FREE
The Appalachian VOICE
February / March 2013
The Silent Majority
From slime molds to songbirds, it's time we start paying attention to what the planet's creatures have to say
ALSO INSIDE: Caving the Highlands • The Trouble with Severance Taxes • SPECIAL SECTION: Meet Your Politicians

The Appalachian Voice
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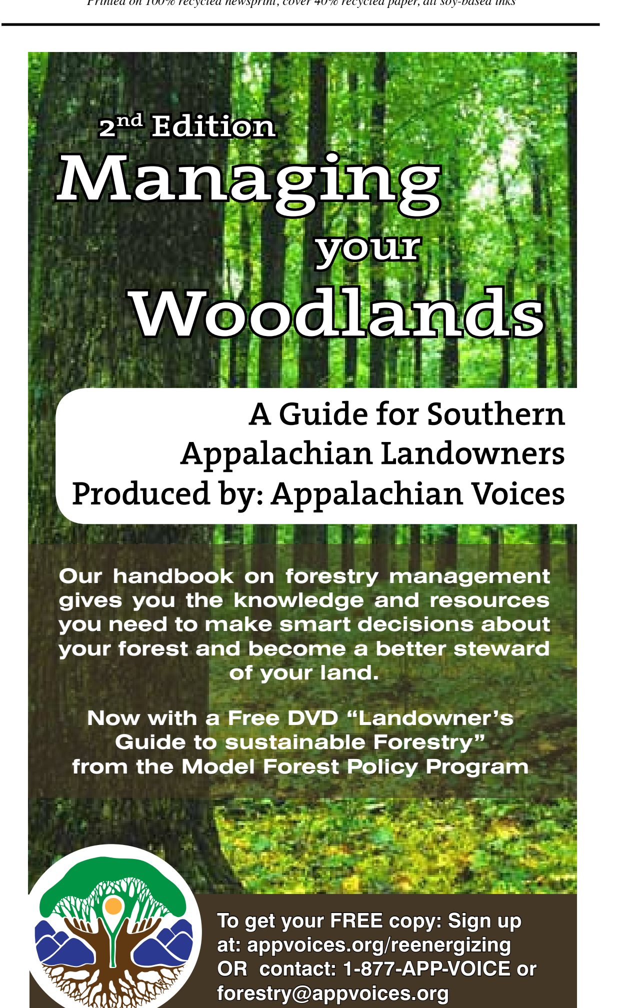
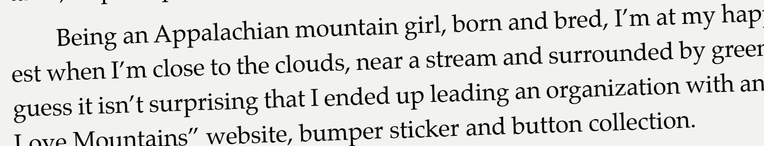


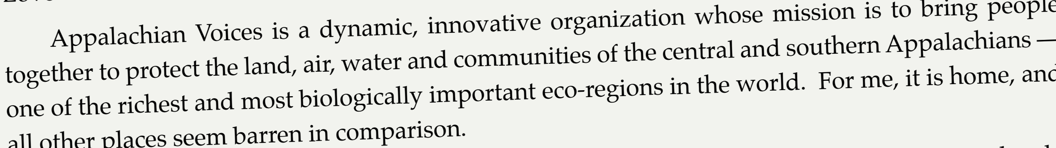
A Note from our Executive Director



Dear Readers,

I once was at a meeting in the North Carolina flatlands when someone asked what I enjoyed most. "I'm always happiest when I'm going uphill," I instantly replied. For those in the room who knew that I grew up in the mountains, or perhaps did themselves, there was an instant nod of recognition.

Being an Appalachian mountain girl, born and bred, I'm at my happiest when I'm close to the clouds, near a stream and surrounded by green. I guess it isn't surprising that I ended up leading an organization with an "I Love Mountains" website, bumper sticker and button collection.



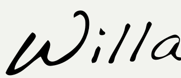
Appalachian Voices is a dynamic, innovative organization whose mission is to bring people together to protect the land, air, water and communities of the central and southern Appalachians — one of the richest and most biologically important eco-regions in the world. For me, it is home, and all other places seem barren in comparison.

It has been a pleasure to serve for the past four years as executive director of a tremendously effective organization committed to protecting the mountains I adore. But change is a part of life and the time has come for me to move on. With Appalachian Voices stronger than ever, I have decided to turn over the reins to another who I believe will be the best leader of this great organization yet. Tom Cormons, who has for many years helped to guide our program work from our Virginia office, is stepping into the role to lead Appalachian Voices to the next stage of transitioning our region away from fossil fuels and into a clean, vibrant future.

My plan is to resume my former work with the Blue Ridge Parkway Foundation, another organization that shares my abiding mission of protecting our treasured mountains. But I leave with confidence that Appalachian Voices' work to protect our mountains will grow ever stronger.

I, too, will continue this work, but now as a member of Appalachian Voices, rather than its leader.

Fond farewell,



Willa Mays, Executive Director

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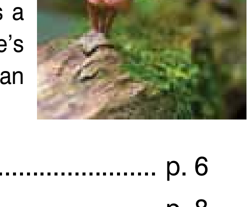
About the Cover

The call of a spring peeper is thought to sound like the peep of a chick, and like sleigh bells when in chorus. Photo by Brian Shults, facebook.com/brianshultsphotography

The Silent Majority



From the fragile to the fierce, our region boasts a remarkable range of living creatures. This issue's features explore how the beasts of the Appalachian wild are adapting to today's tumultuous world.

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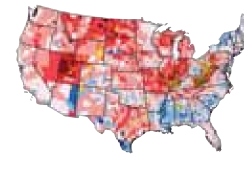
Special Pull-Out Section

Appalachia's Political Landscape



As the U.S. Congress begins its 113th session, we look at Appalachia's political past, its present representatives, and preview the environmental agendas of our region's statehouses.

We need YOUR Voice!

Help us make The Appalachian Voice a better resource for readers like you! Complete this brief survey to tell us more about who you are and what you are most interested in learning about, and you will be entered to win your choice of an Osprey backpack or a beautiful wool throw, and other prizes!

Fill out the survey below and mail to:
Appalachian Voices
ATTN: Survey Response
171 Grand Boulevard • Boone, NC 28607

Or take it online at **APPVOICES.ORG/VOICESURVEY**

**Answers to this survey are strictly confidential and will not be shared outside of Appalachian Voices.

I would best describe myself as:
- ❍ Appalachian, with family roots that go back generations
- ❍ Transplant who has chosen to live in this region because________________
- ❍ Living outside Appalachia but with a family connection that makes it 'home'
- ❍ Environmentalist who is concerned about the protection of air, land and water
- ❍ A visitor who left a bit of my heart in those beautiful hills
- ❍ Don't much care what you call me, just leave my mountains alone

How do YOU read *The Appalachian Voice*?
- ❍ Read every issue cover to cover
- ❍ Pick up every issue and read some of the articles
- ❍ Pick up a copy once in a while
- ❍ Read it on online
- ❍ Only read it for certain sections

Where do you pick up your copy? (Select all that apply)
- ❍ Grocery store
- ❍ Coffee shop
- ❍ Public library
- ❍ Near where I live (10-mile radius)
- ❍ Somewhat near where I live (30-mile radius)
- ❍ On vacation or visiting family in the mountains
- ❍ Receive it in the mail because I am a member of Appalachian Voices.
- ❍ Other: ________________

***The Appalachian Voice* is a publication of nonprofit organization Appalachian Voices. How aware are you of this connection?**
- ❍ Yes, completely
- ❍ Sort of, but not sure what Appalachian Voices does
- ❍ Had no idea
- ❍ I thought Appalachian Voices was a newspaper

How much has *The Appalachian Voice* changed your concern for the environment in Appalachia?
0...(a little) 1...(a lot) 2...(a whole lot)

How familiar are you with the work of Appalachian Voices?
NONE SOME VERY
- 0 1 2 Advocating for clean water in North Carolina with the Red, White and Water campaign
- 0 1 2 Fighting mountaintop removal coal mining with the I Love Mountains campaign
- 0 1 2 Transitioning away from coal-fired electricity as an energy source in Tennessee
- 0 1 2 Stopping new polluting coal plants and advancing energy savings policies in Virginia
- 0 1 2 Suing Big Coal for water violations through our Appalachian Water Watch program

Rank your sources of environmental information: (1 most frequent, 5 least frequent)
- ____ *The Appalachian Voice* newspaper
- ____ Local newspapers, TV, radio
- ____ National newspapers paper, TV, radio
- ____ Other environmental organizations' newsletters
- ____ Blogs and websites

Rate what you like to read in *The Appalachian Voice*:

	NOT SO MUCH	TAKE IT OR LEAVE IT	LOVE IT!
Human interest (local heroes, profiles)	0	1	2
Appalachian culture (arts, history)	0	1	2
Outdoor recreation (hiking, kayaking, bike riding, birding)	0	1	2
Critters (birds, fish, that weird-looking bug I saw in my backyard)	0	1	2
Energy issues (coal mining, alternative energy, fracking, etc.)	0	1	2
Land and conservation (agriculture, forestry, public lands)	0	1	2
Water quality and water pollution	0	1	2
Book reviews	0	1	2
News about Appalachian Voices	0	1	2

Other (don't be shy!): ________________

If you were editor-for-a-day, you would add: (select any that apply)
- ☐ More news about my community
- ☐ More national news
- ☐ Stories about fishing and hunting
- ☐ Profiles about staff and more stories about Appalachian Voices
- ☐ More wildlife / ecology stories
- ☐ More political and economic coverage
- ☐ Sustainability how-tos
- ☐ Don't change a thing, I love *The Voice* as it is

Are you interested in becoming a member of or donating to Appalachian Voices to support our work to protect Appalachia?
- ❍ Extremely interested
- ❍ Very interested
- ❍ Somewhat interested
- ❍ Not interested
- ❍ Not sure

Would you be willing to contribute $1 or $2 each issue to keep reading the paper?
❍ Yes ❍ No ❍ Not sure

What is your home zip code? ________
(To help us understand where our readers are from)

How old are you?
❍ under 17 ❍ 18 - 25 ❍ 26 - 35
❍ 36 - 55 ❍ 56 - 70 ❍ 70+

What is your gender?
❍ Male ❍ Female ❍ Prefer not to answer

What is your education level?
❍ High school grad, GED, or less ❍ Some college
❍ College graduate ❍ Post-graduate degree

How often do you vote
- ❍ I only vote in presidential elections
- ❍ I vote in most national, state and local elections
- ❍ I vote on local issues only
- ❍ I don't generally vote

Would you like to become more involved with Appalachian Voices?
- ☐ Volunteer to help distribute *The Appalachian Voice*
- ☐ Attend a rally
- ☐ Learn how to lobby and contact elected officials
- ☐ Sign a petition or send comments to a government agency
- ☐ Be part of a focus group or fill out other surveys
- ☐ OTHER: ________________
- ☐ Maybe later

Hop on your soapbox and tell us what you think! ________________

Include your Email to be entered into the drawing or if you are interested in becoming more involved)
* ________________

Virginia Bill to Lift Uranium Mining Ban Withdrawn

By Davis Wax

On January 31, legislation to lift a 31-year old ban on uranium mining was withdrawn from the Virginia Senate floor before voting could commence that afternoon. The bill's sponsor, Sen. John Watkins, removed the bill from the agenda of a panel expected to defeat the proposal.

Like many others across the state, the members of the Agriculture, Conservation and Natural Resources Committee are concerned with the environmental effects associated with the proposed mining of a large deposit of uranium ore at Coles Hill Farm in southern Virginia.

The National Academy of Sciences concluded in a study that the state's wet climate and proclivity for extreme weather events like hurricanes are linked with a greater likelihood of water contamination through radioactive leaks. Human exposure to uranium — via contaminated dust, water, or food — has been linked to kidney and liver damage, various cancers and birth defects.

The radioactive waste leftover from such mining activity, known as tailings, has been a major concern for those opposed to the removal of the ban. Virginia Uranium, the company which has been pushing to lift the state ban, says it will safely store all tailings underground, though there have been questions about how close this storage would be to vital water resources.

The metropolitan area of Hampton Roads gets a large amount of its drinking water from Lake Gaston, which is only 20 miles downstream of Coles Hill. Richmond and Raleigh, N.C., are not far away, either. It is estimated that the drinking water of more than one million Virginians could be affected by such a uranium mine.

With any further legislation seemingly done for the year, Sen. Watkins has brought his proposal straight to the governor in hopes of a successful administrative push to other state agencies. Gov. McDonnell (R) is overseeing the request, but before voting was scheduled to begin and as of press time, he had yet to take an official stance on the issue.

Inspecting Fracking in Ohio

The Ohio Department of Natural Resources, which is responsible for overseeing oil and gas extraction in the state, failed to fulfill its promise to hire a total of 90 inspectors to cover the state's 64,481 operating gas and oil wells, according to *The Cleveland Plain Dealer*. The department only had enough staff to cover 18 percent of its wells in 2011, leaving more than 50,000 unchecked. The department currently has 52 inspectors and nine vacant inspection positions. Regardless of the department hiring process, residents of Athens County have outlined a proposal to Athens City Council to ban fracking wells within a 20-mile radius of the city, according to *Athens News*. Supporters of the ban say that municipalities have the right to prevent water pollution, and want the council to adopt the ordinance and place it on the ballot for a referendum vote in November.

Signature Drink Menu

Cafe Cubano $3.75
espresso, steamed half & half, demerara sugar and a pinch of sea salt–caramel sauce substituted for sugar at your request

Black Mountain Drinking Chocolate $3.00
velvety dessert beverage made with local Black Mountain Chocolate –cayenne added at your request

Tiramisu Affogato $4.50
warm espresso is poured over luscious vanilla ice cream and topped with crushed lady fingers, homemade whipped cream and cocoa powder

Espressoda $3.25
espresso and Mexican Coca-Cola with a dash of half & half –served with a Coke chaser on the side

Nutella Mocha $3.95
hazelnut ganache, espresso, steamed milk and homemade whipped cream

London Fog Tea Latte $3.25
black tea steeped into frothy vanilla bean-infused milk

Killer Bee $3.75
honey and cinnamon-infused espresso is added to cold, creamy milk and served over ice

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At Long Last, A Safer School for Marsh Fork

On Jan. 7, more than 200 students of Marsh Fork Elementary began classes at a new facility a few miles from the old school in Raleigh County, W.Va. Because of health concerns brought on by a coal processing plant and a high-hazard coal slurry impoundment located adjacent to and above the original building, Marsh Fork was the center of a controversy that led to protests, arrests and nationwide publicity. Equipped with smart board presentation stations and computer labs with the fastest internet connection in the area, local officials say the new Marsh Fork Elementary is one of the state's most advanced schools.

