FREE

The Appalachian VOICE

February/March 2015

On the Trail of the Past

Appalachia's Frontier History Revival

Cleaning Up Coal Ash
The Saga Continues

Bristol: The Cradle of Country Music

Lake Sturgeon
Ancient Fish,
Modern Recovery

The Appalachian VOICE

A publication of AppalachianVoices

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A Note from Our Executive Director

2014 was a remarkable and exceptionally busy year for Appalachian Voices. We responded to a string of environmental crises, uncovered coal industry violations of unprecedented scale, and advanced groundbreaking energy savings projects — all while strengthening our organization to take our work to the next level. We've charted an ambitious course of action for 2015 to pursue our shared vision for Appalachia's future:

- With just two years left in the Obama presidency, we're escalating our pressure on the administration to crack down on mountaintop removal coal mining. Recent court decisions affirm the EPA's authority, and with abundant scientific evidence incriminating the practice, there's no excuse not to.
- On Capitol Hill, we'll leverage our strong relationships to defend against attacks on environmental protections.
- We'll continue working with our partners in Kentucky and elsewhere in Appalachian communities to hold lax officials and lawbreaking coal companies, such as Frasure Creek Mining, accountable in court.
- With new state and federal rules on coal ash disposal, 2015 is our chance to make sure Duke Energy and North Carolina leaders keep their promises to stop coal ash pollution and permanently close the sites threatening communities (see p. 10).
- As states work to comply with the EPA's Clean Power Plan for cutting carbon pollution, Appalachian Voices is engaging with citizens to demand robust clean energy initiatives, which would bring tremendous economic benefit to our region.
- We're working with residents and officials in Tennessee and North Carolina to encourage electric cooperatives to set up programs offering financing for home energy efficiency improvements.
- We're expanding our work in southwest Virginia to advocate for alternatives to the ill-conceived Coalfields Expressway (see p. 23) and bring much-needed economic diversity to an area that has suffered too long from over-dependence on the coal industry.
- In North Carolina and Virginia, we're opposing expansion of infrastructure for the natural gas industry, which would endanger communities and delay clean energy expansion.

Please join us in these efforts to protect our home. Visit AppalachianVoices.org to sign up for action alerts and get involved.

For our future,

Tom

Tom Cormons, Executive Director

GET INVOLVED ▸▸▸▸ environmental & cultural events

See more at appvoices.org/calendar

Appalachian Voices Webinar Series
Join experts, impacted residents and Appalachian Voices staff for an engaging conversation on issues featured in our newspaper. Upcoming webinars in the series are "Health Hazards in the Life Cycle of Coal" on March 5 and "Assessing the Evolving Impact of Coal Ash," scheduled for mid-April. Learn more and register at appvoices.org/webinars or call Kimber at (828) 262-1500

Banff Mountain Film Festival
Environmental and outdoor recreation films. Tour will visit Charlottesville, Va. March 8-9, Knoxville, Tenn. March 23, Boone, N.C. March 27-28, and Morgantown, W. Va. April 3. Visit banffcentre.ca/mountainfestival/worldtour

Experience Your Smokies
March 17: Blacksmithing at Mountain Farm Museum | March 24: Wildlife and vegetation management at Cataloochee | April 14: Air quality and trail crew at Clingmans Dome | April 28: Fisheries, location TBA | May 9: Salamanders at Purchase Knob | Full-day class sessions accompanying park employees; must attend all classes. $50. Register by Feb. 27. Visit friendsofthesmokies.org/events.html or call (828) 452-0720

Virginia Native Plant Society Speaker Series
Feb. 22, 2-4 p.m.: At "Familiar Flora Amid Siberian Splendor," learn about eastern U.S. ecology and how drifting continents, volcanoes and glaciation created similarities to eastern Siberia's plants. Free. Tri-County Feeds Conference Room, 7408 John Marshall Hwy, Marshall, Va. Visit vnps.org/events

2015 Sustainability Film Series
Feb. 24: Thin Ice | March 17: Surviving Progress | April 21: Mission Blue | All films 7-9 p.m.: Film series examining our planet's environmental, economic and social challenges. Free. I.G. Greer Hall, Appalachian State University, Boone, N.C. Visit sustain.appstate.edu/2015filmseries

Clinch River Youth Summit
Feb. 28, 10 a.m.-3 p.m.: High school youth, teachers and educators invited. Presentations on environmental stewardship projects. Tour of Wetlands Estonoa. Free. Estonoa Learning Center, St. Paul, Va. Visit clinchriverva.wordpress.com/events or call (276) 679-1691

Snowbird Trout Festival
March 10-12: Four USA Fly Fishing Team members will teach casting/fly tying and stream techniques and guide guests on the three mile delayed harvest section of Big Snowbird Creek. Culinary classes on trout preparation. Snowbird Mountain Lodge, Robbinsville, N.C. Visit snowbirdlodge.com or call (828) 479-3433

Tennessee Environmental Conference
March 17-18: 14th annual conference features presentations on statewide environmental concerns such as resource preservation, sustainable development and human and environmental health. $250 before Feb. 27, $350 after Feb. 27. MeadowView Conference Resort and Convention Center, Kingsport, Tenn. Visit tnenvironment.com

Growing Appalachia
March 21, 9 a.m.- 4:30 p.m.: Workshops on small-scale farming, energy efficiency and renewables sponsored by the Big Sandy chapter of Kentuckians for the Commonwealth. Donations accepted. Jenny Wiley Conference Center, Prestonburg, Ky. Visit kftc.org/events/growing-appalachia or call (606) 263-4982

Corn Potato String Band
March 27, 8:30 p.m.-12 a.m.: Authentic Appalachian folk musicians who are champion fiddlers, and also play banjo, guitar, bass and mandolin. $8. The Purple Fiddle, 21 East Ave, Thomas, W. Va. Visit mountainmusictrail.com/event

Appalachian Studies Association Annual Conference
March 27-29: This year's theme is "Many Mountains, Many Musics." Keynote speaker is Margo Miller, executive director of the Appalachian Community Fund. $150-175/individuals, $100-125/students; scholarships available. East Tennessee State University, Johnson City, Tenn. Visit appalachianstudies.org/annualconference or call (866) 244-0626

Environment Virginia Symposium
March 31-April 2: Topics include sustainable development, energy and freshwater conservation. Prices vary from $50 for undergrads to $400 for businesses. Virginia Military Institute, Lexington, Va. Visit vmi.edu/Conferences/EV/Environment_Virginia or call (540) 464-7361

West Virginia Make It Shine Program
April 6-19: Statewide cleanup held the first two weeks of April each year. Volunteers can receive support to conduct cleanups on public lands. To be considered for cleanup assistance, submit applications by Feb. 28. Visit bit.ly/1zSPQ92

Across Appalachia

Environmental News From Around the Region

An Early Warning for the Birds

By W. Spencer King

Just before tornadoes devastated several central and southern states in April 2014, one group noticed the warning signs and fled to Florida.

Golden-winged warblers left their nests while the storms were more than 250 miles away. The birds breed throughout the Appalachian region and migrate to South America for the winter.

Henry Streby of University of California Berkeley, along with University of Tennessee scientists, tagged the warblers in the Cumberland Mountains of northeast Tennessee for tracking research. They incidentally noticed this unusual out-of-season migration while looking at data following the storms.

Streby told scientific journal Current Biology that the birds were most likely alerted by the low-frequency sounds that tornadoes produce. The sounds, which are below what humans can hear, travel hundreds of miles.

Earthquakes, avalanches and lightning also produce low-frequency sounds, and scientists note that golden-winged warblers are unlikely to be the only species using them as an early warning.

By the Numbers

By Kimber Ray

10 million
Visitors to Great Smoky Mountains National Park last year, the most of any national park in the country, followed by the Blue Ridge Parkway

6 Consecutive years that Virginia state parks have achieved record attendance

7 Number of states where the Tennessee Valley Authority has ended its policy of removing all trees within the utility's right-of-way corridor that are, or could be, 15 feet high or taller

1 Mountain lion shot in Bourbon County, Ky., this December, marking the first confirmed sighting since before the Civil War; the question of whether it had wild or captive origins remains under investigation

800
Gallons of tree sap that spilled in southwest Virginia this January and shut down half of a gas station parking lot

1 Rank of Ashe County, N.C., among top Christmas-tree producing counties; Ashe growers harvest about 12 percent of the nation's 17 million annual trees

Funding Cuts for Hazardous Waste Management

By W. Spencer King

Starting this year, Kentucky's hazardous waste management fund will have $1 million less to work with annually.

Some contaminated sites, such as old fuel refineries, will be abandoned due to the tight budget. Tim Hubbard, assistant director of Kentucky's Division of Waste Management, told WDRB News that money being cut from the budget was set aside in case of an expensive hazardous waste emergency.

Officials say funding cuts will make it difficult for the state to coordinate cleanups and monitor hazardous sites that are not considered a federal priority.

The state legislature will vote to reauthorize the fund in June 2016.

EPA Cannot Regulate Lead in Ammunition

By Chris Robey

A recent federal court ruling determined that the U.S. Environmental Protection Agency cannot regulate use of lead ammunition, which raises concerns over the effects of spent ammunition on raptors and other wildlife — especially as bald eagles rebound from dwindling populations during the 1960s.

The decision closely follows a government spending bill that blocks the EPA from regulating lead in shot and fishing tackle.

The well-documented link between spent ammunition and lead poisoning in wildlife spurred the U.S. Fish and Wildlife Service to ban lead buckshot for waterfowl hunting in 1991, but lead is still permitted for other types of hunting. Raptors, like waterbirds, are especially vulnerable to lead in the environment; exposure occurs when they eat contaminated fish and carrion or directly consume bullet fragments.

Some experts believe that promoting non-lead alternatives, such as copper bullets, would be more effective than prohibition. Many hunters, however, remain skeptical of these alternatives.

WV Repeals Changes to Climate Science Standards

By Chris Robey

Following a heated public rebuke, the West Virginia Board of Education reversed its decision to alter newly proposed national K-12 science education standards. The board's alterations would have required West Virginia teachers to frame human-caused climate change as a debate rather than an accepted body of evidence.

Teachers and environmental groups denounced the alterations as an attempt to undermine peer-reviewed evidence of climate change.

The newly restored standards will be open for public comment until mid-February. In March, the board will vote on final standards for the 2016-17 school year. If adopted, the standards will mark the first time West Virginia students are required to study evidence supporting human-caused climate change.

The reversal comes just days after the conservation group, Friends of the Blackwater, released a report highlighting rising temperatures in the state's Allegheny Highlands region. View the report, titled "On the Chopping Block," at alleghenyclimate.org

About the Cover **D. Rex Miller captured this image of a fern leaf embedded in snow on North Carolina's Grandfather Mountain. Miller is a member of Appalachian Voices and a native of Appalachia. He hopes his work instills a sense of the beauty and mystery of nature's wild spaces. View his art at drexmillerphotography.com**

Preservation Gains Across Region

By Dac Collins and Lorelei Goff

At the end of 2014, several regional land trusts finalized a host of easements, conserving views, habitats and cultural sites.

In a typical conservation easement, land trusts protect property from development that might affect ecological integrity, while private landowners retain ownership.

The Dickson family of Monroe County, W.Va., recently donated their 600-acre farm to the West Virginia Land Trust as a conservation easement. The family has owned Spring Valley Farm since Richard Dickson settled there in 1776.

The easement is ripe with heritage and rural culture. Remnants of old mills and other historic structures are visible along the banks of Second Creek as it winds through the property. "One of the motivating reasons we wanted to seek permanent protection of the property was to preserve the scenic and agricultural character of the land," Page Dickson told the land trust.

The Southern Appalachian Highlands Conservancy protected a 76-acre tract of land near Carver's Gap in the Roan Highlands. With trout waterways, wildlife habitats and views from the Appalachian Trail, this "jewel in the crown of the Roan" was on the land trust's radar for 40 years.

In the highlands of southwestern North Carolina, The Highlands-Cashiers Land Trust acquired the 48-acre Black Bear Trail property in Jackson County, N.C, increasing the size of a vital wildlife corridor to more than 1,000 acres.

