West Virginia Highlands Conservancy
PO. Box 306
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The Highlands Voice

The Monthly Publication of the West Virginia Highlands Conservancy

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Groups to FERC: Do We Really Need Another Pipeline?

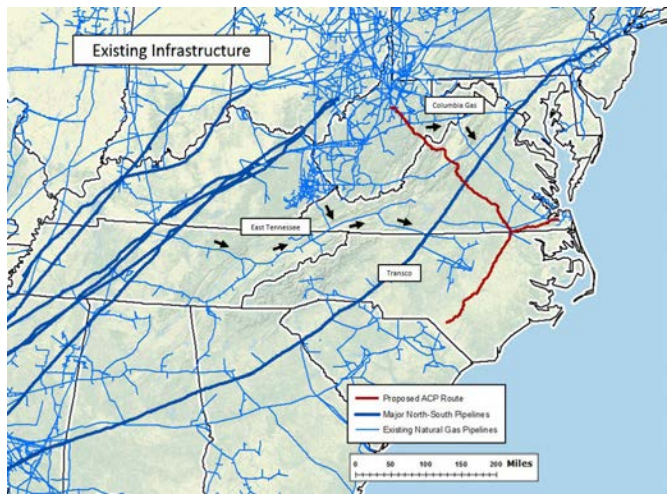
By John McFerrin

Do we really need another pipeline to carry natural gas from northern and north-central West Virginia and western Pennsylvania to Virginia and North Carolina?

That is the question that many groups, including the West Virginia Highlands Conservancy, are asking as the Federal Energy Regulatory Commission begins consideration of whether to approve the proposed Atlantic Coast Pipeline Project from West Virginia to Virginia and North Carolina and the smaller Supply Header Project.

If built, the Atlantic Coast Pipeline Project would run approximately 600 miles from northern and north central West Virginia to Virginia and North Carolina. The Supply Header Project would involve the construction and operation of approximately 38.7 miles of pipeline and the modification of existing compression facilities in Westmoreland and Green Counties, Pennsylvania, and Harrison, Doddridge, Tyler, and Wetzel Counties, West Virginia.

From the information the groups have now, the answer is either "no" or a weak "maybe." The groups would like the Federal Energy Regulatory Commission (FERC) to look at the question broadly before making any decision on any pipelines.



The forum for asking this question is the Environmental Impact Study being undertaken by the Federal Energy Regulatory Commission (FERC), which must approve the pipelines. The study is required because a decision on approving or not approving the pipelines is a major federal action. The National Environmental Policy Act (NEPA) requires a study of the decision's environmental impact before making it. FERC is just beginning the study; we have just completed the time for people to send in comments suggesting what FERC should study. For more about how the procedure works, see the March, 2015, issue of *The Highlands Voice* as well as the box on page 4.

How the National Environmental Policy Act (NEPA) works

The National Environmental Policy Act (NEPA) is our national commitment to looking before we leap on environmental matters. It tries to keep us from doing unnecessary environmental damage out of ignorance. It requires that, before the federal government takes any major action it must study the environmental consequences of that action and consider alternatives to the action.

(More on p. 3)

What's inside:

Ramblin' the Ridges

By Cynthia D. Ellis

Seasonal Guest Departs; Leaves Questions

A Rufous Hummingbird spent the winter in a welcoming garden in Charleston; he lingered here through the last days of April. The homeowners had been thrilled to host the tiny, russet-colored visitor. Everyone knows the familiar Ruby-throated Hummingbird, but this other bird isn't supposed to be here. Except, that this wasn't West Virginia's first record of a western vagrant of the zipping, zooming kind. We always used to say that the only hummingbird east of the Mississippi was the Ruby-throated, but now new sightings continue to accumulate. In fact, Rufous Hummingbirds are no longer deemed "vagrant" in the American southeast. Why? Does this have anything to do with concerns of the West Virginia Highlands Conservancy?

There might seem to be little connection.

Rufous Hummingbirds, *Selasphorus rufus,* weigh less than a nickel, but are fierce defenders of feeder and flower food sources. They breed in Idaho, Montana, Washington, Oregon, Alaska, and Canada. Later, the birds fly to Mexico and Florida for the winter, in what is the longest migration for any hummingbird. One once somehow made its way to Russia, and they began to be recorded in winter in the east in the 1980's.

They have been observed, briefly, or for extended periods, in the non-breeding season, in a number of places in West Virginia. These include Shepherdstown, Bluefield, Parsons, Kingwood, Morgantown, Capon Bridge, and Lake Stephens in Raleigh County. Thoughtful human hosts put out heated nectar or keep feeders beside a warm light bulb.

But, in general, despite their increased wanderings in the east, Rufous Hummingbirds are in decline. Their current status puts them on the "Yellow Watch List" of the North American Bird Conservation Initiative. Their current numbers can be gauged, to determine which populations are most at risk, by the use of "stable isotope analysis". In this process, single feathers are removed from birds carefully captured in mist nets. Analysis of hydrogen isotopes can show the location of the bird when that feather was grown. Researchers can link population totals to summer and winter locations. Habitats can be evaluated in both places.

Climate change has made noticeable differences in breeding areas of Rufous Hummingbirds. There is less snowpack and earlier snow melt. Hummers have timed their breeding to coincide with the bloom of spring flowers after snow melt, and spring flowers are blooming earlier. As in all these newly recognized ecological changes, the ability of creatures to adapt to change is largely unknown.

Now...this is a species in decline and yet, along with that, a few people in the Highlands are seeing more of them.

It is known that birds can, and often do, stray from routine areas and migration paths. Such outlying flights may help in range expansion and increasing genetic diversity. Storms blow birds off course. One explanation for increased sightings may be the increased popularity of birding and the rise in better technology for tracking species.

Rufour Hummingbird

Photo by Wally Nussbaumer

So, there are more reports here... and "here" could be part of the problem.

We live in, and are very concerned with, areas of fossil fuel extraction. Burning fossil fuels adds to climate change. Burning the coal and gas from here makes flowers bloom too soon in the Rocky Mountains. That complicates life for hummingbirds and contributes to poor breeding success. In a very odd way, it is helpful for more of us to see the birds, so we can learn more about the challenges they face.

We already have plenty of reasons to conserve energy and to consider alternative energy sources. Helping an avian mighty mite, with a "spit-in-your-eye" spunkiness, could be another reason for anyone's list.

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The West Virginia Highlands Conservancy web page is www.wvhighlands.org.

Commenting on the Pipeline (Continued from p. 1)

One of the alternatives, at least in theory, is to just not do it. Usually this alternative is not taken seriously. Typically a final Environmental Impact Statement lists several alternatives, including a "no build" alternative. Invariably that alternative is given lip service and then rejected. By the time we reach that stage there is usually a big company with money to spend and bulldozers idling in the background. It is a rare agency that will say, "Thank you for your interest but we don't think building this is a good idea."

How the National Environmental Policy Act (NEPA) should work here

The groups, including the West Virginia Highlands Conservancy, say that in considering the Atlantic Coast Pipeline Project and the Supply Header Project, FERC should make the "no build" more than a token alternative. West Virginia and Virginia are already thick with pipelines and there is serious doubt whether we need another one. FERC should do its studies with the possibility in mind that at the end it will say, "Thank you for your interest but we don't think building this is a good idea."

What other pipelines are there?

Right now there are several pipelines that crisscross West Virginia and Virginia. (See the map on p. 1) One alternative to building the proposed Atlantic Coast Pipeline Project would be to consider the potential for fully using those pipelines or upgrading selected ones of them.

What other pipelines are proposed?