Inside the Kudzu Bug

Researchers are looking closely at the invasive kudzu bug, hoping that biological clues will give them an edge in their fight against this troublesome insect. Like the aggressive vine it dines on, the kudzu bug is spreading rapidly. According to *The Macon Telegraph*, it arrived in Atlanta, Ga., in 2009 and is now found in eight states. Tracie Jenkins, an assistant professor at University of Georgia, discovered the bug's Japanese origins through DNA research. She also found that the kudzu bug relies on three specific bacteria to maintain basic functions. By studying the bacteria, Jenkins and her colleagues hope to find a way to exploit the bug's weaknesses. Having the insect devour large patches of the invasive kudzu may be good news for native species, but the kudzu bug also inflicts similar damage on soybeans and other native and garden plants.

A Local Fight for Water Rights

More than 40 municipalities around the state have passed resolutions against state government control of municipal water infrastructure. Now, the North Carolina legislature plans to seize control of Asheville's water system. The issue goes back to when Asheville entered into a regional water authority with Henderson and Buncombe counties. As time passed, the partnership dissolved and Asheville retained authority of the water system. The legislators backing the takeover say the new system would protect non-city customers from having to pay more than city customers, while keeping Asheville from using the water as a tool for controlling growth. Opponents of the legislative push say that the move would discourage cities and towns from building their own water systems, thereby allowing privatization of a vital resource.

Fiscal Challenges for N.C. Clean Water Trust Fund

The North Carolina trust fund used to help local governments and conservation groups finance restoration and land protection proje cts faces a questionable future. The state legislature has cut the Clean Water Management Trust Fund's appropriations nearly 90 percent below their $100 million peak in the past two years. The program is currently seeking $40 million for the next two years. Legislators also dropped the fund from the state's recurring budget, such that the fund now has to fight for unspent money. This year, the program approved only $11.6 million of $122 million in grants that were requested. The clean water fund, which has laid off nearly half its staff since 2009, has spent more than $1 billion since its inception in 1996 to buy land and protect waterways, fix failing sewage treatment plants and perform restoration projects.

Enjoy Tail-Wagging Travel Adventures

We know Fido likes to travel and see the sites as much as you do. He already has a fabulous coat, but he still needs a few accoutrements in his travel case. Leashes, travel bowls, packs, treats, toys, and perhaps even a nice pair of boots for the trail can all be found at your local Mast General Store.

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The Custodian's Conundrum

Humanity's immense influence on the landscape begs the question: How do we best care for the Silent Majority?

By Molly Moore

A swarthy tree trunk stands in a small clearing, a gap in the forest canopy created by its once-thick crown of leaves. Shrubs and saplings clamor for sunlight around the tree's base, and carpenter ants colonize the wood's damp interior, pushing it closer to decay. Sensing this activity, a pileated woodpecker, with its signature red crest, perches on the trunk, scrapes off bark and begins to excavate a rectangular hole, lapping up ants as it reaches their network of tunnels.

After the bird moves on, the cavity remains. Smaller cavities provide a move-in-ready home for songbirds and bats, while larger roosts make ideal dens for small owls and mammals or the woodpecker itself.

Despite their stature as North America's largest woodpecker and the distinct drumming of their wood-boring beak, these birds are elusive, as are some of the creatures that dwell, unseen and unheard, in their abandoned cavities. A landowner might see the bare trunk as an eyesore, but every day she postpones chopping it down she supports the community of life that is dependent on the dead tree.

Like their counterparts 150 years ago, residents of Appalachia's towns, cities and rugged homesteads today live in close proximity to wildlife. Black bears frequent trash cans on Asheville streets, salamanders prowl around backyard creeks in Virginia, and wild turkeys provide dinner for families in Kentucky. But if residents from the 1800s arrived today, they may miss the massive flocks of millions of passenger pigeons that once blanketed the sky, and they would be wary of cougars in forests where their contemporaries walk worry-free.

Young forests and meadows with a mix of trees, shrubs and grasses are ideal surroundings for rabbits (left), eastern box turtles (above inset) and golden-winged warblers (lower inset). As landscapes become more fragmented between human development and protected mature forests, these transitional habitats are growing scarce.

Early hunters of the passenger pigeon probably never imagined that the continent's most abundant bird would be extinct by 1914, but between deforestation and an onslaught of overhunting driven by growing cities' demand for pigeon, the bird disappeared. Similarly, the eastern cougar, or mountain lion, was pushed out of the region by habitat loss and hunting. Cougar sightings are still occasionally reported in Appalachia, but those are widely believed to be western mountain lions that escaped from captivity or Florida panthers roaming beyond their native range.

Although we still have conservation crises aplenty, contemporary policies such as the Endangered Species Act, hunting limits and public land regulations have been life-support systems for much of Appalachia's wildlife. Elk, river otters and barn owls have been successfully reintroduced to the Great Smoky Mountains National Park. The U.S. Forest Service, which prioritized timber sales over wildlife protection in the 1980s, is now more likely to consider ecological concerns alongside commercial and recreational values. In North Carolina, the Forest Service harvests just 35 percent of the amount of timber that it did 20 years ago.

On private lands, nonprofit land trusts strike agreements with landowners to permanently protect a property's natural qualities, and therefore wildlife. In January, the Blue Ridge Conservancy in northwestern North Carolina purchased more than 400 acres on the wild and bucolic Pond Mountain and transferred the land to the state. The acreage links state game land with Cherokee National Forest in nearby Tennessee, providing a wildlife migration corridor.

Traditionally, state wildlife managers focused on improving conditions for popular sport animals, such as deer, grouse and turkey. Today, however, those decisions are just as likely to be based around rare species, as both agencies and the public gain a better understanding of the role of small creatures and a sense of pride in Appalachia's distinct wildlife. Postcard selections at gas stations near tourism areas are now likely to include the primordial hellbender salamander alongside traditional images of mountain wildflowers and playful bear cubs.

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Despite today's more sophisticated appreciation for the interconnected web of wildlife, learning how to balance protections for individual species and divergent ecosystems is an ongoing struggle. In Appalachia, the conservation community is grappling with that challenge in the form of a small, brightly accented songbird.

The golden-winged warbler breeds in eastern North America, winters in parts of Central and South America, and is facing devastating habitat loss in both hemispheres. The warbler was one of seven species nationwide that collectively received $33 million from the U.S. Department of Agriculture in 2012 for conservation efforts on private land. It's also being considered for federal endangered species listing.

With its black mask and bold yellow wing patches, this bird loves disturbed landscapes near large stretches of forest. Golden-winged warblers and creatures with similar habitat requirements, like the American woodcock, can find refuge on abandoned farmland, a recently burned forest, or other small clearings created by storms or selective timber harvest. And that can create conflicts of interest when it comes to habitat management.

The problem, says Josh Kelly, a biologist with the nonprofit group Western North Carolina Alliance, is that what is good for the golden-winged warbler can be harmful for species that thrive in mature forests, such as the rare small-footed bat or the fragile pink-shell azalea.

He notes that golden-winged warblers respond positively to wildlife managers' efforts to improve their habitats. That success encourages more projects, funding and publicity, which benefits the warbler. But, Kelly says, activities such as timber harvesting or improving habitat for game species like turkey and deer are also sometimes performed under the guise of protecting this striking songbird.

Meanwhile, Appalachia's cerulean warbler is in even greater jeopardy and needs mature forest with room to fly, but receives far less funding and attention. "This may be somewhat cynical," he says, "but I think that the conditions that favor cerulean warblers do not

Continued on next page

The Heated Issue of Prescribed Burns

By Molly Moore

Steep rock cliffs, a raging river, weathered heath balds and several types of forest make the Linville Gorge Wilderness Area in Western North Carolina a popular recreation destination. A few rare species native to the gorge are at the center of a controversial U.S. Forest Service proposal to conduct controlled burns, in stages, on up to 16,000 acres in and around the wilderness.

Natural, lightning-ignited fires used to occur three to five times per decade, says Josh Kelly, a biologist with the nonprofit group Western North Carolina Alliance, which supports the proposal. From the 1950s until 2000, improved backcountry firefighting successfully suppressed wildfires. In the last decade, however, lightning, human carelessness and excess unburned fuel from downed trees have led to several hard-to-control blazes.

Lightning struck Shortoff Mountain in 2007, and the resulting conflagration affected the habitat of mountain golden heather, a flower that only grows on two ridges in the world. Since then, the flower has increased by 200 percent. Some animals benefit too, such as a type of red crossbill that relies on certain pine trees that release more seeds when exposed to fire.

Several regional environmental groups and the forest service say purposefully bringing limited fire to the wilderness will restore ecological balance and give species that are fond of fire an opportunity to thrive. The agency also says that without prescribed burns to limit the amount of small tinder on the forest floor, nearby communities are at increased risk of fire damage from uncontrollable blazes.

Hot air rises from the Piedmont to make Linville Gorge one of the warmest parts of the southern Blue Ridge. When rain arrives, it drains quickly on the gorge's steep topography. Photo by Lonnie Crotts

Grassroots group Save Linville Gorge Wilderness, which formed to fight the proposal, is concerned about runaway fires, given the gorge's rugged terrain and wild winds. The group believes prescribed fire is incompatible with the area's federal wilderness designation, which prioritizes hands-off land management. Local resident Sue Crotts also thinks the proposal passed through the early planning stages without thorough, site-specific risk analysis.

She says using fire to prioritize certain species above others is inappropriate in a wilderness area. "Save Linville Gorge Wilderness is not opposing nature doing its work, we're opposing the Forest Service coming up with nature's work," Crotts says.

Kelly, however, says the last 60 years of fire suppression have already altered the gorge, and that prescribed fire could help restore a natural fire cycle to the area.

The Forest Service is putting together an Environmental Assessment of the project that includes alternatives; both will be available for public comment in late spring or summer.

Custodian's Conundrum

Continued from previous page

favor resource extraction whereas the conditions that favor golden-winged warblers do favor resource extraction."

Determining how golden-winged warbler habitats affect other species is "a constant balancing act," says Todd Fearer, a coordinator with the bird partnership Appalachian Mountains Joint Venture. Some groups have been hopping on the golden-winged warbler bandwagon, he says, but that doesn't change the fact that there's a pressing need for creating and protecting the young forestland that this and other species desperately need to survive.

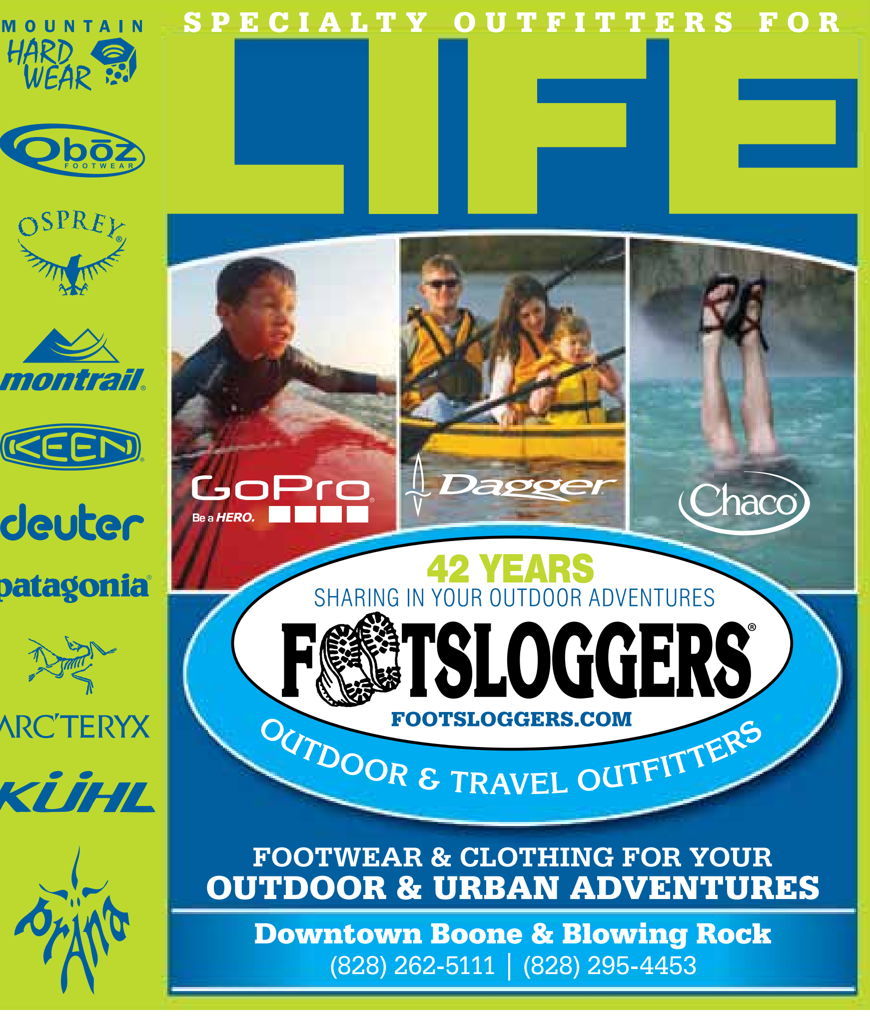
Historically, these patches of young forest might have been created by elk and eastern bison, falling American chestnuts or Native Americans who burned undergrowth to create favorable conditions for wild game. "We need to think very adaptively," says Fearer. "We can't return to what the landscape was like historically. We need to look at what we have now and what's needed to maintain these quickly declining populations."

Questions such as these are more than just theory for the U.S. Forest Service. In 2012, the agency updated its planning rule, which guides the process each national forest goes through every 15 years to craft a work plan and goals. North Carolina's Pisgah and Nantahala national forests are among the first in the nation to create a new forest management plan under the new rule.

Stevin Westcott, the agency's public affairs officer, says that by 2060 the amount of forest on private land in the South is predicted to decline by 11 to 23 million acres. That means the agency needs to create a management plan that's suited not only for the next 15 years, but for a future where southern national forests will see even more demand from recreation, hunting, resource industries and wildlife.

