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# The Appalachian VOICE

April/May 2011

## Our Changing Climate

INSIDE

- Debunking the Top Ten Myths
- Predicting ecological and economic fallout
- What does this mean for our food security?

ALSO INSIDE: Summer Environmental Camps for Kids • 2nd Annual Riverfest • Meet the Scarlet Tanager



# The Appalachian VOICE



A publication of

## AppalachianVoices

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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. Appalachian Voices sponsors the Upper Watauga Riverkeeper® and is also a Member of the Waterkeeper® Alliance.

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## A Note From the Executive Director

Dear Readers,

This year, we have been witness to a trifecta of worst-case scenarios in the world of dirty energy. The tragedy at the Upper Big Branch coal mine killing 29 miners, the disastrous BP oil spill in the Gulf and now Japan's tragic tsunami made even worse by a lingering nuclear threat, all make it clear that continuing to rely on fossil fuels and nuclear energy is just plain dangerous. Transitioning to a cleaner, safer, alternative energy economy is within our reach. We have the technology; we just need the will of the people to demand change and begin to chip away at the entrenched political and financial roots that keep these outdated and perilous energy sources alive.

The dangers of coal may not be as immediately obvious as a nuclear meltdown, but a recent Harvard study shows undeniable risks to the health of communities and the environment. Right now, energy is in on the minds of people everywhere. It is time to be emphatic with leaders, letting them know that we are not willing to risk our lives and environment in the name of dangerous energy any longer. Together, we have the power to usher in a green and peaceful energy future. Let's do it!

*Willa*



## INSIDE THIS ISSUE



p.8

Give your kids something to write home about—send them to an environmental camp this summer!

### SPECIAL SECTION: Climate Change



In this special 8-page section, we look at myths and truths surrounding the greatest dilemma the human race will face this century.

p.14



### About the cover

*Scott Hotaling, a two-time winner of the Appalachian Mountain Photography Competition People's Choice award (2008 & 2010) took this photo of a small salamander warming in the sun at Great Smoky Mountains National Park. A landscape and nature photographer, Scott primarily works in the western North Carolina mountains. See his work online at [LightOfTheWild.com](http://LightOfTheWild.com).*

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**Correction:** In our February issue, "The Women of Appalachia," we inadvertently misspelled the middle name of Ann Pickel Harris, one of our Heroic Environmentalists. We regret the error.

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*Printed on 100% recycled newsprint, cover 40% recycled paper, all soy-based inks*





# TAKE ME TO THE RIVER(FEST)

By Parker Stevens,  
Festival Coordinator

Start your summer with a splash at the 2nd annual Appalachian Voices' RiverFest and membership gathering, slated for June 4 in beautiful Valle Crucis, N.C. on the banks of the Watauga River.

At this year's RiverFest, folks will have the opportunity to try their hand at making Japanese-style fish prints, learn more about the tiny critters in our river, eat delicious BBQ and even meet one of the event's mascots--a real hellbender.

Festival goers will also be able to participate in hands-on demonstrations and talk to water quality experts like Appalachian Voices' own Riverkeeper, Donna Lisenby.

There will also be an opportunity to float or paddle down the river (provided the water level is adequate).

And in case you don't see one on your own, the N.C. Wildlife Commission will have a live hellbender you can meet while learning more about their struggle to survive. To read more about these prehistoric, giant salamanders, see our sidebar on page 4.

There will be face painting, nature walks, piñatas, and a cake walk too! And back by popular demand -- a no-hands



## ACTIVITIES

- Live music by Upright & Breathin' and Bill Adams
- BBQ lunch featuring local foods
- Gyotaku fish prints
- Water cycle obstacle course
- Aquatic bug station
- Enviroscene
- Face painting
- Rubber duck races
- Cake walk
- No-hands watermelon eating contest
- Nature walks
- Piñatas
- Make your own trail mix

watermelon eating contest! Trust me folks, it's harder than it sounds, but it's certainly fun (and entertaining to watch).

This year, RiverFest will also serve as Appalachian Voices' annual member-



Appalachian  
Voices

RiverFest

& Annual Membership Gathering



ship gathering. If you are a member of Appalachian Voices, bring your ideas, questions, or suggestions. You will have the opportunity to meet with members of our staff and board and learn more about the important work we are doing in the region. If you are not yet a member and would like to participate in the membership meeting portion of the event, you can join Appalachian Voices by completing the form on page 26 or by visiting us online at [AppVoices.org](http://AppVoices.org).

## GYO-TAKU-HUH?

Interested in arts & crafts? Try your hand at Gyotaku fish prints! The name for this Japanese style of art comes from the word for fish (gyo) and rubbing or impression (taku). Use paint and rubber fish molds to make colorful prints of fish while learning about the



Riverfest has fun activities for kids and adults alike. Photos by J. Goodman and Dot Griffith

adaptations they have made in order to live in different environments.

## CREATURES WITH THREE TAILS!

Visit the Watauga River Partners to learn all about bugs and insects in the river. Use microscopes and magnifying glasses to get up close and personal with a mayfly larva -- an insect that

*Continued on next page*

## Become a CHAMPION OF THE RIVER!

- Ad in the Voice
- Table at the event
- Membership in the AppVoices Business League
- Logo & signage at the event
- Logo and sponsorship listing on print materials

**Sponsor an activity at RiverFest and get great perks!**



We're also seeking exhibitors and in-kind donations! Learn more about how your business can get involved at [www.appvoices.org/riverfest/sponsorship](http://www.appvoices.org/riverfest/sponsorship). Got Questions? Contact Parker Stevens at 828.262.1500

# RIVERFEST 2011

Continued from previous page

does indeed have three tails. Once you can identify them, head down to the river to see if you can find some for yourself.

## BE A RAINDROP

Ever wondered what it's like to be a raindrop? At RiverFest, kids can become a water droplet and make their way through a water cycle obstacle course, from a rain cloud all the way to a kitchen sink.



## A FOOT-STOMPIN' GOOD TIME

Live blue grass music will be provided by Bill Adams (Charlottesville, Va.) and the band Upright & Breathin' (Boone, N.C.). If you are musically inclined, bring an instrument and join your fellow musicians at the Pickin' Parlor.

Even after this issue goes to print, we will continue to add more great activities, demonstrations and partnerships. Visit [AppVoices.org/RiverFest](http://AppVoices.org/RiverFest) to get the latest scoop on RiverFest 2011. See you there!

## HELLBENDER: Sasquatch of the Salamanders

Cryptic, territorial, and elusive are traits inherent to the hellbender salamander, a unique and formidable-looking creature with almost prehistoric appeal.

The Eastern hellbender is the largest aquatic salamander in the United States, affectionately known as the snot otter, devil dog or Appalachian alligator. This giant amphibian averages from 12 to 15 inches long, but has been known to grow over two feet in length. They generally hide during the day beneath flat rocks in shallow, clean and quick moving streams. Hellbenders can live for more than 30 years in ideal conditions.

Though often killed by fisherman for fear they are eating fish, these toothless giants hunt



*Hellbenders can live up to 30 years, however they are currently threatened due to habitat loss in their fragile territories. Photo by Lori A. Williams, North Carolina Wildlife Resources Commission*

primarily for crayfish, toads and salamanders.

The hellbender is exclusively found in the mountains and surrounding local areas in the eastern United States, with the largest concentration in western North Carolina.

These unique creatures are very important indicators of water quality. As adults they breathe entirely through their skin, which makes them extremely sensitive to pollution and siltation.

Hellbender populations have dramatically declined in the last 25 years. The International Union for Conservation of Nature (IUCN) lists them as near threatened and they are close to qualifying for vulnerable status. In addition to the threat of fishermen, the hellbenders are at risk of habitat loss and degradation.

At RiverFest, you can visit the N.C. Wildlife Resources Commission and meet Rocky, a live hellbender— an opportunity you don't want to miss.

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Local hikers enjoy the Blue Ridge Mountains. Photo courtesy of Appalachian Voices.

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The Release



## ASU In the Running for Solar Decathlon

By Jesse Wood

Students at Appalachian State University are striving to be shining examples of sustainability by building the best model home on the planet.

ASU's Solar Homestead team is one of 20 universities from around the globe competing in this year's U.S. Department of Energy's Solar Decathlon, the world's largest green building competition.

Schools in the competition have seven months to construct a 1,000 square foot home, which will be on display next fall at the National Mall in Washington D.C. The bi-annual event attracted over 400,000 people two years ago.

There is no prize for the winner—only bragging rights—although each of the 20 schools selected for the competition receive, over the course of the project, a \$100,000 grant from the U.S. Department of Energy. Because schools are not able to use the grant for building materials, ASU is using the money to fund research and pay participating students.

Appropriate Technology and Building Science students wrote the original

proposal, but participating students come from a variety of disciplines, such as physics, business, communications, graphic design and computer programming. Over 150 ASU students are involved in the project.

In 2009, ASU began designing their solar model, and in March they started full-scale construction of the homestead. The team's design concept is based on the ingenuity and independence of the original Appalachian settlers.

"We took this traditional homesteading idea, where you have this self sufficient collection of buildings working together—spring house, smoke house, chicken coup and your living quarters," said David Lee, ASU graduate student and Solar Homestead communications manager. "We took that idea and related it to solar power and technology and modern sustainable living."

ASU's Solar Homestead consists of a core house with a separate 120 square-foot guest/office quarters. There is also an outdoor deck covered with a canopy that holds the majority of the solar panels.



Appalachian State University displayed their Solar Decathlon 2011 Design Development Model at the International Builders' Show in Orlando, Florida from January 12-15, 2011. Photo courtesy of the U.S. Department of Energy Solar Decathlon

The ASU team is using bifacial photovoltaic panels, which collect reflective light on the top and bottom of the solar thermal panels while acting as a skylight.

The houses will be judged on affordability, aesthetics and the ease of livability. The structure must have adequate lighting, be able to power electronics, provide hot water, and maintain comfortable and healthy indoor environmental conditions. Also, the house must produce as much solar power as it consumes.

This year's competition features an affordability component to the contest for the first time; in 2009, Team Germany constructed a house appraised at \$1.5 million. Teams receive 100 percent of available affordability points if they keep their house under \$250,000.

"It is really hard to get these points because you are trying to get the latest energy efficient technology and balance affordability," Lee said. "It is tough, but that is what American homebuyers have to do."

Lee and his colleagues would love to win the contest, but that is only their short term goal.

"I think the long term goal is to show people that you can have energy efficient building with sustainable materials and renewable energy systems," Lee said. "These three things are attainable and affordable now."

For more information or to take a virtual tour of their design click to <http://thesolarhomestead.com/>

## Shaping the Future of Wildlife Protection

The National Wildlife Refuge Association is asking for public comment on a draft revision plan to guide the growth and management of America's wildlife over the next ten years. Currently, over 553 wildlife refuges provide

150 million acres of habitat for more than 750 animal and plant species in the United States. Thirty-five of these wildlife refuges are in the central Appalachian region— North Carolina, Virginia, West Virginia, Kentucky and Tennessee. Become a part of the action by visiting [americaswildlife.org](http://americaswildlife.org).

## New Grant to Study Pines

Virginia Tech was recently awarded part of a \$20 million dollar National Institute of Food and Agriculture grant to study the effects of climate change on southern pine forests. With this grant, researchers will study changes and adaptation of trees like the loblolly and develop a plan to improve the health and productivity for southern pines. This tree species covers an area of 34 million acres and sequesters 12 billion metric tons of carbon each year.

performance, presented by artist Tevyn East, incorporates storytelling, song, poetry, prayer, movement and music. Leaps and Bounds, a presentation of East's Affording Hope project, will be presented at the Watauga High School in Boone N.C., on April 20 and at Jubilee in Asheville, N.C., on April 22. Visit [affordinghopeproject.org](http://affordinghopeproject.org).

## Hydrofracking Diesel Injections at it again

New inquiries discovered the continued use of diesel fuel injections in hydraulic fracturing, or "fracking,"- a drilling process which pumps large volumes of water into the earth to loosen up shale rock and release natural gas. The use of diesel in hydrofracking was not considered a violation of the Safe Drinking Water Act until last year, yet the EPA has not enforced monitoring standards since that change. Visit <http://nyti.ms/dJPB6g>.

## Affording Hope through Environmental Dance

Human experience with the environment is intertwined with passion and responsibility. Leaps and Bounds is a multi-layered art performance that joins themes of faith, ecology and the economy, compelling the audience to reflect on the relationship that humans have with the earth. This one-woman

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The first question everyone should ask folks in Appalachia this April is, "What are you doing for the 41st annual Earth Day?"

The answer is a little more complicated, because of the array of events taking place throughout the region. From a recycling contest to dumpster diving, the fairs and exhibitions taking place to celebrate Earth Day will keep your social life hopping all week.



Story by Kaley Bellanti

## The Clinch Coalition and University of Virginia, Wise, Va.

April 20-21: The Clinch Coalition is teaming up with the University of Virginia (UVA) Wise Student Environmental Club to host two major events at UVA's campus in Wise, Va. On April 20, they will featuring the documentary FRESH, a celebration of people across America who are reinventing our food system. This will be preceded by several short Appalshop films. On April 21, Camille Kingsolver, co-author of the book, Animal, Vegetable, Miracle, will discuss her family's journey away from the industrial-food pipeline to a rural life in which they vowed to produce and buy only local food for an entire year. Visit [clinchcoalition.net](http://clinchcoalition.net)

## Appalachian State University, Sanford Mall, Boone, N.C.

April 20, 11am-3pm: Local farmers will present their produce and share their wisdom on sustainability and locally grown food. Attendees can also participate in "The Swap," where students bring unwanted items to exchange. ASU Food Services will also host a local food meal from 11- 2 pm. Visit [act.appstate.edu/earthday](http://act.appstate.edu/earthday).

## 2011 Piedmont Earth Day Fair, Winston-Salem, N.C.

April 16, 10am-5pm: The Triad's largest Earth Day event was designed to promote environmental stewardship through practical life applications. With over 100 exhibits, kids scavenger hunts,

games and live music. Don't miss out on the fun! Visit [peanc.org/earth-day-fair](http://peanc.org/earth-day-fair)

## Charlotte Green and Clean, Central Piedmont Community College, Charlotte, N.C.

April 16, 11am-4pm: This green festival will offer individuals, families and businesses the opportunity to learn about home efficiency, green living, solar photovoltaic, green remodeling and building and green careers. Come experience a variety of kids activities, local food and music. Visit [festival.charlottecleanandgreen.com](http://festival.charlottecleanandgreen.com).

## Asheville Earth Day, Pack Square Park, Asheville, N.C.

April 16: Spend the day in beautiful Asheville learning how to keep your community clean and moving toward a sustainable future while listening to live music from bands, The Lee Boys and Toubab Krewe. Visit [avlearthday.org](http://avlearthday.org).