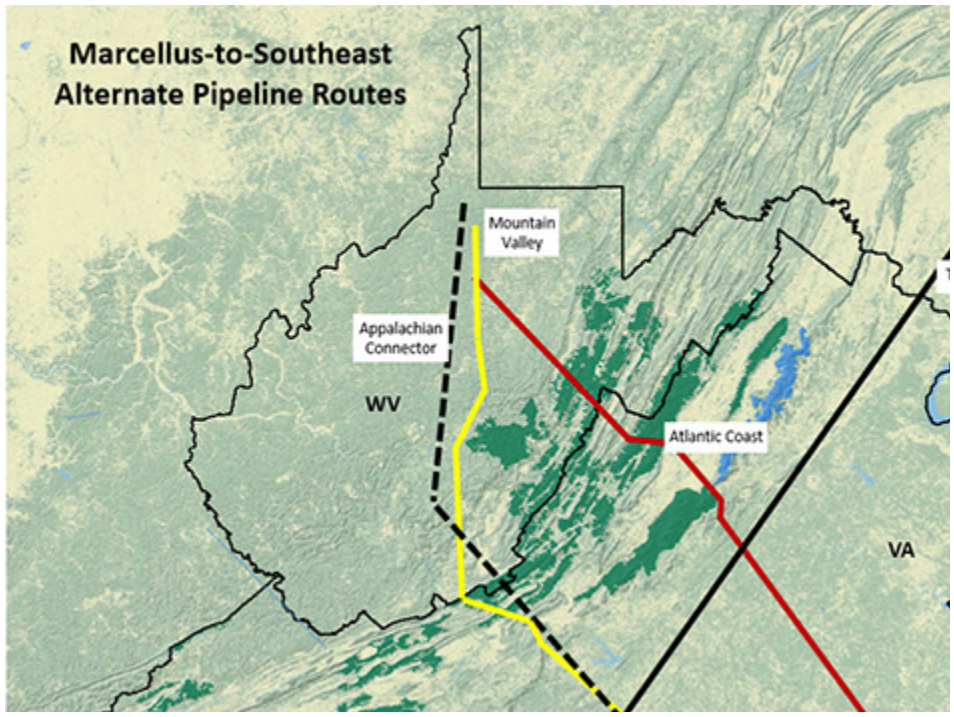
The Atlantic Coast Pipeline—cirrently proposed by Dominion—is the only one that is the subject of the Environental Impact Study being begun right now by the Federal Energy Regulatory Commission. Others will have their turn in the future but right now only the Atlantic Coast Pipeline has begun the formal NEPA process. It is the one that FERC has begun scoping (determining the scope of the Environeental Impact Study) and the one that the goups have commented upon.

It is not, however, the only possibility. There are currently four pipeline projects in various stages of planningand development: (1) the Atlantic Coast Pipeline; (2) the Mountain Valley Pipeline; (3) the Appalachian Connector Pipeline, and (4) the WB Express Project. They are all designed to take natural gas from more or less the same place in northern West Virginia and western Pennsylvania and deliver it to more or less the same place in Virginia or North Carolina.

How do we sort this out?

Having all these proposed pipelines can make anyone's head spin. When people say "the pipeline" they are sometimes talking about the Atlantic Coast Pipeline. Other times they are talking about the Mountain Valley Pipeline. Sometimes they are talking about both. Figuring out which, if any, of these pipelines should be built would make Solomon's head hurt.

Fortunately, the law gives us a tool to uses to figure this out. The National Environmental Policy Act (NEPA) is a better-



decisions-through-study statute. It assumes that if we carefully study all the alternatives, including doing nothing, we will come to a wise decision. Because there are so many pipelines, and so many alternatives, it would be difficult, if not impossible, to study and make a decision on each without considering the others.

Many groups who have commented in this scoping process, including the West Virginia Highlands Conservancy, have suggested that FERC broaden its study to include all proposed pipelines and, in general, the impacts of pipeline development in the Blue Ridge and Appalachian Mountain region of Virginia and West Virginia. By doing that we could figure out the cumulative impacts of all the proposed pipelines, which should or should not be built, whether any should be built at all, whether using existing pipelines or existing rights of way would be better. As the groups have pointed out, it would be difficult enough to figure this all out under the best of circumstances. It would be doubly difficult to figure it out by studying the problem one piece at a time as FERC apparently intends to do.

The West Virginia Highlands Conservancy is a non-profit corporation which has been recognized as a tax exempt organization by the Internal Revenue Service. Its bylaws describe its purpose:

The purposes of the Conservancy shall be to promote, encourage, and work for the conservation—including both preservation and wise use—and appreciation of the natural resources of West Virginia and the Nation, and especially of the Highlands Region of West Virginia, for the cultural, social, educational, physical, health, spiritual, and economic benefit of present and future generations of West Virginians and Americans.

Where We Are in the Process

Having the Atlantic Coast Pipeline approved, or not approved, is a long process. Even though it already seems as if it has been going on for a while, we are just getting started.

The pipeline would have to be approved by the Federal Energy Regulatory Commission. Before it can do that, it has to do an Environmental Impact Study. The first step is called scoping when it figures out what all it plans to study (the scope of the study).

The comment period that just ended was the scoping comment period. People got to tell the Federal Energy Regulatory Commission (FERC) what they think it should study. FERC will take the list of things it already had in mind to study, add in any new ideas it got from the comments, and do the study.

Once FERC does the study, it will publish a Draft Environmental Impact Statement. Once that draft is published there will be another round of comments on what has been proposed and written. There will also probably be another round of public hearings. FERC will take what it found in its study and whatever came out in public comments and do a Final Environmental Impact Statement. Then there will be another round of comments on the Final Environmental Impact Statement.

At this point, Dominion will start saying, “This thing has been studied to death. Time to move some dirt!” or words to that effect. Then FERC will either approve or not approve the project and Dominion will start moving dirt, or not.

Unless somebody sues and then we are into a whole additional procedure.

Of course, FERC is not the only game in town. Dominion would still have to get permission to cross the National Forests and acquire rights of way across private lands, either by negotiation or through eminent domain. Getting permission and the necessary rights of way involve another set of procedures.

What’s at Stake: the Big Picture

The Atlantic Coast Pipeline Project—and other proposed pipelines--is in every respect a very big deal. To the investors it is a huge amount of money. The Atlantic Coast Pipeline would cut right across the highlands of West Virginia, the area which the West Virginia Highlands Conservancy was founded to protect. Any of the pipelines would take property, very often from people who don’t want their property taken. Even if that were the only thing at stake, deciding to build any of these pipelines would be an enormous decision.

As big as that decision is, there is an even larger picture. This is the energy future of West Virginia.

We mine coal in this state because somebody came here well over a century ago and started building the infrastructure to make that possible. If someone had not built the railroads, the tipples, etc. coal mining would never have been possible and would not be going on today.

Whether that was a good or bad thing depends upon how one views coal mining but it is an undeniable fact: no infrastructure, no mining.

Having invested so much in coal mining infrastructure continues to drive us toward coal mining. Since it already exists, we will always be encouraged to continue to use it.

These pipelines are the 21st century equivalent. If they get built we are driving ourselves toward a future based on natural gas.

Just as the existence of all the coal infrastructure makes it more difficult for other energy sources such as solar, geothermal, etc. to establish themselves, the existence of major gas infrastructure would make it difficult for alternative energy sources to establish themselves. By choosing big gas pipelines we are turning our backs on alternative sources of energy.

Thank You!

In the comments on the scoping before the Federal Energy Regulatory Commission, the West Virginia Highlands Conservancy was assisted by Appalachian Mountain Advocates, the Southern Environmental Law Center, and the Center for Biological Diversity. Those organizations filed comments on behalf of the Virginia Chapter of the Sierra Club; the West Virginia Chapter of the Sierra Club; the Shenandoah Valley Network; Chesapeake Climate Action Network; the Augusta County Alliance; West Virginia Rivers Coalition; Wild Virginia; Virginia Wilderness Committee; Highlanders for Responsible Development; the All Pain No Gain Campaign; Shannon Farm Association; Ohio Valley Environmental Coalition; West Virginia Highlands Conservancy; Satchidananda Ashram – Yogaville, Inc.; Potomac Appalachian Trail Club - Southern Shenandoah Valley Chapter; Greenbrier River Watershed Association; Friends of the Lower Greenbrier; Friends of Horizons; Friends of Nelson; National Parks Conservation Association. We very much appreciate their efforts.

The West Virginia Highlands Conservancy is also a member of the Dominion Pipeline Monitoring Coalition. As a member it contributed to and supports its comments.

Commenting: the Rest of the Story

One important point that the West Virginia Highlands Conservancy, and the other groups with which it joined, made was that the Atlantic Coast Pipeline may not be necessary and that the Federal Energy Regulatory Commission should do the kind of study necessary to determine whether any new pipelines are necessary. See the story on p. 1.