Understanding the intricacies of environmental interconnectedness and listening for nature's cues will be critical for society to balance the needs of humans, wildlife and the natural systems that both depend on. In this issue, catch a glimpse of the living underground (p. 8) and marvel at Appalachia's variety of life forms (p. 10). Take a journey with migratory mountaineers (p. 12) and check in with wild game species (p. 16).

As you read these stories, you might do well to keep in mind what Wendell Berry famously said, with one addition: what we do to the land, we to do the wildlife, and we do to ourselves.



Spelunking the Highlands

Worley's Cave: Worthy of Respect and Care

By Matt Grimley

With my headlight loosely strapped and my boots tightly tied, I walked into the mouth of Worley's Cave and I realized something:

28 boy scouts.

That's how many boy scouts you shouldn't have on a caving trip.

Still, I enjoyed this pubescent expedition with River and Earth Adventures, Inc., a Boone, N.C.-based ecotourism business that offers rafting and hiking trips, among other excursions. The caving isn't free, but the trip is worth the money, if only to awe at an otherly world.

Worley's Cave — a seven-mile tract near Bluff City, Tenn. — is named for Elias S. Worley, its first owner. The site is also known as Morrill's Cave, for the man who first explored and mapped its innards.

But Sloan, our knowledgeable and bearded guide, told us the cave dates back to more than 550 million years, when the Appalachian Mountains stood taller than Mt. Everest.

The cave, as a trek, was straightforward. As the tour's website says, going through is about as tough "as climbing up onto your kitchen counter."

The air was warm, nearly 60 degrees, and moist as our line of scouts pranced over a slick clay floor, lended hands on slippery slopes, and shouted encouragements between steep ledges.

We (read: the scouts) squeezed between two slabs of stone, slid down a sandy slide two stories tall, and tromped through pools of standing and running water.

We reached the apex of our journey near the foot of the Devil's Staircase, in the enormous Big Room. Sloan didn't expect it, but our boy scouts sat down and had lunch, something people don't (read: shouldn't) usually do in caves and their fragile ecosystems.

"How am I supposed to eat if my hands are muddy?" asked one scout.

Dissolved layers of limestone, such as those near this stream in Worley's Cave, pervade Appalachia. Called "karst," this geologic formation starts horizontally in the flatlands, and goes in all directions when it hits the mountains. "Caves [in the mountains] are developed in folded rock," says Bill Balfour, geologist. Because of the faulted, broken and thrusted rock, he says, these caves are typically not large, lacking the larger water recharges of their flatland brethren. Photo courtesy of James Fox

Beside our party were wide, shallow pools of water called rimstone dams, caused by mineral deposits from flowing water. Sloan kneeled beside one pool and pointed at a half-inch black salamander.

We wandered over to the edge of the dams, where an enormous lake stretched into the darkness and a grooved ceiling arched a hundred feet overhead.

"There's normally a sandbar down there," Sloan told me, pointing to the still water. "And there's normally only a couple feet of water."

The water, unusually high from four days of rain, prevented us from continuing on the last leg of our journey, up the Devil's Staircase, into the supposedly amazing Fairy's Ballroom, and down another sandy slide into the normally shallow creek, which we'd then follow into daylight.

But not today. Once the scouts choked down their beef jerky, we hiked back to the entrance, noting the curious hanging speleothems (cave formations) called mineral curtains on the way.

But before completing our three-mile and three-and-a-half hour journey, we sat down and switched off our lights in a cavernous room called Base Camp.

Silence overwhelmed and the depths of the cave came to life.

And then somebody farted.

28 boy scouts.

Leaf Them Be

Even without beef jerky scraps from boy scouts, caves are dependent on the outside world for food.

Detritus from decaying leaves and other organic material is washed in, and guano from cave crickets and bats is plopped down. From these resources, fungus and bacteria are able to grow, and "that sort of kicks everything off," says Cory Holliday, cave and karst program director for The Nature Conservancy's Tennessee chapter.

Cave creatures are often blind and colorless. Because caves lack large nutrient sources, the animals have slow metabolisms and move meticulously and gracefully.

"They don't waste energy because they don't have energy to expend," says Holliday.

They also live a long time. Cave crayfish, for example, can live to 70 years. Compare that to three years for a surface crayfish.

One has to look hard to find them, but they're there. Beetles, springtails and millipedes feast on the cave floor. Rare species of blind cavefish pass

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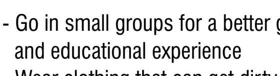


Owning the Caves

"Living where we do … the majority of caves are on private land," says Marty Abercrombie, chairman of the Chattanooga Grotto caving association. "It's really up to the landowner, how comfortable they are with letting people come onto their property."

With that, Abercrombie suggests to contact a local caving organization (check caves.org) and a professional guide, or go to commercial outlets such as Raccoon Mountain in Chattanooga, Tenn. That way, safety is your friend until your skills call you further.

Sloan had some simple tips for people looking to go caving:

- Go in small groups for a better guiding and educational experience
- Wear clothing that can get dirty
- Go to the bathroom before you go in
- Don't bring food in
- Go when it's been raining; the extra moisture makes all the formations prettier
- Know what kind of trip you want, be it full of belly crawls or boy scouts

And says Cory Holliday, "Even without white-nose syndrome, we should always be cleaning our gear." Studies show that biodiversity, especially with microbial organisms, decreases considerably with human activity, so be sure to wash your clothes for caving trips.

Holliday also says, "Minimize any exposure to bats in caves. Whatever they're doing in caves, it's a significant part of their life."

Photo by Matt Grimley

Spelunking

Continued from previous page

through the subterranean streams. Endangered amphibians such as the Tennessee cave salamander, with its lidless eyes, glide through streams.

Cave species aren't the hardiest ecosystems, leaving them open to easy harm. Clearcutting forests on the surface can ruin the cave's clean water and main food sources. Pollution from agricultural runoff or extractive practices such as hydraulic fracturing can also taint the water that the caves depend on.

At risk is the largely unmapped biodiversity of the region's caves. In Tennessee, for example, Holliday says there are only ecological records for about two percent of the state's 9,700 caves. This biological mystery intensifies in the Appalachians, where the unique karst geology limits the travel of species between caves.

"Endemism [being unique to a certain geographic location] just shoots through the roof [in Appalachia]," Holliday says. "The organisms in one cave may be completely different from those in a cave literally five miles away."

Snuffed Out

When it hits, the bats are hibernating in their winter dens. The white fungus, also known as *Geomyces destructans*, spreads its powdery tendrils on their wings and faces, waking the bats from their slumber.

To fight the invading disease, the bat's immune system goes into overdrive, destroying the illness but also the fat reserves and tissue that the bats need to live through the winter.

White-nose syndrome has killed five to seven million bats since first detected in 2006 near Albany, N.Y. Since then, it's been found in 19 states, and Holliday, also a regional expert on white-nose syndrome, says that the fungus is just starting to hit its critical phase in the southern Appalachians.

A cave can have the fungus without showing dead bats right away, says Holliday. That makes the disease's onset particularly hard to recognize. However, three or four years after the fungus first arrives, the cave will experience some kind of mass mortality event. Worley's Cave, for example, saw its three-year mark last year when over 80 percent of the bats died. Another cave in Carver County, Tenn., saw their bat numbers plummet by 98 percent.

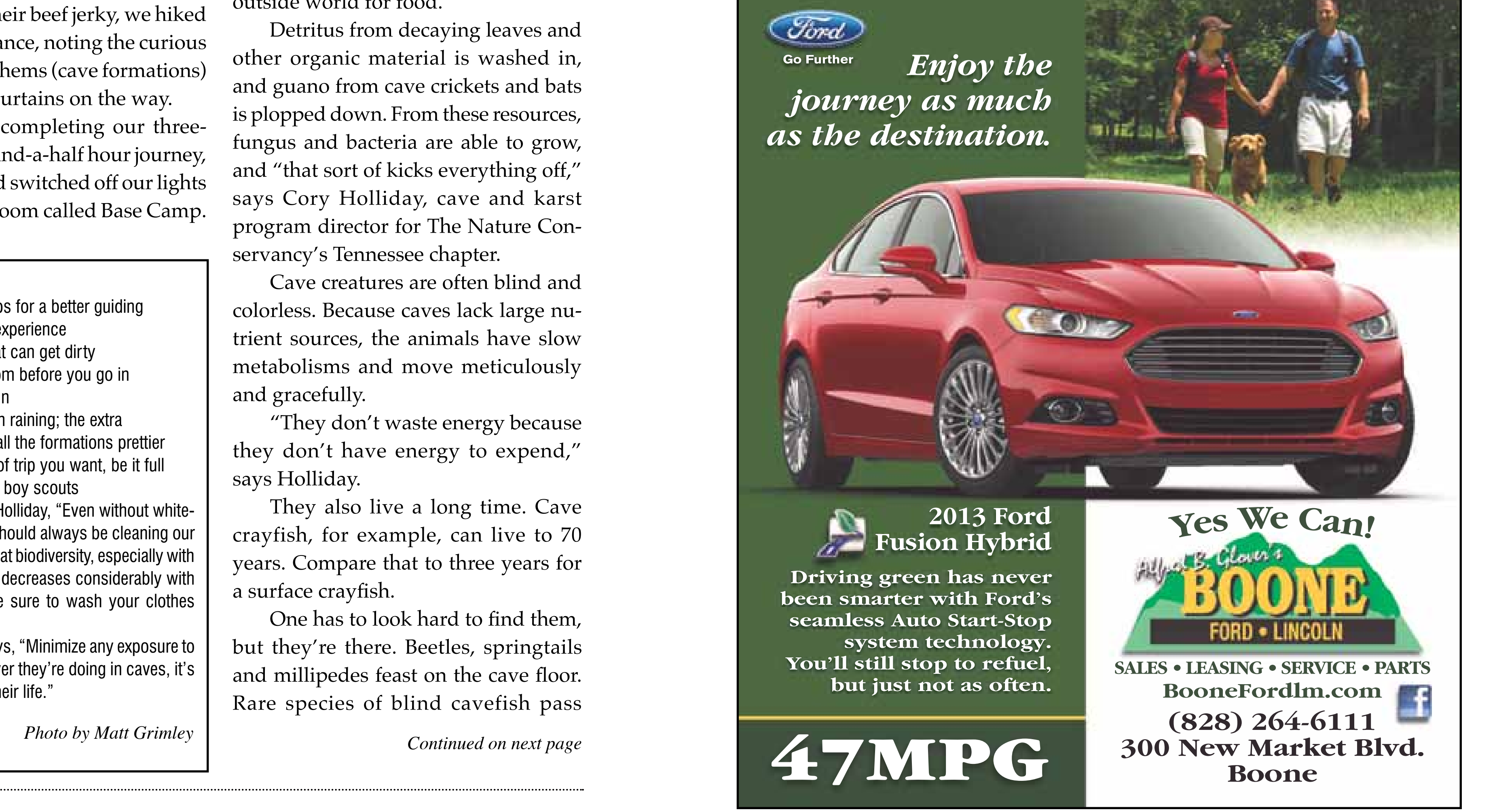
White-nose syndrome, decimating bat populations on the East Coast, is European by descent, and almost all Old World bats are immune to the fungus. U.S. Geological Survey scientist Carol Meteyer told the Washington Post recently, "It's cellular suicide. [The immune system] comes out in a huge wave, going out to those areas of infection and kills everything." Scientists have likened the disease to AIDS. Photo by Al Hicks, NY Dept of Environ. Conservation.

New caves are receiving the disease every day, including Mammoth Cave in Kentucky in January. Panic is on the rise among those aware of the fate of the creature that saves 4 to 50 billion dollars in insect suppression services for U.S. agriculture every year.

Many officials are limited in their response to the disease. Because chemical sprays that can easily kill the fungus also irreparably damage the caves, all that agencies can do is limit human involvement through cave closures and disinfectant stations.

Some have attempted alternatives. One multi-partner project in Kentucky is working with a slow-release anti-fungal inoculation to cure the plague. And Holliday has his own project in Montgomery County, Tenn., an artificial concrete cave for the bats that will be sprayed for the fungus after the bats leave every year. If it proves successful in fighting the disease, the lessons learned could be applied to other manmade structures such as mines where bats hibernate.

While Holliday remains hopeful for the project, he does note that "it's a last-ditch effort." As with the rest of the cave dwellers, bats are long-lived and don't reproduce often, recalling what Holliday says: "Once [the cave ecosystem] is gone, it tends to be gone."



On the Fringe of Life

A Tour of Appalachia's Biodiverse Frontier

By Molly Moore

These mushrooms (above) from West Virginia's New River Gorge are one of countless varieties in Appalachia, a world hub for fungi species. Photo by Jessica Elaine Ulm Anderson.
Daniel Douglas of Eastern Kentucky University compared land snails (left) in an old growth forest with snails in a forest that was logged 70 years ago and strip-mined 40 years ago. He found that snail communities had not yet recovered from the disturbances. Photo by Daniel Douglas.

Crouch Knob in Randolph County, W. Va., might be home to the largest remaining cluster of running buffalo clover in the world. As its name suggests, this particular clover once flourished alongside buffalo, sending "runners" of floral clones across the bison-trodden earth of eastern North America.

In 1825, the last eastern wood bison was killed near the source of West Virginia's Tygart River. Running buffalo clover also seemed to disappear from the Central Appalachians until a population was rediscovered in the New River Gorge in 1983. Since then, small numbers of the federally endangered flower have been found in several states, typically along trails or in mowed areas where human disturbances echo the buffaloes' impact on the land. Yet while running buffalo clover might be adjusting to the modern world, its eastern namesake doesn't have a chance.

Extinction is a natural process as constant as life itself. In Earth's deep past, however, there are five instances where the rate of extinction soared to more than 75 percent in a relatively short time period and the rate of new species' emergence decreased. The most recent of these mass extinctions upended the dinosaurs' reign and made room for the rise of a curious hairless ape that many scientists believe is accelerating extinctions through habitat fragmentation, pollution, introduction of invasive species, spread of disease, outright killing and global climate change.

Is the loss of creatures such as the Carolina parakeet — a small parrot that was likely the most colorful bird to grace North America — indicative of a grand extinction to rival that of the dinosaurs, or just another tick mark in evolutionary time? That's the question posed in a 2011 study by Dr. Anthony Barnosky and others in the journal *Nature*, titled "Has the Earth's sixth mass extinction already arrived?" The short answer: It's quite possible that we're nearly there.

Amphibian Alert

Nothing speaks to the chill of sudden species loss like the hundreds of frog and toad varieties around the world that are facing extinction. Chytrid, a fungus spread by pet American bullfrogs, among other causes, has hushed swathes of rainforest that were formerly cloaked in the sound of croaking.