## 6th Annual New River Earth Day Celebration, Fayetteville, W.V.

April 23, 12pm-5pm: Learn how to be a citizen of sustainability this Earth Day. Enjoy live music and a climbing wall while learning about recycling,

composting, alternative energy, water conservation and sustainability. Visit [greenwv.org/earth-day](http://greenwv.org/earth-day).

## EarthFest 2011, Pellissippi State Community College, Knoxville, Tenn.

April 16, 10am-5pm: Be a part of this "zero-waste" event as EarthFest helps promote environmental awareness through activities such as the used mercury thermometer exchange, kids recycling relays and earth worm diggs. Visit [knox-earthfest.org](http://knox-earthfest.org).

## Earth Day Celebration, E.P. "Tom" Sawyer State Park in Louisville, Ky.

April 22, 10am-6pm: Celebrate Earth Day at the park! Join in hikes to vernal pond, a dumpster dive, a live animal demonstration, a park clean up and a geocaching demonstration. Call 502-429-7270.

## Earth Day at VMNH

April 15: School groups are invited to the Virginia Museum of Natural History's 3rd annual Earth Day at VMNH event. Visiting classes will participate in hands-on programs, activities, music and movies to learn about conservation, recycling, biodiversity, ecology, and the beauty of nature. Programs will be SOL correlated to Virginia standards. Contact [discover@vmnh.virginia.gov](mailto:discover@vmnh.virginia.gov)

## Jobs Project Installs 46 Panel Solar System in W.Va.

By Jeff Deal

This winter, a crew of electricians and construction workers—several with experience working in coal mines—worked to bring the green economy and solar electricity to a town long known as the "Heart of the Billion Dollar Coalfield." On February 3, a team from West Virginia's Mountain View Solar and Wind installed 46 high-performance solar electric panels on the roof of a Williamson, W.Va., doctor's office. The 11-kilowatt (kW) solar electric system will sit atop the roof of the Williamson Family Care Center, on a building owned by Dr. Dino Beckett.

The installation highlighted Williamson's "Solar Week," a four-day green jobs training and education event convened by town mayor Darrin McCormick, The JOBS Project, representatives from the region's community and

technical colleges, electricians, contractors, business owners and residents, as well as community-developed renewable energy pioneer, The Appalachian Institute for Renewable Energy (AIRE). The installation used solar electric panels made by the American employees of SolarWorld, the largest and most experienced U.S. manufacturer of crystalline silicon solar electric technology.

"With this project, local electricians are learning job skills while receiving \$45 an hour," said Eric Mathis, executive director of The JOBS Project, a non-profit organization working to bring sustainable job options to West Virginia. "An area that has up to this point summarily rejected all things not coal opens up its arms, eyes and skies to a broader view of energy and its role in it. Plus, the groundwork is laid for hundreds of projects like it. That's significant."

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# summer! camps!

Summer is just around the corner and that means it's time for summer camps! Environmental programs can help your child become a stronger individual, make lifelong friends and foster independence while learning about the outdoors. We compiled this list of environmental summer camps to help you get your kids outside and learning.

By Kaley Bellanti

## Green River Preserve

Location: Blue Ridge Mountains, N.C.  
Age: 7-17; Session: one week  
Cost: \$1000-2000

Green River Preserve is a co-ed overnight camp located on 3,400 acres of wildlife preserve in the Blue Ridge Mountains of North Carolina. Campers will crawl into caves and waterfalls, snorkel in rivers and creeks, track wildlife, hike and explore archaeological sites.

 [greenriverpreserve.org](http://greenriverpreserve.org)

## Sea Turtle Camp

Location: Wilmington, N.C.  
Age: 13-17; Session: 11 days  
Cost: up to \$2000

Sea Turtle Camp is an 11-day adventure where campers work alongside the Karen Beasley Sea Turtle Hospital staff to care for sea turtles. Campers will learn about and help with coastal conservation, spending 20 community service hours working on eco-service projects that will teach them about salt marsh and wetland sustainability while directly improving the health of the North Carolina coast.

 [seaturtlecamp.com](http://seaturtlecamp.com)



Campers learning to canoe at Camp Hidden Meadows, surrounded by the Monongahela and George Washington National Forests.

## UNC Wilmington Marine Quest

Location: Wilmington, N.C.  
Age: 5-17; Session: one week  
Cost: \$800

Campers will have the opportunity to learn about marine life off the coast of North Carolina. Younger campers will spend their time exploring beaches and marshes, while the older campers will participate in ocean research cruises to learn about marine technology.

 [uncw.edu/dpscs/marinequest/](http://uncw.edu/dpscs/marinequest/)

## Piedmont Wildlife Center

Location: Durham, N.C.  
Age: 4-18; Session: daily from 9-3  
Cost: \$200-225/week

The Piedmont Wildlife Center's summer camp program specializes in different themes each week. A few of this summer's special camps include: "Way of the Cougar," "Survival in the Natural World" and "Swamp Crawler".

 [kidsprogramspwc.wordpress.com/camps/](http://kidsprogramspwc.wordpress.com/camps/)

## Blue Jay Point County Park 4-H Camp

Location: Wake County, N.C.  
Age: 8-14; Session: one week, mid-June  
Cost: \$400

Campers have the opportunity to learn outdoors skills through hands-on activities such as horseback riding, archery, arts and crafts, ropes courses and more.

 [wakegov.com/humanservices/family/4hyouth/4hcamp.htm](http://wakegov.com/humanservices/family/4hyouth/4hcamp.htm)

## Camp Katuah

Location: Raleigh, N.C.  
Age: 7-15; Session: one week  
Cost: \$500

Master the basics of permaculture, a blend of natural science, native traditions, technology and ecological awareness. Campers will learn about natural paint, solar ovens, earthen ovens, gardening and more.

 828.664.0067

## Gwynn Valley Camp

Location: Near Brevard, N.C.  
Age: 5-13; Sessions: 1 to 4 weeks  
Cost: Varies

Experience farm life and learn about your connection with the land. Campers will milk cows and goats, pick vegetables, feed animals, gather eggs and more. Campers will also spend time hiking, swimming and riding horses.

 [gwynnvalley.com](http://gwynnvalley.com)



EARTH Camps are held at Buffalo Cove, a beautiful 200-acre camp located at the headwaters of the Yadkin River in the Blue Ridge Mountains.

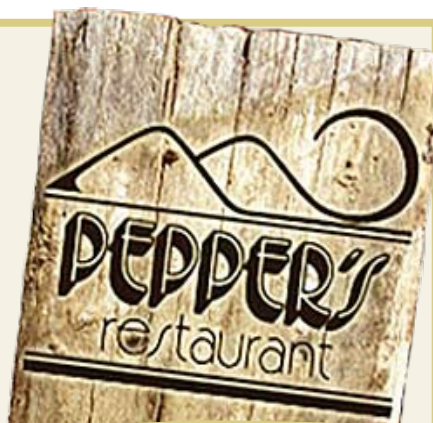
## EARTH Camps

Location: Deep Gap, N.C.  
Age: 8-17; Session: one week  
Cost: \$500-1400

Buffalo Cove is a non-profit organization dedicated to teaching children self-confidence and positive interaction with the earth. Campers learn traditional earth skills, campcraft, woodlore, hiking, canoeing and more.

 [buffalocove.com](http://buffalocove.com)

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## Ocean Adventure Camp

Location: Topsail Island, N.C.  
Ages: 5-12; Sessions: Day or Week  
Cost: \$190/week

Campers learn to conserve the coast by spending time in the ocean, beaches and marshes. Camp themes include, "Mysteries of the Deep," "Shark Days" and "Squirmy, Slimy and Spineless."

 [ematopsail.webs.com](http://ematopsail.webs.com)

## 4-H Camp Explore

Location: Greenville, Tenn.  
Ages: grades K-8; Session: one week  
Cost: \$250

Campers learn about the environment and explore the natural surroundings doing stream analysis, forest ecology, lake exploration, canoeing, woodworking, leather crafts, archery and other activities. Open statewide to the first 180 students that make a reservation.

 [clydeaustin4hcenter.com/CampExplore/](http://clydeaustin4hcenter.com/CampExplore/)



Children have the opportunity to work with farm animals at Camp Idyllwild in Duck River, Tennessee.

## Camp Idyllwild

Location: Duck River, Tenn.  
Age: 5-11; Session: one week  
Cost: \$2000

Inspiring a love of nature, campers will build forts, explore creeks, hike, do arts and crafts, watch birds and learn about organic gardening.

 [campidyllwild.com](http://campidyllwild.com)

## Burgundy Center for Wildlife Studies

Location: Capon Bridge, W.Va.  
Age: 8-15; Session: one week  
Cost: \$650

At the Burgundy Center, children and teens learn to respect the natural world, as campers are introduced to plant, animal and earth science. Campers participate in overnight trips, helping to foster their relationship with nature and the outside world.

 [burgundycenter.org](http://burgundycenter.org)

## Camp Hidden Meadows

Location: Bartow, W.Va.  
Age: 7-16; Session: one week  
Cost: \$800

Camp Hidden Meadows provides campers with activities such as white water rafting, horseback riding, caving, hiking, woodworking, ice cream making and more. They also offer week-long horseback riding and rock climbing camps.

 [camphiddenmeadows.com](http://camphiddenmeadows.com)

## Mountain Adventures Summer Camp

Location: Spruce Mountain, W.Va.  
Age: 12-17; Session: one week  
Cost: \$850 plus

This camp defines adventure; campers will participate in activities that develop self-confidence while educating them about their natural surroundings. Activities include white water rafting, rock climbing, caving and more.

 [mountain.org/summercamp](http://mountain.org/summercamp)

## Rust Nature Sanctuary Summer Camp

Location: Leesburg, Va.  
Age: 4-17; Session: one week  
Cost: Varies

As part of the Audubon Naturalist Society Summer Camps program, this camp is located on over 40 acres of nature reserve. Campers will have fun with games, hikes, songs and other camp traditions in a natural setting. A counselor training program is available for campers over 13.

 [audubonnaturalist.org/default.asp?page=547](http://audubonnaturalist.org/default.asp?page=547)

## Wilderness Adventure at Eagle Landing

Location: New Castle, Va.  
Age: 8-17; Sessions: 1-2 weeks  
Cost: \$895-1795

At this outdoor adventure program, campers will indulge in rock climbing, kayaking, canoeing, mountain biking, rappelling, caving, ropes courses and more.

 [wilderness-adventure.com/](http://wilderness-adventure.com/)

## 4-H Camps

Location: West Kentucky, North Central, J.M. Feltner and Lake Cumberland, Ky.  
Age: 9-14; Session: one week  
Cost: Varies

Children will learn about the environment doing activities such as fishing,

hiking, swimming, riflery, archery, canoeing and more.

 [ca.uky.edu/](http://ca.uky.edu/)

## Bear Creek Aquatic Camp

Location: Kentucky Lake, Ky.  
Ages: 10-18; Sessions: 1-2 weeks;  
Cost: \$300 plus

Bear Creek Aquatic Camp is a Girl Scout camp located on Kentucky Lake, featuring over 200 acres of waterfront property and 2 miles of shoreline. Campers learn sailing, windsurfing, archery, horseback riding, hiking and more.

 [kygirlscoutcamps.org/bear\\_creek\\_aquatic.htm](http://kygirlscoutcamps.org/bear_creek_aquatic.htm)

## Camp Crooked Creek


Location: Louisville, Ky.  
Age: 11-17; Session: one week  
Cost: Varies

Camp Crooked Creek is a Boy Scout camp where campers spend time learning about the wilderness and participate in activities such as: hiking, fishing and swimming and have the



Wilderness Adventure at Eagle Landing in Virginia is full of adventures like the ropes courses pictured here.

opportunity to earn merit badges.

 [lhcbasa.org/59/BoyScoutSummerCamp](http://lhcbasa.org/59/BoyScoutSummerCamp)

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# Hiking the Highlands

## Kentucky's Pine Mountain Trail

By Sam Adams

The first impression when entering the southern end of the Highland Section of the Pine Mountain Trail is that it is going to be an easy walk.

The trail enters the forest where U.S. 119 crests Kentucky's second-highest mountain near Whitesburg, and abruptly starts downhill. The word "trail" seems to be a misnomer; It's more like a dirt road – wide and easy to walk on. Trees throw dappled shadows on the route, promising cooling shade, and the verdant slopes foretell water at every bend.

First impressions can certainly be deceiving.

The Pine Mountain Trail is a linear state park that will eventually run 110

miles along the top of the longest mountain range in Kentucky. It begins at the Breaks of the Big Sandy River, where the Russell Fork passes through Pine Mountain, and is complete to U.S. 119, where hikers can temporarily pick up Little Shepherd Trail, a one-lane paved state road, for another 38 miles. When finished, the PMT will parallel the Little Shepherd, then continue to the Middlesboro on the Tennessee border. Traveling this route one finds miles of wild splen-

dor, complete with black bear, elk, deer, rattlesnakes and a view that is unmatched in Kentucky.

The Pine Mountain Trail has been designated as the route for the Great Eastern Trail through Kentucky.

The highland section is allegedly easier to hike from the south, but make no mistake: it is only easy for hikers already conditioned to the mountains. Once the trail passes the Flamingo Shelter, not even a half-mile from the southern end, it drops perhaps another 200 feet, then starts back up abruptly. The next several miles take the hiker on a dizzying roller coaster of exposed cliff line, deep woods and mountain bogs.

The Highland Section doesn't waste time showing hikers why Pine Mountain is famous for its views. Just after passing the sign-in box, hikers find themselves on a narrow spine of limestone and treated to a one-of-a-kind view to the north. Only a tenth of a mile from the box, Eagle Arch, a natural sandstone arch comes into view below the trail.

After passing Eagle Arch, there are some mountain bogs along the trail, but no drinkable water to speak of during the hot months. A heart-pumping mile and a half past the arch, hikers get a brief respite from the heat, as they must shed their packs to pass through the Lemon Squeezer, a narrow split in the rocks.

From there, it's only another mile to the Southern end of the High Rock Loop Trail, where day hikers descend to Bad Branch Falls State Nature Preserve and a pickup point, but anyone who does not

Whitesburg lies nestled into the foothills below High Rock, the main overlook along the Highland Section of the Pine Mountain Trail. Photo by Sam Adams



### THE HIGHLANDS

The Highlands section is 16 miles long. Hikers can begin on the west side of U.S. 23 at the Virginia/Kentucky border, or on the east side of U.S. 119 approximately 3 miles south of Whitesburg across from KY 1679 (Little Shepherd Trail).