That is not the whole story by a long shot. Commenters included not just traditional conservation groups but agencies such as the United States Forest Service and the United States Environmental Protection Agency. They included local governments and people worried about caves. There were comments on the economic effects of the pipeline.

Commenters raised a plethora of issues both human and environmental questions that the Federal Energy Regulatory Commission must consider in deciding whether or not to approve the Atlantic Coast Pipeline.

Among other things, commenters addressed:

- The impact on land values and rural land and culture
- Threats to endangered species
- Role of the proposed pipeline in climate change
- Impacts of increased shale gas drilling that the pipeline would encourage
- Environmental justice
- Impact of the pipeline of karst systems
- Forest fragmentation, including habitat conservation
- Slope stability
- Erosion and sediment control
- Inability of state regulatory agencies to monitor and regulate pipeline construction
- Risk to private and public water supplies

The Dominion Pipeline Monitoring Coalition (with a boost from Friends of Nelson) has compiled a list of the more environmentally focused scoping comments submitted by organizations and agencies to FERC. If you want to see what some group or organization go to http://pipelineupdate.org/environmental-review/scoping_comments/ and click away.

Want to See all the Comments?

The comments filed by Appalachian Mountain Advocates, Southern Law Center, and the Center for Biological Diversity on behalf of the West Virginia Highlands Conservancy and multiple other groups, as well as those filed by the Dominion Pipeline Monitoring Coalition (WVHC is a member) are far from the only comments filed. To see all of the comments, go to www.ferc.gov and follow the links.

That is the Federal Energy Regulatory Commission's web site. It has information about everything FERC does. To go more directly to the comments on this project, go to http://elibrary.ferc.gov/idmws/docket_search.asp.

To find the Atlantic Coast Pipeline, search for Docket No. PF15-6. That will give you a listing of all the documents that have been filed, including those filed by Appalachian Mountain Advocates, the Dominion Pipeline Monitoring Coalition, and everybody else who commented.

The documents you will find include all the documents that have been filed. It is a lot; some would say it is an overwhelming number. The comments on scoping were due April 28. It is easier to find the comments on scoping if you limit your search to that date and the dates just before it.

Send Us a Post Card, Drop Us a Line, Stating Point Of View

Please email any poems, letters, commentaries, etc. to the VOICE editor at johnmcferrin@aol.com or by real, honest to goodness, mentioned in the United States Constitution mail to WV Highlands Conservancy, PO Box 306, Charleston, WV 25321.

Cow Mountain Salamander, one of many species threatened by the pipeline. Fortunately, he has the Friends of Shenandoah Mountain to stick up for him.

Fish and Wildlife Service Proposes Endangered Species Status for Crawfish

On April 7, 2015, the U.S. Fish and Wildlife Service published a proposed rule in the *Federal Register* proposing to list the Big Sandy crayfish (*Cambarus callainus*) and Guyandotte River crayfish (*Cambarus veteranus*) as endangered under the Endangered Species Act (ESA). Ongoing erosion and sedimentation have made many streams within their historical ranges unsuitable for the crayfishes. The Big Sandy crayfish is found in four isolated populations across the upper Big Sandy River watershed in Virginia, West Virginia and Kentucky. The Guyandotte River crayfish survives at a single site in Wyoming County, West Virginia.

Both crayfish species shelter beneath loose, large boulders in streams and rivers that typically have good water quality and low siltation. The Guyandotte River and Big Sandy crayfishes, as well as other crayfish species, play an important role in healthy streams by recycling animal and plant matter and serving as food for other wildlife.

The primary threats to both species are activities that degrade stream water quality and add excessive sediments to stream bottoms, which prevent crayfishes from sheltering under large boulders. These activities can include fossil energy development, road construction, unpermitted stream dredging and accidental contaminant spills. Best management practices can help control sediment and erosion during timber harvest, construction and other projects.

This proposed listing fulfills the Service's obligation under a 2013 settlement agreement with the Center for Biological Diversity. As part of the agency's effort to fulfill other settlement agreements and address a backlog of species awaiting status reviews, the Service has committed to proactive conservation partnerships and research that could preclude the need for species being listed. One example is the Southeast At-Risk initiative, which has engaged diverse stakeholder communities to proactively conserve 40 species and prevent their need for ESA listing.

The proposed rule will be available for review and comment until June 8, 2015.

For more information about the crayfishes, visit the Service's web site at www.fws.gov/northeast/crayfish. This website includes a link to the proposed rule, as well as a Frequently Asked Questions document, and a fact sheet on the species.

Big Sandy Crayfish *(Cambarus callainus)*. Credit: Zachary Loughman, West Liberty University

The loss of a good, good friend,

Bill Howley, 62, of Chloe died on April 23 in a car accident near Exit 79 on I-79. He was on his way to a meeting in his capacity as the recently-hired program director for WV SUN, an organization that promotes self-reliance through solar cooperatives in West Virginia. His last views were almost surely of the beautiful spring leaves and redbud blossoms.

Bill was born in Washington, D.C., to William J. and Sally N. Howley. He found his true home on the farm that he and his wife, Loren, built together in Calhoun County after meeting in college. He passed innumerable teachings to their two sons, and he delighted in showing the farm to his two grandchildren.

Bill attended McDonogh School in Owings Mills, Md., and received a B.A. from Yale University in 1974 and an M.B.A. from Ohio University.

In addition to his life as a farmer, Bill worked tirelessly to improve the lives of West Virginians. For many years, he advised artists and arts organizations on community projects throughout West Virginia and Ohio. He also coached and umpired children's sports teams, organized community classes on Shakespeare, tutored and mentored many children, and was involved in various community organizations. Bill provided research and business assistance to various local law firms, including his wife Loren's.

In recent years, Bill became a leading consumer advocate on energy issues. He was an organizer of the successful fight against the PATH transmission line, which would have increased electric costs for ratepayers. He founded The Power Line, a widely read online information source about the electricity industry and renewable energy issues. During and after the 2014 water contamination crisis in Charleston, Bill contributed his expertise and strategy skills to help organize citizens demanding reform.

His survivors include his wife of 40 years, Loren; his children, Jacob Howley and Maria Paoletti, of Mount Rainier, Md., and Isaac Howley and Bilqis Rock, of Baltimore, Md.; his grandchildren, Khymi Russell and Solomon Howley-Paoletti; his brother and sister-in-law, John and Nora Howley, of Silver Spring, Md.; his nephew, Joseph Howley, of New York, N.Y.; and his niece, Malka Howley, of Philipsburg, Mont.

Bill touched the lives of other family members and countless friends and colleagues, who will remember his passion, intellect, and humor.

On Turtle Husbandry and an Alternative Cosmology

By Charlie Felkhake

Talking about the environmental challenges people are imposing on the planet is heavy stuff. In the long run they are going to come back and bite Homo sapiens and the life forces on the planet will move on. But, there is a place for just enjoying our present favorite critters, sort of like ecological music for the psyche.

My favorite critters are turtles. Since I found two box turtles in near proximity in our weedy, hilly, back yard at the age of almost four (yes during the fifties my mother kicked me out of the house some afternoons to fend for myself), I have always had an affinity for them. I have a poster I bought in college that I still have, that is a picture of a box turtle with the caption "I might be slow but I get the job done". That is good advice. They have been around for many tens of millions of years longer than us and they still get the job done (although it seems we are putting the hurt on them).

If I had a nickel for every time I have been bitten by a turtle I could probably afford some fancy coffee, but since I don't drink coffee, maybe two craft beers. When I first met my wife I had a few young water turtles in containers in my refrigerator (which I had been doing for two decades) to let them pass the winter naturally. She had to accept them if she wanted to get to know me better. We now have two teenagers and I sometimes wish I could put them in the refrigerator to sleep for the winter. Life goes on (OK, they are straight A students and mostly good kids).

Years ago I had some friends that participated in the annual Christmas bird count in WV and at a party where they were discussing it. I, on a whim, told them that I was responsible for organizing the Christmas turtle count in WV. They were amazed and asked how many were counted this past season. With a straight face I told them zero, and chuckled at their shocked expressions.

I then relented and explained that since turtles were cold blooded (poikilotherms) their metabolism was related to their temperature. Since their metabolism decreased by a factor of 2.3 for every 10 degree C decrease in temperature, at 32 degrees F it is only one fifteenth of what it is at 90 degrees F. This makes them so sluggish they find a safe place to wait out the season. They do not truly hibernate. They also do not eat in a cool house in winter so have to be slowed down all the way or starve.