"Amphibians are the quintessential canary in a coal mine," says J.D. Kleopfer, a biologist with the Virginia Department of Game and Inland Fisheries. "We can't reiterate that enough." Many amphibians live the first part of their life in water before transitioning to land as an adult, a lifestyle that makes them highly vulnerable to poor water quality.

Frogs in Virginia are doing fairly well, Kleopfer says, especially compared with their international kin.

But he's aware of the havoc that chytrid is wreaking across the globe, and is keeping a watch on amphibian health at home. Recently, Virginia biologists received reports of sudden spates of wood frog deaths, primarily in mid-Atlantic Appalachia. The wood frogs appear to be victims of the hemorrhage-causing ranavirus, a potential peril that Kleopfer's team will begin investigating this February.

Frogs are just one of Appalachia's amphibian indicators — salamanders are frequently heralded as the epitome of Appalachian biodiversity. "Nowhere else in the world is there even a close second to the diversity of salamanders as there are in the southern Appalachians," says Kleopfer.

The eastern hellbender, which can grow to more than two feet long and live up to 30 years in the wild, has been largely unchanged for over 400,000 years. It's one of many salamanders found only in Appalachia. As a regional mascot, it's studied more than most mountain life forms. Still, its life processes are just beginning to be understood.

Researchers are finding fewer young hellbenders, and are trying to determine whether juveniles are dying or whether reproduction

Left to right: Appalachia's living wonders include the eastern hellbender, Arcyria Denudata *slime mold, orange earth tongue mushroom, running buffalo clover and* Lycogala epidendrum *slime mold, also known as wolf's milk. Slime molds are brainless, fungus-like organisms that seem to possess a form of spatial memory. When these creatures move around in search of food, they avoid taking routes they've traveled before.*

rates are down. Hellbenders, like many salamanders, take in oxygen through their skin. If erosion from mining, logging or development overwhelms a stream, the sediment can settle on the salamander's skin and make breathing difficult. In contaminated water, hellbenders also break out with dramatic lesions and skin diseases.

Dr. Kimberly Terrell, a biologist with the Smithsonian Institution is working with Kleopfler and Dr. Bill Hopkins of Virginia Tech to determine how population size, habitat selection and landscape use might be driving the current decline in southwest Virginia's hellbender populations.

As part of the new study, Terrell is assessing hellbender health — analyzing blood samples, checking for disease, and searching for signs of elevated stress hormones. Long periods of stress caused by changing water temperature or pollutants can lead to reduced hellbender health, possibly affecting the species' ability to reproduce or fend off disease. Terrell and her partners are pairing their findings in the field with the results of lab studies on how captive hellbenders respond to changes in water temperature. The goal is to learn how hellbenders might respond to chaotic weather and an overall warmer world.

She says the region's salamanders are resilient to shifts in climate, having survived several mass extinctions, but the pace of man-made environmental change is so rapid that species are struggling to keep up genetically.

Swimming Upstream

Tierra Curry, a biologist with the Center for Biological Diversity, grew up in southeast Kentucky, a place she describes as "saturated and seeping and teeming with life." In addition to salamanders, the region harbors rare fish such as the diamond darter, whose range has decreased from five states to a single river in West Virginia. It's also one of the few darters that produces sounds and "talks." Some of the same activities that threaten this endangered species, such as mountaintop removal coal mining and poorly planned development, also make it difficult for scientists to assess the region's biological richness.

"Appalachia and especially the coalfields are understudied and under-surveyed," Curry says. "We very easily could have lost mussel and crayfish and salamander species to extinction before they were even discovered or surveyed just because of the level of devastation."

Without knowing the full scope of the region's biodiversity, it's hard to know how one species' struggles might impact another. Appalachia is a global epicenter of freshwater mussels, which depend on a few specific fish to help them reproduce. A freshwater mussel will create a lure that looks like prey to the mussel's favored host fish. As the fish draws near, the mussel sprays fertilized eggs onto the fish's gills, where the eggs dwell until they reach maturity. If a dam prevents host fish from reaching certain mussels, or if erosion clouds the water with dirt and the fish can't see the mussels' lures, the mussels can't reproduce.

Into the Unknown

Pure mountain water sources provide the foundation of salamander and mussel success the same way that tiny organisms, such as soil-dwelling amoebas known as slime molds, support Appalachia's staggering variety of trees.

"Slime molds are among the key players in nutrient cycling in soils, and without soil the whole system collapses," says Dr. Steven Stephenson, author of the new book "A Natural History of the Central Appalachians." "But only in the last 10 years have people begun to realize that, 'Wow! Slime molds are here and they're doing a lot for us.'"

The slime mold affiliated with the embattled American chestnut seems to be on its way out, he says, and the mold associated with red spruce might also find itself in trouble as the cold-loving spruce faces warmer conditions. "The more we look at it the more we realize that some of these seemingly insignificant groups are actually ecologically very important," Stephenson says.

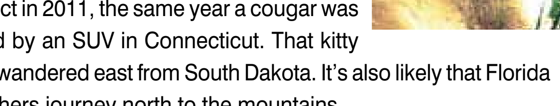
Stephenson wouldn't have to convince Dr. Ernest Bernard, an entomologist at the University of Tennessee in Knoxville. Bernard began studying small wingless insects called springtails in the early '90s, and has been contributing to the Great Smoky Mountains National Park's groundbreaking All-Taxa Biological Inventory since its inception 15 years ago. The massive biodiversity survey, the first of its kind, has resulted in the discovery of 923 species that are new to science, 7,636 that are new to the Smokies, and inspired a series of similar inventories around the country.

In examining the soil-dwelling organisms, says Bernard, "I came to the realization that the whole continent is really under-collected for insects." Sixty new springtail species have been found in the Smokies, and Bernard has even found new species on the university campus.

Some of the species he's found in the national park are anomalies in North America — their nearest cousins are oceans away. "Apparently the park has been enough of a refuge for them to survive all this time," he says. "They might have been more widespread millions of years ago, but this is where they're hanging on, here in the Smokies."

With so much left to discover, it's hard to know what the multitudes of microscopic life might convey about the health of the ecosystems that are built on their backs. But if small amphibians are the canary in a coal mine when it comes to the health of the planet, perhaps these tinier life forms also have a story to tell.

In Memoriam



Since Europeans arrived, excessive hunting and deforestation has led to the demise of a number of Appalachian creatures.

Carolina Parakeet

The only parrot native to the United States favored old forests along rivers. Farmers saw it as a despised agricultural pest and ladies prized its feathers for their hats — it was extinct by the early 1900s.

Passenger Pigeon

Nesting colonies of passenger pigeons could be several miles wide and 40 miles long, with hundreds of birds in each tree. The birds could fly at 60 mph, but that didn't save them from extinction in the early 20th century.

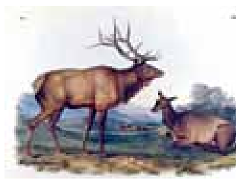
Eastern Wood Bison

Smaller than their western counterparts, migratory eastern wood bison carved paths through the forest, and their trails were used by Native Americans as well as early European settlers. The last herd was slaughtered during the winter of 1799-1800, though a few individuals survived until 1825.

Eastern Mountain Lion

Experts believe the last of the eastern subspecies of mountain lion, or cougar, went extinct in the 1930s. It was officially declared extinct in 2011, the same year a cougar was killed by an SUV in Connecticut. That kitty had wandered east from South Dakota. It's also likely that Florida panthers journey north to the mountains.

Eastern Elk



Extinct by the end of the 19th century, eastern elk were larger than their western cousins. Recently, western elk have been reintroduced to some parts of Appalachia. Remnants of the eastern elk's bloodline might persist — Theodore Roosevelt sent 18 elk to New Zealand, and some might have been the eastern variety.

Carolina parakeet and passenger pigeon drawings courtesy of Biodiversity Heritage Library; "Hennepin, Amplissimae Regionali Mississipi" 1687 map, from Yale University Library, Map Collection; Cougar courtesy of U.S. Fish and Wildlife; John James Audobon Elk lithograph courtesy of Brooklyn Museum

Appalachia's Political Landscape

The 113th Congress begins at a pivotal time in the political economy of Appalachia. To better understand the course being charted by our representatives, in this special pull-out section we take a look at the political climate in our region and introduce you to Appalachia's elected leaders in the U.S. House of Representatives.

Where There is a Will: The Persistence of Political Challenges in a Region Apart

By Brian Sewell

From the muddy path that led to the cabin, reporters and cameramen waited to document the modest declaration of an "unconditional war on poverty." That day in 1964, surrounded by children on the front porch of a home in eastern Kentucky, President Lyndon B. Johnson said that "Appalachia missed out on the abundance which has been granted to the rest of the nation."

Over the next several decades, federal funding to the Appalachian Regional Commission contributed to growth in places such as Atlanta, Birmingham and Pittsburgh, but often overlooked the economic and environmental toll of natural resource extraction. Today, counties in the heart of the region remain among the most impoverished in the country.

Communities of Central Appalachia are now feeling the pressure of what is likely coal's long-term decline. As a result, some Appalachian politicians are decrying a perceived political "war on coal." Others are addressing the divergence of the coal industry's interests from those of the communities they represent.

Absentee Enterprise

The mixed results of economic initiatives in Appalachia are not for a lack of will. During the 20th century, social and labor movements repeatedly rose in opposition to unjust land leases, anti-union policy, insufficient medical care for miners with black lung disease and the destruction of mountaintop removal. Each time, there were powerful forces pushing back.

In the late 1800s, landowners were coaxed into selling their mineral rights for as little as 10 cents an acre. Soon, with access to abundant natural resources, wealthy out-of-state owners turned their attention to politics, helping to elect governors and congressmen to safeguard their investments and perpetuate profits.

The coal industry's political influence began to come to light at the turn of the century. The pursuit of a severance tax on natural resource extraction in West Virginia repeatedly failed under pressure from Standard Oil Company and other corporations.

Photo by Jamie Goodman

In 1953, Governor William C. Marland tried again saying, "For the past fifty years, we have seen our natural resources exploited, in many cases extravagantly and wastefully, by outside capital." The proposed tax was summarily defeated by Marland's own party. It wasn't until 1980 that a severance tax was passed.

Increasingly, union-led strikes, periods of upheaval including the black lung movement, and coal-related disasters such as the Farmington Mine explosion in 1968 and the Buffalo Creek flood in 1972 revealed a culture of government and industry collusion, the poor enforcement of existing laws, and an apparent disregard for the safety of miners and their families out of deference to coal companies' avarice.

By 1970, mountaintop removal had grown widespread. Far fewer miners were required, but coal companies argued that if Appalachia had more flat land to develop, the shortage of jobs in the region would be easily remedied.

That year, Democratic gubernatorial candidate Jay Rockefeller came out against mountaintop removal, saying that "strip mining of coal must be prohibited by law, completely and forever." He altered his position after being defeated despite outspending his opponent two-to-one. Now a U.S. senator, Rockefeller expressed his outrage with the U.S. Environmental Protection Agency in 2011 after the agency vetoed one of the largest mountaintop removal permits in history. "Let there be no doubt that surface mining operations can and must be done in an environmentally sensitive manner," he wrote in a letter to President Obama.

Pivotal Politics

Mining is not the only industry in the region. Manufacturing, agriculture and the furniture industry have all gone through their own transformations. But the edifice shaped by extractive industries and the politicians who create economic, tax and environmental policy has remained largely intact. Although the greatest current threat to domestic coal use is cheap natural gas, rules pursued by the EPA under President Obama have galvanized the coal industry and its supporters in Congress. The industry's political visibility and resolve has rarely been greater.

Last year, TV ads targeting key votes began airing before a vote to block an EPA rule to cut harmful emissions from coal plants. Even adamantly pro-coal Senator Joe Manchin earned a mention in an ad stating, "Senator Joe Manchin may vote right, but will he lead others to stand up to Obama?"

On the day of the vote, Sen. Manchin reminded his colleagues that, "From the day I arrived in the Senate, I have been determined to stop the EPA's jobs-killing agenda." Sen. Rockefeller, on the other hand, criticized the industry's "war on coal" message that claims the future is bleak "unless we somehow turn back the clock, ignore the present and block the future." By speaking out, Rockefeller publicly severed his ties with the industry months before announcing he would not seek re-election in 2014.

Similar battles have played out in the U.S. House of Representatives, in congressional hearings and in the statehouses of Tennessee, Kentucky, Virginia and West Virginia.

Arguments in defense of reducing regulation have gained traction in the politics of Central Appalachia and the United States as a whole. But so have ideas on how to improve the long-term health and prosperity of Appalachian communities, ideas that can be hastened by political courage in pivotal times.

During his campaign for southwestern Virginia's 9th district congressional seat, Anthony Flaccavento, a farmer who has worked on community development, often made the distinction between being "pro-coal" and "pro-coal miner."

"To be pro-coal miner," he wrote in an editorial last summer, "is to start telling the truth about this long-term job loss – which will continue whether a Republican or Democrat occupies the White House – and to work like mad, right now, to create new manufacturing jobs and new businesses that can begin to make up for these losses and build an economy that will provide opportunities for our children."

Although he was endorsed by the United Mine Workers of America, Flaccavento lost to the incumbent, Rep. Morgan Griffith, who was heavily backed by the coal industry.

In a chapter titled "A Legacy of Neglect" in its 1964 report, the President's Appalachian Regional Commission advised the president and Congress that "further resource activity in the region — if uncoordinated in its timing or its relationship to human and social capital — could repeat the past pattern and make little more than a piecemeal improvement of the Appalachian social and economic substructure."

More than half a century after the group of governors, federal officials and regional stakeholders convened, their prescriptions for the nation's elected leaders persist. But that doesn't mean there is not a way forward.

Regional Representation

Marking the beginning of the most diverse Congress in the nation's history, the 113th meeting of the U.S. House of Representatives began on January 3. Nationwide, the Democratic party gained nine seats in the House as a result of the November election, but it remains narrowly under Republican control. We looked at 16 central and southern Appalachian congressional districts to find out: who represents us?