The highest elevation on the trail is 3,248 feet at Mayking Knob.

continue from this point to High Rock is missing the figurative high point of the trail.

The trail dips considerably to reach the High Rock Loop trail. Hikers can refill canteens from the stream there before beginning the steep ascent over boulders and along sheer cliffs. In high summer it is an unforgiving sweatbox, with the heat reflected off bare limestone ridges.

But High Rock makes it all worthwhile.

Although it is several hundred feet below the actual summit, High Rock provides an unparalleled view of Whitesburg and the surrounding area. Even Mars Rock, a few hundred feet to the north, doesn't offer as fine a vista.

Beyond High Rock, hikers plunge back into the woods. Along this section, hikers must be careful to watch for blazes and keep a close eye on the map, as well as the ground. Since this is the most difficult point to reach from both ends, it is also the most difficult to maintain and the least traveled.

From this point, hikers will have several opportunities to leave the trail, but those who continue will climb another 300 feet to Mayking Knob, Kentucky's second-highest point, then start the jagged descent to U.S. 23. Hikers get their second chance at water, and their first designated camp site at the Adena Shelter, eight miles from U.S. 23 and the end of the section.

Maps can be downloaded from [www.pinemountaintrail.com](http://www.pinemountaintrail.com)

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# Acme McCrary Shaping legs and shaping sustainability in the textile industry

Story by Kyle Wolfe

Textile plant Acme McCrary is out to prove that big industries can make a big impact. The company's Pritchard Street facility in Asheboro, N.C., is home to one of the country's largest solar thermal systems in the country. At the end of 2010, the plant transferred from the age-old steam boiler to solar thermal energy to heat the water they use to produce the 110,000 dozen pairs of hosiery per week.

Traditionally, the textile industry relies heavily on fossil fuels for energy. Industry giant, Acme McCrary, who employs 600, is setting new standards for manufacturing plants nationwide.

"We are pleased to be a leader in sustainability and to be a responsible corporate citizen for our community, our employees and our customers," said Bill Redding, CEO of the corporation. Redding credits his employees on the company's Green Committee as a major initiator of the project.

"There was a need from the customers and the company to make the corporation more sustainable," explains Bruce Williams, an Acme McCrary employee and member of the Green Committee. "The idea of solar power came up, and we went with it."

The Green Committee started re-

searching the prospect of solar energy and found that solar thermal would be the most efficient resource.

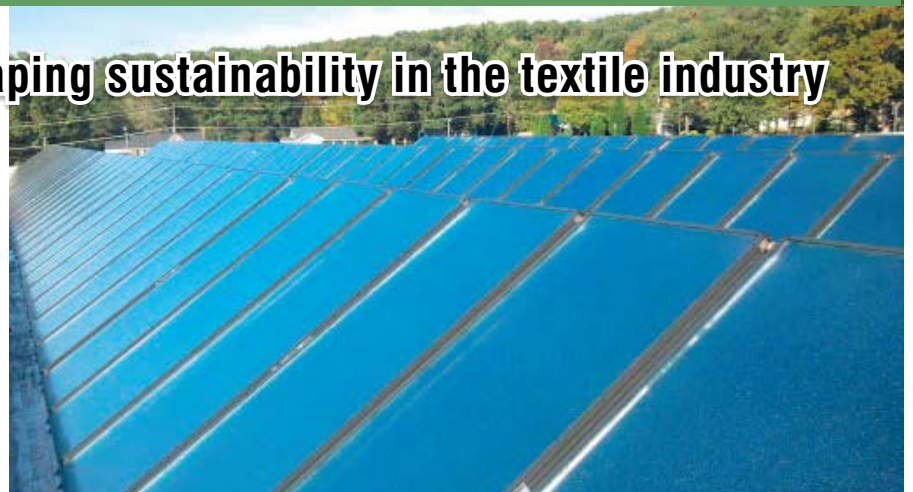
Acme McCrary credits one of its major customers, Walmart, as an inspiration, due to environmental standards that Walmart has imposed on its vendors. "Walmart's sustainability requirements drove us to form our own," Williams stated. Acme McCrary joined Walmart's Sustainable Council in 2010.

"A successful merchandise lineup hangs on the right products... and the right partner. Coincidentally, we offer both." - Acme McCrary

Acme McCrary found FLS Energy based in Asheville, N.C. The company specializes in solar

energy systems that provide hot water and electricity to their clients. FLS Energy designed and installed the solar thermal system at no cost. In turn, the company is selling the thermal energy back to Acme McCrary at a lower price than the cost of traditional fossil fuel energy.

The system includes 200 solar panels, manufactured by Alternate Energy Technologies based in Jacksonville, Fla. The panels capture heat from sunlight to generate 10,000 gallons of hot water a day at 180° F. Annually, the implementation of solar thermal ultimately will reduce the corporation's carbon emissions by 249,000 pounds and cut



Rooftop solar panels adorn the top of Acme McCrary. The panels are projected to reduce the building's carbon emissions by 249,000 pounds each year.

energy costs by more than \$20,000.

The project was partly supported by a grant under the American Recovery and Reinvestment Act.

On January 18th, Acme McCrary held a press conference introducing the solar thermal system to the public. North Carolina State Senator Kay Hagan was present for the ceremony and praised Acme McCrary's leadership and initiative. "The installation

of these next-generation solar panels represents a partnership between our state's textile sector and emerging clean energy sector," Hagan stated.

The partnership between Acme McCrary and FLS Energy provides an essential link for the future of the textile industry; proving big corporations can make a positive impact on the environment.

Visit [acme-mccrary.com/](http://acme-mccrary.com/) and [flsenergy.com](http://flsenergy.com).



**"There was a need from the customers and the company to make the corporation more sustainable"**

Bruce Williams, Acme McCrary Green Committee member



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## Coal Industry Backlash Against Clean Water Act Continues

By Sandra Diaz

Much to the ire of the coal industry, the Environmental Protection Agency has taken unprecedented steps to mitigate coal-related pollution on Appalachian waterways over the past two years. The coal industry is fighting back, and leveraging the new, anti-regulatory political climate in order to pass bills that weaken federal clean water laws.

The industry loudly opposed the EPA's January decision to veto the controversial Spruce No. 1 mine permit, despite the fact that mine owner Arch Coal had earlier refused a compromise. The agreement the EPA initially offered the company would have allowed the company to obtain the majority of the minable coal at the site, while cutting the amount of streams buried in half. In addition to saving Arch millions in mitigation and reclamation costs, the changes would have cost only \$.55/ton more.

Shortly after the EPA's announcement, industry allies in Congress struck back with legislation to limit the agency's permit veto authority granted to them under Section 404(c) of the Clean Water Act. Senator Joe Manchin (D-WV) introduced the EPA Fair Play Act (S. 272), which would disallow the EPA to veto any permit after the Army Corps permit has already been issued; Rep. Dave McKinley (R-WV) introduced a companion bill in the House.

The Mining Jobs Protection Act, introduced by Kentucky senators Mitch McConnell and Rand Paul (S. 468) and by Hal Rogers of Kentucky and Shelley Moore Capito of West Virginia in the House (H.R. 960), is similar to the legislation introduced by Manchin. The legislation would drastically reduce the

time frame in which the EPA can assess the water quality impacts of valley fills for mountaintop removal coal mining operations and other "dredge and fill" permits from six months to 60 days.

Some members of Congress utilized the platform of the 2011 federal budget bill (H.R. 1), attaching amendments to the bill which would deny the EPA ability to direct funds toward enforcement of current and proposed regulations on mountaintop removal mining, coal ash storage, emissions from coal-fired power plants and other environmental safeguards. Although the amendments had direct impact on the EPA's use of funds, they ostensibly had no effect on reducing the overall budget.

The budget bill passed in the House with the majority of the pro-coal provisions and is now stalled in the Senate while Democrats and Republicans struggle to compromise.

States legislators are also jumping in to remove clean water protections. Efforts to dilute the Clean Water Act in Virginia were successful when allies of the coal industry passed legislation to limit the ability of state regulators to use water quality testing for evaluation and enforcement of surface coal mining permits. The bill also repeals the authority of the citizen State Water Control Board to administer certain Clean Water Act permits.

In Kentucky, the Senate's Natural Resources and Energy committee unanimously approved Senate Joint Resolution 99, which would declare Kentucky a "sanctuary state" for the coal industry, free from EPA's "over-reaching regulatory power," while the Natural Resources and Environment Committee in the House unanimously passed House Bill 421, which would exempt coal mined and used exclusively in Kentucky from the federal Clean Water Act. With the state's legislative sessions now closed, lawmakers will have to reintroduce the provisions in order to achieve passage.



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### NEWSBITES FROM COAL COUNTRY

**CITIZEN POLICYSMITHS GO TO WEEK IN WASHINGTON:** Over 100 citizens from across the country will assemble in Washington, D.C., April 2 - 6 to meet with Congress about the Clean Water Protection Act and the Appalachia Restoration Act. For more information on this event, visit <http://ilovemountains.org/wiw>.

**FAMILIES WITH POISONED WELLS GET THEIR DAY IN COURT:** Trial begins August 1 for 700 plus community members seeking compensation for exposure to toxic metals and chemicals in coal waste (slurry) allegedly introduced into ground water by Massey Energy Co. near Rawl, W. Va.

**KEEPING THE "MOUNTAIN" IN BLAIR MOUNTAIN:** On March 9, mountain lovers from across the nation will begin a five-day march that will end in a rally from Marmet, W.Va., to Blair Mountain in an effort to stop the commencement of mountaintop removal coal mining operations on the historic peak. More at [www.friendsof-blairmountain.org](http://www.friendsof-blairmountain.org)

**WV UNDERGROUND COAL SLURRY BAN BILL GUTTED:** A bill to ban underground coal slurry injections was voted on for the 1st time in the West Virginia Legislature. Although sponsored by Senate leadership, the Alternative Coal Slurry Disposal Act was unfortunately gut-

ted of key provisions in both the House and Senate and did not make it out of the Finance committees.

**KENTUCKY MOUNTAIN LOVERS "PORCH SIT-IN" WITH THE GOVERNOR:** On Feb. 14, 2011, fourteen peaceful protesters emerged from the office of Kentucky Gov. Steve Beshear after a four-day sit-in; they were met by an exuberant crowd of 1,000 supporters on the steps of the state Capital for the 4th Annual I Loves Mountains Day.

**EPA TO ARCH COAL:** The Clean Water Act - Obey or Pay: Arch Coal agreed to pay a \$4 million civil penalty for alleged violations of the Clean Water Act in the states of West Virginia and Kentucky.

**TENNESSEE: MTR FREE OR NOT TO BE?:** Community members in Tennessee, seeking to end mountaintop removal coal mining in the state, defeated a bill that appeared designed to delay decisive action on permanently ending mountaintop removal coal mining within the state.

**STOP LIMITING CONDUCTIVITY LIMITS:** The EPA's Environmental Quality Board for W.Va., siding with arguments by the Sierra Club, ordered the WV Department of Environmental Protection to regulate conductivity pollution from coal mining operations within the state.



## Coal Dust Control Measures Rejected in Virginia

By Jamie Goodman

Residents in southwest Virginia expressed disappointment this March when a petition to the State Air Pollution Control Board to require mandatory control and monitoring regulations for coal dust from nearby mines and transport trucks was denied.

The petition was unanimously rejected by the board. However, the



board instructed the state Department of Environmental Quality to develop a protocol for monitoring the situation in Roda and other Virginia coal communities.

In 2008, in response to rising complaints about excessive coal dust in the

coal camp of Roda—located in Wise County, Va.—regional organization Southern Appalachian Mountain Stewards (SAMS) and the Sierra Club installed two dust monitors and conducted a two-week study of air quality. The results revealed up to three times the EPA's acceptable level of dust.

Coal companies have assumed various voluntary measures to contain

coal dust, including truck washers and street sweepers, but according to Jane Branham, vice president of SAMS, "I have personally watched as coal trucks in Roda simply drive around the washer instead of through it."

Residents in Roda attribute numerous health conditions to the coal dust, including high incidents of asthma and lung cancer. According to a report by the Virginia Asthma Coalition, health districts that include coal mining have some of the highest rates of adult asthma in the state.

## EPA Proposes New Clean Air Emissions Standards, Enforces Clean Air Act

By Jamie Goodman

Despite recent backlash from industrial supporters over the EPA's actions to regulate environmental impacts, the U.S. agency is taking a stronger stance on clean air.

In mid-March, the agency announced the proposal of new national standards for mercury, arsenic and other toxic pollution from coal fired power plants. The proposed standards would require many power plants to install enhanced pollution control to cut the emission of harmful airborne toxins.

According to the EPA's release, if instated, the measures would prevent as

many as 11,000 heart attacks and 120,000 cases of childhood asthma symptoms and significantly reduce emergency room visits and hospital admissions. The plan would also create 31,000 short-term construction jobs and 9,000 long-term utility jobs.

The announcement falls on the heels of a settlement between the EPA and the Tennessee Valley Authority (TVA) over alleged violations of the Clean Air Act. In mid-March, TVA agreed to pay a \$450,000 penalty for releasing unpermitted sulphur dioxide and nitrogen oxide into the air at its Widow Creek Power Plant in Stevenson, Ala.

TVA will also be required to eliminate 931 tons of SO<sub>2</sub> and 13 tons of nitrogen oxide from their permitted emissions allowance.

Clean Air Act Amendments enacted more than 20 years ago mandated that the EPA require industry to control toxic

air pollutants such as mercury, but at the time no national standard was set for toxic emissions levels.

The EPA will conduct a 60-day public comment period, holding public hearings on the proposed Clean Air Act standards to take input and feedback.

## Two New Reports Look At High Costs of Coal

By Jeff Deal

Two new studies have a lot to say about the externalized cost of coal use.

When considering the damages caused by coal mining, processing, burning and waste disposal, the cost of electricity is actually double or triple the price paid by ratepayers to electric utilities. The report by the Harvard Medical School's Center for Health and the Global Environment also found that the cost to society could be lowered by boosting the manufacture and installation of renewable energy technologies, promoting energy efficiency, ending mountaintop removal coal mining and enforcing water quality standards. You

can read the full report (Mining Coal, Mounting Costs) at [chge.med.harvard.edu/publications/reports/](http://chge.med.harvard.edu/publications/reports/).

A related report by a group of government health agencies found that increased electricity usage does not provide "greater health benefits" in countries with an infant mortality rate less than 10% and a life expectancy greater than 57 years of age. The study also discerned "significant" harmful health effects with the use of coal. Read more of this report (Estimating the Global Public Health Implications of Electricity and Coal Consumption) at [ehp03.niehs.nih.gov/article/info%3Adoi%2F10.1289%2Fehp.1002241](http://ehp03.niehs.nih.gov/article/info%3Adoi%2F10.1289%2Fehp.1002241).