The Foothills Land Conservancy had a record year and preserved more than 11,700 acres across southern Appalachia. The tracts range from 112 acres to 2,620 acres and are located in South Carolina, Kentucky, Georgia and Tennessee.

The Kentucky Creative Industry Report

By Dac Collins

Arts advocates were thrilled when the Kentucky Arts Council released the Kentucky Creative Industry Report this winter, the first report of its kind to fully acknowledge the contribution of the creative industry to the state's economy.

The creative industry accounts for $1.9 billion in annual state revenue and approximately 2.5 percent of all employment in the state, providing about 60,000 jobs. That is roughly equivalent to the amount of jobs created by the information technology and communications industry and it is significantly more than the estimated 12,000 workers directly employed by Kentucky's coal mining industry.

This 2.5 percent includes traditional artists, such as painters, musicians and writers, as well as non-traditional artists, such as web designers, advertisers and architects.

Bob Stewart, secretary of the state Tourism, Arts & Heritage Cabinet, says the report finally gives supporters of the arts "the data we need to prove the arts' significance economically."

Former Freedom Executives Indicted for Elk River Chemical Spill

By Kimber Ray

Federal prosecutors in December charged the now-bankrupt Freedom Industries and six former employees for criminal violations of the Clean Water Act in relatation to the January 2014 chemical spill that contaminated the water of more than 300,000 West Virginia residents.

The FBI released supporting documents showing that at least a decade before the spill, Freedom was warned of problems at the Elk River site such as critical deficiencies with the tank and containment wall that allowed chemicals to seep into the river. The agency also reports that company expenditures were almost exclusively devoted to projects that would increase revenue, rather than compliance with environmental regulations.

Former Freedom Industries President Gary Southern faces additional fraud charges related to the company's bankruptcy filing the month of the spill. According to these charges, Southern, a company executive since 2009, falsely stated under oath to have assumed leadership with the company only days before the spill in order to avoid blame and protect his assets from lawsuits

In response to the spill, Gov. Earl Ray Tomblin signed a bill to create the nation's first requirement for inspection of aboveground storage tanks, according to National Geographic. As of mid-January, inspection certifications required for approximately 20,000 of the state's more than 47,000 aboveground tanks were not submitted by the Jan. 1 deadline and, of those submitted, nearly 1,100 did not meet new safety requirements.

Industry lobby groups have tried to weaken the new chemical safety bill, in one instance proposing changes that would exclude thousand of tanks near drinking water sources from new inspection and safety standards.

Such changes could provide amnesty to Lexycon, a company created by former Freedom executives three months after the spill. The new company has already been cited for charges such as improper storage of MCHM — the chemical associated with the notorious spill — and releasing chemicals into waterways without a permit. No fines have been issued.

The Crooked Road Drives Mountain Music into Classrooms

By Lorelei Goff

Virginia Highlands Community College recently announced the Crooked Road course, a hybrid course taught in-class and online, for K-12 teachers

The Crooked Road, a living history of Appalachian mountain music, meanders through 333 miles of southwest Virginia. The tour, comprised of music venues, museums and wayside exhibits, was conceived as part of the state's efforts to diversify economic development. It has thrived so well that it's driving mountain music into K-12 classrooms.

The course will give teachers the knowledge and techniques to present the region's rich musical heritage to students in a multimedia format. Teachers will use their training to educate their students about old-time string bands, a cappella gospel, blues, 300-year-old ballads, bluegrass and more through audio/visual resources, live demonstrations and field trips.

More information about the Crooked Road course can be found on the Virginia Highlands Community College website: vhcc.edu.

The Lake Sturgeon

A Dinosaur in the Tennessee River

By Dac Collins

The lake sturgeon, *Acipenser fulvescens*, is the largest and longest-living freshwater fish native to the southeastern United States. They can live for up to 150 years and there are recorded catches of sturgeon that were over eight feet long and weighed more than 300 pounds.

In evolutionary terms, this primitive fish has changed little since it swam among dinosaurs. The species has existed since the Upper Cretaceous Period, 136 million years ago. Today, it is listed as either threatened or endangered in 19 of the 20 states within its historic range, including Tennessee, North Carolina, Kentucky, Georgia and Ohio. Anglers in these states are required by law to immediately release all sturgeon.

Lake sturgeon were regarded as trash fish until the mid-19th century, when the fishing industry realized the value of the sturgeon's eggs as caviar. At the time, the caviar industry was young and extremely profitable, so there were no regulations to speak of and boats harvested unsustainable numbers of fish. This vigorous overfishing continued for around a hundred years and it was a major factor in the collapse of sturgeon populations.

All waterways in the United States were closed to commercial sturgeon fishing by the 1970s. By that time, the Tennessee Valley Authority had built dams throughout the South, including on the Tennessee River and its tributaries, and these obstructions prevented the sturgeon from reaching their spawning grounds. With their populations decimated and their migration routes blocked off, the lake sturgeon that inhabited the Tennessee River watershed were headed towards extinction until restoration efforts began in 1995.

Dr. Larry Wilson, a fisheries management expert at the University of Tennessee, is part of the Tennessee River Lake Sturgeon Working Group, a cooperative effort between state, federal and private organizations to reintroduce lake sturgeon to the Tennessee River watershed. Members of the group include the U.S. Fish and Wildlife Service, the Tennessee Wildlife Resources Agency, The University of Tennessee and the Tennessee Aquarium Conservation Institute.

The first hatchery fish were released into the Tennessee River in 2000. Since then, the group has stocked approximately 150,000 fingerlings — juvenile sturgeon — in the Upper Tennessee and its tributaries, including the Clinch, Holston and French Broad rivers.

Wilson monitors the fish with the help of Christina Saidak, a graduate student at the University of Tennessee who has implanted acoustic telemetry transmitters in 49 sturgeon. Saidak says that "we are seeing both upstream and downstream movement of fish, and we have seen positive weight and growth patterns similar to the weight and growth patterns of lake sturgeon elsewhere in their home range."

The ultimate goal of the project is to restore a self-sustaining population of lake sturgeon to the Tennessee River watershed, but this could take years — even decades — since the species takes an unusually long time to reach sexual maturity. Females might not produce eggs until their twentieth year, which is still five years away for even the first reintroduced sturgeon. But Saidak has reasons to be optimistic: "We have identified potential spawning and staging areas through direct observation and reports collected from local fishermen. Within the next ten years or so, we hope to see some [evidence of spawning sturgeon]."

Because they have to migrate long distances in order to spawn, sometimes swimming hundreds of miles, the lake sturgeon's ability to procreate in the Tennessee River watershed depends entirely on whether or not they can successfully navigate a complex system of dams. Those without locks, like Cherokee Dam on the Holston and Douglas Dam on the French Broad, are dead ends for migrating sturgeon.

All nine dams on the main stem of the Tennessee, however, have navigational locks, and the locks at many of these dams are now being held open during certain times of the year in order to enhance the potential for migratory fish to move through. "Thirty years ago, nobody thought about it or cared about it," says Dr. Wilson, "but biologists are now making water control officials aware of spawning patterns of different fish and their movements, so there is quite a bit of coordination between the two."

The restoration efforts of the Tennessee River Lake Sturgeon Working Group are contingent upon the cooperation of water control officials with fishery biologists and a continued moratorium on commercial fishing. If these conditions are met, the primitive lake sturgeon might once again thrive in the Tennessee River.

Graduate student Christina Saidak holds a young, healthy lake sturgeon at Fort Loudon Reservoir on the Tennessee River. Photo by Keith Darner, University of Tennessee. Above right, a lake sturgeon at the Toledo Zoo searches for food along the bottom of the aquarium. Photo by Flickr user Crow911.

- **Male sturgeon reach sexual maturity at 14-15 years old, females between 15-20 years old; males spawn every other year, females every 2-3 years**
- **When spawning, up to fifty males may surround a single female**
- **Lake sturgeon spend most of their lives at the bottom of deep reservoirs but they spawn in shallow areas of rivers with rocky or gravel bottoms and flowing water**

Hiking the Highlands

The "Pinnacles" of Berea

By Nick Mullins

Journeying thirty miles south of Lexington on I-75, the low, undulating hills of Kentucky farmland transform into forested mountains rising to the meet the sky. Tucked against the edge of the Cumberland Plateau sits Berea, a small town that began as a settlement of abolitionists seeking to teach their message that "God has made of one blood all peoples of the Earth." Berea is now known for the college of the same name founded in 1855 that provides a tuition-free liberal arts education to students of limited means, and for the town's thriving arts and crafts industry.

Of the many extraordinary things Berea is known for, few realize too that Berea is home to Kentucky's largest privately managed forest — more than 8,400 acres owned by the college and maintained by the wonderful folks in their forestry department. What's more, the forest contains a variety of natural landmarks, many of which are accessible to the public through nearly 12 miles of trail networks, including 9 miles that traverse Indian Fort Mountain.

At 8 a.m., I'm the first one in the parking lot of the Indian Fort Theatre, which serves as the primary trailhead to the Indian Fort Mountain trail system and the scenic "Pinnacles." The night brought with it a fresh snow that covers the trees. Small clumps fall to the ground as a slight breeze shuffles the leafless canopy of limbs and branches. My lungs are invigorated as I take a deep breath of the clean, crisp air and the foggy breath I exhale signals the beginning of my trip into solitude.

Tracks of squirrel and rabbit cross the path in front of me. The first half-mile of the trail begins with a gentle grade and a small creek crossing before climbing steeply up several switchbacks that cause my heart to pump harder and harder.

I pause to take my outer jacket off and listen to the near silence of the snow, interrupted only by a small creaking from the canopy above. I continue upward to the first split in the trail, one of the first choices that heighten the sense of adventure on the mountain. After only a short hesitation, I choose to go right, making the East Pinnacle my first destination.

INDIAN FORT MOUNTAIN

Difficulty: Ranges from easy to difficult

Mileage: Trails total 9 miles with a variety of options and distances

Cost: Free and open to the public

Contact: (859) 985-3587 or visit www.berea.edu/forestry/indian-fort-mountain-trail

The trail wraps around the mountainside and makes for a pleasant walk before climbing further to the next split. Small pines droop over the trail under the weight of ice and new snow, some bobbing up and down as I brush past them.

Halfway along the ridge, fox tracks join the trail and keep me company, stopping only once from their stride to perhaps observe a sound before continuing on. I emerge from the darkness of the pines onto the rocks that form the East Pinnacle. Cold wind from the valley rushes up to meet me as I stand exposed on the bluff. I look down upon the homes dotting a patchwork of farms below, watching thin blue lines of smoke rise from their chimneys.

The silent cold of winter sharply contrasts with the sounds of Mountain Day from years past, when dozens of Berea College students gather on the East Pinnacle to hear the college's choir sing as the sun rises from beneath the distant mountains. I close my eyes to see the brilliant reds and yellows of fall and the bright smiles of people clapping and dancing to fiddle music after the choir has finished singing up the sun.

I trek the half-mile back to the last split in the trail, this time taking the Lookout Trail where another steep climb quickens my breath with a variety of switchbacks. Reaching the top of Robe Mountain I consider my choices of trails and destinations. The Eagle's Nest or the Buzzard's Roost? Perhaps the Devil's Kitchen to see the icy cliffs and unique rock formations? Or I could make my way to the Indian Fort Overlook or the West Pinnacle to watch the town of Berea waking from beneath the blanket of snow. I choose just to make a choice, each trail beckoning me, each bend adding eager curiosity to my hastening steps crunching through the fresh snow.

The winter sun breaks through the clouds over Baker Hollow, one of the many striking vistas found along the 9-mile Indian Fort Mountain trail system. Photo by Nick Mullins

A former coal miner, Nick Mullins attends Berea College and is a volunteer distributor of The Appalachian Voice. Together with his wife and their two children, the Mullins family spends their summers speaking out against mountaintop removal coal mining through the Breaking Clean Tour. Nick is also known for his blog The Thoughtful Coal Miner.