Thomas Massie (KY-4)

Freshman Thomas Massie is a conservative thinker with libertarian leanings, endorsed by both Rand and Ron Paul. Massie supports using all energy that can be produced in Kentucky, from coal to solar, as dictated by the free market with little regulation and zero subsidies. His northern Kentucky district includes suburbs of Cincinnati, Ohio.
District Specs: 15% poverty rate, 31.8% rural, Education level: 24.9% college, 87% high school

Andy Barr (KY-6)

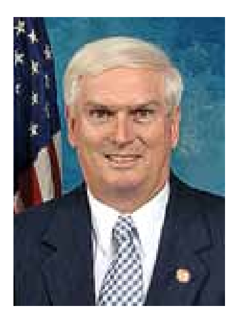
Though this freshman representative from Eastern Kentucky does not yet have a voting record, he has made his position clear on a number legislative efforts. Barr vehemently opposes putting a tax on carbon and tougher regulations on toxic power plant emissions, and chided his opponent, former Rep. Ben Chandler, for co-sponsoring the Clean Water Protection Act, which he said would virtually ban all surface mining in Kentucky.
District Specs: 19% poverty rate, 27.4% rural, Education level: 29.3% college, 85.8% high school

Hal Rogers (KY-05)

Decidedly pro-coal, the current Republican Chairman of the House Appropriations Committee consistently votes in the interests of the coal industry and has said that "coal is not America's energy problem, it is America's energy solution." Rogers' district, nestled in the eastern corner of Kentucky, is home to more mountaintop removal than any other district in the nation and, according to the Gallup-Healthways Well-Being Index, ranks dead last in the nation in life expectancy, physical health, emotional health, and overall well-being.
District specs: 28% poverty rate, 76.5% rural, Education level: 11.2% college, 72.2% high school

Phil Roe (TN-01)

Congressman Roe represents a former pro-union district in upper East Tennessee which has been held by the Republican Party since 1881. There is no coal in his district, but he has said he believes that the United States has "a 400-year supply at current usage, and we need to look and expand our technology in coal." Congressman Roe generally votes with the coal industry, but eco-tourism is an enormous part of the economy in his district, and he has supported legislation such as the Tennessee Wilderness Act, which would protect important natural areas of East Tennessee.
District specs: 20% poverty rate, 42.5% rural, Education level: 17.9% college, 81.4% high school



John Duncan (TN-02)

Congressman Duncan inherited this mountainous East Tennessee congressional seat from his father, but has done little of note in his decades of service. Tennessee's second district is home to much of the Great Smoky Mountains National Park, America's most-visited national park, making it a popular tourist destination. Despite this fact, Rep. Duncan has been openly hostile towards those working to protect Tennesseans and the environment from mining techniques such as mountaintop removal.
District specs: 15% poverty rate, 25.8% rural, Education level: 27.7% college, 87.2% high school

Chuck Fleischmann (TN-03)

The Chattanooga-based representative generally sides with the coal industry, but voted against an amendment that would have prevented the U.S. Environmental Protection Agency from regulating coal ash waste. Earning a second term by beating out local dairy magnate Scotty Mayfield and Weston Wamp, the son of former Representative Zach Wamp, Fleischman is a strong supporter of nuclear energy, the development of environmentally-friendly drilling practices and "clean coal" technology.
District Specs: 20% poverty rate, 37.2% rural, Education level: 19.9% college, 82.6% high school

Scott DesJarlais (TN-04)

Congressman DesJarlais won a closer-than-expected re-election in 2012 due to allegations that he had pressured a former mistress to have an abortion. The pro-coal representative once stated that "We have an abundance of natural and technological resources in our country and should not be held hostage by Arab Sheiks or by regulatory agencies in Washington." Much of the small amount of coal mining in Tennessee takes place in his Cumberland Plateau-based district.
District Specs: 20% poverty rate, 43.8% rural, Education level: 20.7% college, 83.1% high school

David McKinley (WV-1)

Before serving in Congress, this northwestern West Virginia representative owned a construction and engineering company. As a freshman, McKinley drafted legislation that would prevent the U.S. Environmental Protection Agency from finalizing rules to regulate the disposal of coal ash waste. He is currently gathering support for a Congressional Resolution opposing a federal tax on carbon emissions.
District Specs: 18% poverty rate, 45.21% rural, Education level: 20.3% college, 87.8% high school

Shelley Moore Capito (WV-2)

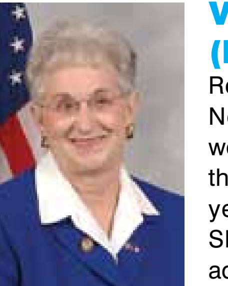
A seventh-term representative for central West Virginia, Capito has deep roots in West Virginia politics, as her father served as the state's governor for three terms. A co-founder of the Congressional Coal Caucus, Capito has fought on behalf of the coal industry against the U.S. Environmental Protection Agency, and supports the practice of mountaintop removal coal mining.
District Specs: 18% poverty rate, 48.81% rural, Education level: 20.1% college, 85.5% high school

Nick Rahall (WV-03)

Rahall is a long-serving representative from southern West Virginia, and is the ranking member of the powerful Transportation and Infrastructure Committee. In the 1970s, Congressman Rahall helped draft and pass the federal Surface Mine Control and Reclamation Act. He has compared federal efforts to protect citizens from coal pollution to a "terrorist threat," while single-handedly blocking the bipartisan Clean Water Protection Act, which he claimed would have over 400 votes in the House if he wasn't standing in the way. Although Rahall has stated that West Virginia should support green job development due to declining coal reserves, he reverted to a hardline pro-coal stance after the coal lobby publicly questioned his allegiance and worked to defeat him in Congress.
District specs: 21% poverty rate, 59.84% rural, Education level: 15% college, 79.4% high school

Robert Hurt (VA-5)

A second term representative whose district stretches from Charlottesville to the North Carolina border, Hurt has consistently voted to stop the U.S. Environmental Protection Agency from limiting pollution from coal-fired power plants, including carbon and mercury pollution. He is also a supporter of offshore oil drilling along the coast of Virginia.
District Specs: 17% poverty rate in, 64.7% rural, Education level: 25.8% college, 83.4% high school



Virginia Foxx (NC-5)

Representing northwestern North Carolina, Congresswoman Foxx was elected to the House after serving 10 years in the state Senate. She is a conservative and advocates reducing the size of government wherever possible. Last year, she voted for H.R. 3409, a bundle of coal-friendly bills which Foxx wrote would "stop the U.S. Environmental Protection Agency from imposing a liberal cap-and-tax agenda on the American people through the auspices of the Clean Air Act."
District Specs: 18% poverty rate, 39.6% rural, Education level: 25.1% college, 83.9% high school

Mark Meadows (NC-11)

Freshman Mark Meadows represents most of Western North Carolina, though the redistricted 11th longer includes the large city of Asheville. Meadows is a conservative businessman who advocates reducing the size of government. He has criticized regulations targeted at mountaintop removal coal mining and has said he supports improved use of national forests for timber harvesting and recreation."
District Specs: 18% poverty rate, 55.5% rural, Education level: 21.4% college, 82.9% high school

Bob Goodlatte (VA-6)

Recently elected to his 11th term, Goodlatte represents the highly conservative northwestern section of Virginia. He has been an advocate of the coal industry for nearly two decades and believes the Obama administration, through a "war on coal," is creating unattainable standards for coal companies that will shutter coal-fired power plants and halt coal mining in Appalachia.
District Specs: 14% poverty rate, 35.6% rural, Education level: 24.2% college, 84.3% high school

Patrick McHenry (NC-10)

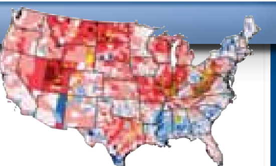
When he first ran for the North Carolina House of Representatives, McHenry was still a junior in college. As a federal representative, he has co-sponsored legislation to expand the Blue Ridge Parkway but frequently votes against environmental protections. In 2011, McHenry voted to prohibit the Endangered Species Act from considering the impact of climate change on plants, fish and other wildlife. In the 2012 election, McHenry won re-election to a fifth term, receiving 73 percent of the vote in his district.
District Specs: 17% poverty rate, 36.1% rural, Education level: 23.4% college, 84.1% high school

Morgan Griffith (VA-9)

Griffith, a second term representative from southwest Virginia — an area that includes all of the state's mountaintop removal coal mines — has been an ardent supporter of the coal industry, and believes that coal jobs are the bedrock of the southwest Virginia economy. A fervent critic of the U.S. Environmental Protection Agency, Griffith has consistently voted to limit the agency's powers to veto mine permits and to create and enforce regulations on coal-fired power plants and coal ash ponds.
District Specs: 19% poverty rate, 58.2% rural, Education level: 18.5% college, 80.9% high school

Nationwide specs: 15% overall poverty rate, according to a 2011 U.S. Census Bureau report; 19.3% of U.S. population is rural, according to the 2010 U.S. Census. Education level: 32% college, 89% high school, according to U.S. Department of Education (2011 figures). Education statistics for congressional districts from 2011 American Community Survey.

Vested Power: State-Level Legislative Agendas in 2013



By Brian Sewell, J.W. Randolph and Nathan Jenkins

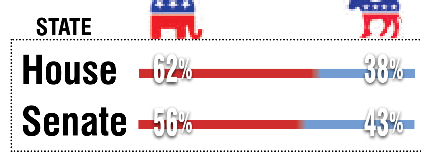
At the state level, the public often has greater access and input on decisions and the processes of their governments. But so do special interests — especially campaign funders and industries that play a significant role in state and large-scale economies.

State governments in Appalachia create their own environmental policy and decide how much to fund the agencies that enforce it. Some pass modest laws to incentivize renewable energy, but all put their weight behind fossil fuels.

Federal policies influence state leadership, too. In the three years since the Supreme Court's *Citizens United decision*, many states including North Carolina and Tennessee have repealed or rewritten campaign finance laws, altering the way races are run.

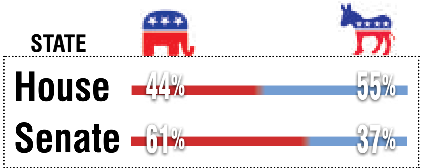
Like all state legislatures, this year elected leaders in Appalachian states will grapple with transportation and infrastructure projects, budget shortfalls and unemployment. But states in the region must also meet the challenge of regulating industries that simultaneously present economic benefits and major environmental risks.

North Carolina



A new era in North Carolina politics began on Jan. 5, as state leadership and the legislative agenda shifted completely under GOP control for the first time since 1870. Pat McCrory, a former mayor and executive at Duke Energy, was sworn in as the state's first Republican governor in more than 20 years. Gov. McCrory has been outspoken about making North Carolina a player in energy production by tapping into the nation's shale gas boom and the potential for offshore wind development. This year, the N.C. Mining and Energy Commission, which was formed after fracking was legalized in the state last year, will continue developing regulations of future drilling in the Piedmont region, including controversial issues related to land ownership rights. Legislation passed last year requires the N.C. Division of Air Quality to revise the state's air toxics program. So far, proposed rule changes ease restrictions on industry by exempting pollution sources from state oversight if they are covered by federal rules and do not pose an "unacceptable risk" to human health.

Kentucky



Residents of the commonwealth are familiar with bitter battles and partisan politics. Republicans retained control of the state Senate in the most recent election, while the Democratic party controls the House of Representatives and governor's seat — Gov. Steve Beshear was re-elected to a second four-year term in 2011. This year, declining coal severance taxes and a debate over which state projects will be funded by the tax are at the top of the legislative agenda. Democratic Rep. Fitz Steele introduced a bill to require all severance taxes to be returned to coal counties. In response to declining revenues from the coal industry, the state legislature is expected to review environmental and mining regulations. House Majority leader Greg Stumbo, a supporter of mountaintop removal coal mining and development on post-mining land, recently announced that lawmakers would redraw district maps early this year. On the federal level, speculation has begun over who will challenge longtime senator Mitch McConnell in 2014.

West Virginia

STATE	Republican	Democrat
House	46%	54%
Senate	29%	71%

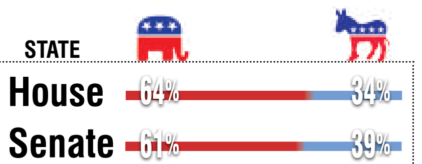
In the 2012 election, incumbent Democratic Gov. Earl Ray Tomblin and the Democratic party maintained control of the state legislature. In his inaugural speech, Gov. Tomblin promised to continue representing the interests of the coal industry, saying that he would fight the "federal government to get off our backs and out of our way." Meanwhile, up to three-quarters of streams in the state are too polluted to support their designated uses such as recreation, providing drinking water or simply supporting aquatic life. Last year, the state passed SB 562, a bill that allows the secretary of the Department of Environmental Protection to raise the threshold for considering a waterway biologically impaired. Recently, the agency has been plagued with the threat of lawsuits, and because of a lack of funding and shortage of staff is struggling to meet required inspections.

Virginia

STATE	Republican	Democrat
House	67%	32%
Senate	50%	50%

Virginia residents may face a year of political posturing as Republican Gov. Bob McDonnell, who has sought to make Virginia "the energy capital of the East Coast," forms his legacy and candidates looking to replace him develop policy positions. On the legislative side, the Republican-controlled House of Delegates and Senate are currently debating proposed legislation to change the state's renewable portfolio standard. Originally established in 2007, the law is meant to encourage power companies to invest in renewable energy, but utilities have received credits for meeting goals without constructing any new wind or solar generation. Some lawmakers have suggested eliminating bonuses for clean energy altogether, while other proposals would require the development of renewable energy projects in the state. Although a bill to life the ban was recently withdrawn, state lawmakers have proposed lifting a 30-year ban on uranium mining — an issue that doesn't fall cleanly along partisan lines.

Tennessee



Tennessee turned deep red at the state level in the 2012 elections, as Republicans achieved a supermajority in both the House and Senate. Just four years ago, Democrats held majorities in the legislature as well as the governor's seat, which also now belongs to a Republican. The state stands closer than ever to becoming the first to pass a ban on mountaintop removal mining — a platform current Gov. Bill Haslam ran on during his 2010 election race. In 2012, the Scenic Vistas Protection Act reached the floor of the state Senate, making it the first mountaintop removal ban to ever make it to the floor of any legislative body in the country. On the federal level, Senator Lamar Alexander has introduced legislation to curb mountaintop removal in the U.S. Senate, and also championed the Tennessee Wilderness Act to protect a large swath of Cherokee National Forest, which has gained support from other Tennessee Senator Bob Corker as well as three Republican House members from East Tennesseee. The coal industry in Tennessee employs approximately 500 miners, while the state's mountain-based tourism industry employs more than 175,000.