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By Dr. Matthew Wasson, Ph.D.

The debate is over - at least in the scientific community. Over ninety-four percent of experts in the field agree that the climate is warming due to human activity. In 1998, nearly 75% of Americans believed that "solid evidence" of climate change existed. Due to a well-funded campaign by the fossil-fuel industry to create "controversy," that number has dropped to a low of 58%. With help from the website SkepticalScience.com, we identified the top 10 arguments used to deny human-caused effects on climate change and provide a brief summary of why those arguments are wrong or misleading.

# Top 10 Arguments USED BY CLIMATE SKEPTICS

(And Why They're Wrong)

**1 "Global warming is caused by the sun"**  
The evidence that the Earth is warming has become overwhelming over the last few decades and many skeptics of human-induced climate change have come to acknowledge the trend, though not always the method. In the 1960s, scientific studies showed that brightness and warmth of the sun were increasing, as were the frequency of sunspots—a theory that was paired with the gradual increase in global temperatures that had occurred since the beginning of the century. Climatologists of that era erroneously believed that energy from the sun was a significant factor driving changes to global temperatures. Since 1975, however, solar activity has been on a declining trend, while global temperatures have risen dramatically, and volumes of research has proven that solar activity cannot explain the global warming we see today.

**2 "Climate has changed before, so it can't be caused by human activity"**  
One thing that climate scientists and global warming skeptics often agree on is that weather patterns have changed naturally in the past. However, arguing that humans cannot be responsible for present-day climate change is akin to saying humans cannot cause forest fires because natural factors have caused forest fires in the past. Almost all climate scientists agree that the current trends of rapid warming is caused by human-generated greenhouse gas and cannot be explained away by pointing to natural factors that may have caused climate variations in the past.

**3 "There is no consensus among scientists that humans are causing climate change"**  
A recent survey of climate scientists revealed that more than 97% of active researchers believe that the earth is warming and that human activity is primarily responsible. The most respected scientific societies, such as the American Association for the Advancement of Science, the American Astronomical Society, the American Geophysical Union, the American Institute of Physics and the American Meteorological Society, all agree that global warming is happening and that it is caused primarily by human activities.

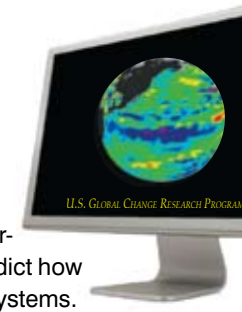
**4 "The earth is cooling, not warming"**  
A common tactic of climate change deniers is to claim that recent cold weather events provide evidence that the earth is not warming and may actually be cooling. What the deniers may not grasp, however, is the distinct difference between long-term climate patterns, which are measured over decades, and unpredictable short-term weather events caused by factors unrelated to climate change. From average global air and water temperatures to snow cover and ice melt in polar regions, all ten of the most important indicators of climate change point to real evidence that the globe is warming.

**9 "Antarctica is gaining ice, not losing it"**  
The argument that Antarctica is gaining ice relies on selective use and interpretation of data. While "sea ice" (i.e., ice that occurs on top of the ocean) has increased in recent years, what is far more concerning to scientists is that "land ice"—which represents the vast majority of ice in Antarctica—is declining. As for the other pole, climate change deniers cannot debate the fact that both sea and land ice is declining in the Arctic. Overall, the rate at which ice in both polar regions is melting is consistent with some of the most dramatic predictions of climate models.



Photo by Joe Mastroianni National Science Foundation

**5 "Climate models are unreliable"**  
Climate models mathematically represent a complicated set of interactions between the sun, oceans, land and atmosphere in order to predict how the overall climate will be affected by changes in any one of these systems. The models are first tested to see how well they represent historic changes in climate; if successful, they can then be used to predict how factors such as increases in greenhouse gas emissions will impact climate in the future. A number of climate models running for decades have proven to be quite accurate in their predictions, with an exception—they have significantly underestimated the amount of warming and sea level rise that actually occurred in recent decades. No one has yet developed a model that can explain recent global warming trends—without adding greenhouse gases as a contributing factor.



**6 "The temperature record is unreliable"**  
Global warming deniers have recently seized on studies that claim many weather stations are "improperly" located, in an effort to attribute warming over the past few decades as poorly located thermometers. It is true that increasing temperatures at some weather stations can be explained by what is called the "urban heat island effect," where temperatures in urban areas increase as natural vegetation is replaced with pavement and asphalt. Overall warming trends, however, have been the same in both urban and rural areas and have been measured by satellites, as well thermometers, so improper placement of weather stations cannot explain the increase in temperature seen over the past century.

**7 "It hasn't been warming since 1998"**  
It's true that temperatures were particularly high in 1998. The six years that followed—while still some of the hottest years on record—exhibited a slightly lower average temperature than the record set in 1998. But global warming deniers seized on this short-term variability, cherry-picking individual numbers and ignoring other indicators of global warming—such as unabated increases in ocean temperatures and the melting of arctic sea ice—to argue that the earth had actually been cooling since 1998. In actuality, both 2005 and 2010 were the two hottest years ever recorded, and average yearly temperatures continued a steady climb throughout the second half of the decade.

**8 "Scientists were predicting another ice age in the 1970s"**  
While some scientists did propose in the 1970s that another ice age could be imminent, a survey of papers addressing the question of future climate patterns published in climate science journals between 1960 and 1979 show that 60% actually predicted a warming climate, while only 10% predicted cooling. The reports that predicted another ice age received significantly more attention in the media than the consensus that occurred by 1980 admitting that those predictions were misplaced.



## A Fossil Fuel Free Future by 2030?

New Study Proposes The Possibility  
By Jesse Wood

Is it really feasible to power the entire world with renewable energy by 2030? According to Mark Jacobson, professor of Civil and Environmental Engineering at Stanford University, and Mark Delucchi, research scientist at the Institute of Transportation Studies at University of California–Davis, it is. "Based on our findings there are no technological or economic barriers to converting the entire world to clean energy," Jacobson said in *Science Daily*. "It is a question of whether we have the societal and political will."

Last December, Delucchi and Jacobson co-authored a two-part study in *Energy Policy* journal outlining a detailed plan to power the entire world with renewable energy produced from the sun, wind and ocean. According to the U.S. Energy Information Administration, total global power consumed at any given moment is 12.5 trillion watts (terawatts or TW); and in 2030 global power consumption is estimated to increase to 16.9 TW. But if fossil fuel usage and biomass combustion (byproducts of plant and wood matter) were to be eliminated, global power demand would decrease to just 11.5 TW by 2030.

### According to Delucchi and Jacobson, the entire world could be powered with the following renewable energy:

- 3,800,000 5MW wind turbines
- 49,000 300 MW concentrated solar plants
- 40,000 300 MW solar PV polar plants
- 1.7 billion 3 kW rooftop PV systems
- 5,350 100 MW geothermal power plants
- 270 new 1300 MW hydroelectric power plants
- 720,000 0.75 MW wave devices
- 490,000 1 MW tidal turbines

For Delucchi and Jacobson's estimates to work, the world needs to power transportation with electricity or hydrogen rather than gasoline, because 80% of energy produced from gasoline is wasted through heat, whereas only 20% is lost through electricity. According to Delucchi and Jacobson, powering the world through renewable energies by 2030 is a monumental task, but its scale is similar to past government projects. "This really involves a large-scale transformation," Jacobson said in the *Science Daily*. "It would require an effort comparable to the Apollo moon project or construction of the interstate highway system."



# Appalachia and Our Changing Planet

CLIMATE CHANGE



By Bill Kovarik

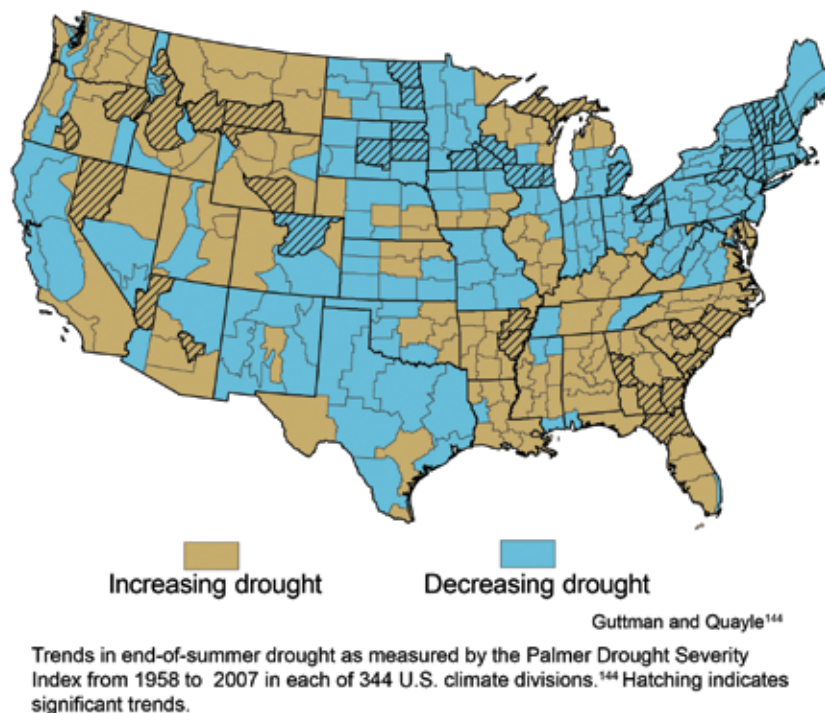
Appalachia has always been a refuge for biodiversity.

During the last ice age 20,000 years ago, the Appalachian mountains were a Noah's Ark for thousands of species until the glaciers receded.

In the 19th and 20th centuries, many of our own species trooped off to spend their summers in the mountains, flocking to resorts around Asheville and Boone, N.C., and the Blue Ridge in Virginia, to escape malaria and summer heat along the coasts.

Modern refugees from urban stress still seek solace in the forests and if sea levels rise as quickly as scientists are now predicting, another wave of refugees can be expected in a generation. What will be left of the forests, native species and water resources?

Can Appalachia survive climate change? Will it continue to serve its timeless role as a refuge for biodiversity? Dozens of major studies are



underway to answer these questions. The initial results, as one scientist said, are grim.

## Trail Hikers Will See Changes

To get an idea of how climate change may affect Appalachia, consider the Appalachian Trail. Fifty years from now, hikers will probably have to cope with higher temperatures, dried-up streams and more forest fires.

"For the present, water isn't that serious a problem," said Lenny Bernstein, who studied climate change for the Appalachian Trail Conservancy. "But if those supplies dry up, it's an entirely different challenge."

During the 2007-2008 drought, portions of the Appalachian Trail in North Carolina had to be closed. "Was that an unusual event or a harbinger of the future?" Bernstein asked.

According to the U.S. Global Change Research Program, climate history shows the southeast has become hotter and drier since the 1970s. In the past 30 years, for most of the Appalachian region, five to 15 fewer days of freezing have been recorded per winter.

Climate models project continued warming and far less rainfall.

"It is disconcerting," Bernstein said.

"If those projections are real, and that's where the future is, then 2008 is not going to be unusual."

## More and Larger Forest Fires

Projections of severe climate change show much drier conditions over the southern end of the Appalachian Trail, with 8 inches less rainfall every year. Eventually, it might not be safe or even possible to hike the entire trail from Georgia to Maine.

A dramatic rise in large forest fires nationwide over the past 30 years is documented in the Quadrennial Fire Review (QFR) of 2009. Where there had been about 50 large fires (over 50,000 acres) in the 1979 - 1989 period, there were over 225 nationwide in the 1999 - 2008 period.

"The effects of climate change will continue to result in greater probability of longer and bigger fire seasons, in more regions in the nation," the QFR report stated. "Drought effects in the southeast, southwest and west will make these areas especially vulnerable in terms of fire risk."

## Biodiversity Under Siege

As summers grow hotter and drier, it's likely that Appalachia's stressed forests will harbor fewer birds and animals, and that a migration of many species to cooler climates will take place. However, it's not easy to separate climate impacts from the already serious impacts of habitat encroachment and mountaintop removal coal mining.

From flying squirrels to bog turtles, Appalachia provides a home to an extraordinary diversity of species. It is considered to be one of the world's great centers of biodiversity. Only two years ago, biologists found an entirely new genus of salamander -- the first new vertebrate genus to be discovered in the United States in half a century. Salamanders, however, are on the decline. In a 2010 journal article, JR Milanovich and colleagues found that climate change threatens "significant projected loss of habitat for many salamander species that currently occupy the Appalachian Highlands."

## Ecology vs. The Changing Climate

### A Game of Knowns, Unknowns, and Unknown Unknowns

By Sarah Vig

When it comes to climate change, "we have the knowns, the unknowns, and the unknown unknowns," said Steve McNulty, an ecologist with the U.S. Forest Service.

According to McNulty, the "knowns" are scenarios scientists can expect to develop with climate change and managers have an established best practice technique.

"It is commonly held that the way to manage a forest faced with drought stress is forest thinning," said McNulty.

The "unknowns" are factors that scientists expect to be affected by climate change, but don't know how, such as the behavior of invasive insect species. The "unknown unknowns," McNulty said, are the "surprises," by virtue of their obscurity, these clearly have the most potential to seriously impact ecosystems.

Take the case of the southern

pine beetle, a tree parasite that lays its eggs under the bark of pines, where the larvae then feed on the tree's living tissue underneath. Under normal circumstances, the beetle's hosts are trees made vulnerable by sickness or age.

When the Asheville area was experiencing an extended drought in the late 2000s, the southern pine beetle spread farther north into territory it had not previously inhabited and began attacking spruce trees that grow in the higher elevations.

Contrary to expectations and previous behavior, it was the healthiest spruce stands that suffered the greatest impact. These trees were using the most water,



Continued on page 21

Continued on page 21



# Agricultural Production: AN ATMOSPHERE OF UNCERTAINTY

By Jillian Randel

Among growing concerns about the warming of the earth and the buildup of greenhouse gases is the impact that climate change has on our food supply.

Irregular precipitation patterns, rising temperatures and higher levels of carbon dioxide could govern how and what food is grown and sold in Appalachia and worldwide in the coming years.

The only reliable factor in this equation is the level of uncertainty that surrounds climate change and its impact on agriculture— an already volatile science based on hard-to-predict weather patterns. Uncertainty is the theme as atmosphere changes develop, followed by predictions on how these changes will affect our food chain as we move forward.

## When it Rains, it Pours

Erratic behavior is the name of the game when it comes to precipitation patterns in the coming years. Scientists at the University of Maryland's Center for Integrative Environmental Research predict a mix of longer, intense droughts with increased rainfall in the form of high volume storms and flooding.

