.

The mineral selenium occurs naturally and is necessary for life in extremely small amounts, but it is toxic to aquatic life even at very low levels. Once in the environment, selenium accumulates in birds, fish and other aquatic organisms, building up to toxic levels in their tissues. It is especially harmful to fish, causing reproductive failure, deformities and even death.

In 2012, Patriot Coal Corp. agreed to phase out its use of mountaintop removal coal mining in order to resolve $400 million in liability for selenium pollution cleanup. Many coal mines and coal ash ponds release selenium, but it is difficult and expensive for companies to remedy the problem because even small amounts can be hazardous.

A brief, high discharge of selenium into a stream might not be that toxic at first. Yet over time selenium deposits in the stream's soils can be absorbed through an organism's diet and build up to toxic levels in insects and fish.

Duke Energy's Dan River coal ash spill this past February is a good example. Although selenium concentrations in water downstream from the spill were relatively low, the selenium in the coal ash that coated the bottom of the river for dozens of miles poses a long-term hazard for fish and other aquatic life.

Selenium is expensive to remove from water, and its effects on the environment are complicated. This makes water quality standards for selenium a prime target for attacks from industries who wish to avoid water treatment costs and regulators who are easily bogged down in complicated science.

There have been quite a few strikes on selenium regulations in recent years, and many of them have focused on changing the basis of water quality standards for the mineral from the amount of selenium in the water to the amount found in fish tissue. Once adopted by individual states, water quality standards are used to determine which streams are impaired and to determine the amount of pollution allowed in permits. Every state with mountaintop removal coal mining has made some attempt to change its selenium standards in recent years, and the U.S. Environmental Protection Agency has tried several times to change the national standards.

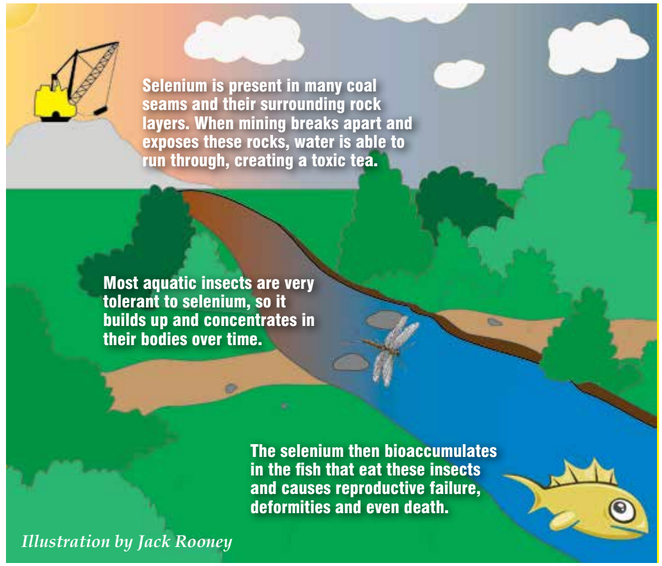

Illustration by Jack Rooney

A fish tissue-based standard seems to make sense from a purely scientific perspective, since selenium accumulates in fish over time. Yet these standards add complexity and costs to already underfunded and overworked environmental agencies. The changes also make it much harder for citizens to enforce these standards under the Clean Water Act because of the increased cost and difficulty of collecting fish for testing.

Collecting fish creates its own set of problems. Extremely polluted streams might not have any fish at all, or the only fish surviving might be less-sensitive species that accumulate selenium levels in their bodies at a slower rate. Repeatedly gathering fish from streams with selenium problems could also further stress those fish populations. Collecting fish for scientific purposes requires special equipment such as an electro-shocker and special permits that may not always be available. The process is also more time-consuming than collecting water samples. And even when specimens are collected, it is impossible to know how long a certain fish has been near a particular pollution discharge point.

Late in 2013, Kentucky proposed, and EPA approved, weaker state selenium standards that rely on fish-tissue testing. Appalachian Voices, along with a number of partner organizations including the Sierra Club, Kentuckians

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Study Shows Steep Decline in Fish Populations Near Mountaintop Removal

By Matt Wasson, Ph.D., Director of Programs for Appalachian Voices

A study from researchers at the U.S. Geological Survey published in July provides strong new evidence that mountaintop removal coal mining in Appalachia is devastating downstream fish populations.