Safe Passage Appalachia and migrating birds serve each other in multiple ways

By Matt Grimley

Every fall and spring, an ongoing restlessness called *zugenruhe* begins to make some birds' wings twitch at night. They will gorge on seeds and insects, fattening their bodies by as much as 10 percent per day. Solitary birds will even flock together for better predator avoidance, food finding and orientation for the long journey ahead.

It's all part of migration.

Propelled by genetics that go back to the ice age, and fostered by a series of individual and group choices, migration is equal parts odyssey and mundanity, an age-old rite of daily life. Despite abundant research, the journey remains a mysterious process and is highly variable between species, representing in some ways the amorphous hardiness of the world's most mobile creatures.

There are 10 to 20 billion birds in the United States. Every year, more than five billion of them, representing about 350 species, will jet off for a difficult journey that will bring better food and eventual offspring, while killing off untold numbers from weather, exhaustion and natural predation.

Human-made obstacles are proving increasingly fatal, however, causing billions of mortalities every year, and the wellbeing of migratory birds becomes a question for the Appalachian wilderness, a well-noted migratory flyway. Can the mountains maintain safe passage and healthy lives for traveling birds, or will humankind block their journey?

Clockwise from top left: Chestnut-sided warbler, blue grosbeak, summer tanager, orchard oriole. Up to 70 percent of local woodland birds in southern Appalachia are migratory, playing a number of ecological roles such as pollinators, pest exterminators, seed dispersers, food for predators, and camera bait for active birders. Photos by Ed Schneider

Feelin' Blue

"Zee-zee-zee-zizizizi-zeeet!"

Cerulean warblers may be rare, but at least they're loud, trilling a tattoo of notes before their song's crescendo. Melinda Welton, research associate with the Gulf Coast Bird Observatory, expected to hear their chorus when she drove to West Virginia for a bird survey.

What she found instead was mountaintop removal coal mining, valley fills and reclaimed pastures: a relative silence.

Over the past fifty years, the cerulean warbler's population in the United States has declined by more than 70 percent. Of the eastern songbirds, no bird has experienced a steeper loss.

Of the migratory birds, none has become a more potent symbol for habitat loss. While their North American breeding habitat, mature hardwood forests with structurally diverse canopies, is fragmented through improper timber management and coal mining, their wintering habitat in South America is overtaken by pastureland, coca farms and sun-grown coffee plantations.

There's not a quick solution to the warbler's plight. According to Welton, the birds thrive mostly in forests where no human interference has taken place, meaning reforested timber land and reclamation projects may take 30 or 40 years to be suitable for lasting warbler populations.

Researchers often cite the Cumberland Mountains, which stretch from West Virginia to Tennessee, as the best breeding habitat for the bird, says Welton. Protecting this breeding territory, with the help of wildlife agencies and nature conservancies, will be crucial to the bird's survival.

"I don't know that you can track human welfare to the existence of cerulean warblers," says Welton, "but if [their habitat] goes, then we can't predict what else we lose."

Over and Out

It's a big question, how the Appalachian mountains serve migratory species. Andrew Farnsworth, a research associate with the Cornell Lab of Ornithology, thinks it boils down to two basic functions.

First, the region provides a rich habitat. Appalachian streams burst with edible insects and sport a surplus of nestable trees, and when undisturbed, they support breeding species such as scarlet tanagers, wood thrushes and Kentucky warblers. And because there are so many resources available, says Farnsworth, there's good evidence that some birds use the southern terminus of the Appalachians as stopover ground, pecking up precious foodstuffs on their way to and from the tropics.

The ridgelines of the mountains provide the second function. They guide raptors such as eagles, hawks and vultures as they fly south. Nocturnal migrants such as songbirds use the ridges, too, but evidence of their flights is less clear.

The raptors are auspicious as they take advantage of the sun-filled topography. Conserving precious energy, they circle upward on masses of hot air called thermals. When a thermal dissipates, sometimes at altitudes greater than 3,000 feet, they glide off into the next thermal to repeat the process. With this method, they often cover 250 to 300 miles each day with minimal flapping. Winds that meet the ridges also cause updrafts, which sometimes throw these fast-gliding raptors on a collision course with human-made projects such as wind turbines.

Soaring Costs

According to the American Bird Conservancy, up to 440,000 birds were killed by wind turbines in 2010. These fatalities comprise less than one percent of the whole, however. Larger mortalities arise from window collisions (up to one billion each year), pesticides (at least 72 million annually), and cats (up to 3.7 billion birds).

Smart engineering designs for windmills, lights and other structures, combined with educational campaigns such as the American Bird Conservancy's "Cat Indoors!" program, have

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helped to mitigate these avian losses in recent years. Yet modernization and human expansion is still taking a toll on the birds.

Habitat loss and climate change pose serious threats to migratory birds, Farnsworth says. These, when compounded with the rest of human-caused mortalities, make for a serious situation.

With climate change, some will be better off. For species such as the eastern phoebe or tree swallow — which have larger, more mobile populations and extensive ranges — things may not be so dire. Other species that rely on specific habitats and seasonal food sources in and out of migration, such as the barn swallow or the canvasback duck, will have a harder time adjusting.

The birds' timing and presence — or absence — around the nation is becoming a point of interest for ornithologists and birdwatchers alike. Recent studies have shown migration timing to have shifted by more than 20 days for some species, while ranges have shifted as well, prompting birds such as the golden-winged warbler to have moved nearly 100 miles north in the past two decades.

Feathering the Storm

"Birders...are very diligent about going out to find things," says Farnsworth.

eBird, from Cornell University and the National Audubon Society, might be the best evidence for that. The project, now 10 years old with over 100 million observations, engages volunteers from around the world to enter their observations into an online database.

Rough-legged hawks winter in northern and central Appalachia, and breed in the Arctic tundra. Like bald eagles, this hawk's southward movements depend to a large degree on habitat and prey conditions at the northern latitudes, which may be at risk of climate change in coming years. Photo by Ed Schneider

eBird data has been used for studies on biodiversity and climate change, and Cornell has used the project to mobilize birdwatchers in the wake of disasters such as the Deepwater Horizon oil spill. With birders examining the coast periodically, ecologists, conservationists and scientists can examine bird populations and extrapolate real costs of environmental losses.

Another Cornell-collaborated project called Birdcast attempts to tell the future. Taking what is known from meteorological data and using radar and acoustics to track birds, it merges everything together to predict where, when, how many and what kind of birds are going to travel. Researchers hope to automate the avian models produced from this data, and use it in ways like the modern weatherman, to predict and recall the turbulent feathered migrations.

Bird is the Word

According to a U.S. Fish and Wildlife Service report, there were about 48 million birdwatchers in the United States in 2006. They were estimated to have generated about $82 billion in economic output while creating 671,000 jobs nationwide.

It's among the nation's fastest growing hobbies, and even without its economic impact, its educational and social benefits are felt. Simon Thompson, bird guide and owner of the store Wild Bird Unlimited out of Asheville, N.C., says over the past two years he and other local birders took part in a "fiercely competitive" bird-a-thon that raised over $14,000 for cerulean warbler habitat.

Thompson describes the beauty of birding, not only by sight, but by sound. "Listening gives you 360 degrees," he says, noting the joy of navigating between the layers of birdsong that symphonize every day.

"The birds are free," he says. "They don't watch CNN. They don't know there's a war."

Canvasback ducks migrate in "V" formation, creating air vortices with their wingtips that ease the flight weight of each successive duck. This reduces drag by 65 percent and increases the ducks' range by as much as 70 percent. Photo by Ed Schneider

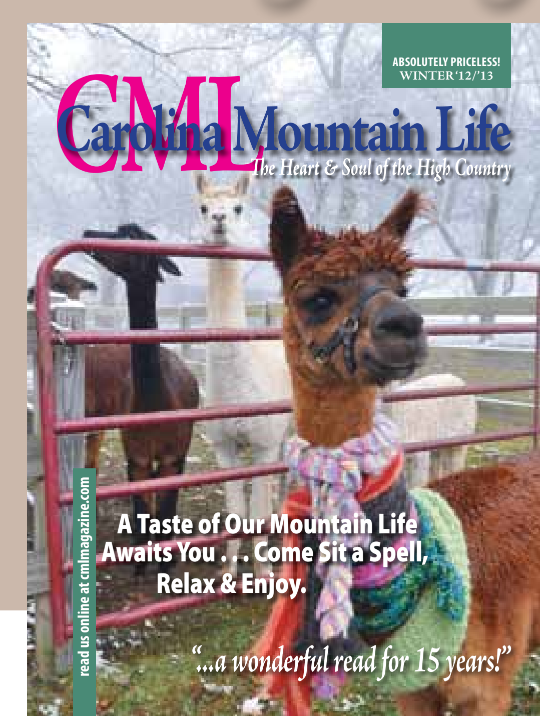
Not Just For The Birds

Monarch butterflies travel thousands of miles from all over North America to Mexico, following south the same Appalachian updrafts as birds every fall. Recent research has revealed that monarchs produce two or more short-lived generations over the summer, and these progeny will make another migration across the Appalachians to the East Coast. (That's 360 degrees of migration for anyone keeping track.)

Bats flap off to a cave and hibernate come winter. They can travel over a hundred miles to find their roosts, using vision, echolocation and the sun for orientation. However, most bats are not adapted for speed or distance, so the summer distribution of bats is limited by the availability of wintering caves.

Spotted Salamanders migrate *en masse* during the first warm rains or foggy nights in the spring to breeding ponds, often the same ones they were born in. These amphibians and others engage in a phenomenon called "explosive breeding," wherein tens or hundreds of their kind arrive at a pool. The males leave their sperm packets and the females suck them up with their cloacas to fertilize the eggs internally.

"What a great magazine!"



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The Ebb and Flow of Appalachia's Game Species

By Davis Wax

From the mythic, raccoon-crowned Daniel Boone to the adventurous, tradition-minded hunter of today, hunting in Appalachia makes up a long and colored tale. Its most intriguing characters may be the game species themselves, each accentuating a pastime and way of life which is slowly becoming history.

A Game Icon of Southern Appalachia

The ruffed grouse, a pudgy, nonmigratory bird ranging from the Appalachians to Canada and Alaska, spends most of its time on the ground. Its gray and brown plumage helps it camouflage in thick brush, making it difficult for hunters to spot.

"Hunters like grouse because they're challenging," says Allen Boynton, a wildlife program manager for the Department of Game and Inland Fisheries in southwest Virginia. "They can be gone before you see them."

Grouse are quick to flush (fly from their brushy hiding place) at unusual sounds and are fast enough to elude a hunter not primed and ready. "Flushing twenty or thirty and only getting a dozen in a season," says Boynton, "would be considered good."

Wildlife management has been increasingly concerned with local grouse populations, though hunting has little to do with the lower numbers. Rather, it is all about habitat. "The grouse is an iconic Southern Appalachian game bird," says Chris Kreh, wildlife biologist for the N.C. Wildlife Resources Commission, "but it thrives in young forests of five to fifteen years."

According to Boynton, the last time the Appalachian region was extensively logged was in the 1920s and '30s, and some trees today are reaching a century in age. Cutting is not nearly as widespread, and so neither are younger forests.

Herbaceous woodland cover is key to grouse avoiding predators such as hawks and bobcats, and also allows for crucial nest protection. The grouse is not such a simple homemaker, however, since younglings prefer grassland insects and more mature birds enjoy dining on nuts only old forests can provide.

Logging done without professional management, however, is always bad. "Amatuer harvesting can produce degradated water sources," says Boynton, "and a loss of tree species important to certain squirrels and birds."

Struggling for Mutual Benefit

The eastern gray squirrel likes to nest in older hardwood forest trees where it enjoys cover and various nuts. While not as iconic as the grouse, the gray squirrel is still a quite popular game animal in Appalachia.

As a game animal, the black bear's population health remains stable due to its use of diverse habitat and its omnivorous diet (photo by Brian Hammond). The chunky grouse (below left) is quicker than it looks. Many hunters lose them before they even get a glimpse (photo by Ed Gaillard).

"In southwest Virginia," says Boynton, "the most harvested game after deer is squirrel." Timber harvests and surface mining, however, heavily contribute to the loss of squirrel habitat, while deer are better at adapting to changing habitat.

The white-tailed deer is ubiquitous throughout most of North America and no stranger to Appalachia. There are numerous complaints each year usually linked to car collisions as well as vegetable garden and farmland invasions, especially those involving damage to alfalfa and corn.

"Using hunting to manage populations can be a problem," says Chris Ryan, a game management supervisor for the West Virginia Department of Natural Resources, "because the department can't control access to private land."

Deer will often keep to pockets on small acreages of land, rendering them difficult for hunters to cull a growing herd if they don't have permission to venture there. Special hunting seasons aim to keep numbers at a safe level not just for humans, but also for the growth of regenerating forests and wildlife such as ground-dwelling birds which seek cover and nesting in the vegetation that large deer populations will severely overbrowse.

Though many don't think of it as a hunted animal, the black bear is another celebrity game creature of Appalachia, with substantial seasons in all central and southern regional states. Population numbers are consistently stable, a point linked to the animal's superb adaptability — it ranges between both U.S. coastlines and to Alaska and Mexico. Unlike deer, the black bear roams broadly and seldom pins itself down to a single habitat.

"We have over 1,000 complaints a year from the public," says Ryan. Bears typically interfere with the community via trash or farmland crops, particularly corn. In woodlands they will scavenge as diversely as they need to, benefiting from the fruits and insects of the young forest, as well as the acorns and hickory nuts of older growth.

While deer and bear are less susceptible to loss of habitat, grouse and quail depend upon unique conditions. Before European settlers arrived, the

Continued on next page

Traditional Trout Hang on to Native Waters

By Molly Moore

Although they only occupy about 25 percent of their historic range, southern brook trout are doing alright, says Jim Habera, a cold water fisheries biologist for the Tennessee Wildlife Resources Agency. He has worked on every brook trout stream in the eastern part of the state, and the remaining population has stayed fairly stable in recent decades.

Poor logging and agricultural practices devastated brook trout populations around the turn of the last century. "People didn't want to wait for brook trout to recolonize," says Habera. "They said, 'Let's just throw some rainbows and browns in there.'"

Cool mountain streams have a finite amount of food available for hungry fish, and once rainbow trout from the American West and brown trout from Europe took hold, the brook trout were at a disadvantage. Those troubles, combined with water pollution, have limited the fish to headwater streams above 3,500 feet in elevation.

Well-intentioned fisheries managers introduced brook trout from northern hatcheries, but later genetic testing revealed a difference between southern Appalachian brook trout and their larger northern brethren. Conservationists learned they had unintentionally brought another non-native species into the mix.