This GREEN House

Families Win Energy Savings

By Eliza Laubach and Sarah Kellogg

Amidst children's toys, juice bottles and furniture, a plastic tube snakes through Sean Dunlap's home in Boone, N.C. The front door to the 1930s farmhouse is covered in thick, red plastic and a giant fan is depressurizing their house. John Kidda, a local home energy contractor, walks through the house holding a tool that produces a visible vapor. He watches to see if the vapor is sucked through the wall or stays floating in the air.

The procedure Kidda is running, called a blower door test, is part of a complete energy audit, which tracks all the places where energy is lost, especially where heated air is escaping.

According to Kidda, the average home has the equivalent of an open window's worth of air leaks. For Dunlap, the age of his house combined with the style of wood-slat walls and ceilings equals a leakier home.

Dunlap is among three homeowners in the North Carolina High Country who are benefitting from insulation and air-sealing upgrades in their homes. They won an energy contest held by Appalachian Voices to raise awareness about how homeowners would benefit from energy efficiency upgrades and programs to finance them. Dunlap, along with Zachary Dixon of Boone and Vance Woodie of West Jefferson, won free energy audits and special energy upgrade packages. Local home energy contractors, who donated to the contest, will soon begin work on the winners' houses to make them more comfortable and healthy while lowering their energy bills.

The true root of energy efficiency lies both under and above a home: the attic and crawlspace. Insulating and air-sealing a house's unconditioned spaces makes a huge impact on the comfort within the house and cuts costs on the home's energy bill.

The average person spends about 40 percent of their energy bill on heating and cooling, and about 30 percent of conditioned air is lost through ceilings, floors and walls. Many homes in the Appalachian region are old and not updated to current building codes that require more insulation.

Zach Dixon, who is out of work due to a serious medical ailment, uses space heaters to heat his house and chronically struggles to pay his electric bill. The two bedrooms in his house are over an uninsulated garage, which creates a major heat sink. Zach previously used a wood stove in his garage, and had cut out a hole in the hallway floor so that the heat would rise into his house. He no longer uses the wood stove due to a fire scare, however, and the only barrier between the two spaces now is a rug.

According to Dixon, he hopes his electricity will be more affordable once his house is adequately insulated. Contractors will install insulation on the ceiling of his garage and in his attic to bring his house in alignment with current building code. Weatherstripping will also be installed around his garage door and attic hatch, and the crown moulding will be caulked throughout his house to cover gaps that allow cold air to enter and heated air to escape.

In his home, Zach Dixon, right, talks with Rory McIlmoil of Appalachian Voices about his high heating bills. Photo by Jaimie McGirt

Thirty miles away in Ashe County, Vance Woodie, a retired Korean War veteran, lives with his wife in a turn-of-the-century home that was once heated by a coal stoker furnace. The ducts were never replaced when he upgraded to an oil furnace, and the air intake is in the basement, which is still littered with coal. "I guess that's why the dust still comes in thick in the house," Woodie says when told of the air quality issue.

Though most homes do not have coal dust floating around, many houses have ductwork traveling through moldy spaces, a cause for indoor air quality concerns. Woodie and his wife, Thelma, have also noticed that the room farthest away from their furnace is always the coldest, due to their leaky and uninsulated ductwork.

The contractors plan to completely replace, seal and insulate Woodie's ducts, which is very important for those with central heating, to ensure that all the heat generated by the furnace reaches the conditioned areas of the house.

As for Sean Dunlap, he is looking forward to a tighter house this winter so his children, who are the fifth generation to live there, will have a home to play and grow in without feeling a persistent chill. The comfort of his kids, Dunlap says, is the greatest prize he could have won.

Insulation and Air-sealing Are the Root of Energy Efficiency

John Kidda, a home energy contractor, prepares a blower door test at Sean Dunlap's home. Photo by Eliza Laubach

- Apply caulk around doors and windows to greatly reduce the draftiness of your house.
- Insulation installed in attics should rise above the rafters and be about six to 10 inches thick. Blown cellulose insulation can be displaced by wind, so be sure to have correct dampers in place at the eaves.
- Crawlspace insulation should be in direct contact with the floor of the house, not hanging down. The moisture barrier should be facing up with the insulation facing down.
- When sealing ductwork, use mastic paint, not tape, to create a lasting seal.

Smoke in the Hills: Wood Stoves in Appalachia

By Eliza Laubach

An inexpensive heat source and supply of wintry comfort, the cast-iron stove's nostalgic character holds strong in Appalachia. Up to 30 percent of homeowners in the region are estimated to use wood stoves as a primary heat source, according to a survey of census data.

Some cherish wood heat as a renewable, inexpensive energy source that offsets fossil fuel use, but wood stoves have been under fire in recent years for smoke pollution. Researchers have found evidence of particulate matter air pollution as a result of wood stove use in areas of the west and northeast, while the central and southern Appalachian valleys have received less scrutiny. Despite being blamed for pollution, wood stoves can be an efficient, low-impact heating source when operated and maintained correctly.

Dr. Susan Doll, assistant professor of Technology and Environmental Design at Appalachian State University, found that stove operations have a major impact on indoor air quality through her limited research on wood stoves in Appalachia. Although chimneys take wood smoke outside, Doll says, particulate matter can pollute the home through a leaky stove and when opening the door to add wood. In addition, she found that smoking indoors increases particulate matter levels enough to mask the effect of wood smoke pollution in a home.

Burning a low fire releases more particulate matter, according to the U.S. Environmental Protection Agency's Burn Wise website. A damper, which reduces updraft through the chimney and keeps the fire from going out, may help to conserve wood, but dampers increase pollution so it is best to use them only at night or when away from home.

Best Burn Practices

1. **Burn mostly hardwood.** Softwood bark is deeply furrowed and the wood has a reddish tinge.
2. **Firewood should season for at least six months.** Properly dried wood has cracks in the end grain and sounds hollow when hitting against another log.
3. **Keep your fire burning hot** most of the time. Regularly cleaning out the ashes allows proper air intake to keep a fire burning hot.

Source: epa.gov/burnwise

Dry wood boosts a stove's performance. The higher the wood's moisture content is, the more energy it takes to ignite the log and less energy is available for heating, according to the EPA. Softwoods such as pine, cedar and hemlock are less dense, translating into less energy potential. Efficient fire management and an EPA-certified wood stove can counter the damage stoves pose to the environment and health.

The EPA estimates 75 percent of wood stoves in peoples' homes are not certified by the agency's 1988 standard because they were purchased before the EPA regulated wood stoves, although a modern stove will surpass that standard. An updated rule was released February 4, so most wood stoves manufacturers will have to redesign and recertify their wood stove lines (see page 15).

Check for an EPA-certified metal label on the back of a wood stove. If manufactured before 1992, the wood stove is inefficient, says the EPA. Photo by Jamie Goodman

Gary Yoder, sales manager at High Valley Stoves out of Abbeville, S.C., says some manufacturing companies cannot afford the investment caused by the new rule. John Ackerly, president of the wood-heat advocacy group Alliance for Green

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COAL ASH MANAGEMENT

Long-Awaited, Still Debated

By Kimber Ray

State regulators have known about toxic groundwater contamination near Duke Energy's coal-fired power plant in Salisbury, N.C., for years.

Since 2011, officials have disclosed more than 226 water quality test violations near the Salisbury plant that bear similarities to coal ash, the hazardous byproduct that remains after burning coal for electricity.

Of course, regulators decided to play it safe — for the power industry, that is. The N.C. Department of Environment and Natural Resources' repeated claims that perhaps the pollution was simply a natural occurrence were a predictable line of defense when considering that historically, the regulatory directive on coal ash might as well have been "look away."

Though that could prove a difficult feat for the second largest source of industrial waste in the United States, government officials have achieved this with astounding finesse.

Despite more than 150 federally acknowledged cases of water contamination and several notorious spills, measures such as water quality monitoring, safety inspections and protective liners for coal ash ponds remain rare on the state level and, until this past December, nonexistent on the federal level.

"There are plenty of people who say 'I really don't care, I just want a job,'" states Brian Williams, program manager for the Dan River Basin Association, which works to protect and promote that river. "And I understand that: people need to eat and they need a job. But they also need to drink, and you can't live without water."

The most recent high-profile coal ash spill occurred in North Carolina in February 2014, when more than 30,000 tons of ash emptied into the Dan River from a containment pond at Duke Energy's retired coal-fired power plant in the city of Eden. Under the ensuing glare of public attention, last August state legislators passed what amounts to today's toughest rules on coal ash in the nation.

North Carolina's claim to regulatory fame is a source of major disappointment for many environmental and public health advocates across the country, who had hoped to see a stronger coal ash rule passed by the U.S. Environmental Protection Agency this December.

The cumulative costs of weak coal ash regulations are tremendous. In a 2014 analysis of just five of Duke Energy's 14 power plant sites in North Carolina, Dr. Dennis Lemly, a research biologist with the U.S. Forest Service and an associate professor at Wake Forest University, estimated that environmental and economic impacts totaled almost $2 billion.

"As far as what's happening on the ground right now, there's been no change [either nationally or in North Carolina]," Lemly says. "These rules still allow surface impoundments of coal ash, which is really the root of all evil in terms of fish and wildlife damage that we've seen for many, many years."

Guilford College students, above, in front of the retired Dan River Steam Station during a river outing with the Dan River Basin Association in 2013. The association has long promoted citizen water quality testing as a vital component of healthy waterways. Photo by Brian Williams

No effective controls prevent coal ash from blowing into the neighboring community at this combustion waste landfill, pictured left, near the Cane Run power plant in Jefferson County, Ky. Photo courtesy Kentuckians For The Commonwealth

Familiar Disappointments

Under the new federal rule passed this December, coal ash disposal will now be held to safety standards similar to those for household trash — and that's an improvement. Unlike municipal landfills, coal ash waste sites were not historically required to have liners and, consequently, many don't. The limited available data indicates that nearly all unlined ponds are seriously impairing nearby surface and groundwater with toxic levels of pollutants such as arsenic, lead, mercury and selenium.

"The EPA spent years developing this rule and turning up lots of evidence on how dangerous coal ash is," says Pete Harrison, an attorney for the nonprofit Waterkeeper Alliance. "In the end, they gave in to intense political pressure and turned in an extremely weak and minimally enforceable rule."

Although the federal rule sets minimum standards for the disposal and monitoring of coal ash, the EPA will neither enforce these regulations nor require states to do so. If a state chooses not to adopt the rule, the only enforcement will be through citizen litigation after a problem has already occurred.

States are free to take greater initiative and craft more restrictive standards, though on that front, North Carolina stands alone. Unlike the federal rule, the North Carolina Coal Ash Management Act could put an end to the nationally popular method of coal ash disposal — storage in unlined, wet surface impoundments — and the state will oversee enforcement.

But while all *new* coal ash waste produced by Duke Energy must be dried and stored in lined landfills, how the state law will address the utility's existing 33 unlined surface impoundments remains to be seen. The state rule requires all coal ash ponds to close by 2029, but so far, only four are marked as high-priority and slated for relocation to lined landfills.

Closure plans for the other 29 sites, to be announced by the end of the year, may permit ash to remain in unlined ponds with an impermeable clay cap installed on top. This cap-in-place type of closure, also permitted by the federal law, could allow toxic waste to leach into groundwater indefinitely.

Another unresolved problem is where to relocate coal ash from Duke's ponds that are being emptied out. The utility is already grappling with this issue at its four high-priority sites. Current plans to haul millions of tons of ash to landfills in Chatham and Lee counties have proven controversial, and residents continue to rally in opposition.

Continued on next page

Despite the status of Duke Energy's Belews Creek coal ash pond as the largest in the state, this site, located just 35 miles upstream from the Dan River spill site, is not slated for high-priority cleanup. On Jan. 31, local grassroots group Residents for Coal Ash Cleanup and Appalachian Voices gathered to protest continued inaction. Photo by Jaimie McGirt

Coal Ash

Continued from previous page

Chronically Lax Oversight

Sites such as the Dan River are just the tip of the ashburg — a word used to describe the hulking masses of coal ash that decorate the scenes of spills. Although the exact number is unknown, more than 1,000 coal ash disposal sites are located in 37 states.