"Dry weather can scare you to death but wet weather can starve you to death," said Charles Church, owner of Watauga River Farms in Valle Crucis, N.C. "You worry a lot when there's a drought cause you're afraid your plants are not going to get watered enough, but too much water can totally ruin them."

According to the Intergovernmental Panel on Climate Change, frequent flooding can generate low levels of oxygen in the soil, increase crop susceptibility to root diseases, cause severe erosion and increase runoff and leaching of agricultural chemicals into surface water.

"About a year ago we had a big rainfall on one corner of the [school's] farm," said Christof den Biggelaar, associate professor of Agroecology and Sus-

tainable Development at Appalachian State University in Boone, N.C. "In that corner, all the onions and garlic roots were exposed because the rain had washed the soil away."

Drought has also been a problem in Appalachia.

"For the most part rainfall here is pretty generous. You could count on about an inch a week, but the last few years it's been difficult to plan on that," said den Biggelaar. "With farming you look at longer term trends and it seems like over the last few years you have all these stats you almost have to throw out the door."

## It's Getting Hot Out There

According to the U.S. Global Change Research Program, the annual average temperature in the Southeast has risen about 2°F since 1970. Temperatures in the Southeast are projected to rise about 4.5°F by the 2080s under a lower emission scenario, and under a higher emission scenario are expected to rise about 9°F by that time.

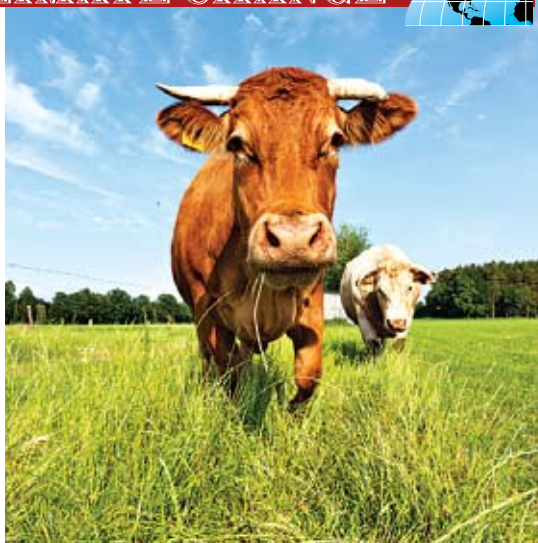
Higher temperatures benefit crops that grow well in the heat, but will negatively impact crops that prefer cooler growing seasons. Appalachia's cool mountain growing climate provides the region with a distinct market edge.

"It is good for farmers here when they can grow cold weather crops during summer months and places like California and Florida can't," said den Biggelaar. "Broccoli prices go up and farmers can be competitive and still pay bills."

With temperatures on the rise, plants demand more water to survive. Without adequate water for cooling, plants suffer heat stress.

"The problem is with unpredictability," said den Biggelaar. "There are lot more small farms here that don't have irrigation, but you never needed it because rainfall was regular and it never

## CLIMATE CHANGE



got really hot. Now that is changing."

According to den Biggelaar, the Appalachian State Teaching and Research Farm has had trouble growing many Appalachian summer crops such as broccoli, spinach, cabbage and lettuce, making it hard to keep up with demand from their Community Supported Agriculture program.

Shorter and warmer winters will also negatively impact agriculture, according to the U.S. Global Change Research Program, with warmer temperatures affecting fruits that require more nights below a certain temperature. Many apples and berries require between 400 and 1,800 cumulative hours below 45°F to produce abundant yields.

"If spring gets warm earlier the trees might bud and then frost early and you lose your crop," said den Biggelaar. "In 2007 there was a late Easter freeze and there were no apples and very few blueberries; we lost a lot."

## Carbon Dioxide: A Fair-Weathered Friend

One of the most widely recognized effects of climate change is increased levels of carbon dioxide (CO<sub>2</sub>). Increased levels of CO<sub>2</sub> act as a fertilizer for many plants. In many greenhouses, farmers are finding ways to increase these levels to stimulate faster plant growth.

"Carbon dioxide is a double-edged sword," said den Biggelaar. "For direct crop production it would be good, but higher CO<sub>2</sub> in the air increases acidity of oceans and air, which is a bad thing."

## Rising Temps Make the Cows Come Home

Increased temperatures and humidity puts greater strain on livestock, which in turn reduces their ability to produce milk, gain weight or reproduce.

Animals suffer heat stress from longer and hotter summers. Just like plants, they require cooler nights to recover from heat. This recovery time will be harder to find with temperatures rising.

Studies done for the University of Maryland's Center for Integrative Environmental Research show that a 9°F increase in temperature reduces livestock yield in animal and dairy operations by about 10 percent in the Appalachian region.

Variations in climate can also affect the forage that many animals rely on for their diet.

## Weather: A Lost Ball in the High Weeds

Agriculture is a science based on predictions and patterns that often follow their own direction. It is a science that is hard to pin down and will never be exact.

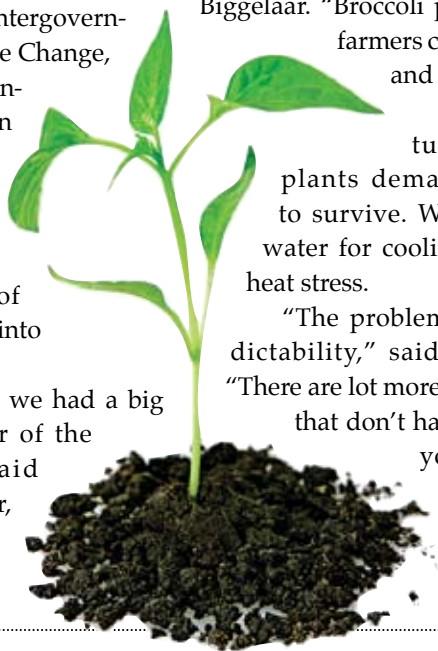
"I have farmed my whole life and I've seen periods where it is extra hot and extra dry," said Church, who doesn't necessarily believe in climate

change. "It's something that has gone on since the beginning of time. I see year by year it can be hotter and dryer, then right back to wet the next year."

Weather patterns are becoming harder to predict, but the question we must address is: what can we do now to ensure a secure future for our food systems?

## WEEDS AND PESTS

According to the U.S. Global Change Research program, as temperatures increase, certain species of pests and weeds begin to move northward and spread. Warmer winters no longer provide the severe cold needed to kill off many insects and pests.





# Bartering for the Economy

By Jillian  
Randel

**CLIMATE CHANGE**



Consider the effects that a warming earth will have on the global economy. Ecology and environmental systems provide enormous benefits to the goods and services sector, reminding leaders that we live in a multi-layered, interconnected world. The Appalachian region presents a diverse array of economies susceptible to the impacts of climate change.

## Knock on Wood for Forestry

The forestry industry is a backbone economy in many Appalachian communities. Increased temperatures and increased levels of CO2 in the air- two side effects of climate change- have uncertain effects on tree growth. While increased CO2 could stimulate forest growth, warmer temperatures could inhibit long-term growth.

"The climate is not going to do anything unless CO2 continues to rise," said John Seiler, forestry professor at Virginia Tech in Blacksburg, Va. "If CO2 rates doubled, for example, photosynthetic rates would double. Even if it's possibly a little dryer trees may not care because they are eating twice as fast and don't need to worry about eating when it's dry."

According to the U.S. Department of Commerce, Economics and Statistics, Tennessee ranks second in the nation for hardwood lumber production. In 2000, the forest product industry accounted for 6.6% of the state's GDP, generating 21.7 billion in economic output and providing 180,000 jobs. Tennessee is not the only state in the region whose economy

relies on forestry and lumber production. Kentucky, West Virginia, Virginia and North Carolina all gain from the economic benefits of the timber industry.

Even if trees do gain from the short-term benefits of increased CO2, there is still a big question about long-term survival for trees that prefer cooler growing seasons. The timber industry will see a huge decline if hardwoods are replaced by softer trees that carry less commercial value.

"The level of uncertainty is really, really high," said Seiler. "It's not going to be whether one individual tree survives, it's going to be changes in competition between trees that survive. Chestnut oak seems to be coping better than black oak, so you might find chestnut replacing black oak. Survival is about who responds the best in the future environment."

## Pitching Camp with Outdoor Recreation

National Parks and other preserved areas stimulate spending in areas that are far away from cities and other destination spots. Think of all the spending

## Economic Benefits of Outdoor Recreation in Appalachia

State	2006 estimated spending on hunting, fishing and wildlife viewing*	2006 Number of jobs hunting, fishing and wildlife viewing brought to state*	2009 Economic benefit from National Park Tourism**
Virginia	\$2.1 billion	49,265 jobs	\$493,128,000
North Carolina	\$2.3 billion	49,771 jobs	\$707,241,000
Kentucky	\$1.8 billion	41,765 jobs	\$76,593,000
West Virginia	\$1.2 billion	29,064 jobs	\$57,779,000
Tennessee	\$2.1 billion	35,226 jobs	\$501,305,000

\*2006 estimates from the National Wildlife Federation.... \*\*2009 estimates from the National Park Service



## A BREATH OF FRESH AIR

The environment is our main source of healthy air and water- naturally! Without functioning ecosystems we would have to spend more to filter air and purify drinking water. According to the Appalachian Center for the Economy and the Environment, the value of federally designated wilderness areas for watershed protection, carbon storage, climate regulation and waste treatment (nutrient cycling), is \$174 per acre/ per year. With those estimates, a forest like the Monongahela National Forest in West Virginia provides a value of \$7 million or more of ecosystem service per year.

that occurs on vacations: motels, bed and breakfasts, restaurants, retail stores, grocery stores, gas, camping, the list goes on.

Changes to ecology and habitat could dramatically affect outdoor recreation. The effects of climate change could cause species to move north in search of water and cooler climates.

The Outdoor Industry Foundation estimates that outdoor recreation adds \$730 billion dollars to the U.S. economy annually and the central Appalachia states see many of these benefits (see table above).


Preserving land through national and state parks, land trusts and community parks establishes protection of scenic areas, drinking water, cold water fisheries, capacity of the land for carbon storage, habitat for wildlife and recreational activities like hunting, climbing, paddling, camping, fishing and other outdoor sports.

According to the North Carolina Ski Areas Association, revenue generated by the ski industry in 2009-2010 amounted to \$146 million dollars and provided

over 100,000 jobs. Warmer winters will shorten ski seasons and provide less favorable weather for snow.


"The thing with Virginia, West Virginia, Tennessee and Kentucky is that people don't realize that most states do not have deciduous forests and copious amounts of water," said Sissie Summers of the Central Offices Programming Administrator for West Virginia state parks. "Most places have one or the other, or neither. People in Appalachia forget that we have things that most of the world doesn't have, and they are affordable, generational, treasured places."

Climate change is directly linked to economic development. The extent to which business relies on atmospheric changes ranges from harmful- a small fly fishing business in West Virginia to catastrophic- a multi-billion dollar lumber industry in a state like Tennessee. We live in an interconnected world and Appalachia is particularly susceptible to the trickle-down effects of a warming earth.



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# Transition Initiatives **CLIMATE CHANGE**



## Building Resilience at the Community Level

Story by Jillian Randel

Imagine a community where people can respond to economic downturns and fluctuations and availability of food with confidence. This community would be independent and self-sufficient. Members would cultivate, sell and store all their food needs, leaving little to be bartered with the outside world. Imagine a highly functional and effective transition initiative.

What does a town of 65,000 people eat? Where does this food come from and where does it go? Those are the questions Bill Sharple addresses through his State College, Pennsylvania, transition initiative.

"I have established a project to develop an architecture for local economies," said Sharple. "It's a process of defining what a self-sufficient community looks like and developing a model for a local economy."

The Transition Network, started by a community in Totnes, U.K. in 2005, encourages communities to reduce energy consumption, moving away from nonrenewable and carbon-intensive energy sources to build local economies and food dependence. The idea has spread like wildfire, inspiring the development of over 350 transition towns worldwide over the past six years.

The State College initiative formal-



Participants plant tomatoes in one of the Garden Starter projects in the State College transition initiative, designed for people who want to learn how to grow their own food organically. The focus is on small raised-bed gardens that can be set up almost anywhere. Photo courtesy of Bill Sharple

### Other initiatives in and near Appalachia include:

**Asheville, N.C.**

[transitionasheville.ning.com](http://transitionasheville.ning.com)

**Berea, Ky.**

[sustainablebera.org](http://sustainablebera.org)

**Staunton/Augusta, Va.**

[transitionstaunton.org/about](http://transitionstaunton.org/about)

**Carrboro/Chapel Hill, N.C.**

[transitioncch.org](http://transitioncch.org)

For more general information on transition towns, visit [transitionnetwork.org](http://transitionnetwork.org)

ly came into existence last spring and has since hosted a series of workshops on local foods, permaculture, rising gas prices and open forums on topics such

as food and energy.

The initiative is working with local churches to develop community gardens; they helped plant one garden last year and already have two new garden projects in the works. One church has an acre they use to supply the local food bank, and Community Supported Agriculture (CSA) projects are thriving throughout the town.

"We have a group from the School of Living [an organization dedicated to establishing environmentally-sound communities] beginning to look at an incubator model to help people start homesteads for farmers markets or for their own use," said

Sharple. "Incubators encourage economic business opportunities by providing space, training and resources to 'hatch the eggs' of businesses and bring them to life."

Katherine Watt, one of the other founders of the initiative, is working to establish a permanent farmers market to have a building where people can assemble and meet. She also has a blog and monthly column in the local newspaper about sustainability.

"Our goal is to reach self-sufficiency and to get 10 percent of our food grown locally within 10 years," said Sharple, who estimates that State College currently consumes about one to two percent locally grown food. "You have to find out what works best for you. The bottom line is we have to come up with a higher degree of local self-sufficiency, and we can do that and still live a good life."

Transition towns have powerfully impacted communities worldwide. What began as one town's desire to move away from nonrenewable sources of energy has transformed into an entire movement addressing global economic and environmental issues.

To follow the State College blog, visit [voicesweb.org](http://voicesweb.org).

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# Sequestering Your Carbon Footprint

CLIMATE CHANGE



By Jesse Wood & Jillian Randel

As consumers, all humans produce a carbon footprint—a measure of our impact on the earth's resources. Home energy use, transportation, food and goods and services are part of everyday life, but each of these needs leaves their mark on the world's forests, oceans and air.

There are plenty of easy and relatively inexpensive ways to soften our impact on the environment. A little bit of effort conserves a surprising amount of energy, which, in turn saves money and lowers our carbon footprint.