The new findings echo previous science demonstrating the negative environmental effects of mountaintop removal, a coal mining practice that uses explosives to blast away the tops of mountains to access thin seams of coal and dump the waste into valleys below. In 2010, a group of 13 prestigious biologists published a paper in the scientific journal *Science* that analyzed peer-reviewed studies and West Virginia water quality data. According to the paper, the group found "serious environmental impacts that mitigation practices cannot successfully address."

The authors of the recent study, published in the peer-reviewed journal *Freshwater Science*, found a 50 percent decline in the number of fish species and a two-thirds decline in the total number of fish in streams below mountaintop removal mines in West Virginia's Guyandotte River drainage.

"Our results indicate that headwater mining may be limiting fish communities by restricting the prey base available for fish," Nathaniel Hitt, a USGS research fish biologist and lead author of the study, said in a press statement. "For instance, fish species with specialized diets of stream insects were more likely to be lost from the streams over time than fish species with more diverse diets."

The study also indicated that water quality played a more significant role than habitat in influencing fish population health. Previous research has focused on how water quality deterioration from mountaintop removal mining has impacted aquatic insects, but the July study is the first USGS paper to examine the issue from the perspective of fish.

Declines in populations of both fish and aquatic insects indicate the declining health of an ecosystem on which all organisms depend, including people. The "ecological indicator" theory is consistent with the dozens of scientific studies published in the last few years that show communities near mountaintop removal mines suffer an array of poor health outcomes ranging from high rates of cancer, respiratory illness, heart disease and birth defects to low life expectancies that are comparable to those in developing nations like Iran, Syria, El Salvador and Vietnam.

Stream decline also has a significant impact on the economy. In Appalachia, sportfishing is a multi-billion dollar industry, creating more jobs than surface mining in each of the states where mountaintop removal mining occurs. Unlike coal, it is also a growing industry: the number of jobs it created in West Virginia more than tripled between 2001 and 2011.

The USGS study comes as the EPA and other federal agencies grapple with rules intended to protect streams from the types of pollution cited by the study's authors.

Selenium has caused grotesque deformities in larval fish, ranging from s-curved spines and double-headed larvae to fish with both eyes on the same side of their heads. These fish (above) were caught at Belews Lake, N.C., which is adjacent to a Duke Energy coal-fired power plant. Photo by Dr. Dennis Lemly

Seleni-what?

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For The Commonwealth, Kentucky Waterways Alliance, Defenders of Wildlife, and the Center for Biological Diversity — represented by Appalachian Mountain Advocates — has filed a lawsuit challenging these changes.

The groups argue that the new standards are too weak to serve their intended purpose, and that the rules violate the Endangered Species Act because the EPA failed to consult the U.S. Fish and Wildlife Service as required by law. Fish and Wildlife has serious concerns about the new rule and stated in a letter to the EPA that the Kentucky standards "may result in negative impacts to federally listed species."

In May, the EPA released a draft of a new national water quality standard for selenium. The agency has proposed to replace the single standard for long term toxicity of five parts per billion in water with a complex set of five different numbers and one formula.

EPA's newly proposed standard is actually slightly weaker than the version the agency proposed back in 2002. The new draft standard includes an 8.1 parts per million criteria for whole fish, compared to the slightly stronger 2002 proposed standard of 7.9 parts per million. Among the many scientists and agencies that criticized the 2002 proposal, the Fish and Wildlife Service told the EPA that "Based on a large body of scientific evidence, the service believes these criterion values will not protect federally listed fish and wildlife species. Furthermore, the service believes these values are not even sufficient to protect the aquatic life for which the criteria were developed."

In 2009, Tennessee legislators tried and failed to weaken that state's selenium standards to those that the EPA previously abandoned in 2002. As a leading expert on selenium, Wake Forest University associate professor and U.S. Forest Service biologist Dr. Dennis Lemly told Tennessee lawmakers, "Based on the work I've done, 7.9 would kill a lot of fish."

The federal environmental agency's newly proposed selenium standards still face a peer review process and public comment period before they can be finalized.

Prevailing Politics Influence State Reactions to EPA Carbon Rule

By Brian Sewell

Flexibility: it's the foundation of the U.S. Environmental Protection Agency's plan to reduce carbon pollution from existing power plants.

"That's what makes it ambitious, but achievable," EPA Administrator Gina McCarthy said when she unveiled the plan on June 2. "The glue that holds this plan together, and the key to making it work, is that each state's goal is tailored to its own circumstances, and states have the flexibility to reach their goal in whatever way works best for them."