According to a 2011 analysis of state regulations by the nonprofit law organizations Earthjustice and Appalachian Mountain Advocates, some of the most dangerous and least-regulated ponds are in Appalachia. Low numbers of water quality violations in Kentucky may seem to indicate otherwise until considering that, as has been the case in most states, there are no groundwater monitoring requirements for coal ash disposal sites in Kentucky.

In Tennessee, more than six years have passed since a poorly constructed dam at the Kingston Fossil Plant collapsed and unleashed more than one billion gallons of coal ash across hundreds of acres and into two rivers. State officials have yet to enact even the most basic of regulations, such as annual inspections of massive containment dams like the one that failed.

Although this historic 2008 spill prompted the EPA to promise the nation's first coal ash rule, it was a 2012 lawsuit brought by a coalition of environmental groups — including Appalachian Voices, the publisher of this paper — that brought the EPA to fulfill this promise in 2014.

Even if the rules had arrived sooner, however, it's unlikely the new regulations could have prevented last year's disaster on the Dan River. Final wording of the federal rule — which, at press time, had yet to be published — suggests that it would not allow the EPA to require the removal of coal ash from inactive ponds at shuttered facilities like the one that spilled.

No rule can mend the botched cleanup of the Dan River, which did not begin in earnest until six months after the spill. "The coal ash is now too buried by sediment to ever fully remove," remarks Williams from the Dan River Basin Association.

Only about six percent of the coal ash was removed, but, with the ash now covered, Williams says water tests no longer show any levels of coal ash contaminants such as arsenic and mercury. This means the river is safe for recreational use such as paddling, but local residents remain concerned about the inevitable arrival of annual winter floods, which will stir up the coal ash and sweep it across adjacent farmlands.

Another concern is the gradual buildup of toxic contaminants in fish and wildlife. During the initial impact, many bottom-dwelling macroinvertebrates such as mussels, clams and crayfish were choked by the coal ash, and Williams has little doubt that conditions will worsen over time.

"There's still a thousand-plus tons of coal ash in the river, so for the EPA to say [the river's] back to pre-spill conditions is totally irresponsible," Williams states.

Citizen Enforcement

One widely praised aspect of the federal rule is a requirement for all coal ash sites to install water quality monitoring wells within the next two years and disclose this data online in order to aid citizen enforcement.

"In some Southeast states right now, it can be next to impossible to get all the information about a given facility and understand what's going on," explains Harrison of Waterkeeper Alliance. "If you want records that should be public under federal law, you can't go to a website like in North Carolina, you need to go to the agency office and stand there all day with a scanner and huge boxes of hard copy discs."

Since North Carolina's system was put in place in 2010, reports have revealed that sites at all 14 of Duke Energy's coal-fired power plants have been polluting local water sources. This pre-existing water quality data for North Carolina sites may require the state to close coal ash impoundments earlier than current state-mandated deadlines because, once groundwater violations are discovered, federal law requires the facility to close within five years.

But, as Harrison warns, "It's not quite so cut and dry. The federal law also provides second chances for the company to demonstrate that it has the problem under control in some other way."

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To discuss the evolving impacts of coal ash, join our upcoming webinar conversation this April with a panel of experts including Amy Adams, North Carolina campaign coordinator with Appalachian Voices and a former regional supervisor for the N.C. Department of Environment and Natural Resources. Visit appvoices.org/webinars

Walking the Walk of Preservation

Experiencing Appalachia's Past, One Frontier at a Time

At Cumberland Gap National Historical Park, reenactors commemorate the first crossing of the gap by European settlers in 1775. The trail marker denotes the beginning of the Boone Trace pathway at the park. Photo by Roberta Mills, Boone Society, Inset photo by Sam Compton

By Matt Grimley

A small clay bead. A hunk of carved soapstone. A shattered pipe.

"You can't put a shovel in the ground at the Berry Site without finding artifacts," says David Moore, an archaeology professor at Warren Wilson College outside of Asheville, N.C.

Before Sir Walter Raleigh or the Puritans, there were the Spanish. Since nearly the start of the 1500s, they had marched through swamps and forests into the heart of the yet-to-be United States. They were fresh from conquests of native populations in Central and South America, and they wanted more. More state-level societies to manipulate for their economic gain. More silver. More gold.

In 1566, Juan Pardo and his troops built six forts as they plowed from the Carolina coast to the Appalachians. Historians knew the locations of these forts from Spanish documents, but no supporting archaeological evidence had ever been found.

That is, until a couple years back. The Berry Site, located on a tributary of the Catawba River near Morganton, N.C., was home to the Native American town of Joara, as well as Fort San Juan, which the Spanish built in 1567. After digging for years, Moore's group finally uncovered a ditch outlining the fort, giving life to what they had only read of.

Now they had to show it to the world and keep it safe.

"Preservation in archaeology is a tricky subject," says Moore. "For us, preservation involves as much education as anything else."

Moore's archaeological team is composed of students and fellow academics. They work mainly with private landowners who are willing to preserve their sites and allow access to researchers.

History, it seems, is lost every day: already, Christmas tree nurseries and other landscaping projects have ruined about 25 potential research sites in the area. Moore notes that Exploring Joara, an educational archaeology nonprofit that he helped to create, brings in school groups and kids to their dig sites. The group's interpretive center has also helped educate local governments, businesses and people, totaling more than 10,000 contacts just last year. He hopes that Joara will encourage local residents to think back on the land and its layered history, and to help conserve it.

After building their fort, the Spanish lasted only 18 months in the Appalachians. The native people, realizing their gifts of food and services would not be reciprocated, burned down the strange forts and killed all but one soldier. The Spanish failure opened the way for the English and the dramatic morphing of the American frontier.

The Sense for Change

At the center of preserving history is the growing market of heritage tourism, where travelers schedule their vacations around historical landmarks. It's a booming industry, according to a 2009 study from the U.S. Cultural and Heritage Tourism Marketing Council, with more than 110 million heritage-driven tourists pumping $192 billion into the U.S. economy every year.

Many communities find that investment into landmarks yields more money. The Appalachian Regional Commission reported in 2010 that every 40 cents the federal agency spent on tourism projects spurred another dollar in private investment. In the case of Burke County, N.C., for example, where Joara and Morganton are located, tourism jobs increased 5.8 percent in 2013 alone. That's the largest jump in such jobs out of any North Carolina county that year, says Ed Phillips, director of the Burke County Tourism Development Authority.

History abounds underfoot, and yet material preservation is often facilitated only by a single mean: ownership.

"To control your own destiny," says Rick Wood, Tennessee state director of the Trust for Public Land, "you have to buy a piece of property." Landowners, he says, can also protect the land in perpetuity through an easement, a legal arrangement where an organization preserves the property and the landowner receives money or tax benefits in return. Bequesting land in a will to a favored organization will also do the job of preservation.

Wood notes that even in rural places, historical preservation garners growth. In Charleston, Tenn., for example, the community has invested in trails and a greenway around its historical Fort Cass, which served as an internment camp for Cherokee, Creek and enslaved African Americans at the beginning of the Trail of Tears in 1838. Of the 15,000 people who were forcibly removed from their homes, it is likely that several thousand died in such internment camps or along the cruel march to their new home in Oklahoma.

Warren Wilson College field school students help uncover Appalachia's 16th-century Spanish history at the Fort San Juan excavation site near Morganton, N.C., in June 2014. Photos courtesy Warren Wilson Archaeology Lab

History, whether good or bad, provides a sense of place. And more and more, Wood says, communities want to build their own place in history.

What Could Have Been

It winds through the rolling farmland and forests of southern Ohio, lifting just above the Earth, stretching to 1,348 feet long and weighing innumerable tons.

The Serpent Mound, under consideration for UNESCO World Heritage site status, is the world's largest surviving example of an animal effigy mound. A huge number of original earthworks in Ohio — placed along livable rivers and arable valleys — are already destroyed.

Serpent Mound, thankfully, was protected from the get-go, says Crystal Narayana, program director for the Arc of Appalachia, which manages the site as well as thousands of acres of regional wilderness and historical sites. The mound was made a publicly-accessible archaeological park in the late 1800s, and has been in the hands of Ohio History Connection for more than 100 years. Dense forest buffers the 60 acres and a tributary of Ohio Brush Creek, home to endangered fish and mussels, from potential development.

A few earthworks exist in government or nonprofit hands, Narayana says, but many lie with private owners, who may not always have preservation in mind. Twice, she says, the Arc of Appalachia has stepped in to save earthwork sites from the auction block. Her organization, which has saved 4,000 acres of wilderness and historical sites since 1995, will soon start fundraising to buy another site back from a mining company.

"The people who live here are just not very aware of their significance, and that is unfortunate," she says in an email.

More than 40,000 visitors come every year to Serpent Mound, a little more than an hour east from Cincinnati — which, incidentally, was built over an earthwork. Tourists at the serpentine effigy can visit a museum, walk on trails and take in the panoramic view from an observation tower.

Unlike other earthworks, Serpent Mound was not a burial site. It holds no attributable artifacts. Instead, current research suggests it may have been built to direct spirits of the dead to farther-on resting spots. Nearby conical burial mounds suggest the builders may have been from the Adena Culture or the Fort Ancient Culture, whose timeframes run separate from each other by more than a millennia.

"I think the modern people of Appalachia have a lot in common with the ancient Native Americans," Narayana says. They lived off the land, hunted, gathered nuts and grew gardens. Native American blood persists in the region, though lessened from earlier times, and preserving this place of mystery may be just one more important step to connecting with the shared past.

Lost Time

The race to save history has always been a race against time. Stories fade without frequent telling, and for Sam Compton, who is married to a descendent of Daniel Boone, the retelling of Boone's story is personal.

Compton, as president of the Boone Society, wanted to make a more perpetual reminder of his backcountry legacy. Using his background as a businessman, he began the process of making a heritage trail called the Boone Trace Corridor.

The corridor of roadside stops would follow the footsteps of famous frontiersman Daniel Boone. In 1775, on the eve of the country's independence, he was paid by the Transylvania Company to take 30 axmen and clear a path for settlers from the Cumberland Gap about 119 miles north to Fort Boonesborough, Ky.

The trail currently passes a handful of historic cities, state parks and museums. Under Compton's guidance, and with help from more than 120 state and local partners, the path will expand to include more sites and a series of self-guided education stations along the road. "The more places that you can create within your county, [the more the tourists will] slow the traffic down and they'll spend more money in that county," says Compton.

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TRAILING THE PAST

Lewis & Clark Eastern Legacy Trail:

Though still needing a final study and congressional approval, a proposed road route would follow the pair's fascinating trip back to Monticello and Washington, D.C, from Louisville, Ky. Did you know Lewis took an astronomical observation at the Cumberland Gap in 1806? Or that Clark was a month behind Lewis because he was courting a Louisville woman?

Trail of Tears:

A section of the the Unicoi Turnpike Trail — one of the oldest known trails in North America — was used by prehistoric Americans, later tribes and European settlers before serving as part of the Trail of Tears for Cherokee and Creek tribes. A two-and-a-half mile segment of the trail was recently transferred to the U.S. Forest Service for public access and preservation.

Overmountain Victory National Historic Trail:

The Overmountain Men of the Appalachian frontier won the Battle of Kings Mountain and helped win the Revolutionary War. Nowadays, you can follow these frontiersmen's footings through 330 miles of roadways or a separate 87 miles of walkable paths from Virginia to South Carolina. Fun enough to start another Whiskey Rebellion!

Photo by Malcolm Wilson

Bristol Museum Celebrates Birthplace of Country Music

By Megan Northcote

When Salt Lake City native Thomas Richardson took a family trip to the city of Bristol, on the Virginia-Tennessee line, in 2003, he had to admit he was a little disappointed.

Having grown up in a family of "old-time music living-room pickers," Richardson had hoped his cross-country journey to a town where country music got its start would have had a little more to show for itself than a downtown mural depicting a smattering of country music greats.

Last August, Richardson, who holds a doctorate in ethnomusicology, got his wish with the opening of The Birthplace of Country Music Museum in Bristol, Va. where he currently serves as curator of education and outreach.

The museum is housed in a historical brick building just one block away from the recording studio of the renowned 1927 Bristol Sessions. "[Those sessions] were the first, most commercially successful recordings in the history of country music," museum Executive Director Jessica Turner says.