Today, biologists have mapped out streams with native southern trout and are careful to introduce the right type, preferably fish from within the same watershed. By restoring habitat, removing invasive trout and re-introducing southern brook trout, state and federal agencies along with nonprofit conservation groups are keeping non-native trout at bay.

Brook trout south of the New River in Virginia are genetically distinct from brook trout further north. The genetic split took place at the end of the last ice age more than 10,000 years ago. Photo by Jim Habera, Tennessee Wildlife Resources Agency

In some places, tension persists between anglers fond of rainbow trout and conservation plans that favor the "brookies." Habera recalls that after area biologists teamed up with the Great Smoky Mountains National Park to clear Lynn Camp Prong of invasive fish and reintroduce brook trout, a few anglers threw large rainbows back into the stream. Not only is that illegal and expensive for wildlife agencies, he says, it defies the principle of returning southern Appalachian fish to the streams that were their evolutionary homes. "We've decided, and the public has generally agreed, that we want to manage for native game species."

The Evening Hour: Painting a Gripping Picture of a Gritty Place

Review by Paige Campbell

Appalachian Voices Book Club

Carter Sickels' debut novel "The Evening Hour" is a study in contradictions, many rooted deeply in its Appalachian setting. The town of Dove Creek is a remote southern West Virginia community cloaked in the same desperate, static smallness that often characterizes the Appalachia of literature. At the same time, the setting is a dynamic one that fuels the plot in fundamental ways.

Sickels begins by exploring the age-old theme of Appalachian poverty — and the people driven to flee it — with an ear for dialect and great sensitivity to the nuanced relationships between neighbors and kin. The book follows Cole, a young nursing home aide caught up in illegal prescription drug trade, whose character is developed through many such relationships: the fire-and-brimstone grandparents, the pill-popping girlfriend, the co-worker whose position as a nurse is one Cole quietly aspires to.

But the relationships that loom largest over Cole — and the readers — are ones from his past: the mother who skipped town when Cole was a baby, the childhood friend whose intense place in Cole's life seems to have both shaped and shaken him.

The cast of characters is a large and ambitious one, and serves as the lens through which we are able to comprehend both Cole's devotion to this place and his simultaneous impulse to leave it behind. Yet some interactions beg for more (and more richly developed) voices. When a flood lays waste to part of the community, further dialogue might have spoken more directly to the depth and variety of human responses to such tragedies, so familiar in this flood-prone region.

Still, Sickels succeeds in creating a protagonist with a sturdy moral framework but patently immoral habits, who strokes old folks' foreheads before cleaning out their jewelry boxes and medicine cabinets, who constantly lets people down and whom we root for anyway. The ambiguity surrounding each character rings true, if occasionally a touch incomplete.

"The Evening Hour's" geographic setting is also invoked through the ominous backdrop of mountaintop removal coal mining. When a local activist takes Cole to see how the practice has transformed once-familiar places, Sickels takes us right along, meticulously detailing the starkness that remains. He also takes us up and down the hollers that are devastated by a related dam failure.

These visuals are where Sickels' writing shines the brightest, even (perhaps especially) when he's describing something bleak. It's all there: the moonscape of the mountaintop removal site, the debris hanging from tree branches after floodwaters recede. Through Cole's memory, we also see the way the mountain, with its quiet swimming hole and lush forests and welcoming front porches, once was.

This contrast is one of many that make "The Evening Hour," especially its setting, compelling. Ultimately, our understanding of Cole is so intertwined with Cole's understanding of his surroundings, that we — and he — must face them head-on before beginning to contemplate what might come next.

Game Species

Continued from previous page

bobwhite quail most likely frequented fields and woodlands burned by Native Americans. However, with the loss of farmlands in the region today, quail have fewer landscapes to call home.

"We get more complaints about quail populations being low than any other game," says Boynton.

Restoration projects for quail center around farmland management, which is complicated by the woodland growth near these abandoned areas and, again, trouble accessing private land.

Hunters depend on stable species populations and healthy habitats for their hobby to be viable. Voicing their concerns to wildlife management and participating in harvest recordings are a couple ways hunters can aid other conservationists.

The future of hunting as an Appalachian tradition, however, is itself at risk. "It seems people in general are moving away from outdoor activities," says Boynton. "Fewer hunters per capita participate in the seasons each year."

In addition to changing human interests, coal mining and timber harvesting, as well as the degradation of grasslands, are altering hunting and game habitat in Appalachia to the benefit of some species and detriment of others.

The eastern wild turkey is a large game bird that thrives in mixed habitat: forested areas for cover and open land for mating and brooding. Photo by Art Drauglis

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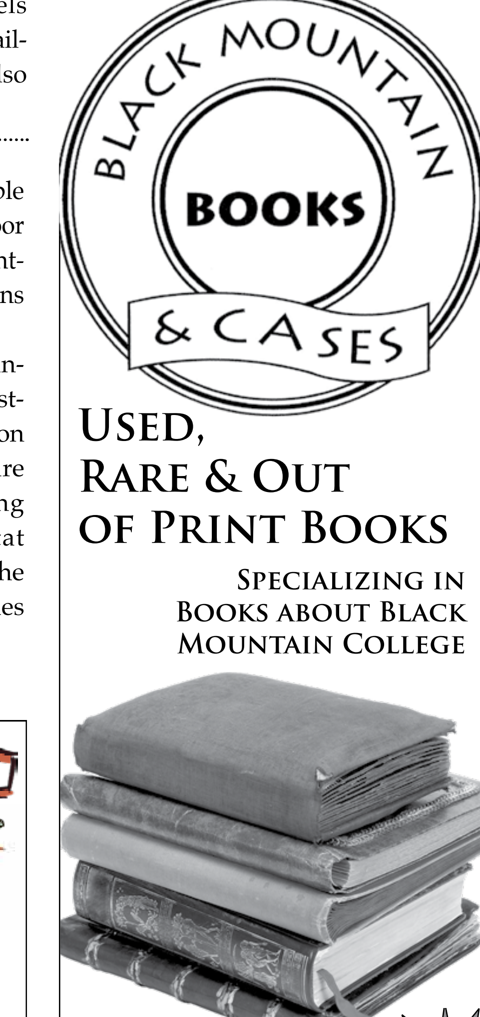

Appalachian States Reconsider the Role of Coal Severance Taxes

By Brian Sewell

Lawmakers in Central Appalachia are seeking legislative solutions to counter declining severance tax revenue after decades of natural resource extraction.

Although not all of the counties in coal-producing states in Appalachia have minable coal, they all benefit from severance taxes, which generate millions of dollars used to improve roads, build flood controls and extend and improve natural gas and electrical infrastructure. New proposals hope to provide coal-producing counties with a larger share of revenue and the means to maintain local services and fund future projects.

According to the U.S. Census Bureau, severance tax collections in West Virginia for 2010 represented nearly nine percent of state revenue, with 88 percent coming from coal. The same year in Kentucky, severance taxes totaled three percent of all revenue, with 83 percent from coal production. Tennessee, Virginia and Ohio also levy severance taxes on natural resources, but rely less on extractive industries for public funds.

As the legislative session began, lawmakers in Kentucky wasted no time before introducing legislation to reform the way severance taxes are collected and distributed. Perry County Rep. Fitz Steele introduced a bill to require all that severance tax revenue go to coal-producing counties — half currently goes into Kentucky's general fund.

The commonwealth also must prioritize projects already in the state budget. After reaching an all-time high in 2009, analysts predict that this year 27 of the 35 coal counties will not receive funding needed to complete projects that were already approved.

In Virginia, anticipating rising utility costs, House of Delegates member James Morefield announced he will introduce a bill to amend the state's severance tax statute to focus funding on natural gas infrastructure that would include commercial and residential use.

By far the largest coal producer in the region, West Virginia has the most to gain from coal severance taxes. Recent legislative changes and rising natural gas production are predicted to offset declining coal production, keeping tax revenue relatively stable. But some groups believe the tax should be increased to create a permanent trust fund similar to those in states such as Wyoming, New Mexico and Alaska.

Increasing the severance tax on coal and natural gas by one percent could yield $5.7 billion dollars over the next 23 years, according to the West Virginia Center on Budget and Policy, a proponent of the West Virginia Future Fund.

If properly set up, the center says, "the fund itself becomes self-sustaining, even once the natural resources have been exhausted."

Impoundment Safety Called Into Question

Questions and criticism followed a Nov. 30 accident at a CONSOL Energy-operated coal slurry impoundment in West Virginia that left one worker dead. A few days after the incident, *The Charleston Gazette* reported that records "outlined company concerns that construction to enlarge the dump had not been moving fast enough to keep up with slurry waste generated by the preparation plant at CONSOL's nearby Robinson Run Mine." On Jan. 10, the Office of Surface Mining reported that regulators had not done enough to prevent impoundment breakthroughs into abandoned underground mines. In response, the West Virginia Department of Environmental Protection announced new regulations for impoundment construction. OSM plans to conduct similar studies in six other states including Kentucky, Tennessee and Virginia.

Interior Department Under Fire for Stream Buffer Zone Delay

A coalition of environmental groups reopened litigation against the U.S. Department of Interior for its inaction on a rule to protect streams from mountaintop removal mining that was removed in the final weeks of the Bush administration. While the Interior Department and the Obama administration agreed the removal of the "stream buffer zone rule" was unlawful, a new rule has not been issued. Under the stream buffer zone rule, surface mining was prohibited within 100 feet of streams. Environmental groups say the Bush repeal allowed coal companies to place valley fills and waste impoundments, byproducts of surface mining, directly into streams.

Southeastern Coal Plants Retire and Convert

The growing share of electricity generated by natural gas and recent announcements of coal plant retirements are rapidly changing the energy sector across the southeast. On Jan. 7, Georgia Power announced its plans to retire 15 coal- and oil-fired units at four plants across the state. The same week as Georgia Power's announcement, Duke Energy touted three facilities that came online at the end of 2012. The new units include natural gas-fired generation at the Dan River Power Station and the H.F. Lee Plant, both in North Carolina. Duke Energy has also received approval from the N.C. Utilities Commission to convert the Sutton Steam Station in Wilmington, N.C., to natural gas and said it plans to retire the Riverbend and Buck plants this April, two years ahead of schedule.

Senate Investigation to Scrutinize Coal Export Royalties

As U.S. coal exports hit a record high and the industry attempts to expand ports in the Pacific Northwest, the winners of the Powder River Basin bonanza, including Arch Coal, Peabody Energy and Cloud Peak Energy, are coming under fire. On Jan. 4, members of the Senate Energy and Natural Resources Committee directed the U.S. Department of the Interior to investigate whether coal companies are avoiding paying royalties by underpricing coal mined on federal and tribal lands. Federal officials are auditing export sales from the past few years to determine whether coal companies fairly priced and paid royalties on coal shipped overseas.

Near Future Could be Bright for Coal

According to a new report from the U.S. Energy Information Administration, the percent of electricity generated by burning coal will get a bump this year as natural gas prices increase. The agency predicts that coal will provide around 40 percent of total generation this year. If natural gas remains cheap, however, coal's share could be lower than predicted. Over the long-term, Appalachian coal production will continue to decline and coal-plant retirements will far outpace generation coming online.

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The Conception of Wild Ideas: Scientists Confront Conservation Challenges of Our Times

Excerpted from an essay by Travis Belote, Greg Aplet, and Pete McKinley. To read the full essay, visit appvoices.org/thevoice

1934 was a big year for conservation in the Southern Appalachians. The Great Smoky Mountains National Park was established in June, and in October, on a roadside somewhere outside of Knoxville, Tenn., a group of five were simmering on a provocative idea: that some places should be left to their own devices where people could experience nature on its own terms.

That day marked the beginning of The Wilderness Society, the organization most closely associated with the Wilderness Act, which established a National Wilderness Preservation System that now contains over 100 million acres. These wilderness areas provide the core of a network of wildlands aimed at protecting nature and passing it on to future generations. As conservation science has developed, wilderness designation has repeatedly been shown to effectively protect wildlife, clean water and refuges from many pernicious threats.

Recently, however, a host of challenges — including climate change, invasive species, and atmospheric pollution — have transcended wilderness boundaries and now threaten the species and processes we value from nature. Some have even begun to question the appropriateness of wilderness in such a profoundly altered world.

Last fall, 77 years after The Wilderness Society was conceived, TWS research ecologists met in the Smokies to take on another provocative idea: how do we ensure that future generations will have opportunities to experience nature under increasing pressures from climate change and other threats unknown to our founders?

We came from all over the country and convened in East Tennessee, where the Southern Appalachian wildlands support a rich array of biological diversity jeopardized by existing and future threats and where the boundaries of a national park or wilderness area may not be enough to protect the wildness within.

The challenge before us now is that wilderness conservation inherently values nature operating without human control – "untrammeled by man" in the words of the Wilderness Act – but increasingly, many of the things that we value in wilderness are under threat from external forces that bring human impacts well inside the boundary lines of protective reserves drawn on maps.

What do we do if protecting nature requires intervening to fend off the effects of climate change, invasive species, and pollution? Do we value "untrammeled nature" more than we value the diversity of native species and the processes they maintain? Will human-caused climate change impacts be more destructive than management interventions undertaken to assist the maintenance of nature's parts and processes?

Intervening in nature might be the best defense to prepare some species for future changes in climate. In such a case, an argument can be made that 'trammeling' in the form of restoration is needed to head off greater and longer term threats to wilderness coming from the pervasive, and mostly unknown, impacts of human-caused climate change.

But, what about situations where continuous pressure like climate change threatens the ecological integrity of wilderness? If we allow nature to respond to changes in climate without intervening, we would maintain the untrammeled nature of wilderness and its role as a barometer against which to judge management elsewhere, but a hands-off approach may in some cases jeopardize the very species and populations we hope to preserve.

While in the Smokies, The Wilderness Society ecologists concluded that the soundest course to the future will require a "portfolio approach" in which some parts of the landscape are devoted to forestalling change through the process of ecological restoration, some parts are devoted to innovative management that anticipates climate change and prepares for it, and other parts are left to change on their own time – on wilderness time – to serve as scientific "controls" and continue to provide the benefits of wilderness.

Bad decisions of the past, conducted with good intentions, have led to some natural resource disasters (think planting kudzu to control soil erosion). Whatever we do and however we respond, a Hippocratic Oath to land management and conservation should be considered: first, do no harm.