Turtles have taken a lot of my time through the years. It involved care of pets, rescue, rehabilitating of sick and injured, and raising young to a safer size for release into the wild. Some became so tame that I fed them by hand. Some didn't make it and I didn't always know why. I have a lot of books on turtles and over a hundred turtle figurines. I also raise guppies, collect rocks and cacti, garden, and raise teenagers (and was a high school swim coach this past winter) so I hope I'm not too obsessive-compulsive about them.

I'll close with a favorite turtle story:

After a lecture on cosmology and the structure of the solar system, William James (a Harvard professor) was accosted by a woman.

"Your theory that the sun is the center of the solar system, and the earth is a ball which rotates around it has a very convincing ring to it, Mr. James, but it's wrong. I've got a better theory," said the woman.

"And what is that, madam?" Inquired James politely.

"That we live on a crust of earth which is on the back of a giant turtle,"

Not wishing to demolish this absurd little theory by bringing to bear the masses of scientific evidence he had at his command, James decided to gently dissuade his opponent by making her see some of the inadequacies of her position.

"If your theory is correct, madam," he asked, "what does this turtle stand on?"

"You're a very clever man, Mr. James, and that's a very good question," replied the woman, "but I have an answer to it. And it is this: The first turtle stands on the back of a second, far larger, turtle, who stands directly under him."

"But what does this second turtle stand on?" persisted James patiently.

To this the woman crowed triumphantly. "It's no use, Mr. James – it's turtles all the way down."

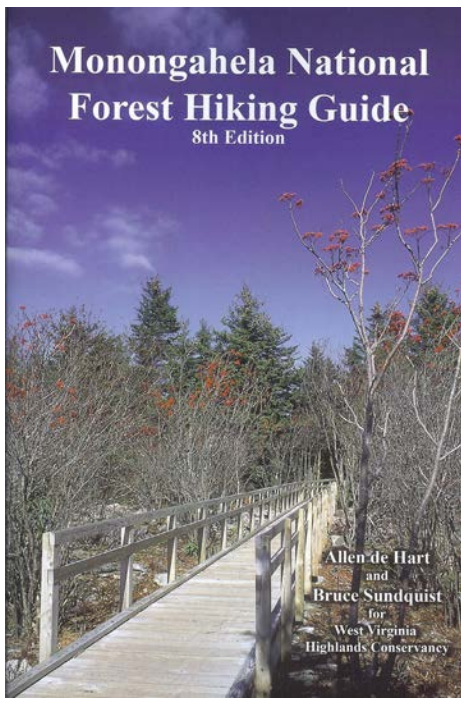
Second verse, same as the first

Forest Service Approves Pipeline Survey Through Monongahela National Forest

Just as his compatriots at the George Washington National Forest did (*The Highlands Voice,* April, 2015), the Forest Supervisor for the Monongahela National Forest has decided to authorize Atlantic Coast Pipeline (Dominion Resources) to do surveys along a mile 17.1 mile section of the Monongahela National Forest in Randolph and Pocahontas counties. These surveys would be conducted in preparation for possible construction of its proposed natural gas pipeline that would cross the Monongahela National Forest.

The rationale was roughly the same as that for the George Washington: it's just a survey. The Forest Service did not consider this as the first step in a larger project which it must consider. Instead, it viewed this as a minimal intrusion into the Forest, just some people coming in, looking around, taking a few measurements.

The Forest Service's view is that if the Federal Energy Regulatory Commission determines that the pipeline is needed then the Forest Service can make a determination at that time whether or not to issue a right of way permit to actually construct the pipeline in the Forest.



The Monongahela National Forest Hiking Guide

By Allen de Hart and Bruce Sundquist

Describes 180 U.S. Forest Service trails (847 miles total) in one of the best (and most popular) areas for hiking, back-packing and ski-touring in this part of the country (1436 sq. miles of national forest in West Virginia=s highlands). 6x9" soft cover, 368 pages, 86 pages of maps, 57 photos, full-color cover, Ed.8 (2006)

Send $14.95 plus $3.00 shipping to:
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8TH Edition Now Available on CD

WV Highlands Conservancy proudly offers an Electronic (CD) version of its famous Monongahela National Forest Hiking Guide (8th Edition), with many added features.

This new CD edition includes the text pages as they appear in the printed version by Allen deHart and Bruce Sundquist in an interactive pdf format. It also includes the following mapping features, developed by WVHC volunteer Jim Solley, and not available anywhere else:

- All pages and maps in the new Interactive CD version of the Mon hiking guide can easily be printed and carried along with you on your hike
- All new, full color topographic maps have been created and are included on this CD. They include all points referenced in the text.
- Special Features not found in the printed version of the Hiking Guide:Interactive pdf format allows you to click on a map reference in the text, and that map centered on that reference comes up.
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Price: $20.00 from the same address.

BUMPER STICKERS

To get free ***I ♥ Mountains*** bumper sticker(s), send a SASE to Julian Martin, 1525 Hampton Road, Charleston, WV 25314. Slip a dollar donation (or more) in with the SASE and get 2 bumper stickers. Businesses or organizations wishing to provide bumper stickers to their customers/members may have them free. (Of course if they can afford a donation that will be gratefully accepted.)

Also available are the new green-on-white oval ***Friends of the Mountains*** stickers. Let Julian know which (or both) you want.

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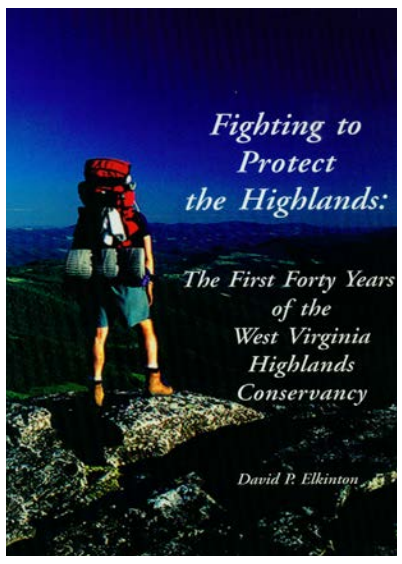
Other	$15		
Regular	$25	$35	$50
Associate	$50	$75	$100
Sustaining	$100	$150	$200
Patron	$250	$500	$500
Mountaineer	$500	$750	$1000

Mail to West Virginia Highlands Conservancy, P. O. Box 306, Charleston, WV 25321

West Virginia Highlands Conservancy
Working to Keep West Virginia Wild and Wonderful

GREAT HISTORY BOOK NOW AVAILABLE

For the first time, a comprehensive history of West Virginia's most influential activist environmental organization. Author Dave Elkinton, the Conservancy's third president, and a twenty-year board member, not only traces the major issues that have occupied the Conservancy's energy, but profiles more than twenty of its volunteer leaders.



Learn about how the Conservancy stopped road building in Otter Creek, how a Corps of Engineers wetland permit denial saved Canaan Valley, and why Judge Haden restricted mountaintop removal mining. Also read Sayre Rodman's account of the first running of the Gauley, how college students helped save the Cranberry Wilderness, and why the highlands are under threat as never before.

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518 pages, 6x9, color cover, published by Pocahontas Press To order your copy for $14.95, plus $3.00 shipping, visit the Conservancy's website, wvhighlands.org, where payment is accepted by credit card and PayPal. Or write: WVHC, PO Box 306, Charleston, WV 25321. Proceeds support the Conservancy's ongoing environmental projects.

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The Master Naturalists Contemplate a Forest Manager's Tools

By Hugh Rogers

On the evening before the prettiest day of April, I got a call from Andy Stump. He was going to show some wildlife habitat projects to a Master Naturalists group and wondered if I'd like to come along. Following Charlie Feldhake's piece in the January edition of the *Voice*, "Another suggestion for managing West Virginia forests", Andy would demonstrate "tools" that forest managers have been using.

Andy grew up on, and with his siblings inherited, a farm in Hampshire County. Besides the agricultural perspective, he has experience with the Bureau of Land Management in Colorado, followed by ten years with the Forest Service here in West Virginia. He is a certified Master Naturalist (MN).