In 1927, Ralph Peer, a record producer from the Victor Talking Machine Company in New York, traveled to Bristol, a booming railroad town where regional musicians often jammed together while waiting for the next train. In Bristol, Peer set up a portable recording studio inside the Taylor-Christian Hat Company on State Street.

Over the course of 10 days, he recorded 76 songs by 19 different acts originating from New York to Atlanta, including yodeling sensation Jimmie Rodgers, American folk group The Carter Family, and Ernest Stoneman, the recording veteran who encouraged Peer to travel to Bristol.

While many of the acts were pre-arranged, Richardson describes how A.P. Carter, founder of The Carter Family, just happened to see an ad recruiting local talent. Together, A.P., his wife, Sara, and his eight months pregnant sister-in-law, Maybelle, traveled 20 miles by truck in the heat of summer to record in Bristol, quickly becoming one of the most influential groups in country music history.

Yet, not all acts from the Bristol Sessions have endured such a lasting legacy. While Peer primarily produced "hillbilly records" featuring white, Southern talent, the museum does highlight a little-known record by El Watson, the lone African American act recorded at the 1927 session.

At the museum, visitors can watch the introductory film, "Bound to Bristol," narrated by Johnny Cash's son, John Carter Cash. Visitors can then hear all of the original Bristol recordings and learn about changes in technology that made the sessions possible.

The number of original instruments on display include a Gibson harp guitar, Maybelle Carter and Jimmy Rodger's guitars, and an autoharp made for A.P. Carter's daughter, Janette, built from wood reclaimed from her father's old grocery store.

But, Turner says, the last thing the museum wants to do is "museumize" the living musical legacy these Bristol Sessions gave to the region.

"We want visitors to see that our musical heritage is a living tradition, and not just history," Turner says. "Early country music is still very accessible to people, and we want our museum to help visitors relate to it."

For this reason, the museum also includes the ultimate music "playroom," featuring a listening station of contemporary artists' remakes of these old-time tunes, a mixing station for visitors to recreate the Bristol Sessions songs, and a karaoke booth for guests to belt out the original lyrics — or yodels — as these artists would have done in 1927.

"I always thought this room would be the kids' room, but I couldn't have been more wrong," says Richardson, who has caught grandmas pulling their grandkids into the karaoke booth.

This spring, the museum's own WBCM-LP radio station and recording studio will begin broadcasting live from the 1920s building, and will feature old-time and bluegrass tunes around the clock.

The seatless Immersion Theatre exhibit presents an open dance space that invites visitors to partake in the ultimate music festival being shown on the curved screens surrounding them.

"Today, [visitors and] musicians who aren't country music musicians are still being inspired by and learning from the artists who recorded at the Bristol Sessions," Turner says. "We want to continue that tradition."

Virginia Governor Terry McAuliffe listens to a Bristol Sessions tune with Jessica Turner, the museum's executive director. Photo by Jonathan McCoy

COMING UP

"New Harmonies" Exhibit
MARCH – SEPTEMBER

On loan from the Smithsonian, this exhibit highlights all the different musical genres, from gospel to Cajun, that have influenced the sound of American roots music. Located in the Special Exhibits Gallery on the first floor of the museum.

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www.birthplaceofcountrymusic.org

Smoke in the Hills

Continued from p. 9

Heat, doesn't entirely buy the industry argument, however, but is well aware that many families cannot afford to upgrade their stoves.

To alleviate this problem while improving air quality, the EPA sponsors wood stove change-out programs. Bill Beachy, who facilitated such a program in Christiansburg, Va., upgraded 20 low-income families' stoves, some made of tin and burning whatever was available, to modern, efficient wood stoves.

In rural central Appalachia, wood heat is especially used for its low-cost benefit. "There are high levels of poverty in this part of the country," says Tricia Metts, associate professor in the Department of Environmental Health at East Tennessee State University. "We don't see a lot of EPA-certified, modern and properly maintained woodstoves."

Metts co-authored a survey of census data to gain better insight into the connections between poverty, household air pollution and burning solid fuels, such as wood and coal. The researchers assessed poverty levels and solid fuel use as a primary heating source across the country, and they found a high coincidence of the two. Out of 117 U.S. counties designated as high priority for research on health effects of household air pollution from burning solid fuels, 34 were in the Appalachian region.

Modern designs have increased wood stoves' efficiency, but some also increase impact on the environment and health. The EPA's new rule brings these new types of stoves under regulation. Pellet stoves, which burn processed sawdust compacted into pellets, are cleaner and more efficient, and the pellets are taken from a waste stream. A wood-fired furnace or outdoor wood boiler, which transfers the heat from the stove through ducted vents or water pipes throughout the house, increases the heating efficiency but has a higher particulate matter output. Learn more about wood stove efficiency, burn practices and change-out programs at epa.gov/burnwise.

New Wood Stove Standard

In response to a lawsuit filed by seven states whose air quality is impacted by wood stove use, the U.S. Environmental Protection Agency released a final rule updating wood stove standards on February 4. The EPA rule greatly reduces the amount of particulate matter allowed to be released through a chimney and allows five years for manufacturers to redesign their products to meet compliance.

Existing wood stoves in homes are exempt, so the impact on air quality will not be noticeable until homeowners upgrade their stoves.


Split wood dries faster. No wider than six inches is what the EPA recommends.

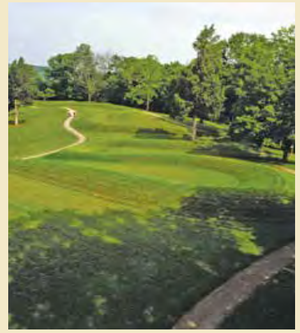
Preserving History

Continued from p. 13

Tourists are no longer the byproduct of historic preservation; they are mechanisms by which it happens. As such, Compton is focused on making an adventure of the Boone Trace. Towns and highways block a fully walkable trail such as the Appalachian Trail, but the corridor can still step off to dramatic destinations. Just off the road, beyond the education stations and history signage, visitors could step in the exact footsteps of Daniel Boone, canoe the rivers, walk the trails and take horses into the backcountry. Activity becomes meaning felt through cultural memory, and the end result is something that everyone can keep.

"There would be no Oregon Trail or Santa Fe Trail or Gateway to the West in St. Louis had it not been for Daniel Boone making those first steps," says Compton.

He says that Boone is already vanishing from school curriculums. The Kentucky Department of Education is working on new Daniel Boone lessons, but he's still worried that it won't be enough.


View of the ancient Serpent Mound in southeast Ohio. Photo courtesy Arc of Appalachia

History becomes old, tired. Kids will stop learning about Boone, and then one fine day, he's gone. One of the society's Boone impersonators, speaking about the disappearance of frontier history, once said to Compton, "It's almost like God created man and then there was the Civil War."

Like all history — that which you can still hear or feel or touch — it was and is so much more than that.

An Appalachian Bookshelf

Appalachia's triumphs and tragedies, its beauty and mystery, and its people's tenacity, love and good humor have long been enshrined in fiction. This year, the stories of the region's struggles with coal are reaching a national audience thanks to John Grisham's bestselling "Gray Mountain," a legal thriller that pits a small but dedicated team of individuals against a rapacious coal industry. Also spreading awareness, the debut novel from Christopher Scotton weaves the impacts of mountaintop removal mining into a poignant story of humanity and healing.

Across the region, writers are offering brilliant new work of all stripes, including several don't-miss endeavors featured here. To find more of the best recent writing on Appalachia, we suggest a visit to your local librarian!

Gray Mountain

By John Grisham

It's 2008, ten days after the fall of Lehman Brothers, when 29-year-old Samantha Kofer is laid off from her profitable but uninspiring career at a New York law firm. Within days she finds herself traveling the hairpin roads of southwest Virginia to intern with the Mountain Aid Legal Clinic, a nonprofit law firm in the fictional town of Brady, Va., nestled deep in Appalachia's coal country.

There, while learning to use her legal training to help rural clients struggling with debt, domestic violence and substance abuse, Samantha is soon confronted with the fallout of the region's dominant industry. A skilled — and charming — trial lawyer introduces her to the environmental devastation of mountaintop removal coal mining, the dangers of careless coal trucks, and criminally negligent mining practices that have deadly consequences for local families. To her horror, she also witnesses the ways that companies can manipulate the law to deny federal black-lung benefits to dying miners.

Amidst all this, the local residents are genuine and welcoming. Samantha lets her guard down and finds a sense of family and even a bit of romance. But after the shocking death of a main character, she finds herself drawn ever more deeply into a threatening, murky struggle against Big Coal and must decide whether to follow the allure of her former big-city lifestyle or to stay in Appalachia and fight alongside her new community.

Fans of John Grisham expect a good-guys-versus-bad-guys legal thriller, and "Gray Mountain" delivers. Readers will find themselves rooting for the locals, and, like Samantha, shocked that our legal and regulatory systems allow the coal industry to get away with such heinous violations.

Though "Gray Mountain" is a work of fiction, the crimes inflicted by the coal companies on nearby communities are based on reality. Grisham toured the area near Whitesburg, Ky., with attorneys from Appalachian Citizens' Law Center, a nonprofit law firm, and also spoke extensively with Dr. Matt Wasson of Appalachian Voices, the publisher of The Appalachian Voice.

"Grisham expressed keen interest in understanding and accurately representing the damages that surface mining cause in central Appalachia," says Wasson. "His novel has exposed readers across the country to these issues, and we hope it will inspire readers to support the fight for justice in these communities."

At press time, Gray Mountain had spent 14 weeks on the New York Times Best Sellers list for fiction. — *Review by Molly Moore*

Joe Potato's Real Life Recipes

Tall Tales & Short Stories

By Meriwether O'Connor

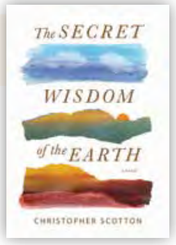
Characters bold and bright populate Meriwether O'Connor's vivid and often humorous short stories. Rooted in rural Appalachia, these tales feature animals, humans and plants that celebrate country living while being brave — or perhaps stubborn — enough to stand unflinching in the face of hardscrabble realities.

O'Connor's writing is frank, entertaining and imbued with a sense of magical realism. In an interview with Story Circle Book Reviews, O'Connor, who was raised in Kentucky, says that "'Joe Potato fits into what is now called 'Grit Lit,' a more down-to-earth version of Southern Gothic." A decidedly non-traditional recipe follows each tale, and, like her characters, the recipes don't take themselves too seriously, either.

"Joe Potato's Real Life Recipes" is nominated for the Weatherford Award, and O'Connor plans to release another collection next year. — *Review by Molly Moore*

The Secret Wisdom of the Earth

By Christopher Scotton



The debut novel by Christopher Scotton is a coming-of-age story that takes familiar themes — tragedy and the quest to find healing — and explores them with the backdrop of a central Appalachian community beset by mountaintop removal coal mining.

Set in 1985 in the fictional Medgar, Ky., a richly conceived mountain hamlet populated by colorful characters, "Secret Wisdom of the Earth" traces the summer 14-year-old Kevin Gillooly spent at his mother's childhood home in the mountains as he comes to grips with the tragic death of his younger brother. Exploring Medgar and the surrounding hills, Scotton uses prose at once elegant and approachable to weave together the stories of longtime residents, close friends and unabashed enemies, including many struggling with whether or not to abide by the bounds of tradition.

In mending his broken life, Kevin develops deep ties with some folks including his stoic grandfather, Pops, and Buzzy, an adventurous local boy with whom he becomes fast friends. Others, like Bubba Boyd, a prideful and blustering coal baron, offer powerful lessons too. The wiser respect the land. The shortsighted concentrate only on what can be taken.

"Men like Bubba Boyd think the Earth owes them a living," Pops explains. "They take whatever wealth they can from the mountains and move on."

Though not about environmentalism on the surface, an environmental ethic permeates the novel and gives readers perspective on the threats posed by energy extraction in Appalachia today.