## Transportation

**Problem:** Gas prices are rising. We continue to grow more dependent on foreign oil and fossil fuels, and are unable to prevent devastating oil spills. Yet, we all have to drive, and unless we live a few blocks away from our destination, it is not always practical to walk or bike to where we need to be.

**Solution:** Consider a fuel-efficient or alternative fuel vehicle. Carpool and consolidate household trips into town. Visit [fuelconomy.gov](http://fuelconomy.gov) to track, calculate and compare your vehicles fuel economy.

**Bonus Round:** If you bought a Hybrid or Diesel, Alternative Fuel, or a Plug-in/Battery Electric Vehicle in 2010, you may be eligible for a federal tax credit:

**Hybrid or Diesel** – up to \$3,400

**Alternative Fuel Vehicle** – up to 4,000

**Plug-in Hybrid or Battery Electric Vehicle**  
– up to \$7,500

**More Info:** [afdc.energy.gov/afdc/laws](http://afdc.energy.gov/afdc/laws).

## Food

**Problem:** According to National Sustainable Agriculture Informational Services, “The vast majority of energy (around 80%) used in the U.S. food system goes to processing, packaging, transporting, storing, and preparing food. Produce in the U.S. travels on average 1,300 – 2,000 miles from farm to consumer.”

**Solution:** Eat a combination of local, organic and in-season foods. Shop at your farmers market during summers,



choose foods with less packaging and try to reduce your meat consumption. Check out [localharvest.org/](http://localharvest.org/) to find locally grown food near you.

**Bonus Round:** If you are interested in comparing the amount of carbon your food choices emit, check out [eatlowcarbon.org](http://eatlowcarbon.org).

## Goods and Services

**Problem:** According to the U.S. Environmental Protection Agency, in 2009, Americans produced about 243 million tons of Municipal Solid Waste, or about 4.3 pounds of waste per person per day.

**Solution:** Americans can reduce their consumption in small ways. Replace items only when you really need to. Recycle paper, glass, aluminum, electronics and plastic. Compost food waste for the garden and look for recycled products, particularly those labeled “post-consumer waste.”

**Bonus Round:** Visit [myfootprint.org](http://myfootprint.org) for an interactive way to track your own ecological footprint.

## Appliances

**Problem:** According to Stephen and Rebekah Hren, authors of *The Carbon Free Home*, some of the biggest energy wasters are TVs, computers, electric dryers, refrigerators and lighting.

**Solution:** Using a power strip or motion-activated outlet to regulate ap-

pliances can often reduce their power consumption by three-quarters.

**Problem:** According to the Consumer Energy Center, twenty-year-old refrigerators are among the most inefficient household appliances.

**Solution:** Look for the Energy Star label, which uses 60% less energy. As electricity prices rise, these appliances will pay for themselves. One of Hren's favorite carbon-free home solutions is drying clothes the old fashion way – on a clothesline.

**Bonus Round:** Incandescent lights put 95% of their energy into heat and only 5% into lighting. Try Compact Fluorescent bulbs, which are at least 75% more efficient.

## The Home

**Problem:** Homes consume large quantities of energy, and inefficiencies often go unnoticed.

**Solution:** Weatherization is a simple and cost-efficient way to increase your home's efficiency. Caulking, weather strips and storm windows eliminate drafts during hot and cold temperatures. Consider double-pane windows and make sure your walls and ceilings are insulated.

If you are building a house, check out green design features such as passive solar heating, a rainwater catchment and recycled materials. Also, look for lumber that is sustainably forested.

And if you think solar panels and other renewable systems are right for your home and budget, go for it! There are plenty of tax credits for home owners, who install renewable energy systems in their homes.

**Bonus Round:** In North Carolina, if you install solar panels or a wind turbine on your land, you are eligible for a 35% state tax credit up to \$10,500 per installation. If you install a solar water heating system, it is \$1,400 per installation. On top of that, there are federal incentives available too. Plus, you can sell any excess energy you produce back to the utility grid.

Check out [dsireusa.org](http://dsireusa.org) for federal and state tax incentives for renewable energy systems.

## Government Energy Policies At Work

Our world governments have as much, if not more, responsibility for helping to curb greenhouse gas emissions. Although carbon-reducing legislation will likely receive less favor in the new U.S. congress, the current administration has in the past two years (and continues to announce new measures) made efforts to reduce emissions.

### Recovery Act Investments in Clean Energy:

The American Recovery and Reinvestment Act included more than \$80 billion in the generation of renewable energy sources, expanding manufacturing capacity for clean energy technology, advancing vehicle and fuel technologies, and building a bigger, better, smarter electric grid, all while creating new, sustainable jobs.

### Appliance Efficiency Standards:

The Administration has established more stringent energy efficiency standards for commercial and residential appliances, including microwaves, kitchen ranges, dishwashers, light bulbs and other common appliances.

### Leadership in Sustainability:

President Obama signed an Executive Order on Federal Sustainability, committing the Federal Government to lead by example and reduce greenhouse gas emissions by 28% by 2020, increase energy efficiency and reduce fleet petroleum consumption.

### Efficiency Standards for Cars and Trucks:

In May 2009, President Obama announced the first-ever joint fuel economy/greenhouse gas emissions standards for cars and trucks. In May 2010, President Obama created the first-ever efficiency and emissions standards for medium and heavy-duty cars and trucks.

### Making Homes More Energy Efficient:

Recovery Through Retrofit will eliminate key barriers in the home retrofit industry by providing consumers with access to straightforward information about their home's energy use, promoting innovative financing options to reduce upfront costs and developing national standards to ensure that workers are qualified and consumers benefit from home retrofits.

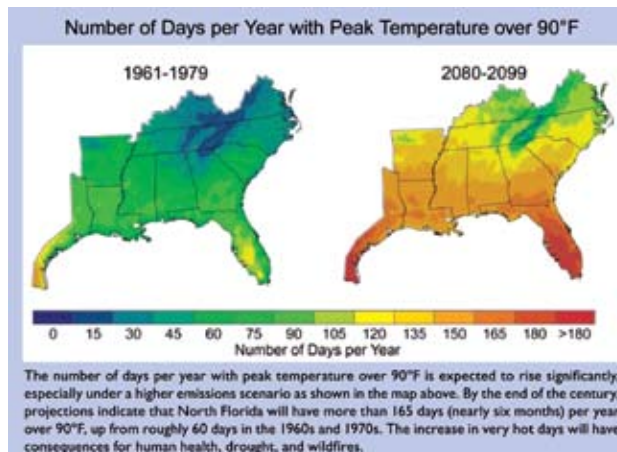


# Appalachia and Our Changing Planet

Continued from page 16

Native trout are also endangered, according to a “grim prognosis” by Patricia Flebbe, research biologist for the U.S. Forest Service. Between 53 and 97 percent of wild trout populations in the southern Appalachians could die out as streams become warmer, Flebbe and other Forest Service researchers said. Trout are coldwater species that depend on relatively low stream temperatures to survive. “Trout are already at the southern limit of their range,” Flebbe said. “Suitable habitat area will shrink and become much more fragmented as the climate becomes increasingly warm.”

Forest service researchers say that climate change will likely pose a severe threat to Fraser fir, Balsam fir and Carolina hemlock of the central and southern Appalachians. These species occur in higher elevations and are also currently under siege from exotic pests like the woolly adelgid. Other tree species—the Table Mountain pine, Red spruce and Striped maple— may survive in the north, but face extinction in central and southern Appalachia as a result of changing climate conditions.



that will be hardest hit are those that are narrowly distributed in habitat, according to Mark Schwartz and colleagues writing in the journal *Climate*. Focusing on trees and birds of the eastern United States, the scientists found that extinction vulnerability increases for species that are not as widely distributed.

It is this vulnerability which give some grave pause about the future of Appalachia in the face of our changing climate.

\* Charts from United States Global Change Research Program, [www.globalchange.gov](http://www.globalchange.gov)

Many studies on the impacts of climate change focus on single species, but broader studies of ecosystems also reflect high risks. The types of animals

## Ecology vs. The Changing Climate

Continued from page 16

producing the least amount of resin, and therefore less able to keep the beetle from infesting under their bark.

McNulty is well-versed in ecological stressors through his position at the USFS Eastern Forest Threat Assessment Center, but explained that climate change is unique because it will bring about “new combinations of events that we haven’t seen before.”

The USA National Phenology Network (USA-NPN) brings together two important resources to help shed light on some of these unknowns: professional scientists and the capacity for extensive data collection.

Phenology is the study of recurring plant and animal life cycle stages, especially their timing and relationships with weather and climate. Anyone who has ever made note of the first robin in springtime, or the first tree to turn color in fall has made a phenological observation.

USA-NPN capitalizes on the simplicity of making observations to collect a massive amount of data nationwide through their citizen science program, Nature’s Notebook. Since 2008, Nature’s Notebook has garnered 3,000 registered observers who have made 76,000 phenological observations.

With this data, USA-NPN can establish patterns of change and identify species’ responses to both seasonal weather changes and longer-term climatic change.

According to USA-NPN, some will be indirectly affected by climate change because they are out-of-sync with a changing climate. For instance, a migratory bird’s migration patterns might be cued by day-length in North Africa while its food source in its springtime home— insect larvae— has a lifecycle triggered by plant growth; if spring comes earlier, the larvae may be reaching maturity before the bird arrives.

Alyssa Rosemartin, Acting Assistant Director for USA-NPN, said that phenology is a key tool in identifying vulnerable species in different ecosystems by their “likelihood to mismatch,” like the bird and the larvae.

Rosemartin pointed out that it “may not be possible to maintain ecosystems the way they are (or have been).” While the contemporary data set might not be able to show obvious and serious climate-related impacts yet, “the data we’re collecting now will be able to help us determine management practices,” she said.

The Appalachian Trail Conservancy suggests that in the Blue Ridge of Virginia, red spruce is at risk of disappearing. It is found only at the highest elevations, and is migrating upslope to adapt to warmer seasonal temperatures. Due to its limited area of cover, it may not survive.

With the abundant biodiversity present in the Appalachian mountains and the microclimate variations that have driven that variety, adaptations to

climate disruption will be challenging.

Quite simply, the amount of biodiversity means that Appalachia may have more to lose and attempts at man-made solutions become infinitely more complex. “It’s a matter of triage,” said McNulty, “... it’s a lot of critters to get in the boat.”

The question then becomes, what do we save? Can we help our systems adjust? And, as McNulty asked pragmatically, “Do we really want to spend one-quarter of the [U.S.] budget on a species that is not going to last the next 20 years?”

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# Editorial

## Fossil Fuels & Nuclear: How Costly is Too Costly?

Before the flood waters had fully receded from Japanese towns shattered by a 9.0 earthquake and 30-foot tsunami, and while firefighters were racing to cool down a category 5 nuclear disaster (still smoldering as we go to press), some in the energy industry were stumbling over themselves to tout the benefits of fossil fuels over nuclear.

Nuclear industry reps stressed the idea that America could construct expensive, new and supposedly “safer” nuclear plants, while coal industry reps took it a step further—suggesting we use more fossil fuels to replace nuclear.

Yet isn't the over-reliance on both of these sources of energy the root of our problem?

Appalachians are already dealing with devastation from global climate change and toxic waste from energy production: radical flooding, fouled water from coal mining-processing and toxic air emissions from fossil fuel electric plants. Some communities are literally losing their backyards and family farms to mountaintop removal coal mining. Haven't we already paid too great a price for coal, oil and nuclear energy?

Nuclear energy in the US has only survived for 60-odd years because of enormous subsidies like the Price-Anderson Act of 1957—legislation that saddles the American taxpayer with ALL expenses over \$10 billion dollars for any and all nuclear disasters within our borders.

Using sources of energy like nuclear and fossil fuels will always be inherently dangerous—and the safety of these plants relies on the industry to remaining ever vigilant. Yet time and again we see that cutting corners where safety is concerned is just part of doing business.

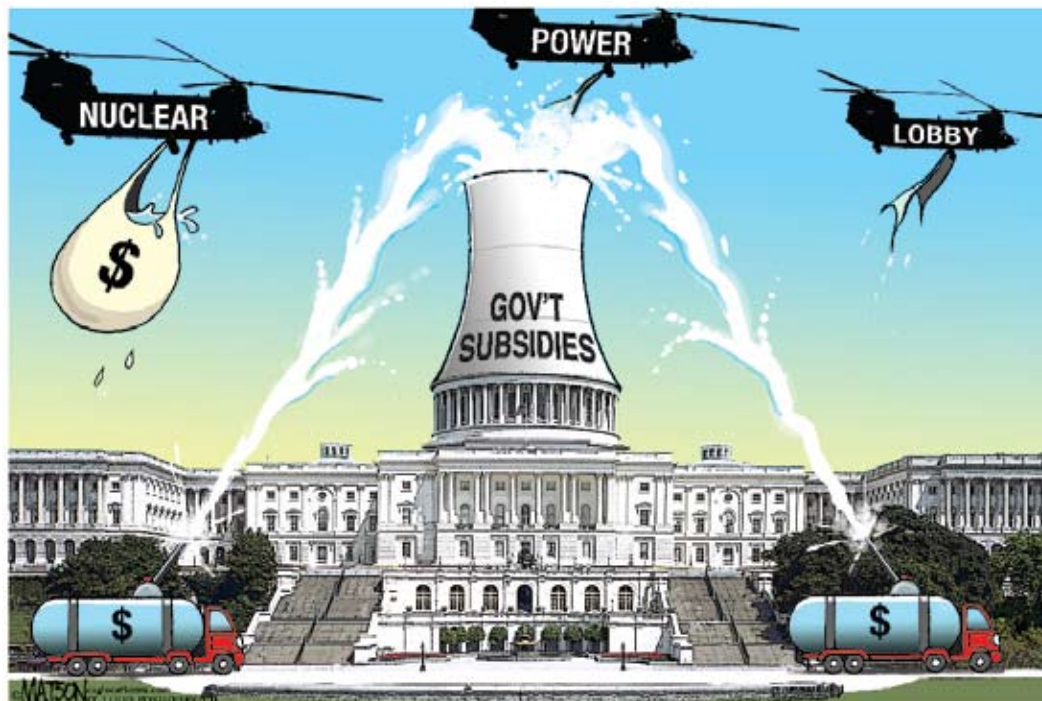
This condition was clearly seen in 2002, when the Tokyo Electric Power Company (operator of multiple nuclear power plants, including the damaged Fukushima facility) admitted to falsifying maintenance reports at their plants on “hundreds of occasions” for more than two decades.