Nearly every state has a Master Naturalist program. West Virginia's began in 2003, sponsored by the Division of Natural Resources (DNR) Wildlife Diversity Program, in association with Davis and Elkins College, West Virginia University's Extension Service, and the Canaan Valley Institute. Canaan Valley Institute dropped out in 2006, about the time most activities devolved to local chapters. There are eight active groups in the state (*see* mnofwv.org).

After certification, which requires many core classes and electives, Master Naturalists are expected to continue their education and do sixteen hours of volunteer service every year. Highlands Conservancy board member Jackie Burns, who was on the tour, teaches some of the classes. ("Anything taught out-of-doors is absorbed and retained better"—one of the Suggestions for Instructors on the MN page of DNR's web site.)

When our tour organizer, Andy Dalton, a resident of Canaan Valley, first inquired about the program, she was told, "If you want to do it, you'll have to start a new group." So she did, and also serves as vice chair of the state advisory commission.

Andy D. and Andy S. were nicely matched. He was laid-back, rambling, humorous; she was the camp counselor who kept us moving along.

Andy S. began with a plea for more "early successional" forest. In his view, the Forest Service has overcompensated for its behavior back in the 80's, when it was cutting and road building anywhere; now, it's not cutting enough. On the Mon, the net new growth per year was about 140 million board feet, of which 83.6 million was produced on management areas not suitable for logging. That left more than 55 million available. In the bad old days, up to 50 million board feet were cut; now, only 8 to 10 million. Andy insisted that pleasing more loggers could promote more habitat for wildlife under stress.

Next topic: deer. Their overpopulation has had drastic effects on their health and the health of the forest. Andy's take on this got my attention four years ago, when he wrote a letter to the editor of The Inter-Mountain criticizing the DNR's targets for deer population—then based on four bucks killed per square mile during the two-week gun season. He wrote, "This translates to a

management goal of forty deer per square mile, which is nearly three times what the ecosystem can support."

For a lesson on this topic, we stopped at a twelve-year-old timber cut along US 219 north of Thomas. Scattered mature trees had been left to re-seed the plot. Pocahontas Land Co., with advice from the Forest Service's Northern Research Station, had fenced a large portion to exclude deer. Outside the fence, the forest was carpeted in ground cedar, which obviously did not appeal to deer. No plant grew higher than our ankles. Inside the fence was a dense growth of five-foot-tall blackberries, a pioneer species and nurse crop for seedlings. When saplings reached pole size, they overtopped the blackberries, which died back. Andy said nature "wants" to bring the forest, piece by piece, back to its early successional stage, via fires, insects, blowdowns, or age. The exclosure was mimicking nature, free from the pressure of too many deer.

South of Thomas on 219, we turned at the Mountaineer wind turbines, and took Sugarland Road down to the Forest Service's New Mill Run timber sale. Andy had a key to the gate on FR 935, which is opened to the public during hunting season. Ten years after this selective cut, young trees were half the size of the seed trees. "This is one of the most productive forests in the world," Andy said.

Timber cuts were a good place for starting varieties of American chestnut that might survive the blight that had killed off the native species. As we made our way up a grassy skid road, Andy put new marking tape on the chestnuts he had planted. An interesting pioneer species here was the copper-colored fire cherry, or pin cherry. Another pioneer, not universally loved, was the grape, which Andy praised for providing dried, nutritious food for birds all winter long.

His main interest here, though, was a wildlife opening. Unlike the typical version, which looked like a suburban lawn dropped into the forest, this was bumpy, irregularly planted, with gouged-out water holes. Andy had directed the dozer operators to pile the rocky soil into "islands" that he planted for wildlife: brushy species such as hazelnut, and conifers, such as Canaan fir, that provided shelter for birds from late spring storms. Switch grass, a native warm season grass, was planted as a border. Trees were girdled to produce dead snags for woodpeckers and bats. We spotted newts in the pools.

From Mill Run, our eight-car parade continued down to the Cheat, through Parsons, and up to the Fernow Experimental Forest. To the familiar bear-chewed signs that described what was going on in each patch, the Fernow had added interpretive notices about their newest management option: fire. The Monongahela now uses fire on a regular basis; the DNR has used it on some of its wildlife management areas. In Maine, Andy said, 50% of the blueberry fields are burned every year.

A 2007 burn in John B. Hollow was intended to enhance habitat for the

(More on the next page)

More About Hugh's Field Trip (Continued from previous page)

endangered Indiana bat. Insect populations exploded after the burn. Loosened bark made the trees more suitable for roosting. Plenty of snags and cavities also appealed to woodpeckers. Because the canopy survived, different species had sprung up: instead of blackberry canes, there were beech and other saplings. Elsewhere, the Fernow was studying oak regeneration after fire.

In the Fernow I learned that maple leaves don't burn. Where the fire went over a ridge and encountered a stand of maples, it petered out.

We stopped for lunch on the bank of Elklick Run. It was plain to see that Master Naturalists retain the primary interests that brought them into the program. Birders were preoccupied by warblers' calls, while botanists had their heads down, identifying Carolina spring beauty, squirrel corn, Virginia bluebells, Dutchmen's britches, and one of three species of red trillium.

A long descent from Fork Mountain brought us to the Shavers Fork. In a bend in the river, the Forest Service had reversed homesteaders' efforts to turn bottomland into pasture. Blocking old ditches allowed pools to form, and water to drain slowly. This was the Queens wetland. Doing such restoration on a landscape scale would make the Shavers Fork less "flashy," said Andy. On our marshy walk he pointed out buttonbush and other plants that had taken hold.

Heading further south along the Shavers Fork, we reached Stuart Memorial Drive. Our last stop was the old farmsteads on the flank of Bickle Knob that had been preserved as grazing allotments. Andy said that long before the current focus on wildlife habitat, the Forest Service had wanted to keep them open for botanical diversity. Now, Coberly Sods was regarded as prime habitat for Golden-Winged and other rare warblers. The grass was lush; there were sinkholes into the limestone. At a spring, the naturalists turned over rocks to find salamanders. Andy noted how much work was required to keep the brush down—and how many people thought the Forest Service had better things to do.

As we walked down the hill to our cars, he remarked, "If you're a forest manager, and nobody's mad at you, you're not doing your job."

For another take on forest management, I called the wildlife guru Andy had quoted and I had known for many years. Elizabeth Byers, formerly at the DNR, is now working on a special project at the Department of Environmental Protection's watershed assessment branch. She agreed that our forest was starved for biomass. When she first came to West Virginia, she couldn't believe the park-like forest where you could walk without lifting your feet. Where was the undergrowth? However, too aggressive management increased risks, e.g., invasive species.

She would rather expand habitat case-by-case: focusing on "tree-sized" openings, such as we get from natural disturbances; girdling trees to create snags; planting old farms. Leaving things alone, for the most part, would get us to a desired state, it would just take longer. Our current even-age forest will decay, trees will fall, biomass will develop.

As for deer, she said their herbivory is *one* of the top five causes of lack of biodiversity, along with development, industry, climate change, and invasives.

Under The Highlands Part IV--Caves and What's Down There

By Jim VanGundy

Caves and Karst

Karst is a geological term that refers to a type of landscape in which solution of the underlying bedrock is the dominant geologic process. Most types of rock are not soluble enough to form karst terrains, but under certain conditions a few types can be dissolved significantly by water to form the caves, pits, sinkholes, underground streams, large springs and thin rocky soils that commonly characterize karst.

While it is limestone and related rocks that most commonly form karst, a few other rock types may do so as well. In arid regions such as portions of the American southwest, rocks such as gypsum and rock salt may be found at the earth's surface. Both of these are quite soluble in water and sometimes form large caves. In hot and humid tropical settings, karst-like landscapes may even form on normally insoluble rocks such as sandstone and quartzite.

Most large caves however are formed in limestone or closely related carbonate rocks such as dolostone or marble. All of West Virginia's caves, with a few minor exceptions, are formed in limestone. West Virginia currently has over 4,500 known caves and certainly many more than that remain undiscovered because they have no known entrance. There are both theoretical and empirical reasons for supposing that there are many caves that have no entrance. The empirical reason is that entranceless caves are routinely encountered in quarries, mines, construction sites and road cuts. Several of West Virginia's largest known caves originally possessed no natural entrance.