But the politics surrounding federal climate action also vary widely among states. Two months after the plan's release, some states are optimistic, touting how much carbon they have cut in recent years as a good start. Others are positioning themselves for a fight.

Changing Political Climates

With Democratic Gov. Terry McAuliffe in office, Virginia could be the most amenable state in the region to the EPA's efforts. Gov. McAuliffe announced his support for regulating carbon emissions late in his campaign and recently reinstated a 35-member state commission on climate change made up of elected officials, industry representatives, environmental advocates and scientists.

In North Carolina, Republican Gov. Pat McCrory's on-the-record comments about climate change are scant. He has claimed at various times that "there has always been climate change," or that it is "out of our control." But if actions speak louder than words, the McCrory administration's approach is telling.

This year, the N.C. Department of Environment and Natural Resources removed documents about climate change from its website, including the state's Climate Action Plan, which took dozens of experts years to research and compose.

Gov. McCrory also recently joined eight other Republican governors in penning a letter to President Obama that claims the EPA's carbon rules would "largely dictate" the type of electric-generating facilities states could build and operate, and criticizes the president for seeking to "essentially ban coal from the U.S. energy mix." Rather than suggesting improvements, the governors demand that the regulations be thrown out altogether.

Other Republican governors including Tennessee Gov. Bill Haslam were absent from that letter. While the Tennessee legislature is far from active on climate change, major cities in the state such as Nashville and Chattanooga have released their own climate action plans. And the Tennessee Valley Authority, the federally owned utility that powers Tennessee and portions of six other states, expects its emissions to be half of what they were at their peak in 1995 by 2020, according to a statement released the day the EPA's plan was announced.

In West Virginia and Kentucky, the second and third largest coal-producing states in the country, regulations that could negatively affect the coal industry elicitw particularly intense backlash. The two states recently joined a lawsuit against the EPA brought by coal CEO Bob Murray, who says the agency is lying to the American people about the existence of climate change.

The states claim that what the EPA is attempting "is nothing short of extraordinary" and that the agency wants to impose "double regulations" on coal plants since harmful pollutants other than greenhouse gases are already regulated under another section of the Clean Air Act. But the courts have repeatedly ruled that the EPA has the authority and obligation to regulate carbon pollution.

Earlier this year, Virginia passed legislation to require a cost-benefit analysis of regulating carbon dioxide. And West Virginia and Kentucky made laws directing state agencies to develop alternative standards and compliance schedules.

Regardless of how outspoken they are, state leaders opposing the EPA may be out of step with voters. According to a June poll conducted by the Wall Street Journal and NBC News, 67 percent of Americans either strongly or somewhat support the EPA's plan and 29 percent oppose it.

The EPA is expected to finalize the rule by June 2015 and states must submit their implementation plans by June 2016.

113TH CONGRESS: Below are recent congressional bills and amendments on environmental issues and how central and southern Appalachian representatives voted. To see other recent votes, or for congressional representatives outside of the five-state area, visit thomas.gov. ✔=pro-environment vote ✗=anti-environment vote ○=no vote

	Kentucky			Tennessee				North Carolina				Virginia			West Virginia		
HOUSE	T. Massie (R) KY-04	H. Rogers (R) KY-05	A. Barr (R) KY-06	P. Roe (R) TN-01	J. Duncan (R) TN-02	Fleischmann (R) TN-03	S. Desjarlais (R) TN-04	V. Foxx (R) NC-05	P. McHenirey (R) NC-10	M. Meadows (R) NC-11	R. Hurt (R) VA-05	B. Goodlatte (R) VA-06	M. Griffith (R) VA-09	D. McKinley (R) WV-01	S. M. Capito (R) WV-02	N. Rahall (D) WV-03
H.R. 3301, the North American Energy Infrastructure Act, would limit the ability of the President and Federal Energy Regulatory Commission to approve natural gas and oil pipelines and electrical transmission lines that cross international borders, and narrow the environmental review of such projects. 238 AYES, 173 NOES, 10 NV **PASSED**	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
H.R. 4923, the Energy and Water Development and Related Agencies Appropriations Act, would decrease funding for energy efficiency and renewables and increase funding for fossil fuel and nuclear power technology. 253 AYES, 170 NOES, 9 NV **PASSED**	✔	✗	✗	✗	✗	✗	○	✗	✗	✗	✗	✗	✗	✗	✗	✗
H. Amdt. 1024 to H.R. 4923 would expand exemptions to the Clean Water Act for practices related to agriculture and the discharge of fill material for projects such as maintaining drainage ditches. 230 AYES, 182 NOES, 11 NV **PASSED**	✗	✗	✗	✗	✗	✗	○	✗	✗	✗	✗	✗	✗	✗	✗	✗
H. Amdt. 1040 to H.R. 4923 would prevent federal agencies from assessing risks or costs associated with climate change. 229 AYES, 188 NOES, 15 NV **PASSED**	✗	✗	✗	✗	✗	✗	○	✗	✗	✗	✗	✗	✗	✗	✗	✗