In Appalachia, coal giant Massey Energy Co., received the largest civil penalty in EPA history in 2008—\$20 million—for Clean Water Act Violations in Kentucky and West Virginia. Two years later, 29 miners died in Massey's Upper Big Branch coal mine; disabled safety equipment was later found in the area where the fatal explosion occurred.

Although the nuclear disaster in Japan is what has dominated the news, cleaner technologies—like the off-shore wind turbines located less than 200 miles from the epicenter of Japan's recent earthquake—not only survived the disaster but are “fully operational.”

The renewable energy of planet Earth—solar, wind, hydroelectric and geothermal—is far greater than all known supplies of coal, oil and nuclear. These technologies not only stem the rising tide of global climate change and environmental pollution, but offer Americans new jobs and economic opportunities for decades to come.

This is especially the case for Appalachia. We, as a nation, just need to green up our act.



DESPERATE ATTEMPTS TO AVERT A TOTAL MELTDOWN

## Viewpoint

### Seeing God's Face in the Dirt

By Rev. Pat Watkins  
Culpepper UMC - 15 Nov 2009

Cain was a farmer, rooted in the soil. Farming was his life, his existence, his very being was connected to the earth.

And that is precisely why Cain's punishment was so hard for him to bear.

Because he killed his brother, God said, “You are cursed from the ground. When you till the ground it will no longer yield to you its strength; you will be a fugitive and a wanderer on the earth.”

For Cain, rooted in the earth as a hundred year old oak tree, the punishment was devastating.

Listen to how he responded to God's sentence! He said to God:

“My punishment is greater than I can bear! Today you have driven me away from the soil, and I shall be hidden from your face.”

Cain's relationship with the earth was connected to his relationship with God; to lose his relationship with the earth was to be hidden from the very face of God. Now I realize we're not all like Cain. We don't see our identity as being so rooted in the earth as Cain did.

But perhaps that's part of the

problem?

Ironically, Cain's punishment created for him a lifestyle very similar to the one we live today. His punishment was that he would become a fugitive and wander on the earth, with no rootedness to a geographical place.

But isn't that who we are?

Oftentimes we choose where to live based on our career. Sometimes we have to choose location based on the school systems. When we retire, we might want to go to the coast or the mountains or to Florida where it's warm all the time. We have no rootedness to any particular spot of land anymore.

We have removed ourselves from God's creation. We relate to God and to each other, but for the most part we don't relate to God's creation anymore. Gone are the days when kids spend more time outside than inside. In one short generation, we've lost our connection to God's creation. Most children have no earthly idea where their food comes from. And most adults don't know where their electricity comes from or where their gasoline comes from.

How do we recover a good re-

lationship to God's creation? How do we demonstrate that relationship in the life of the church?

I simply want you to realize that there is a great deal of Biblical evidence to suggest that there really is such a thing as a relationship between you and me and God's creation. And it is up to you to figure out how to appropriately live out that relationship in your life and in the life of your church.

If our faith as Christians is not informing positions we take and decisions we make; if our faith does not engage us in making the world a better reflection of the Kingdom of God for the sake of the gospel, then we've missed half of what it means to be a Christian.

If Cain were here today, I think he'd leave us with this thought. He'd say,

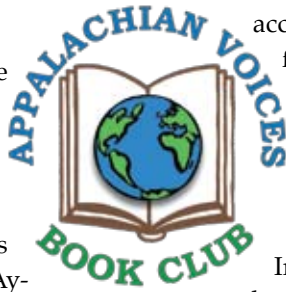
“Stare at a sunrise with your mouth hanging open. Examine an orchid and allow its beauty to take your breath. Stand in the middle of the Redwood Forest Cathedral that God built. Gaze into the heavens, count the stars, and appreciate the vastness of the incredible Universe that God has created. Experience God in all that you see around you. Be filled with God's fullness, God's Grace, this day and forever more.”



# Arctic Gardens: Voices from an Abundant Land

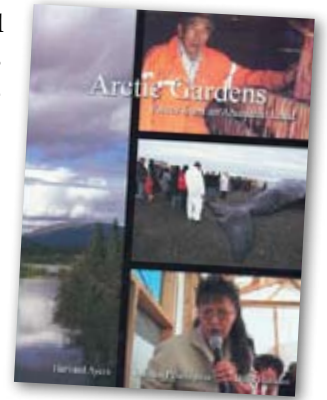
Review by Jeff Deal

Few places on Earth have galvanized the hearts and minds of those seeking to safeguard and strengthen Earth's precious cultural heritage and natural wonders like the Arctic. Dr. Harvard Ayers, Landon Pennington and David Harmon's book, "Arctic Gardens: Voices from an Abundant Land," is a firsthand



account of the detrimental effects that fossil fuels and global warming inflict on one of North America's last great wild ranges: the Arctic region of Canada and Alaska. Through interviews with 100 native people - Indians, Eskimos and Inuvialuit - the authors document the formidable challenges wrought by industrial global climate change on the cultures and people who have lived

successfully in concert with the land and wildlife of the Arctic for thousands of years. The eyewitness accounts are supported by scientific evidence from the areas of biology, earth science, anthropology and ecology, and create a strong case for defending and bettering the world, on which all our lives, and the future, depend. You can purchase the book in print or electronic format at [arcticvoices.org](http://arcticvoices.org)



## TOP 10 Books on Climate Change



Climate change has become one of the most controversial and widely disputed topics facing today's citizen, often dominating political and economic discussions. Below is a list of some of the most recognized books on climate change, ready to equip you with the knowledge to tackle the climate debate at your next gathering.

### 10. *Earth: The Sequel* by Fred Krupp and Miriam Horn.

Krupp and Horn focus on environmental entrepreneurs—among them three young scientists who genetically engineer yeast to ferment into sugar to use as green fuel. These scientists not only help guide us to a secure energy future, but gain wealth through their inventive ideas. A perfect read for unique, yet realistic solutions to climate change.

### 9. *Climate of Uncertainty* by William Stewart.

Stewart's examination of the major climate change issues—renewable energy, increasing populations and sustainability—has gained attention for its comprehensive and easy-to-follow look at all sides of the climate debate. The perfect read for someone seeking an understanding of climate change from an objective voice.

### 8. *The Hot Topic: What We Can Do About Global Warming* by Gabrielle Walker and David King.

Walker, a contributing editor for *New Scientist*, and King, chief science advisor at University of Cambridge, team up to explain the science of warming and provide a guide to both the problems and the solutions. They explain fossil fuels, carbon dioxide, the effect on ecosystems and how much more the earth and humans can take

before things reach catastrophic levels.

### 7. *Our Choice: A Plan to Solve the Climate Crisis* by Al Gore.

Solutions are the overriding theme of Gore's latest book on climate change. Former U.S. vice president, Gore fills this book with interesting debates on energy, population and resource depletion. He provides solutions to the climate crisis developed during his travels and includes discussions with leading experts on climate change.

### 6. *Cool It: The Skeptical Environmentalist's Guide to Global Warming* by Bjorn Lomborg.

*TIME* magazine named Lomborg one of the 100 most influential people in the world. A political scientist and economist with a conservative approach to environmentalism, Lomborg has been described as the "bad boy of the climate circus." *Cool It*, however, offers a refreshingly independent perspective on the global warming debate

### 5. *Collapse: How Societies Choose to Fail or Succeed* by Jared Diamond.

Diamond examines how and why Western civilizations develop technologies and immunities that allow them to dominate the world. He examines what caused the great civilizations of the past to collapse into ruin. While his approach may not address global warming directly, however

his discussions on eco-suicide and the climate debate keep the pages turning.

### 4. *The Two-Mile Time Machine* by Richard B. Alley.

According to glaciologist Alley, ancient ice cores drilled on Greenland contain the history of the earth's weather and serve as an archive of information about our climate patterns. Alley explores this history and explains the discovery process in a way that all audiences can understand while still laying out the issues.

### 3. *With Speed and Violence: Why Scientists Fear Tipping Points in Climate Change* by Fred Pearce.

Considered one of the most up-to-date books about the constantly accumulating evidence for global warming and its dramatic effects, Pearce provides an intelligent, yet understandable warning about the dangers of abrupt, accelerating global warming and how pressure from natural forces can cause abrupt changes that will drastically shape the earth's course.

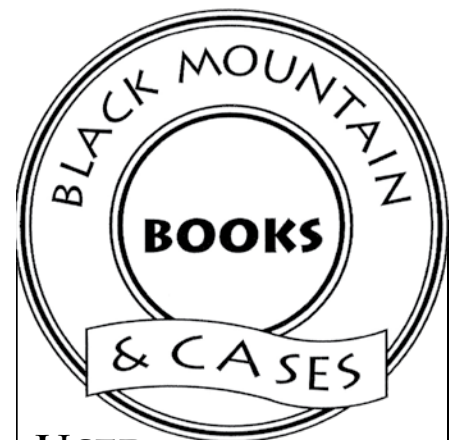
### 2. *The Weather Makers: How Man is Changing the Climate and What it means for Life on Earth* by Tim F. Flannery.

Paleontologist and mammologist Flannery explains the basics of how the atmosphere works today compared to how it has in the past. He hits on topics such as greenhouse gasses and acid rain and calls for action now to prevent further damage.

### 1. *Hot, Flat, and Crowded* by Thomas Friedman.

Friedman, a *New York Times* columnist and 3-time Pulitzer Prize winner, explains how global warming, rapid population growth and expansion

of the world's middle class through globalization have produced a planet that is "hot, flat and crowded." He introduces a national strategy he calls "Geo-Greenism," which gives solutions to the climate crisis as well as insight to making America a better place.

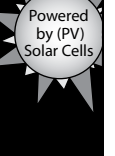


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# Naturalists' Notebook

## Scarlet Tanager — RELOCATION MAY BE ONLY A “CHIRP” AWAY

By Kerri C. Weatherly

When I first noticed a Scarlet tanager, I was instantly enchanted. Its rich, red feathers caught my eye—a burst of color is a sea of green.

I glanced up, and observed the bird as it sat, perched high in the limbs of blooming, leafy trees in the forest. The air was warm, the sun was bright and school had just let out—the Scarlet tanager’s radiant plumage and light-hearted chirp seemed to represent everything that was summer.

The vibrantly colored male Scarlet tanager is generally recognized for its eccentric scarlet feathers, but a little-known fact is that they are one of the only species of tanagers that experience drastic seasonal variance in plumage.

The often-overlooked female Scarlet tanager has year-round olive-yellow feathers.

The wings and tails of both the male and female Scarlet tanager are black or dark brown year-round. During the fall, the male’s exotic color fades to a muted olive.

Scarlet tanagers are classified as American songbirds and are members of the Cardinal family. They live and travel in flocks—called “seasons”—and range throughout central and southern Appalachia, as well as parts of the northern and western United States.

They are medium-sized birds, averaging about seven inches long with a wingspan of about 11.5 inches, and



The adult male Scarlet Tanager with seasonal scarlet plumage. During the fall, the male loses his exotic, fiery color, and his plumage fades to a muted olive, much like the female.

weighing just under an ounce. The diet of Scarlet tanagers consists of mostly insects, worms, snails, berries and fruits.

The voice and song of the male is similar to the song of a hoarse robin—a unique *chik-burr*. The female also sings, but has a softer, less raspy voice, and sings in response to her male mate, or when she is gathering twigs and grasses for her nest.

Scarlet tanagers are monogamous, and raise one brood of offspring per season. Each brood consists of between one and six eggs, with averages of around four eggs per season. The female bird incubates eggs for close to two weeks, and then the nestlings are fed insects

and fruit until they fledge.

Female Scarlet tanagers build shallow nests out of sprigs, weed stalks and fine grass. The female bird then places the nest on a branch, usually between seven and 40 feet high.

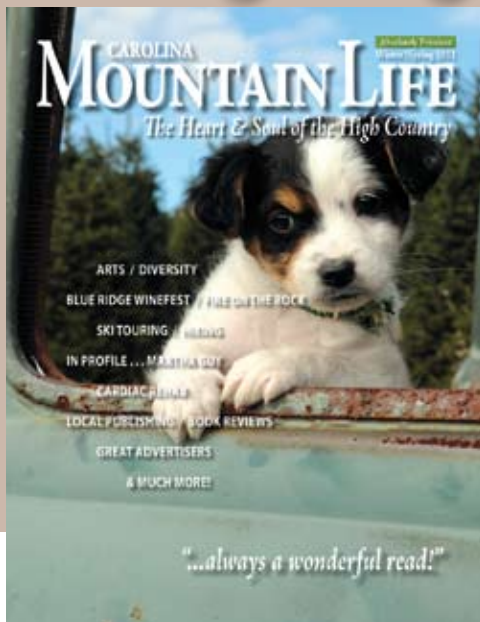
Scarlet tanagers inhabit and flourish in extensive, mature hardwood and hardwood-pine forests, and generally require between 25 and 30 acres to thrive.

The Scarlet tanager is a beautiful representation of brightness and warmth of summertime in southern Appalachia. The rich color of its plumage and its peaceful lifestyle are symbolic of a refreshing, slow-paced afternoon in beautiful Appalachia.

While Scarlet tanagers live and thrive in the southern Appalachian region during the summer, they require cooler temperatures and dense foliage for adequate shade from the heat. Rising temperatures caused by global warming may force this beautiful species to relocate to cooler climates.

Other bird species in southern Appalachia threatened by climate change include almost all Warblers, the Black-capped Chickadee, Tree Swallows, the Purple Finch, the American Redstart and Flycatchers.

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# INSIDE APPALACHIAN VOICES

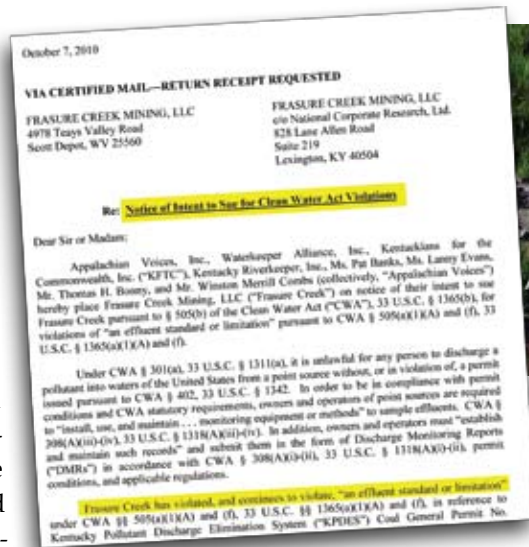
## Big Coal Can't Be Trusted: Another 12,000 Violations of the Clean Water Act

By Sandra Diaz

Our ongoing legal action against the two largest mountaintop removal coal companies in Kentucky, totaling over 20,000 violations of the Clean Water Act, continues. We also initiated legal action against another coal company with a startling amount of Clean Water Act violations.