West Virginia not only has a lot of caves, it has a lot of very large caves. The community of people that explore caves (cavers) somewhat arbitrarily define a large cave as one that has more than one mile of known passage.

There are about 1,100 such caves in the United States and West Virginia is home to 120 of them - slightly more than 10% of the nation's large cave inventory. Fourteen of our caves have ten miles or more of mapped passage, and cavers from literally all over the world come to West Virginia to explore and enjoy them.

Because the major cave-forming limestones reach the surface only in the Allegheny Mountain and Valley and Ridge sections of the state, essentially all of the state's significant caves occur in the eastern counties. Small so-called "shelter caves" are found in sandstone elsewhere in the state but these are seldom more than a few tens of feet long.

Figure 1: The Stratosphere Balloon. An 18-foot in diameter and 25-foot tall formation in Stratosphere Balloon Cave, Pendleton County.

West Virginia has a number of different limestones of various geologic ages. Two of these--the thin Pennsylvanian limestones of the northern panhandle and the Upper Mississippian Avis limestone of the extreme southern part of the state--are of relatively little importance because they contain small numbers of generally small caves. The lower Devonian/upper Silurian limestones and the Cambrian/Ordovician limestones that are found in the Ridge and Valley section of the state contain many large and significant caves and each group accounts for roughly 15% of our total caves. The extensive limestone exposures of the Shenandoah Valley portion of the state display a lot of karst features such as sinkholes and large springs, but very few large caves. Nearly all of the state's large caves are located in Pendleton, Pocahontas, Greenbrier or Monroe Counties, with a few more distributed across Randolph, Tucker, Berkeley and Mercer counties.

Roughly 70% of our caves are formed in the Mississippian-age Greenbrier limestone, which occurs at the surface only in the Allegheny Mountain section of the state. The state's longest cave, the Friars Hole system in Greenbrier and Pocahontas counties, currently has 45.5 miles of mapped passage and 10 entrances. The Organ Cave system, third largest in the state, has 38.5 miles of mapped passage and also has 10 entrances. Large caves that are found to connect with other previously known caves are often referred to as cave "systems".

The second largest cave in the state is Germany Valley's Hellhole System in Pendleton County. Hellhole currently has about 42 miles of mapped passage but exploration and mapping were severely restricted for many years because of control of the only entrance by a limestone company and official closure by the U.S. Fish and Wildlife Service due to concern for the cave's large colonies of endangered bats. The pace of exploration has picked-up in recent year because another entrance has been found and it is located in a portion of the cave that is quite distant from the bat colonies. There are many unexplored leads in this cave and it is likely that it will eventually be found to be West Virginia's largest.

Cave size is typically stated in terms of length of mapped passage and volume is seldom considered because it is impossible to measure and difficult to estimate. Passage dimensions do vary widely however and some caves contain surprisingly large chambers. The table below gives the dimensions of some of the largest known cave rooms in West Virginia.

Incidentally, West Virginia's two highest waterfalls are both located underground: the 150 foot-high Suicide Falls in Cass Cave and the 120 foot-high Monster Cavern waterfall in Friars Hole.

West Virginia currently has four so-called "show caves" that have improved walkways and electrical lighting and are open to the public for a fee. Organ Cave and Lost World Caverns are both near Lewisburg in Greenbrier County. Seneca Caverns in Pendleton County and Smokehole Caverns in Grant County are both within a short drive of Seneca Rocks. In addition to their regular tours, Organ Cave, Lost World, and Seneca Caverns all offer "wild cave" tours that take participants on guided trips into undeveloped portions

(More on p. 13)

Caves and Cave Critters (Continued from the previous page)

of their caves. The hosting cave generally provides the equipment needed for such excursions.

CAVE NAME	Length (ft.)	Width (ft.)	Height (ft.)
Monster Cavern in Friars Hole (Pocahontas Co.)	480	220	200
The Big Room In Cass Cave (Pocahontas Co,)	330	60	180
The Big Room In Tub Cave (Pocahontas Co.)	420	200	40
Entrance Room In Hellhole (Pendleton Co.)	200	120	180
The Big Room In Sinnett Cave (Pendleton Co,)	750	60	40

Figure 2: Some of West Virginia's Largest Cave Rooms

West Virginia Cave Life

West Virginia caves are home to over 60 species of vertebrate animals and probably at least several hundred species of invertebrates. Most of these animals may also be found in non-cave situations but there is a small subset that is found only in caves and is specifically adapted to the underground environment. In West Virginia there are a number of invertebrates that fall into this category but only a single vertebrate: the West Virginia Spring Salamander (Gyronophilus subterraneus), which is found only in General Davis Cave in Greenbrier County. This cave was recently purchased by the Nature Conservancy in order to protect the habitat of this extremely rare salamander.

Bats are probably the cave animals that are most familiar to the general public. Thirteen species of bats have been described from West Virginia and slightly over half of these use caves for winter hibernation. One of these species also uses caves as a place to birth and raise their young and some males of another species use caves as daytime roosts during the warmer months. Bats that hibernate in caves are at risk for white-nose syndrome, a fungal disease that has recently entered North America and is currently causing catastrophic levels of mortality in several of our most common bat species. The US Fish and Wildlife Service currently list three of our cave bat species as threatened or endangered.

Because of the risk of human transport of the white nose fungus between caves, all caves in the Monongahela National Forest are currently closed to exploration unless specifically posted as open. Most of West Virginia's caves however are located on private property and there is no legal prohibition to entering them. Responsible cavers either avoid caves that house hibernating bats, or are using decontamination procedures for their clothing and equipment. Most of the caves that are known to house significant numbers of hibernating bats or maternity colonies of bats, are now gated and human access is controlled by order of the U.S. Fish and Wildlife Service.

Other common terrestrial animals that are found in caves in significant numbers include certain species of salamanders, cave crickets and harvestmen (daddy longlegs). Like bats, these animals feed outside the cave at night during the warm months but return to the cave for shelter during the day. Cave rats, also called wood rats or pack rats, are also found in some of our caves although never in large numbers. These interesting and harmless animals use caves for both winter and daytime shelter. There are also a number of smaller terrestrial invertebrate inhabitants of our caves including millipedes, spiders, beetles, springtails, and pseudoscorpions. West Virginia is considered to be a biological diversity hot spot for cave animals.

Cave streams and pools may contain fish, salamanders and crayfish as well as smaller crustaceans such as amphipods and isopods. While a number of West Virginia's cave animals are highly adapted to their underground habitats, we have no blind or white salamanders, fishes, or crayfishes such as are found in some caves in the American south and mid-west.

Because caves lack light, there is no photosynthesis and therefore no plant life. Since plants constitute the base of nearly all food chains, cave animals must either exit the cave to feed, as do the bats, cave rats, crickets, and harvestmen, or utilize food materials imported from ecosystems on the surface. Since such import is usually scanty at best, most fully adapted cave animals are small and exist in small numbers as well. Because of the high degree of specialized adaptation needed to survive in the cave environment, many cave animals are found in only a single cave or in a small cluster of caves. This pattern of distribution coupled with their usually small population sizes makes specialized cave animals highly prone to extinction.

Karst

Karst landscapes present some unique environmental challenges, particularly with respect to groundwater availability and groundwater pollution. Unlike most rocks, water moves through limestone in discrete solutionally enlarged channels. These channels may be a fraction of an inch in diameter or they may be tens of feet in diameter. In most rocks water is held in numerous tiny voids that are interconnected to a greater or lesser degree. These voids are usually microscopic in size and water moves between them slowly-usually only a few inches per day.

Water in limestone on the other hand is contained in larger voids that are usually highly interconnected. Because of this, groundwater flow rates in limestone may be as high as several feet per second rather than a few inches per day. There are several consequences of these differences. One is that a well drilled in limestone may encounter no water even though it is drilled to four or five hundred feet depth while another well a few feet away may produce very high water yields at a much shallower depth. Wells that by chance penetrate one of the water-filled channels are productive while those that do not encounter such voids are not. In most rock types, a well drilled to adequate depth almost anywhere will produce at least some water. In limestone this is not necessarily true. Where you drill is all-important and finding the right spot often involves a considerable element of luck.