SENATE Note: Senate legislation needs 60 votes to pass	M. McConnell (R)	R. Paul (R)	L. Alexander (R)	B. Corker (R)	R. Burr (R)	K. Hagan (D)	T. Kaine (D)	M. Warner (D)	J. Manchin (D)	J. Rockefeller (D)
S. 2260, the Expiring Provisions Improvement Reform and Efficiency Act, would extend federal tax incentives for renewable energy and energy efficiency. 54 AYES, 39 NOES, 7 NV. **FAILED**	✗	✗	✗	✗	✗	✔	✔	✔	○	○
S. 2262, the Energy Savings and Industrial Competitiveness Act, would promote energy savings in residential buildings, industry and the federal government, and provide grants for career training and education in energy-efficient building. 55 AYES, 36 NOES, 9 NV. **FAILED**	✗	✗	○	○	✗	✔	✔	✔	✔	✔

Surface Mine Near State Forest Meets Opposition

By Brian Sewell

A mountaintop removal permit in West Virginia is causing significant backlash because of its proximity to a cherished state forest and residential areas.

Located along the eastern boundary of Kanawha State Forest in Kanawha County and a few miles from downtown Charleston, the 414-acre KD Mine No. 2 received approval from regulators in May. But the Kanawha Forest Coalition, a group of residents opposing the mine, is pressuring the West Virginia Department of Environmental Protection and Gov. Earl Ray Tomblin to rescind the permit.

In early July, nearly 200 residents gathered to discuss ways to block the mine. The group started a petition to Gov. Tomblin, and also plans to appeal the permit before the West Virginia Surface Mining Board of Review in August.

As it stands, the permit allows Florida-based Keystone Industries to mine within 1,500 feet of some homes, which the coalition contends will lower property values, increase the risk of flooding and put forest visitors at risk from dust and flyrock from blasting. But DEP official Harold Ward told reporters that the permit would not have been approved if his agency was not confident in the proposed mining and reclamation processes. According to the DEP, mining company personnel will check at-risk areas before blasting to make sure no hikers are in danger — a measure opponents say is far from foolproof.

Mining has not yet begun, but DEP has already issued two violations to Keystone for not properly constructing ditches required before the trees on the site are clearcut. The agency also received a formal complaint from the Kanawha Forest Coalition and the Ohio Valley Environmental Coalition about the violations.

Court Favors EPA on Mountaintop Removal

A federal appeals court ruled unanimously in July that the U.S. Environmental Protection Agency has the authority to coordinate with other federal agencies during the mountaintop removal permitting process.

In 2009, the EPA and the U.S. Army Corps of Engineers began coordinating their review of permits associated with large-scale mountaintop removal coal mining. Environmental groups say the process has led to greater scrutiny of the environmental impacts of valley fill permits, which allow coal companies to dump mining waste into adjacent valleys, burying headwater streams. But the enhanced permitting process was challenged by the coal industry and several coal-producing states.

The court also ruled that the EPA's guidance on conductivity, an important water quality indicator, is not a final rule and therefore is not subject to legal challenge from the coal industry.

Ky. Proposes Updates to Coal General Permit

New permitting rules could have far-reaching implications for Kentucky coal mines, processing facilities and the streams that carry away their waste. The state's "general permit," which is updated every five years, is available to coal companies seeking pollution discharge permits judged to have a lesser environmental impact than larger operations.

Currently, pollution discharges within five miles of a public water intake are not eligible for the general permit, but the new proposal would change that and instead ask coal companies to create response plans for "catastrophic releases" into public water supplies.

The U.S. Environmental Protection Agency must also sign off on the changes. The previous general permit expired on July 31.