Declaring "an abuse of discretion to deny those citizens and environmental groups the right to participate in this action," State Judge Shepherd granted us approval to conduct discovery (physical investigation) and deposition (interview) on the settlement proposed by the Kentucky Energy and Environment Cabinet with ICG and Frasure Creek Mining, in order to determine whether the settlement negotiated is "fair, adequate, reasonable and consistent with the public interest."

The Kentucky Cabinet attempted to appeal the decision to a higher court of law, characterizing our intervention as an "unwarranted burden." We countered that the move was premature,



inconsistent with the law and not in Kentuckians' best interests. The appeal motion was dismissed and a hearing is set for June 14.

Our legal team consists of Kentuckians for the Commonwealth, Kentucky Riverkeeper and Waterkeeper Alliance, represented by Pace Law Center.

### Same Water Violations, Different Company

This same team, along with lawyers from Natural Resources Defense Coun-



cil, announced on March 9 our intent to sue Nally & Hamilton Coal Company for more than 12,000 violations of the Clean Water Act. Our evidence indicates that Nally and Hamilton—like Frasure Creek and ICG—filed false and potentially fraudulent water pollution monitoring data with state agencies over the past three years for more than a dozen of its operations in seven eastern Kentucky counties.

Data we collected indicates that Nally & Hamilton may have "cut-and-paste" previous sets of data in later reports rather than monitoring the discharge and submitting accurate data for each month. The company may have also repeatedly omitted legally-required

data from its reports.

If fined, the maximum allowed under the Clean Water Act would amount to potential penalties of more than \$400 million. Nally and Hamilton, as well as the state, have 60 days to respond. While we have yet to received an official response, Nally & Hamilton has completely removed their website from the internet.

To read about the numerous twists and turns in these cases and for up-to-date information, please visit [appvoices.org/kylitigation](http://appvoices.org/kylitigation).

### We Need Your Help

Appalachian Voices needs \$25,000 to hire handwriting experts, forensics experts, conduct depositions and other correlated research. A generous donor pledged \$12,500—half the amount—but only if we can raise the remaining \$12,500 by Earth Day, April 22. Learn more at [appvoices.org/waterdefense](http://appvoices.org/waterdefense), or fill out the form below to donate!



## Help Us Defend Appalachia's Water

### Join Appalachian Voices Today.

All donations postmarked by April 22 will be matched by a generous donor. For more details visit [www.AppVoices.org/WaterDefense](http://www.AppVoices.org/WaterDefense).

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## Sealing the Deal on Harmful Sealants

Thanks to efforts by our Upper Watauga Riverkeeper team, the town of Boone, N.C. passed strict new regulations aimed at limiting the impacts of coal tar-based asphalt sealant on local waterways. A spill of the sealant into the town's Hodges Creek last fall devastated more than a mile of aquatic stream life and lead to the town council's review and ultimate decision, which will require residents and business owners to get approval for permits to apply sealant to sidewalks and driveways. Processing fees for the applications will be directed to costs of oversight and regulation of the new ordinance.

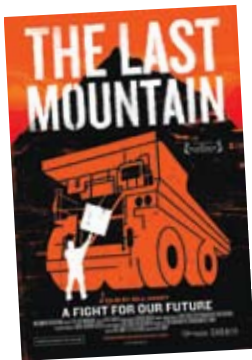
## Join us for Earth Day!

Staff from Appalachian Voices will venture to several points in Appalachia for Earth Week events. Come meet with us and learn more about our work to protect the air, water, land and communities of Appalachia. Look for us in the following locations:

- April 16 -- 2011 Piedmont Earth Day Fair, Winston-Salem, N.C.
- April 16 -- Charlotte Green and Clean, Charlotte, N.C.
- April 16 -- Planet Art, Asheville, N.C.
- April 19 -- Lobbying Presentation, Virginia Tech, Blacksburg, Va.
- April 20 -- Appalachian State University, Boone, N.C.
- April 20 -- Dirty Business Screening with Q&A, Naro Cinema, Norfolk, Va.
- April 22 -- Eco Fair on the downtown mall, Charlottesville, Va.
- April 22 -- Trees on Fire concert, Jefferson Theater, Charlottesville, Va.

See our Earth Week story on page 7 for details on events throughout Appalachia.

## Protecting Our Mountains Through Cinema



Appalachian Voices has partnered with Uncommon Productions and DADA Films to help promote The Last Mountain Movie, a passionate and personal tale about the struggle over powering America with Appalachian coal and the detrimental consequences it generates. Written, directed and produced by award-winning documentary filmmaker Bill Haney, the film opened to critical acclaim at the 2011 Sundance Film Festival, and anticipates a limited theatrical release on June 3.

Appalachian Voices will be attending special screenings of the film to assist at informational tables and participate in a 20-minute Q&A following the screenings. Currently we have scheduled screening visits for June 3 to 9 in Sunshine, N.Y., and Washington, D.C. Dates are tentative as of this issue's publication; visit AppVoices.org for screening details and be sure to check out thelastmountainmovie.com to watch the trailer and read more about this exciting new cinema release.

## Appalachian Voices BUSINESS LEAGUE



New & renewing Members — February / March 2011

Community Garden Market ..... Berkley Springs, W.Va.

Mill Creek Gallery ..... Highlands, N.C.

The Passenger and Warehouse Arts ..... Washington, D.C.

We encourage you to patronize members of our Business League.

To become a business member visit AppalachianVoices.org or call us at 877-APP-VOICE

## Meet Emma - A Future Mountain Protector...

Appalachian Voices would like to welcome the newest member to our family! Emma Elizabeth Randolph, daughter of J.W. Randolph (our Washington, D.C. Legislative Associate) and his wife, Elizabeth (graduating from medical school at the University of Virginia), was born on February 25 at 10:41 a.m. with an honestly inherited predilection for loving people and the planet. She enjoys lazing about on her blanket, fresh cloth diapers, quality time with mom and taking walks on the Rivanna River. She anticipates canoeing, climbing and loving mountains for a long, long time.



## No, It's Not St. Patrick's Day, It's Green Drinks!

Be sure to mark your calendars for Tuesday, May 10, from 5:30- when Appalachian Voices will host Green Drinks at our downtown Boone, N.C., office. The event will feature a small cover for all-you-can-drink regional brews (bring your own glass!) and a short presentation on our work. Green Drinks is a monthly event in the High Country region of North Carolina that highlights local green businesses and non-profits, providing a laid-back atmosphere for socializing and networking. All are welcome to attend!

## Virginia Loves Mountains, too!

As this issue of The Voice was going to print, Appalachian Voices and their allies with the Wise Energy for Virginia Coalition were gearing up for the second annual Virginia Loves Mountains Day. This year's Virginia Loves Mountains Day was not a rally in any one place, but 11 rallies—one at each U.S. Senate regional office across the Commonwealth. Over 300 people are registered to participate, either by visiting Senator Webb and Warren's district offices or by calling their offices in Washington, urging them to stand up for the EPA's good work on mountaintop removal coal mining.

Currently, members of Congress are attempting to defund the EPA's consideration of new mountaintop removal regulations that would limit mining waste from being dumped into headwater streams. For information on Virginia Loves Mountains Day, visit WiseEnergyforVirginia.org.

## Welcome New Board Members!

We would like to welcome two new board members, voted in during our elections last fall—the Rev. Jim Deming and Cale Jaffe. Both bring years of environmental stewardship and conservation.

Rev. Jim Deming is the Minister for Environmental Justice for the United Church of Christ, and previously



served as the Executive Director for Tennessee Interfaith Power and Light.

Cale Jaffe is a senior attorney with the Southern Environmental Law Center and a lecturer at the University of Virginia School of Law.



Visit AppVoices.org/About to meet all of our Board and Staff!





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Budding river warriors examine aquatic life during the 1st Annual Appalachian Voices Riverfest last summer. The 2nd annual RiverFest will take place on Saturday, June 4, in Valle Crucis, N.C. and will feature arts and crafts, river talks, live music, local food, a river float (if the level is high enough) and plenty of splashing about to learn more about our rivers! Visit our story on page 3 for a complete list of activities! *Photo by Jamie Goodman*

## GET INVOLVED environmental & cultural events in the region

### Spring Forest Festival at Bent Creek

April 2: Sponsored by the USDA Forest Service, come celebrate the forests of North Carolina! Participate in educational activities, a tour of Bent Creek experimental forest and see special guest Smokey Bear. 10am-3pm, free. Asheville, N.C. Visit: [srs.fs.usda.gov/news/464](http://srs.fs.usda.gov/news/464)

### Growing Appalachia

April 9: Local experts discuss how to save and earn money through small-scale farming, forestry and energy solutions. Held at Jenny Wiley Convention Center in Prestonburg, Ky. 9:30am- 3:45 pm. Visit: [kffc.org](http://kffc.org)

### Songbirds for Farm Birds

April 10: Highlander Research and Education Center will host a day of music featuring: Trisha Gene Brady of the Black Lilies, The Naughty Knots, Jennifer Nicely, Greg Horne and Kyle Campbell. Located at Morelock Music in Knoxville, Tenn. Visit: [highlandercenter.org](http://highlandercenter.org)

### Sustainability Films: The Greenhorns

April 12: The fourth installment of the Sustainability Film Series, *The Greenhorns*, will take place in the Greer Auditorium on the Appalachian State campus in Boone, N.C. Begins at 7pm. E-mail [zimmerbw@appstate.edu](mailto:zimmerbw@appstate.edu) or visit [sustain.appstate.edu/film-series](http://sustain.appstate.edu/film-series)

### The Electric Fairy Screening

April 11,12,14,16,19: A documentary that examines America's national addiction to fossil fuels, *The Electric Fairy* is part of the Southern Circuit Film Festival and will play at Carson-Newman College in Jefferson City, Tenn. Visit: [electricityfairy.org/](http://electricityfairy.org/)

### Reel Paddling Film Festival

April 15: The 6th Annual Reel Paddling Film Festival will showcase the world's best paddling films. IG Greer Theatre in Boone, N.C. \$5 in advance and \$7 at the door. Visit: [op.appstate.edu](http://op.appstate.edu)



There's no better way to celebrate warmer days and longer nights with Appalachian summer music and arts festivals. From cultural bluegrass festivals to award-winning barbecue festivals, Appalachia has it all—some of them are even free! Take a look at the partial list below and visit [AppVoices.org/thevoice](http://AppVoices.org/thevoice) for our complete Summer Festival guide!

**Pigeon Forge Springfest** - Ongoing through June 7 - *Pigeon Forge, Tenn.*

**MerleFest** - April 28 to May 1 - *Wilkesboro, N.C.*

**French Broad River Festival** - April 29 to May 1 - *Hot Springs, N.C.*

**Shenandoah Riverside Festival** - May 6 to 8 - *Strasburg, Va.*

**Festival In The Park** - May 7 to 10 - *Roanoke, Va.*

**Lake Eden Arts Festival (LEAF)** - May 12 to 15 - *Black Mountain, N.C.*

**Ralph Stanley's Hills of Home Bluegrass Festival** - May 26 to 28 - *McClure, Va.*

**Fiddler's Grove Ole Time Fiddlers & Bluegrass Fest** - May 27 to 29 - *Union Grove, N.C.*

**Graves Mountain Festival of Music** - June 2 to 4 - *Syria, Va.*

**Blue Plum Festival** - June 3 to 5 - *Johnson City, Tenn.*

### Wild Education!

April 16: A monthly adult evening series with conservation and wildlife experts. Located at the Western N.C. Nature Center in Asheville. 6-7pm monthly. Visit: [www.wildwnc.org](http://www.wildwnc.org)

### Power Shift 2011

April 15-18: 10,000 people will convene in the fight for a clean energy future at this 2-day event. Washington D.C. Visit: [powershift.org](http://powershift.org)

### MerleFest

April 28- May 1: It's almost time for MerleFest again and this year they have another great lineup featuring Doc Watson, Robert Plant and the Band of Joy, The Doobie Brothers and many more! Visit: [merlefest.org](http://merlefest.org)

### 27th Exchange Place Spring Garden Fair

April 30 and May 1: Thousands of native plants, herbs, perennials, heirlooms and garden accessories for sale at the spring fair. Also join in garden talks, children's activities, music and traditional foods. Kingsport, Tenn. Call: 423-288-6071.

### Nesting Party

May 7: Learn about cloth diapering, harmful chemicals to avoid and much more! The event is free and includes a 10% in-store discount. Asheville, N.C. 2-4pm. Please RSVP: 828.258.1901

### Shenandoah Riverside Festival

May 6-8: Featuring Midnight Spaghetti and the Chocolate G-string, Future, The Vegabonds and many more, this festival is a weekend-long camping adventure. Proceeds benefit the clean-up of the Shenandoah River. Visit: [shenandoahriverfestival.webs.com](http://shenandoahriverfestival.webs.com)

### Black Mountain Weekend

May 6-8: Wildflower lovers will enjoy visiting Black Mountain, the highest point in Kentucky and habitat to rare species of wildflowers and birds exclusive to the mountain. Pine Mountain, Ky. Visit: [pinemountainsettlementschool.com](http://pinemountainsettlementschool.com)

### Wild and Woolly Forest Festival

May 7: Come participate in the native plantsale, wine tasting and contra dance. Featuring Janisse Ray, author of *Ecology of a Cracker Childhood*, Wild Card Quilt, Pinhook and

A House of Branches. Sautee Nacoochee Center, Ga. 12pm-10:30pm. Visit: [gafw.org](http://gafw.org)

### Grandfather Mountain Naturalist Weekend

May 14-15: Participate in two days filled with guided hikes and special presentations on the nature of Grandfather Mountain. Visit: [grandfather.com](http://grandfather.com)

### Grandfather Mountain's Remarkable Rhododendron Ramble

May 30- June 15: Join the Grandfather Mountain staff as they show you the most memorable sight of the Catawba Rhododendron. Daily programs begin at 1pm and are included with park admission. Visit: [grandfather.com](http://grandfather.com)

### Appalachia Rising

June 5-11: March to preserve Blair Mountain, abolish mountaintop removal, strengthen labor rights and demand sustainable job creation for all Appalachian communities. Blair Mountain, Charleston, W.Va. Visit: [appalachiarising.org](http://appalachiarising.org)

### In the Footsteps of Lucy Braun

June 8-12: Participate in Pine Mountain Settlement School's four-day forest study workshop. Pine Mountain, Ky. Visit: [pinemountainsettlementschool.com](http://pinemountainsettlementschool.com)

Email [voice@appvoices.org](mailto:voice@appvoices.org) to be included in our Get Involved listing. Deadline for the next issue will be Friday, May 13 at 5 p.m. for events taking place between June 1 and July 30, 2011.