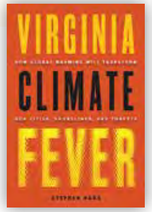
At first, mountaintop removal is depicted as a pervasive but rarely-seen evil encroaching on Medgar as Bubba Boyd grabs up more and more land surrounding the town. Ultimately, however, it's the friction created in the small community by mountaintop removal that precipitates a story of family, friendship and overcoming odds that will change Kevin's life and the town of Medgar forever. — *Review by Brian Sewell*

Read an interview with Christopher Scotton at appvoices.org/scotton

Virginia Climate Fever:

How Global Warming Will Transform Our Cities, Shorelines, and Forests

By Stephen Nash



As visiting senior research scholar at the University of Richmond, Stephen Nash explores the stunning local aspects of climate disruption. This digestible work employs enough facts and visuals to demonstrate the amount of damage that global warming promises for the Old Dominion.

Nash, a journalist, takes the reader with him as he travels around Virginia, talking with scientists, citizens, officials and business people. Through these encounters, Nash reveals that our temperature averages will gradually rise during the next hundred years, essentially turning Virginia into present-day Alabama. Graphs show increasing numbers of days with temperatures surpassing 90 degrees, with drastic consequences for life-forms from trees to fish, and to both rural and city-dwelling humans.

Nash's most compelling passages deal with sea level rise and the increasingly formidable threat of property destruction in the Hampton Roads region. This trend could result in climate refugees as limited financial resources cover only the costs of protecting high-value infrastructure and leave homeowners behind.

Throughout the book, Nash compares two scenarios of human response to global warming, labeled "business as usual" and "work and hope," while maintaining that Virginians are not entirely the masters of their fate because global warming is a problem that requires a global response.

This book is fact-based and never overstated, making it mandatory reading for Virginians seeking a primer on a complex topic. — *Review by Hannah Wiegard, Appalachian Voices Virginia Campaign Coordinator*

Appalachian Toys and Games from A to Z

By Linda Hager Pack and Pat Banks

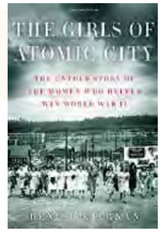
This colorful and educational book teaches children about a simpler time when dolls were made out of corn husks and apples, and games relied more on imagination than electricity.

With the help of Pat Banks' watercolor illustrations, Linda Hager Pack introduces some of the games that were played and the toys that were popular in nineteenth-century Appalachia. In an age when most children see a television or computer screen as their primary source of entertainment, "Appalachian Toys and Games from A to Z" will inspire young readers to get outside and play a game of Fox and Hounds or Kick the Can. — *Review by Dac Collins*

The Girls of Atomic City:

The Untold Story of Women Who Helped Win World War II

By Denise Kiernan



Back when African Americans and Caucasian Americans couldn't drink from the same water fountains and women were an anomaly in the workforce, a team of young women unknowingly helped enrich fuel for the world's first atomic bomb in the hills of East Tennessee.

In this New York Times bestseller, author Denise Kiernan unravels the secrets of Oak Ridge, Tenn., the administrative headquarters of the Manhattan Project. The classified town, cloaked in secrecy, was practically built overnight to house 75,000 people by the end of World War II. Through dozens of conversations with surviving workers and residents, Kiernan reveals an astonishing history. — *Review by Meredith Warfield*

Read an interview with Denise Kiernan at appvoices.org/atomic-city

Turning Carolina Red:

Reports from the Front of an Energy Culture War

Book by the Staff of Environment & Energy Publishing

Five years ago, North Carolina veered from being a fairly moderate, progressive state and took a hard right when the Republican party gained control. The eBook "Turning Carolina Red: Reports from the Front of an Energy Culture War" examines the forces that shaped the sudden change in the state's political ideology. With this innovative eBook, Environment & Energy Publishing provides a comprehensive look at how this political shift is affecting environmental and energy policies in the state and across the country.

Opening with the catastrophic Dan River coal ash spill in 2014, the book gives a detailed account of how the disaster influenced environmental policies in the new paradigm and explores the broader context of electricity generation in the state.

The book also studies the players shaping policy, from members of the General Assembly and state regulators, to environmental groups and conservative think tanks. Throughout, the authors weave a cautionary tale of the power of money in politics. You won't find a better account of the changes and impacts on North Carolina than this. — *Review by Amy Adams, Appalachian Voices N.C. Campaign Coordinator*

SELF-PUBLISHING:

A Modern Avenue for Appalachian Authors

By Dac Collins

Self-publishing is on the rise in today's progressive literary scene, and quite a few writers in Appalachia have foregone the traditional process of submitting their work to publishers in favor of publishing it themselves.

Julie E. Calestro-McDonald and Peggy Calestro self-published "Lost and Found in Appalachia" with the help of the CreateSpace Independent Publishing Platform, an online service. The paperback is a personal account of their road trips through central Appalachia, and the reader is given a glimpse of the region through photographs, anecdotes and hand-drawn maps.

Randall A. Wells self-publishes "Floydiana" as a serial book on his website, randallawells.com, which has been up and running since 2013. His inspirations for "Floydiana" are the events, people, places and scenes that characterize Floyd County, Va. Wells currently has around fifty chapters and counting.

While working at the Appalachian State University bookstore in Boone, N.C., Hugh Howey self-published his science fiction novel, "Wool," as an eBook in 2011. By 2012, the novel was on The New York Times bestseller list, and Howey was able to sell print rights to Simon & Schuster while retaining the e-book rights. Howey advocates that self-publishing can be more lucrative than the literary establishment would like writers to believe, and he has already self-published and released "The Shift Omnibus," a prequel to "Wool."

Looking on the Bright Side, States Seek Solar Benefits

By Eliza Laubach

U.S. jobs grew nearly 20 times faster in the solar industry than the whole economy's national average, reports The Solar Foundation. Recent findings by the nonprofit projects a slowdown by 2017, when a federal tax credit is scheduled to monumentally shrink. In the meantime, however, some southeastern states are catching the rays of the burgeoning industry with policies encouraging growth in both privately-owned and utility-scale solar.

The Georgia House of Representatives is expected to pass a bill that will remove a major economic barrier to rooftop solar for homes and businesses: the lack of financing options. State law currently outlaws third-party financing, when an investor buys a solar panel and sells the electricity to the host site at a reduced rate. The bill would allow this type of solar leasing, thus eliminating the need for up-front investment when a utility customer considers buying a solar panel.

Net metering, a model that allows a rooftop solar producer to sell excess electricity back into the grid, was bolstered in South Carolina this December. Utilities agreed to compensate rooftop solar producers at the same rate they charge for electricity. The agreement also restricts utilities from levying additional fees on rooftop solar owners.

A tactic utilities say offsets their cost of connecting solar panels to the grid, standard fees discourage potential rooftop solar installations. The Virginia Utilities Commission allowed Appalachian Power Company to levy such a fee in 2014. Homeowner associations across Virginia also tried to block rooftop solar installation, for aesthetic reasons, despite a bill passed last June banning them from doing so.

In North Carolina, the Utilities Commission renewed an order that requires state utilities to provide standard contracts when buying electricity from independent solar installations that generate five megawatts or less. Duke Energy and Dominion Power, meanwhile, had pushed to lower that threshold to installations 100 kilowatts or less. Solar energy advocates argued that negotiating custom contracts with Duke and Dominion would cripple independent solar development in the state. Duke owns only 4 percent of the solar energy in its portfolio, according to Charlotte's WFAE News.

Photo courtesy O2 Energies

Last month, The Tennessee Valley Authority announced that it will offer its version of a standard contract for up to 100 MW of renewable energy development. Projects between 50 kilowatts and 20 megawatts are eligible, and the contracts last for 20 years. While solar energy represents only 1 percent of nationwide electricity generation, the solar installation sector is already larger than familiar fossil fuels, such as coal mining, oil and natural gas, The Solar Foundation report found.

Coal Ash Rules

Continued from page 11

The validity of water quality data provided by the companies is also an important consideration. Aside from more notorious cases in which companies were caught altering water pollution reports, Judy Petersen, executive director for the Kentucky Waterways Alliance, says that accuracy is an issue. The federal rule requires a minimum of four wells, but that data's usefulness depends on the location and depth of the wells, as well as whether the state agency has the resources to evaluate a company's monitoring plans.

Continued Challenges

While representatives for utilities across the country supported the EPA's decision not to classify coal ash as hazardous waste, they claim two aspects of the federal rule could prove particularly troublesome for estimating costs associated with coal ash.

According to Harrison, some members of Congress have since proposed changes to address these concerns, such as prohibiting the EPA from ever returning to the rule to relabel coal ash as hazardous waste.

Combined with this effort is a push to limit legal avenues for citizen enforcement by requiring all states to adopt and enforce the federal rule, which would shift enforcement responsibilities to state agencies. In a recent testimony before the U.S. House Subcommittee on Energy and the Economy, Frank Holleman, senior attorney with the Southern Environmental Law Center, expressed his concerns about this proposal.

"We have seen, over and over again, that state agencies will not effectively enforce laws [related to coal ash disposal]," stated Holleman. "Without the citizen right to enforce the law, local communities cannot count on state agencies to effectively protect them."

However the rules are enforced, Petersen of the Kentucky Waterways Alliance notes that her state faces additional challenges unaddressed by the law. Approximately 50 percent of Kentucky is comprised of karst, a rock formation easily dissolved by water that forms into extensive networks of caves and sinkholes.

"[Kentucky] coal ash sites never fill up, and part of the reason is because they're leaking into the ground," says Petersen. "If a karst cave development forms a sinkhole underneath a coal ash impoundment, it doesn't matter if there's a liner — it'll take the liner and everything else with it."

Salem College biology students joined the Dan River Basin Association this January to help collect sediment samples for microbial analysis. Photo by Brian Williams

The Final Judgement

Some critics, such as The Center for American Progress, have suggested that implementation of coal ash rules could be problematic in the 39 states where judicial elections occur. Opportunities to "buy influence in the state courts" have continued to expand in recent years. A report published by the center last November found that North Carolina's court was more likely to rule in favor of special interest groups who had given the largest campaign contributions to judge nominees.

In the long-run, Williams believes no rule will be a strong force for change until people reconsider how they value and monitor water quality. "We demand cheap power and energy," he says. "Well, water is gold. It's time we demand clean water, and more water protection."

Appalachia's Political Landscape

Energy and Environment Star in First Act of New Congress

By Molly Moore

The 114th Congress had barely opened its doors when the subject of climate change rolled up to Capitol Hill, unpacked its suitcase, and settled in for what appears to be a long stay in federal politics this year.

"The best scientists in the world are all telling us that our activities are changing the climate," President Barack Obama said during his State of the Union address. This summer the U.S. Environmental Protection Agency will move forward on a key element of the president's climate change plan by finalizing the first limits on carbon dioxide emissions from power plants. In the fall, world leaders will gather for the potentially pivotal United Nations climate summit in Paris.

The first bill introduced during Senate Majority Leader Mitch McConnell's term, the Keystone XL Pipeline Act, would expedite the approval of the hotly contested pipeline and allow Canadian company TransCanada to send tar sands oil through America to the Gulf Coast. During the debate over the bill, which passed the Senate and received a veto threat from President Obama, senators submitted 247 amendments — mostly about environment and energy — and held roll call votes for 42 of them.

Among these votes were three statements on climate change. The Senate overwhelmingly passed a measure acknowledging that climate change is real, but one amendment affirming that human activities contribute and another suggesting that the United States should change its energy policy to reduce climate change both failed to achieve a 60-vote majority.

But the vast majority of the amendments proposed during the Keystone debate never saw a vote, and were likely written as signals to various agencies, industries and other groups that the Senate is interested in those topics.

One amendment introduced by Sen. Dan Coats (R-Ind.), was designed to prevent the Office of Surface Mining, Reclamation and Enforcement from completing their rewrite of the Stream Protection Rule, a regulation that limits mine waste in waterways. Even though senators did not vote on the amendment, it sends a clear message that Congress is likely to stay involved in the workings of federal agencies.

President's Budget Proposal Includes Boons for Appalachia

By Brian Sewell

Central Appalachian communities weathering coal's long decline would see a boost in funding under the White House budget released in February.

The Obama administration's 2016 budget calls for an additional $200 million per year over the next five years to restore dangerous, unreclaimed mines, mostly in the Appalachian region.