North Carolina Coal Ash Bill Pending

On July 14, the N.C. Senate voted unanimously to reject the state House's revised version of the Coal Ash Management Plan, which weakened the cleanup requirements in the Senate's original bill. Now, a committee with members of both chambers must craft a compromise bill.

Sen. Tom Apodaca, who sponsored the Senate bill, said the House-approved bill contained multiple dealbreakers including a provision that could allow Duke Energy more time to close ponds if the utility claimed the timeline was not economically feasible.

While the negotiations have prevented the bill from reaching Gov. Pat McCrory's desk and could lead to improvements, environmental groups see both versions and their many similarities as being too weak to fully address the state's coal ash pollution problem.

Both the House and Senate bill would require Duke Energy to close four "high-risk" sites across North Carolina within five years. But deadlines for cleaning up the remaining 10 sites would extend until 2029 or beyond, and sites deemed "low-risk" could be capped in place without installing a liner to protect groundwater.

In June, the nonprofit organization Waterkeeper Alliance reported that well-water tests at five homes near Duke Energy's Buck Steam Station in Rowan County revealed hexavalent chromium, a potent carcinogen. Still, an amendment to add the Buck plant to the list of "high-risk" sites narrowly failed in the House.

At press time, the committee had not yet negotiated a final bill.

Dan River Coal Ash Cleanup "Complete"

After removing approximately six percent of the coal ash it spilled into the Dan River in February, Duke Energy announced it has "completed cleanup efforts" to remove coal ash from the river in North Carolina and Virginia. The Dan River Basin Association, a local group working to protect the Dan, says it plans to continue monitoring the water quality and wildlife along the river for years to come.

Sun Shines on Sterling, Va.

Dominion Virginia Power, which critics accuse of dallying on solar energy, is touting plans to build the state's largest rooftop solar project in Sterling, Va. The 800-kilowatt project will feed electricity into the grid starting this fall.

TVA Among Top 10

The Tennessee Valley Authority was awarded ninth place when the U.S. Department of Energy recently ranked utilities by renewable energy sales. TVA was the only utility in the Southeast to make the top 10.

Putting the Brakes on the Coalfields Expressway

After years of collaboration and persistence, the citizens of Virginia have reason to celebrate.

In June, federal officials at the Federal Highway Administration put the brakes on the Coalfields Expressway — a proposed four-lane highway that had evolved into a strip mine project in disguise — citing a lack of thorough environmental and community impact studies.

Photo courtesy Sierra Club

Slated to stretch from Pound, Va., to Beckley, W.Va., the Coalfields Expressway was originally planned decades ago, but prohibitive costs prevented it from ever starting. In 2006, the state entered into an agreement with coal company Alpha Natural Resources to "grade" part of the roadbed by strip-mining it. The change reduced public funding needs but required that the project be rerouted over enough coal deposits to make it profitable for Alpha. The new route not only would have destroyed three times as much forest land and stream miles, but also would have skirted many town centers, creating more harm for local economies than good. And despite the major change in the route, the Virginia Department of Transportation only conducted a cursory study of the impacts.

Once Appalachian Voices got wind of the new plan, we worked shoulder-to-shoulder with local citizens and partner groups to call for a full environmental impact study as required by federal law. We met with the Army Corps of Engineers, the Environmental Protection Agency, the FHWA and the McAuliffe Administration. We spoke before the Commonwealth Transportation Board. We rallied outside of Alpha's headquarters in Abingdon and FHWA headquarters in Washington, D.C. By the end, more than 85,000 people spoke out through comments to public officials.

Thanks to the FHWA's decision, a thorough study of the community and environmental impacts of the project will be required, and the public will be involved in the process. But while this decision is a huge stride forward, the fight isn't over. Appalachian Voices remains committed to working with local citizens to ensure that the law is followed, the process is transparent, and most importantly, the economic viability and natural heritage of the region are preserved.

For more information on our campaign, visit: appvoices.org/virginia/cfx

Busting Clean Water Polluters

Appalachian Voices has joined the Sierra Club and Southern Appalachian Mountain Stewards to file a federal lawsuit against four Red River Coal Company mines regarding illegal water pollution in the South Fork of the Pound River. The groups found that the company is violating its permit that requires compliance with the state of Virginia's Total Maximum Daily Load, which sets limits for the amount of total dissolved solids and total suspended solids a river can tolerate while still protecting aquatic life. The groups are represented by Isak Howell, Joe Lovett and Ben Luckett of Appalachian Mountain Advocates.