Today's ecologists at The Wilderness Society share core values with the organization's founders: we hope to convey into the future that which we inherited from the past. Future generations will live in a different world, just as we live in a different world from 1934.

However, preserving wildlands and the biodiversity therein, offers a chance that our grandchildren may live in a rich, productive, interesting, and beautiful world. Our thinking and approaches to conservation will evolve, but our commitment to preserving wildlands has changed little since that October day 77 years ago.

2013 Exhibition Schedule

March 1, 7:00 - 9:00 p.m.: Exhibit Opens / Public Reception at Turchin Center for the Visual Arts in Boone, N.C. "People's Choice" voting begins

May 17: Deadline for People's Choice voting

May 18: Winners to be announced

July 19, 3:00 - 5:00 p.m.: AMPC Photography Workshop as part of An Appalachian Summer Festival. At the Turchin Center, free & open to the public
5:00 - 6:30 pm: AMPC 10th Year Celebration Reception at the Turchin Center

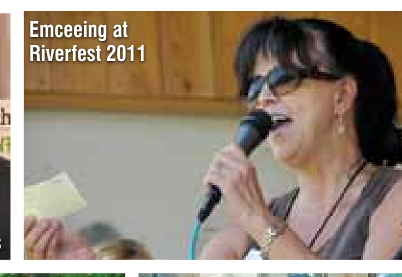
July 20-21: AMPC Intensive Field Photography Workshop. Pre-registration required.

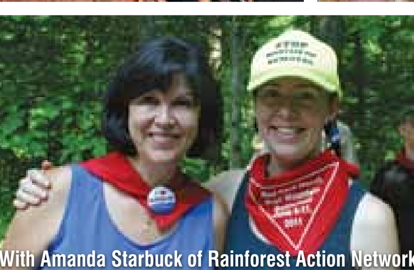
August 16: 10th Annual AMPC Exhibit Closes

APPMTNPHOTOCOMP.ORG

Speaking at Artists for Appalachia

With advisory board member Van Jones


Emceeing at Riverfest 2011


With Amanda Starbuck of Rainforest Action Network

With Senator Ben Cardin at the Democratic National Convention

On the March for Blair Mountain

A Fond Farewell for a Fantastic Leader

In October of 2008, I met an extraordinary person at the Appalachian Voices headquarters in Boone, N.C. She'd been hired as an organizational consultant, and I was a new member of the board. It was immediately clear that Willa Mays was a consummate professional — diplomatic, extremely smart, a person of great presence, and a joy to be with.

Christina Howe and Willa Mays

As her contract work with us drew to a close, we realized we couldn't let her get away. We appealed to her to assume the newly vacated role of executive director of Appalachian Voices, and the success story began.

For four years, Willa has been an exemplary leader, both within Appalachian Voices and in the broader environmental community. She re-energized our staff and board with her enthusiasm, hard work and vision, challenging us all to do our very best. She traveled frequently to our other offices to make sure all Appalachian Voices staff had input and were solidly a part of our team. With grace and humor, she cultivated friends of Appalachia from all backgrounds — volunteers, members and partners. She put our fundraising house in order and developed relationships with funding partners that will last for years to come. She dove into the nitty-gritty of our legal cases, water quality monitoring program and legislation efforts to become a well-versed spokeswoman for our work. The passion she already possessed in spades.

Like the seasons change across the Appalachian mountains, life, too, brings transitions. It is with utmost gratitude and esteem that I, on behalf of the Appalachian Voices board, bid Willa adieu as she moves on to her next chapter with the Blue Ridge Parkway Foundation, where she worked before coming to us. Thank you, Willa, for your caring custodianship. We wish you the very best!

When one door closes, another opens ... It is my great pleasure to welcome Tom Cormons as our new executive director. Five years ago, Tom joined Appalachian Voices to open our Virginia office. He came with an impressive pedigree – an undergraduate degree from the University of Virginia, a UCLA law degree and stints at several other organizations learning the ropes. Under his leadership, our Virginia office has grown to six staff, and Appalachian Voices is front-and-center in some of the most pressing environmental issues in Virginia. For the last two years, Tom has been our deputy programs director, working closely with Willa and Director of Programs Matt Wasson to oversee operations and map out our strategic work plan for the next several years.

In his younger years, Tom was a rafting guide on West Virginia's New and Gauley rivers, ably navigating the rapids and shoals of two of the most wild rivers in the country. We are delighted and excited to have Tom as our new executive director, fully confident in his ability to now guide Appalachian Voices as our journey continues.

For the mountains,
Christina Howe
Chair, Appalachian Voices
Board of Directors

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MEMBERSHIP SPOTLIGHT: Michael Elchinger

By Kayti Wingfield

Michael Elchinger learned about mountaintop removal coal mining early on in his quest to make a difference in the energy sector. He received his undergraduate degree from the University of Virginia, but it wasn't until he was pursuing dual masters degrees in business and natural resources and environment at the University of Michigan that he read an article about mountaintop removal.

"I was bitter that businesses could hide something so hideous and consumers could be so uninformed and disengaged," says Michael. "And even if [consumers] did know - they wouldn't, maybe couldn't, care."

Soon he became acquainted with the work of Appalachian Voices through the organization's Global Awareness layer in Google Earth, and was galvanized into action. He sported the I Love Mountains sticker on his laptop, hosted screenings of documentaries such as "The Last Mountain," kept tabs on the website and subscribed to the e-mail notices while he was formulating a "plan to pursue a career geared toward a transformation to a more sustainable energy system."

When a pig roast that he and three of his friends hold annually for their department morphed into a charity fundraiser — with each friend picking a charity and partygoers "voting" for their favorite by putting money into a jar — Michael's charity, Appalachian Voices, won.

"I could think of no better organization to support, and more importantly, no better way to increase awareness," he says.

Thanks to Michael, his friends, and some folks at a pig roast, more than $1,000 was raised for our work to stop mountaintop removal.

"Though my friends in the School of Natural Resources and Environment might feel that business has no part in the solution, that is where I felt I could be effective and also where most of the impact is," Michael explains. "I also believe that activism and awareness is another powerful tool for change, so I choose to put my talents where they are best spent and give when I can to organizations that match my beliefs and are effective in their cause."

Organizational Roundup

Teaming Up For Virginia

Appalachian Voices' Virginia campaign team partnered with Downstream Strategies to help in their research for a report that details how the coal industry is reaping huge benefits from the Commonwealth of Virginia each year. Released in mid-December, "The Impact of Coal on the Virginia State Budget" reveals that Virginia taxpayers have been boosting profits for the coal industry with tens of millions of dollars in tax breaks and subsidies every year — and costing the state $22 million in 2009 alone. The study also included several recommendations for shifting the state's funding priorities to diversify the economy of coal-dependant southwest Virginia, projecting that $320 million funneled from the current coal subsidies over the next two decades could instead go to much-needed community economic development projects. To see the full report, visit appvoices.org/press.

Young Advocates Raise Their Voices for the Mountains

Eight young advocates from Appalachia teamed up with Appalachian Voices and iLoveMountains in December to produce a special video about mountaintop removal coal mining. In impassioned pleas, the youngsters spoke of how kids and adults living near mountaintop removal have a lower life expectancy, a higher risk of birth defects and a greater chance of contracting life-threatening illnesses than residents of other areas in the country. Watch this important video and take action to ask President Obama to end mountaintop removal mining NOW. Visit appvoices.org/no-more-excuses

Finding the Coal Ash Ponds Near You

In a project critical for the health of all Americans, the Southern Alliance for Clean Energy, Appalachian Voices, Southern Environmental Law Center and NC Conservation Network have launched a comprehensive new web-based tool that allows residents to find specific information about coal ash impoundments near their communities. The site includes information on the health threats, safety ratings of individual impoundments and how residents can advocate for strong federal safeguards. Visit: southeastcoalash.org.

App Voices Supports State Solutions

In Tennessee and Virginia, Appalachian Voices is supporting legislative efforts to end mountaintop removal and expand renewable energy. The Tennessee Scenic Vistas Protection Act was recently reintroduced by Rep. Gloria Johnson, a member of the Agriculture and Natural Resources Committee. With broad bipartisan support, the bill could lead the Tennessee state legislature and Gov. Bill Haslam to be the first state to ban mountaintop removal. In Virginia, Appalachian Voices supports changing the state's voluntary Renewable Energy Portfolio Standard to require to wind and solar energy be constructed in Virginia. The state's 2007 voluntary standard has benefited utilities more than ratepayers by awarding them bonuses without expanding renewables in the commonwealth.

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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Appalachia hosts a stunning array of slime molds. These single-celled organisms play a key role in transferring soil nutrients from one organism to another and go through both mobile and stationary stages. Different slime molds are associated with certain tree species. Hemitrichia calyculata, *above, feasts on bacteria found on decaying wood. See our story about slime mold and the other diverse species of Appalachia on page 10. Photo by Kimberly Fleming*

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Walk for a Sustainable Future

Feb. 2 - 13: Walk for jobs, justice and the environment. The journey begins in Prestonsburg, Ky. and finishes on February 13 in Frankfort, Ky. Stay in local homes and community churches along the way. Visit: footprintsforpeace.net.

Getting Your Farm To Scale

Feb. 8, 9 a.m. - 12 p.m.: Come to this free workshop and networking opportunity for farmers and food producers. Lee Mink of LEAP Farm will present a workshop and networking opportunity. Mill Spring Ag Center, Mill Spring, N.C. Visit: mountainbizworks.org.

Friends of Bear Creek Lake

Feb. 13, 7 - 8:30 p.m.: Socialize at this special bi-monthly event to find out more about Bear Creek Lake State Park. The Friends group encourages all who regularly visit the park to attend. Bear Creek Lake State Park, Va. Visit: dcr.virginia.gov.

I Loves Mountains Day

Feb. 14, 9 a.m. - 2 p.m.: Join Kentuckians for the Commonwealth for citizen lobbying followed by a short gathering at the Kentucky River Bridge. Later, participants will march to the Capitol to deliver Valentine cards with a special "I Love Mountains" message. Frankfort, Ky. Visit: kftc.org.

Winter Celebration of the Roan Highlands

Feb. 16, 9:15 a.m.: Enjoy wonderful speakers and a sumptuous selection of sandwiches and treats from Elizabethton's City Market. At 1 p.m., join the park staff for a hike. Roan Mountain State Park Conference Center, Roan Mountain, Tenn. Visit: friendsofroanmtn.org.

Lords of Nature

Feb. 19, 7 p.m.: This sustainability film series, hosted by the biology department at Appalachian State University, is designed to raise awareness of current environmental issues and help provide solutions. Appalachian State University Greer Auditorium, Boone, N.C. Visit: sustain.appstate.edu.

EPA Extreme Events Kick-Off Meeting

Feb. 26 - 27: EPA presents 14 grantee projects on climate-induced changes in extreme events. The goal of this event is to seek a better understanding of the hazards and encourage smart policymaking. First Floor Conference Center, EPA Potomac Yard South, Arlington, Va. Visit: epa.gov.

YMCA PEAK 2013 Outdoor Education Event

Feb. 28 - March 2: This four-day event covers several topics, including environmental education, administrative issues, grant writing, new trends and ideas, team building, and more. YMCA Camp Greenville, Cedar Mountain, N.C. Visit: campgreenville.org.

Appalachian Mountain Photography Competition Exhibit and Reception

March 1, 7 - 9 p.m.: A special reception for finalists of the 10th annual contest and the start of voting for the People's Choice award. Turchin Center, Boone, N.C. Visit: appmtnphotocomp.org.

Mountain Justice Spring Break - Virginia

March 1 - 11: The RReNEW Collective and Southern Appalachian Mountain Stewards introduce citizens to mountaintop removal coal mining and other environmental issues. Learn about the death cycle of coal, meet and support folks working to build a better future, build skills and have fun hiking and volunteering. Sliding payment scale. Wise County, Va. Visit: mjsbvirginia.wordpress.com.

Scott Cain at North Bend State Park

March 3, 12 p.m.: Spend your Sunday with Scott Cain as he plays hammered dulcimer and lap dulcimer at North Bend State Park. Cairo, W.Va. Visit: northbendsp.com.

Growing Appalachia 2013

March 9: Join the Jenny Wiley Convention Center for workshops about small-scale farming, energy efficiency and renewable energy. Get ideas for saving and earning money or even starting a small business. Prestonsburg, Ky. Visit: kftc.org.

Organic Growers School Spring Conference

March 9 - 10: The 20th annual conference provides practical, region-appropriate organic growing and sustainable living classes and hands-on workshops, seed exchanges, silent auction, and trade show. University of North Carolina, Asheville, N.C. Visit: organicgrowersschool.org.

Wildlife Diversity Conference

March 13, 9 a.m. - 3:30 p.m.: Learn about wildlife diversity at Aladdin Shrine Center with speaker Steve Pollick, a retired outdoor writer with the *Toledo Blade*. Registration is $25, students $10. Columbus, Ohio. Visit: dnr.state.oh.us.

West Virginia Maple Syrup Festival

March 16 - 17: A celebration of the ancient art of maple sugaring. Event offers tours to the Maple Syrup Camp, food, art and crafts, a 5K run, and live entertainment. Pickens, W.Va. Visit: pickenswv.com.

AMPC Lunch and Learn

March 20, 12 a.m. - 1 p.m.: Join the three jurors of the 10th annual Appalachian Mountain Photography competition to hear how they chose this year's exhibition. Turchin Center, Boone, N.C. Visit: tcva.org.

36th Annual Appalachian Studies Conference

March 22 - 24: Come and explore the historical and contemporary communities across the Appalachian region. Organized by the Appalachian Studies Association. Boone, N.C. Visit: appalachianstudies.org.

Spring on Springer AT TrailFest

March 22 - 24: Celebrate the first day of spring at Springer Mountain. Dahlonega, Ga. Visit: dahlonegatrailfest.org

Ramp Digging Weekend-Camp Caesar

April 5 - 7: Enjoy a weekend and learn how to preserve and prepare ramps for your family and friends. Cost is $329. Meals and lodging included. Cowen, W.Va. Visit: wvcommerce.org.

32nd Annual Wildflower Weekend

April 19 - 21: Enjoy hundreds of native plant species at the Natural Bridge State Resort Park. Slade, Ky. Visit: parks.ky.gov.

Pine Mountain Wildflower Weekend

April 19 - 21: Visit a wildflower wonderland, with nearly 100 species of spring wildflowers in bloom. Pine Mountain Settlement School, Pine Mountain, Ky. Visit: pinemountainsettlementschool.com.