The budget proposal also includes $20 million to provide employment services and job training specifically to help laid-off coal miners and power plant employees transition to jobs in other fields. The Appalachian Regional Commission would see its $70 million budget grow by roughly one-third, with $25 million in new funding directed to communities "most impacted by coal economic transition" to support a range of economic development initiatives.

The president's proposed budget may never become law, but legislators are likely to debate the measures as Congress crafts its own budget proposals.

114TH 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		
	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	Fleischman (R) TN-03	S. Desjarlais (R) TN-04	V. Foxx (R) NC-05	P. McHenney (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	A. Mooney (R) WV-02	E. Jenkins (D) WV-03
HOUSE																
H.R. 351, the LNG Permitting Certainty and Transparency Act, would expedite the approval process for exporting natural gas. 277 AYES, 133 NOES, 23 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)	T. Tillis (R)		T. Kaine (D)	M. Warner (D)		J. Manchin (D)	S. M. Capito (R)	
S.1, the Keystone XL Pipeline Act, approves and expedites construction of the pipeline, which would transport crude oil from Canadian tar sands to Gulf Coast refineries and export facilities. 62 YEAs, 36 NAYs, 2 NV **PASSED**	✗	✗		✗	✗			✗	✗		✓	✗		✗	✗	
S.Amdt.3 to S.1 would promote energy efficiency in buildings and encourage energy efficiency for building tenants. 94 YEAs, 5 NAYs, 1 NV. **PASSED**	✓	✗		✓	✓			✓	✓		✓	✓		✓	✓	
S.Amdt.15 to S.1 would expedite the approval process for exporting natural gas. 53 YEAs, 45 NAYs, 2 NV. **FAILED**	✗	✗		✗	✗			✗	✗		✓	✓		✓	✗	
S.Amdt.71 to S.1 would expedite applications to drill for oil and gas on public lands. 51 YEAs, 47 NAYs, 2 NV. **FAILED**	✗	✗		✗	✗			✗	✗		✓	✓		✗	✗	
S.Amdt.75 to S.1 would provide communities whose drinking water could potentially be affected by a tar sands spill from the Keystone XL pipeline with an analysis of the potential risks to public health and the environment. 36 YEAs, 62 NAYs, 2 NV. **FAILED**	✗	✗		✗	✗			✗	✗		✓	✓		✗	✗	
S.Amdt.77 to S.1 would establish a national renewable energy standard that requires electric companies to provide a certain percentage of power from renewable sources between 2015 and 2039. 45 YEAs, 53 NAYs, 2 NV. **FAILED**	✗	✗		✗	✗			✗	✗		✓	✓		✗	✗	
S.Amdt.92 to S.1 would permanently reauthorize the Land and Water Conservation Trust Fund, which helps secure public access to public land for recreation. Does not specify a funding level. 59 YEAs, 39 NAYs, 2 NV. **FAILED**	✗	✗		✓	✓			✓	✓		✓	✓		✓	✓	
S.Amdt.113 to S.1 expresses the Senate's support for public lands and affirms that designation of federal public land should continue where appropriate. 55 YEAs, 44 NAYs, 1 NV. **FAILED**	✗	✓		✓	✓			✗	✗		✓	✓		✓	✗	
S.Amdt.29 to S.1 expresses the Senate's support for the scientific consensus that climate change is real and not a hoax. 98 YEAs, 1 NAY, 1 NV. **PASSED**	✓	✓		✓	✓			✓	✓		✓	✓		✓	✓	
S.Amdt.58 to S.1 expresses the Senate's support for the scientific consensus that climate change is real and human activity is a significant cause. 50 YEAs, 49 NAYs, 1 NV. **FAILED**	✗	✗		✓	✗			✗	✗		✓	✓		✓	✗	
S.Amdt.24 to S.1 expresses the Senate's sense that climate change is real, that human activity is a significant cause, and that climate change is already causing devastating problems so the U.S. should move away from fossil fuel use. *Senate voted on whether to table a vote on this amendment, so only 50 votes needed to pass.* 56 YEAs, 42 NAYs, 2 NV. **PASSED**	✗	✗		✗	✗			✗	✗		✓	✗		✓	✗	

White House Moves to Regulate Methane Emissions

By Brian Sewell

After years of scientific research pointing to methane's outsized contribution to climate change, the Obama administration will use its executive power to regulate emissions of the potent greenhouse gas from oil and gas productions and pipelines.

In addition to developing the first regulations to limit methane emissions, the White House described a set of actions it will take, beginning this year, to achieve a reduction in overall U.S. emissions by up to 45 percent by 2025. Without action, methane emissions are expected to rise dramatically over the next decade.

Several federal agencies will be involved, officials say, each targeting different aspects of the oil and gas industry. The Bureau of Land Management, for example, will update standards to reduce wasteful flaring of natural gas, which is primarily methane, from oil and gas wells on public lands. And the Department of Transportation will propose new natural gas pipeline safety standards that are expected to lower the amount of methane leaked during transport.

Presented as the most significant step the White House has taken to address climate change since releasing rules to limit carbon dioxide, the rules were nonetheless met with some doubt by environmentalists. They apply only to new and modified oil and gas systems and will mostly rely on voluntary efforts from oil and gas companies.

But, under the Clean Air Act, once rules are developed targeting future sources of a specific pollutant, the EPA is legally obligated to issue rules to cut emissions from existing facilities spewing that pollutant too.

Oil and gas companies argue that their financial motivation to reduce leaks eliminates the need for regulation. But energy analysts say contractors and smaller companies along the supply chain, who don't actually own the gas, lack incentive to invest in better equipment and monitoring.

The escaped gas represents more than just lost profits. Methane is a major contributor to global climate change and is the second most prevalent greenhouse gas after carbon dioxide.

Methane makes up 9 percent of U.S. greenhouse gas emissions, about one-third of which comes from oil and gas production. Although its lifespan in the atmosphere is much shorter than that of carbon dioxide, methane's contribution to climate change is 25 times greater than carbon dioxide over a 100-year period.

Getting methane emissions in check could be more urgent than previously thought. A 2014 study published in Science warned that methane may be leaking from oil and natural gas drilling sites and pipelines at rates 50 percent higher than official EPA estimates.

Lawsuit Challenges State Fracking Panel

The Southern Environmental Law Center filed a lawsuit challenging the North Carolina legislature's role in appointing the majority of members on the N.C. Mining and Energy Commission, the body responsible for developing rules to regulate fracking in the state. Lawyers for the environmental group claim the legislature violated the state constitution, which requires that legislative and executive powers "be forever separate and distinct from each other." Plaintiffs hope for a ruling that voids the commission.

Revisions Expected for Surface Mine Blasting Rules

By Lorelei Goff

The federal Office of Surface Mining Reclamation and Enforcement announced in December that it will revise current rules to prevent toxic gas emissions from surface coal mine blasting operations.

The announcement followed a petition from the environmental group Wild Earth Guardians last April to prohibit the production of visible nitrogen oxide emissions during blasting.

Nitrogen oxide — a greenhouse gas linked to respiratory conditions, acid rain and air pollution — is visible as an orange cloud when there is incomplete combustion during blasting at a surface mine.

The current rules governing surface coal mine blasting do not specifically address harmful gas releases. This creates a loophole that some mining companies have used to disregard safe practices.

The agency's public affairs specialist, Christopher Holmes, says the revisions will clarify the intent of the current rules.

"[The Surface Mining Control and Reclamation Act of 1977] says operators may not cause an offsite impact or carry out any activity that threatens human health, safety and welfare, and must prevent damage to property as well," says Holmes. "So, toxic gases would fall under that."

Holmes said no deadline has been set for the revisions.

WV Repeals "Alternative" Energy Law

By Brian Sewell

West Virginia Gov. Earl Ray Tomblin signed a bill to repeal the state's Alternative and Renewable Energy Portfolio Standard, a law ostensibly aimed at promoting adoption of renewable sources.

In the opening days of the 2015 legislative session, West Virginia legislators moved quickly to dismantle the standard, arguing that they were standing up for the state's weakened coal industry by putting clean energy on the chopping block. But the law has had a negligible effect since it was passed in 2009. A broad interpretation of what constitutes "alternative" energy under the law has allowed West Virginia's largest utilities to easily meet the law's requirements by relying on coal and natural gas without adding new solar or wind capacity.

Clean energy advocates reacted with indifference, since the doomed law did little to expand renewable generation, but they say there is a silver lining: lawmakers approved an amendment to the bill that allows West Virginians who have solar panels to continue receiving credit for the excess electricity they generate and put back into the grid.

Interior Dept. Opens Atlantic Coast to Drilling

By Brian Sewell

The Obama administration announced plans on Jan. 26 to open up waters in the Atlantic to oil and gas exploration and drilling. The proposal, which includes the coastlines of Virginia, North Carolina, South Carolina and Georgia, is part of the U.S. Department of the Interior's latest five-year plan, which lays out federal leases for oil and gas development from 2017 to 2022.

The announcement came just two days after the administration took steps to permanently protect millions of acres in the Arctic National Wildlife Refuge, a sanctuary coveted by oil companies and cherished by native Alaskans and environmental advocates. The administration first proposed opening the mid-Atlantic to drilling in early 2010, but three weeks later an explosion and blowout at the Deepwater Horizon in the Gulf of Mexico that led to the largest oil spill in U.S. history put those plans on hold.

WV Legislative Maneuvers Disregard Water Quality

The West Virginia legislature has introduced two new bills that would loosen coal mining rules. If passed, the legislation would undermine the West Virginia Department of Environmental Protection's water quality standards for coal mining permits, resulting in far-reaching impacts on the state's waterways.

Under the bills, mining companies would be shielded from many citizen lawsuits regarding water quality, including litigation based on selenium violations. These types of lawsuits have been successful in recent years.

Alpha Agrees to Water Pollution Settlement

Alpha Natural Resources agreed to a settlement in a 2012 lawsuit, brought by the Sierra Club and other environmental groups, regarding high levels of conductivity found in streams at two of its mountaintop removal mining complexes in West Virginia.

The settlement includes no monetary penalties but would require Alpha to reduce pollution so that the streams either meet stricter requirements than set by state regulators or comply with a measure of conductivity designed by the U.S. Environmental Protection Agency.

Regulators Restore 1983 Stream Protection Rule

To comply with a federal court ruling, the U.S. Office of Surface Mining Reclamation and Enforcement restored an earlier version of a rule meant to protect water quality and stream channels from coal mining waste.

Last February, a court threw out amendments added to the rule in 2008 after determining that the agency failed to consult with the U.S. Fish and Wildlife Service, as required by the Endangered Species Act, when writing the regulation. Because the rule is intended to avert the worst impacts of mountaintop removal, the change will have the greatest effect on coal companies operating in Appalachia.

New Contaminants Found in Fracking Waste

By Eliza Laubach

Two new pollutants were discovered in wastewater from oil and gas drilling, a Duke University study has shown. Researchers tested wastewater discharged or leaked into Pennsylvania and West Virginia waterways and found ammonium and iodide in abnormally high levels in hydraulically fractured and conventionally drilled oil and gas operations, both of which are exempt from the Clean Water Act.

The discovered pollutants become toxic in the environment: ammonium mixes with stream water and becomes ammonia, killing wildlife, and iodide interacts with chlorine in drinking water treatment plants, creating toxic byproducts.

"This discovery raises new concerns about the environmental and human health impacts of oil and gas wastewater in areas where it is discharged or leaked directly into the environment," Dr. Avner Vengosh, professor of geochemistry and water quality at Duke University and lead author of the study, said in a press release. "This practice is clearly damaging the environment and increases the health risks of people living in these areas, and thus should be stopped."

The findings add to the growing list of concerns from residents affected by fracking. In West Virginia, 100 landowners living in the vicinity of oil and gas wells across seven counties are suing drilling companies for the disruption of their daily lives and disregard for health and the environment posed by fracking wells.

Clean Line Wind Project Clears Hurdle

Houston-based Clean Line Energy Partners LLC received initial approval from Tennessee regulators to construct a 700-mile transmission line that would deliver wind power generated in the plains of western Oklahoma and the Texas panhandle to customers in the Tennessee Valley.