The same week, a federal judge upheld a previous decision requiring that A&G Coal Corporation's Kelly Branch Surface Mine obtain a permit for discharges of toxic selenium. Appalachian Voices, Sierra Club and Southern Appalachian Mountain Stewards filed that case against A&G in 2012.

Citizens Make Case Against Mountaintop Removal

In early June, Appalachian Voices, The Alliance for Appalachia and Earthjustice brought a team of Appalachian residents to Washington, D.C., to talk with members of Congress and the Obama administration about the devastating effects of mountaintop removal coal mining on their communities. The week included appointments with 24 House representatives and meetings with officials at the U.S. Environmental Protection Agency and the Office of Surface Mining Reclamation and Enforcement. As a result of these efforts, five new representatives agreed to co-sponsor the Clean Water Protection Act (H.R. 1837), bringing the total to 91 co-sponsors in this session so far. Encouraged by this success, we hope to gain even more support in the House as we continue to defend Appalachia's right to clean water.

Member Spotlight: The Mullins Family

"Breaking Clean" for a Sustainable Future

When Daniel Mullins, 12, and his sister Alex, 9, return to school in Berea, Ky., this fall, they'll have a unique story to share about how they spent their summer vacation. Their parents, Nick and Rusti, took them on an environmental-awareness road trip they called the "Breaking Clean Tour."

For nearly 45 days, the family covered some 3,800 miles in 13 states. Stops included Knoxville, Asheville, St. Louis, Philadelphia, Pittsburgh, and Boston. Through slide shows and storytelling, they took audiences on a journey: from their families' long history in Appalachia, to the tradition of coal mining and labor unions, up to the present-day destruction of mountaintop removal mining. In their quest to find alternatives to coal mining in Appalachia, the family also visited communities that have adopted energy efficiency and sustainable living practices.

Nick Mullins, the kids' father, is a fourth-generation underground coal miner – now former miner — from far southwestern Virginia.


Nick, Daniel, Alex and Rustina Mullins

"We were raised knowing the coal companies were only around to make a profit, not to make the lives of Appalachian people better," he says. "Today, this fact is as true as ever, so I left the mines to do what I can to save Appalachia for future generations and to give my kids a fighting chance at a better life."

Nick and Rusti undertook the "Breaking Clean Tour" as interns with Appalachian Voices and as part of their coursework at Berea College, where they are studying communications, Appalachian history and environmental studies. Nick is also a volunteer distributor of *The Appalachian Voice* in Berea, a guest blogger on our Front Porch Blog and pens his own popular blog, The Thoughtful Coal Miner. In his own words:

> "When people talk about their coal mining heritage, there is an immense pride, but somehow the struggles our forefathers faced have been ignored. There is not one memory I have of my great-grandfather in which he wasn't hooked up to oxygen. I still recall the worry in my mother's eyes as she balanced the checkbook when dad was on strike because the coal company was once again trying to make more profit at the expense of Appalachian families.
>
> "It is important to realize that the pride and heritage of coal mining is more than just digging coal out of the ground to 'keep the lights on.' It's about remembering the constant struggle our forefathers faced against the coal companies to preserve our dignity and our community. It's about continuing that struggle so our children can have a better future.
>
> "On occasion my father would pick up a copy of *The Appalachian Voice* when he was at a doctor's appointment in Kingsport. Years later, when I realized the United Mine Workers in our area wasn't interested in helping non-union coal miners, I turned to Appalachian Voices for help. I knew they were fighting for something better in Appalachia. They welcomed me with open arms and eventually set me on a path to find my own voice and place in saving the future for generations to come.
>
> "My father taught my brother and I respect for the mountains. Those days just sitting on a rock outcrop at the top a ridge, being quiet and watching the world instilled within us a deep understanding and love of nature. Today, I do the same with my children, watching, listening, understanding the wisdom, history, and awe of nature within the mountains we call home."

Tennessee Emerging as Leader in Energy Efficiency

For the past year, Appalachian Voices has sowed the seeds of energy efficiency with groups in Tennessee's energy sector, and we're proud to see those efforts starting to bear fruit.