The relative purity of most groundwater is due to the fact that it has been filtered through soil and rock and has been in the ground for relatively long periods. This allows time for the die-off of harmful microorganisms and the adsorption or neutralization of chemical pollutants. These purification processes are either absent or much reduced in limestone and, because of the high flow rates, pollutants may be quickly transmitted over long distances. Because of this, water from springs or wells in limestone should always

(More on p. 14)

Caves{ the rest of the story (Continued from p. 13)

be suspect and should never be consumed without appropriate treatment.

Another possible environmental problem associated with karst is that large air-filled voids (i.e. caves) may exist at shallow depths beneath the surface. Such voids may collapse when subjected to increased loading by structures or by heavy machinery. This results in the formation of a "collapse sinkhole" with potentially serious consequences for any man-made structure that lies above it or crosses it.

A less spectacular but more widespread problem is that the bedrock surface beneath karst soils is often highly irregular with pronounced ridges (called clints) and deep fissures (called grikes). Soil penetrates deeply into the grikes while only thinly covering the clints. As a consequence, manmade structures built upon karst surfaces may have a tendency to settle unevenly with more settling over the soil-filled grikes and little or none over the rocky clints. This uneven settling causes differential stresses within the structure, which can result in cracking or even collapse in extreme cases.

Caves and West Virginia History

Some of West Virginia caves have historical significance. A few were known and at least partially explored during colonial times. George Washington Cave, a small cave in Jefferson County contains an apparently authentic inscription by George Washington dated 1748.

Another Jefferson County cave, John Brown's Cave was supposedly used to hide the weapons that John Brown used to attack the U.S. arsenal at Harpers Ferry.

Kenny Simmons Cave in Pendleton County featured an underground dance floor and a lake upon which boat rides were offered. The cave was used for parties and 4th of July celebrations from 1895 until the late 1920s.

The sketch above was drawn by artist/author David Hunter Strother (aka. Porte Crayon) and used in his story entitled "The Mountains" that appeared in Harper's Monthly Magazine in 1873. The cave, now known as the Sinks of Gandy, is located in Randolph County and is probably West Virginia's best-known wild cave. Traversing the cave between its two entrances involves about 3,500 feet of mostly wet walking passage.

About fifty West Virginia caves were mined for saltpeter at one time or another, mostly during the American Civil War, but

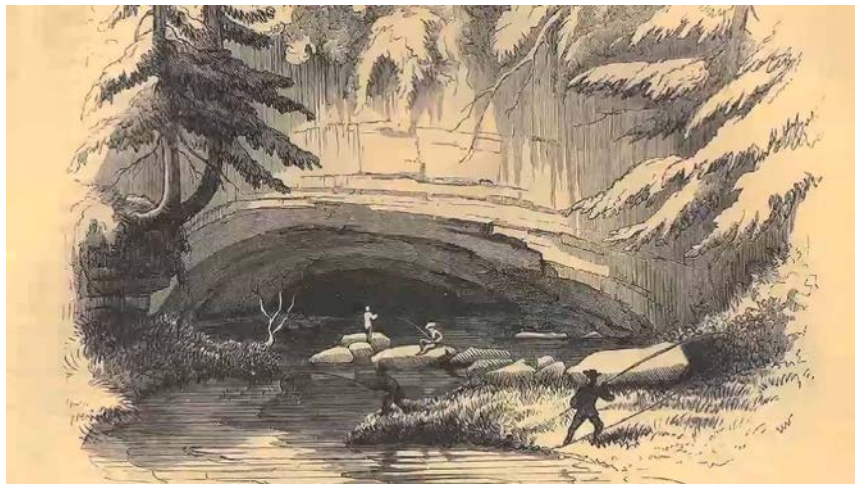


Figure 3: "The Tunnel of Gandy" as it appeared in the mid 1850s.

some mining apparently was done in a few caves during both the French and Indian War and the War of 1812. Some caves have significant quantities of calcium nitrate contained in dry cave earth and this was extracted by mining and then leaching the cave earth with hot water. The leachate was then boiled to concentrate the nitrates. The concentrate was then mixed with wood ashes to convert the calcium nitrate to potassium nitrate. Saltpeter (potassium nitrate) was a necessary ingredient for the manufacture of gunpowder (black powder) and was difficult to obtain domestically, especially for the Confederacy during the Civil War.

West Virginia caves have also contributed to science in several ways, including numerous theses and dissertations by several generations of graduate students in a number of different fields including chemistry, paleoclimatology, paleontology, hydrology, mineralogy, geology, ecology, and evolutionary biology.

There are several of the state's caves that contain significant Pleistocene bone deposits. Bones thus far recovered include those of Musk Ox, Caribou, Cheetah, Jaguar, Saber tooth Cat, Short-faced Bear, Armadillo, Peccary, Mastodon and Wooly Mammoth. Bones of the giant ground sloth Megalonyx jeffersonii were discovered by saltpeter miners in Haynes Cave in Monroe County in the mid-1790s and sent to Thomas Jefferson for identification. Jefferson's Ground Sloth is now the official West Virginia state fossil. In the mid to late 1950s Jones Quarry Cave in Berkeley County was the site of an extended archeological excavation by the Carnegie Museum that recovered a large number of prehistoric human bones and artifacts. It had apparently been used as a burial site by Paleo-Indians.

Recreational Caving

West Virginia has been a mecca for cavers since the earliest days of organized caving in the United States. The National Speleological Society (NSS) is the only national organization concerned with both the exploration and scientific study of caves. It is an unusual organization in that it is a scientific society that publishes a scholarly journal, *The Journal Of Cave and Karst Studies*, but whose membership consists largely of recreational cavers. A monthly "NSS News" magazine provides information on significant caving activities and serves the sport-caving membership of the society. The Society has over 200 local chapters called "grottos". West Virginia currently has 12 grottos located around the state, including groups in Charleston, Parkersburg, Morgantown, and Elkins.

The National Speological Society is an organizational affiliate of the West Virginia Highlands Conservancy although its position on the WVHC Board of Directors is currently vacant. A number of people from the Pittsburgh and Penn State Chapters of the National Speological Society were actively involved in the creation of the WVHC back in the mid-1960s.

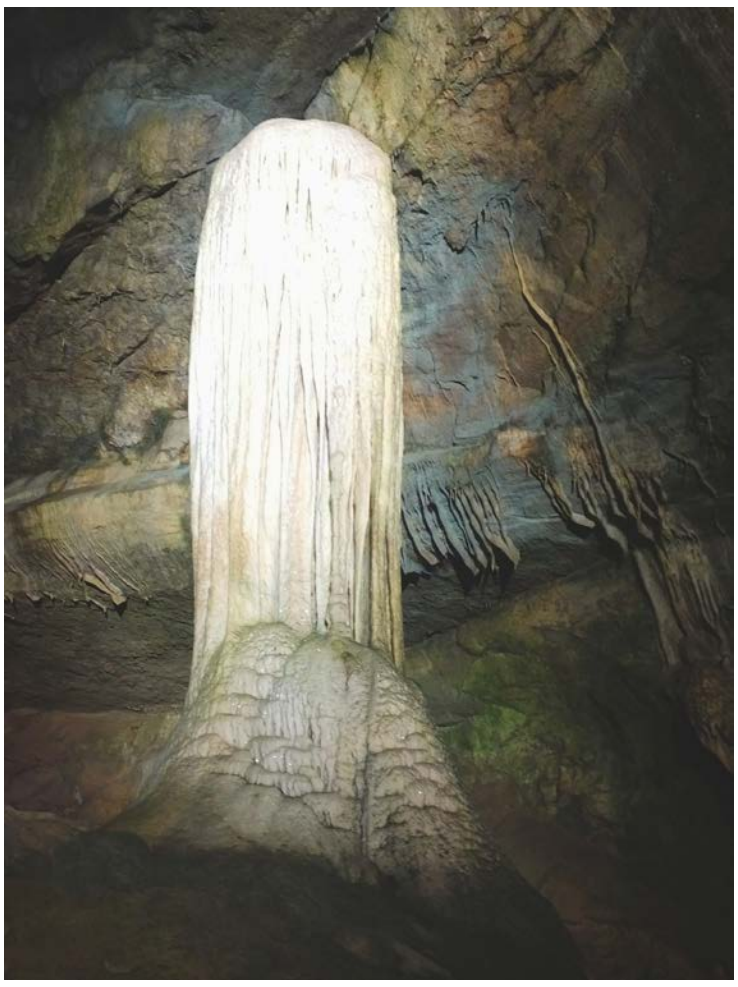
West Virginia is and has always been (for 65 years) the home of the annual caver's Old Timer's Reunion (OTR). Each Labor Day weekend, cavers from all over the country congregate at a caver-owned campground just south of Elkins in Dailey, West Virginia to swap stories, renew old friendships, and to go caving. In peak years, the OTR has attracted as many as 2,400 cavers in a single weekend.