The Tennessee Valley Authority, which provides power to approximately 9 million people in seven southeastern states, signed a letter of support for the project last November, and would become the largest buyer of the projected 3,500 megawatts of clean power.

Clean Line hopes the project will begin operation in 2018, but the energy developer still must obtain final federal and state approval.

Honoring Two Inspiring Leaders

Appalachian Voices is paying tribute to two outstanding individuals, Christina Howe and Bunk Spann, who rotated off our Board of Directors after many years of devoted leadership to the organization.

Christina Howe joined Appalachian Voices in 2008, and served as the board's chair since 2009. Before moving to Valle Crucis, N.C., Christina built and sold offices and airport hangars with her late husband in Miami, Fla. She formerly served as the president of the High Country Conservancy and is currently a partner and the assistant director of the Boone Healing Arts Center, a holistic facility with 14 medicine practitioners.

"My time at Appalachian Voices is one of the most exhilarating experiences I have ever had. I feel so fortunate to have been involved with people from the staff to the board," says Christina. "There is great new leadership and a great spirit that's going to carry the organization forward to a very special future."

Milton G. "Bunk" Spann, also a board member since 2008 and board treasurer since 2010, is the founder of the National Center for Developmental Education at Appalachian State University, and a former elected member of the Boone, N.C., Town Council, where he helped further environmental efforts in water conservation and smart growth. He recently retired to Asheville, N.C., where he is currently working to make his neighborhood and community more environmentally friendly and sustainable.

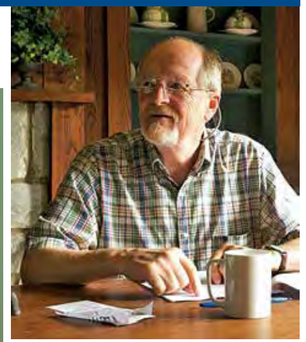
"I have been privileged to serve on several boards but none have been more satisfying than Appalachian Voices," Bunk says. "The organization has a bright future under the able leadership of Tom Cormons. I pledge to continue my support of the new Board and the important work that is before us."

Under Bunk and Christina's successful leadership, Appalachian Voices nearly doubled its staff and established offices in Charlottesville, Va., and Washington, D.C., and took our nationwide campaign against mountaintop removal coal mining to the next level. We discovered and sued over thousands of falsified pollution reports that led to the three largest fines ever levied against coal companies in Kentucky, and defeated what would have been the largest coal plant in Virginia. And we launched our successful campaign to promote energy efficiency financing options for rural electric co-op customers, a project that could result in the creation of thousands of clean energy jobs in the region.

Both Christina and Bunk (who happen to share a birthday!), have agreed to continue their service to the organization on the board's Advisory Council.

"I can't emphasize enough how Christina and Bunk's steadfast dedication, their wisdom and judgement, and their great love for the region and the Appalachian Voices family have helped keep us inspired, ambitious, and — most importantly — focused on what really matters, which is continually taking our work to the next level," says Executive Director Tom Cormons. "It was such a pleasure and privilege to spend my first two years as executive director during their tenures."

James "Kim" Gilliam, is taking the helm as board chair, has been involved in fundraising and nonprofit management for more than



Christina Howe (left) served as chair of the Appalachian Voices Board of Directors from 2009-2014, while Bunk Spann (above) filled the role of treasurer from 2010-2014. Kim Gilliam and Kathy Selvage (below, top to bottom), will now serve in those roles on the board.

30 years. Since 2003, he has managed his private consulting firm in Charlottesville, Va., and has worked closely with a wide range of environmental and social justice groups throughout the United States and Canada.

"It is my privilege to bring my experience home to serve Appalachian Voices," says Kim. "The staff is tireless in supporting and protecting the people and communities of our region of the country, and I am proud to be a part of this exemplary work.

Kathy Selvage, a long-time board member, is stepping into the role of treasurer. A Wise County, Va., resident and daughter of a coal miner, Kathy has worked for years and with numerous groups and organizations to bring national exposure to the issue of mountaintop removal coal mining.

"Though the shoes of Bunk and Christina will be hard to fill, I am delighted to be joining the Executive Committee," Kathy says. "As an organization, we are ideally positioned to help in central Appalachia's transition from the fuels of yesterday to the fuels of tomorrow, and poised to make a real difference in the transformation of Appalachia into just, livable and sustainable communities."

"With Kim's professional acumen and vast experience and Kathy's exemplary and inspirational record as a citizen activist, they're both legends in their own right," Tom says. "We're just incredibly honored they have joined our board's leadership."

To learn more about our Board of Directors, visit appvoices.org/about/team.

AppalachianVoices
BUSINESS LEAGUE
New & Renewing Members Dec. 2015 - Jan. 2015

Farnum and Christ Travel — Bristol, Tennessee
LifeStore Bank — West Jefferson, North Carolina
reNew Home, Inc. — Boone, North Carolina
Balfour Beatty Construction, LLC. — Charlotte, North Carolina
Many thanks to employee Scott Hopkins who requested the donation

To join our Business League, visit AppVoices.org or call 877-APP-VOICE

INSIDE APPALACHIAN VOICES About Our Program Work

A Better Path than the Coalfields Expressway for Virginia

More than 50 local residents recently attended three community forums in southwest Virginia to express their views on ways to improve transportation in the area. Feedback included improvements that would benefit residents and better protect the environment than the ill-conceived Coalfields Expressway. As proposed, the Coalfields Expressway includes significant mountaintop removal coal mining that would bring more environmental devastation to the region, and the suggested route would also draw economic activity away from existing town centers.

A resident looks at a map of the proposed Coalfields Expressway during a community forum. Photo by Alistair Burke, alistairburkephotography.com

Local citizens have begun to compile these ideas so that they can be shared with the Commonwealth Transportation Board and Virginia Department of Transportation. Citizen proposals include upgrading existing road infrastructure, improving traffic patterns in Pound and Clintwood, and providing better access to parks and recreation areas by paving roads and enhancing signage. Residents also suggested increasing funding for public transportation services in the area, including transportation options for senior citizens, and programs like the Spearhead Trails system, which brings tourism to the area.

To get involved, call Southern Appalachian Mountain Stewards at (276) 565-6167.

Addressing the Issue of Fracking and Pipelines

The rapid expansion of a natural gas drilling method called "fracking" poses a serious risk to human health and the environment in numerous U.S. states and threatens to derail the movement to shift the country to cleaner energy sources.

We recently launched a new section on our website that highlights these issues and focuses on the emerging threat of fracking in North Carolina and Virginia.

In 2014, North Carolina lifted a long-standing moratorium on fracking and began paving the way for drilling on untapped pockets of natural gas in the state, and set weak regulations that offer inadequate protection to nearby communities. And in Virginia, three massive natural gas pipelines are being proposed that could threaten private property, water resources and historic and natural heritage sites.

Appalachian Voices is teaming up with citizens and local, state and national groups to oppose expansion of natural gas drilling and infrastructure in these states. To learn more, visit appvoices.org/fracking.

A gasfield in Pennsylvania. Photo courtesy of Terry Wild Stock Photography

Fire on the Mountain: AppVoices Teams Up With Floydfest

FloydFest, a world music and arts festival held just off the Blue Ridge Parkway near Floyd, Va., is gearing up for its 14th annual event July 22-26 with a stellar lineup and a keener focus on family, community and celebrating the Appalachian mountains. And this year, the organizers have selected Appalachian Voices as the featured nonprofit, offering festivalgoers a chance to make a donation to our organization when purchasing their tickets, and even donating a portion of their proceeds to support our work! Quite simply, it's a natural partnership with a festival that celebrates our natural and cultural heritage and an organization that works every day — for nearly two decades — to protect the mountains, rivers and people.

We'll be working with FloydFest folks in the coming months to dream up fun and exciting ways to engage attendees and let them know how they can become involved in protecting the mountains we all love. Tickets are already on sale, so get yours now and come join us for two, three or even five days of joyous dancing, phenomenal music and heartfelt community. Visit appvoices.org/floydfest and stay tuned for more information.

Hellos and Goodbyes

We're thrilled to welcome Lauren Essick to our staff as Distribution Manager of *The Appalachian Voice* and as Appalachian Voices' Operations and Outreach Associate. Lauren will manage the distribution of the publication — which involves 61,000 newspapers and nearly 100 volunteers — and help coordinate our volunteer and outreach activities.

Lauren Essick

She started with Appalachian Voices as a volunteer back in 2009, helping to raise awareness of mountaintop removal coal mining, and has helped us distribute *The Appalachian Voice* in Asheville, N.C., for the past four years.

Kara Dodson

We also bid a fond farewell to Kara Dodson, who served as our Field Coordinator for the past year and as an intern for three summers. Kara brought incredible passion and enthusiasm to her work with residents affected by environmental threats. We wish her well during her next endeavors, and are glad that she will remain part of the Appalachian Voices family as a volunteer!

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.

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Controller — Susan Congelosi
Operations Manager — Shay Boyd
Director of Leadership Gifts — Kayti Wingfield
Development and Operations Coordinator — Maeve Gould
Operations and Outreach Associate — Lauren Essick

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Campaign Director — Kate Rooth
Energy Policy Director — Rory McIlmoil
Washington, D.C. Legislative Associate — Thom Kay
North Carolina Campaign Coordinator — Amy Adams
Virginia Campaign Coordinator — Hannah Wiegard
Water Quality Specialist — Eric Chance
Central Appalachian Campaign Coordinator — Erin Savage
North Carolina Field Coordinator — Sarah Kellogg
AmeriCorps Energy Savings Associate — Eliza Laubach
AmeriCorps Outreach Education Associate — Jaimie McGirt

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Programs Communications Coordinator — Brian Sewell
Editorial Communications Coordinator — Molly Moore
AmeriCorps Communications Associate — Kimber Ray
IT Associate — Toby MacDermott

INTERNS
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Appalachian Water Watch Assistant — Maggie Cozens
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Energy Efficiency Research Assistant — Dan Stevenson
Virginia Grassroots Assistant — Tina Badger
Virginia Grassroots Assistant — Linda Chen
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Editorial Communications Assistant — Lorelei Goff
Editorial Communications Assistant — Chris Robey
Web Design Assistant — Allison Cook

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Vice-Chair — Landra Lewis
Secretary — Dot Griffith
Treasurer — Kathy Selvage

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Pallavi Podapati
Lauren Waterworth
Tracey Wright
Tom Cormons (Ex-officio)

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Jessica Barba Brown
Alfred Glover
Randy Hayes
Christina Howe
Van Jones
J. Haskell Murray
Brenda Sigmon
Bunk Spann

Photographer Michael Phillips captured this image of a tiny owl, titled "Hamlet - Northern Saw-whet Owl Portrait," in Banner Elk, N.C. Phillips' photo was a finalist in the 2013-14 Appalachian Mountain Photography Competition. Finalist photos from this year's competition will be on exhibit at the Turchin Center for the Visual Arts in Boone, N.C., from March through June. People's Choice Voting is held from March 6 to 27. Vote online at appmtnphotocomp.org

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Help Build a Brighter Future for Appalachia

Through our Energy Savings for Appalachia program, we are seeking ways to make energy efficiency upgrades more affordable for low-income families in Appalachia. With proper insulation, air sealing, and other home improvements, residents could keep their homes warmer while using less electricity — good for the planet and for their electricity costs.

Help us in our campaign to convince electric utilities to offer financing programs so all families can enjoy the benefits — and rewards — of an energy efficient home. DONATE TODAY.

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Name _____

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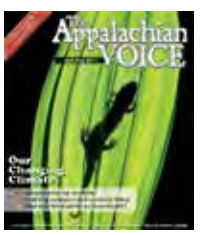
❑ Yes, I would like to receive *The Appalachian Voice* in my mailbox (min. $25 donation)

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



Membership Level

❍ $35 ❍ $250
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❍ Make me a Mountain Protector monthly donor at $_____ /month ($10 minimum)

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Mail this form to: 171 Grand Blvd, Boone, NC 28607
Or visit: AppVoices.org/support-energy-efficiency