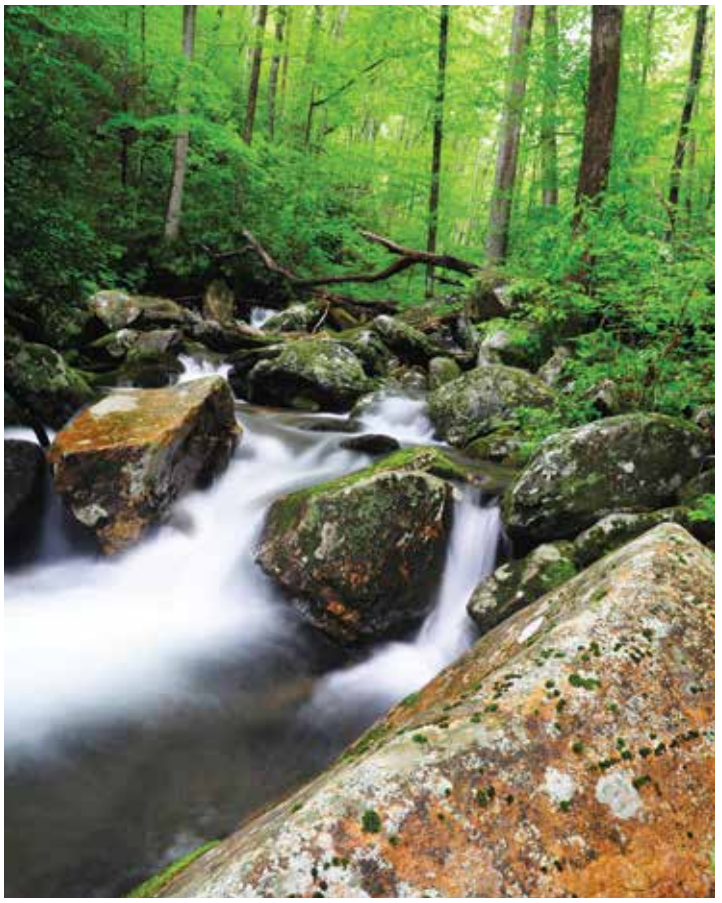
Our Energy Savings for Appalachia Team, composed of Rory McIlmoil, Ann League and Sarah Kellogg, have attended meetings with the Tennessee Electric Cooperative and rural electric co-ops throughout eastern Tennessee. The talks centered around encouraging the co-ops to develop financing programs that would help residents afford energy efficiency improvements to their homes.

The folks in Tennessee were immediately interested in the idea, and just recently applied for and earned a coveted spot to participate in the National Governors Association retreat on energy efficiency. The retreat will address specific challenges Tennessee faces in advancing energy efficiency programs in rural areas, and will help the state develop tools and strategies for implementing successful financing programs for co-op members. The team will include representatives from the Governor's office, the Tennessee Department of Environment and Conservation, the Tennessee Valley Authority, Appalachian Voices and others.

On-bill financing is a loan program that helps residents make improvements to their home such as weatherizing, insulating, or upgrading heating and cooling systems. Currently, only five co-ops in the region — all located in Kentucky — offer financing for energy efficiency improvements.

Visit: appvoices.org/energysavings

Appalachian Voices is committed to protecting the land, air and water of the central and southern Appalachian region. Our mission is to empower people to defend our region's rich natural and cultural heritage by providing them with tools and strategies for successful grassroots campaigns.



Summer is an ideal time to explore Appalachia's natural treasures. This area, close to the headwaters of the Davidson River in Pisgah National Forest near Brevard, N.C., is known for superb trout fishing as well as hiking, mountain biking, horseback riding and rock climbing. Photo by Mark Schmerling

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ACT NOW: Help Us Push for Clean Skies

Burning fossil fuels for electricity is the main source of carbon dioxide pollution in the U.S., but there's currently no limit to how much carbon power plants can emit. The Environmental Protection Agency now has the opportunity to create a strong rule that regulates carbon pollution and better protects our water resources, air quality, farmland, forests, mountains, coasts and our health.

Help Appalachian Voices push the EPA to implement a strong carbon pollution rule and make a big difference in curbing the worst impacts of climate change. Donate today.

❑ $35 ❑ $50 ❑ $100 ❑ $250 ❑ Other: $_____

❑ Mountain Protector (monthly contributor) $_____ /month ($10 minimum)

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City _____ State _____ Zip _____

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❑ Yes, I would like to receive *The Appalachian Voice* in my mailbox (min. $25 donation)

❑ Maximize my donation -- do not send *The Voice* / I prefer to read it online!

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