Note: This is the fourth in a four part series on the geology of West Virginia.

Talking the talk, walking the walk

Board Members go Exploring

After talking the talk (see story, p. 13), West Virginia Highlands Conservancy Board member Jim Van Gundy walked the walk by leading fellow Board members Beth Little, Rick Webb and Bill McNeel on a post meeting tour of Lost World Caverns. Here is some of what they saw. All photographs by Jim Van Gundy.



Board Highlights

By John McFerrin

The Board of the West Virginia Highlands Conservancy met at Lost World Caverns in Lewisburg. In order to have a more relaxed meeting, with more time to think about some longstanding issues, we scheduled a two day meeting. We began early Sunday afternoon, adjourned for the evening, and finished up on Monday.

This gave us time to talk about things that were more chronic concerns than things that we had to do something about right now.

We talked about our membership. There has not been any dramatic decline but there has been some slow decline in the number of members and we certainly are not gaining new members. We talked about that in general, including such ideas as trying to send Beth Little more prospects, putting ads in college newspapers, planning our meetings around tree plantings so that those who came to plant trees could stay to join, encouraging our members to be more active, and listing events people could participate in on the web site. We talked in general about the possibility of an AmeriCorps worker to help with some of this but the Board took no action.

We talked about the need for more brochures and the need for more visibility. Along these lines, Jim Van Gundy will have a table at the Forest Festival in Elkins.

We noted that some of the people who joined around a particular issue (PATH, Monongahela National Forest plan, etc.) are dropping off. Since there are no regular reviews we are less visible. We talked about the lack of outreach and how our name is not identified with the pipeline fight. We talked about aging membership and whether the age of the membership was a problem. We briefly talked about the nature of the organization. Several years ago we considered going to an executive director model with paid staff but declined to go in that direction.

John McFerrin talked about the Voice. He thinks that it has a lot of accurate (but still depressing) stories such as reports on legislative action. It also has stories about litigation which can be a little dry. He would like more stories that are more lighthearted. In response, several Board members stepped forward with story ideas and offers to do stories.

We discussed the Hiking Guide. A new edition will be out in 2016 featuring some new pictures, including some colored pictures. Allen DeHart has almost finished the textual revisions but we have not figured out the final editing. In a related matter, Rick suggested that the future of the Hiking Guide should be not on paper but in an app. We did not develop any specific plans to develop an app. It is just something to be thinking about.

Jackie Burns presented the report of the website committee. The committee has been meeting both on the phone and in person. It developed goals for the website (Fundraising, recruitment, information, be the face of the organization, and encouraging active participation). They are still figuring out questions about platform and how to get better communication between a webmaster and the chairs of committees. It is the general sense of the committee that, once we figure out what we want, we will have to hire a consultant to update and renew our website.

We reviewed several events where WVHC has a presence and/or shares a role in sponsorship – Day at the Legislature, E Day, Sustainable Fair (May 16th), Glenville trips to Kayford, Wellness and Water conference, to name but a few. We agreed to continue to think about hiring someone to boost this aspect of the organization. We will continue to consider using VISTA, AmeriCorps volunteers, etc., if possible.

The 50th Anniversary of West Virginia Highlands Conservancy is coming up in 2017. We discussed in general ideas for a celebration. We discussed having have several different days focused on one historical achievement; making a big push for one weekend – perhaps at Canaan Valley State Park to accommodate what will hopefully be a large event, play it up in the media months ahead of time. (ads on Public Radio, articles in newspapers, personal contact with original members and officers and bring back those who are still available and honor them in some way, interviews in Voice, etc.) Cindy Rank, Bill McNeel, Jackie Burns, and Marilyn Shoenfeld agreed to work on it and to recruit Buff Rodman to help as well.

At a break in the action, President Cindy Ellis noted that the woman who often provides food for our meetings Jeni Burns (aka Ms. Groovy of Ms. Groovy's Catering) had won an award for her work with the West Virginia Sustainable Business Council, a Charleston-based coalition of small- and mid-size businesses that formed after the Jan. 9 chemical leak that tainted the drinking water for 300,000 Kanawha Valley residents.

With all the talk about the organization, we still had time to talk about issues in which the West Virginia Highlands Conservancy is involved. We discussed the pipelines, particularly the proposed Dominion Atlantic Coast Pipeline. The West Virginia Highlands Conservancy is party to at least two major sets of comments to the Federal Energy Regularity Commission. One set was prepared by the Dominion Pipeline Monitoring Coalition and the other by Appalachian Mountain Advocates, Southern Environmental Law Canter, and the Center for Biological Diversity. Individuals were encouraged to send in comments as well.

West Virginia Highlands Conservancy has participated in efforts (previous litigation and recent public rally, etc) to have permitting agencies consider the very real human health hazards from large strip mines as noted in the couple dozen health studies that continue to produce evidence of harm to communities near blasting at these big mines, etc.. The big longwall LEER Mine near Tygart Lake and Grafton, WV continues to grow and two permits are currently being considered – one for the third ventilation shaft and one for the final elevation of the slurry cells. Litigation continues over selenium, aquatic life impairment/conductivity/sulfate.

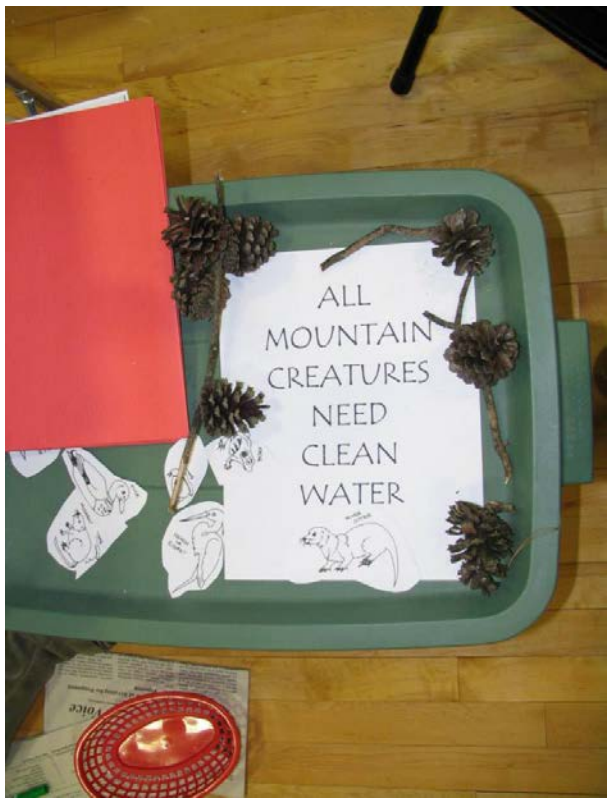
In wind Larry and Wayne updated us on New Creek Mountain Ridge project, Georges Creek, ongoing tax credits and information on the AHA website. We also had reports on public lands, highways, and matters legislative.

Several members took advantage of the location and explored the Lost World Caverns before heading home. (Jim Van Gundy, Beth Little, Rick Webb and Bill McNeel).

The door prize was a bee house, intended to provide a home for wild bees so they can continue their work of pollination and such. Bill McNeel won.

Celebrating Earth Day...

On April 25, despite rain, once again a terrific community effort in Fayetteville made for a successful New River Earth Day. The thirty participating vendors and groups included Trout Unlimited, Whipple Company Store, New River Gorge Learning Cooperative, WVFree... and the West Virginia Highlands Conservancy. Clean water was the theme; kids at our booth made wetlands animals.



Biennial Bat Count Shows Continuing Losses to White Nose Syndrome

By **Geoff Hamill**

Due to their gnarly appearance, bats invoke a sense of horror in many people. But the small flying mammals are one of man's best animal friends. By eating huge amounts of insects, bats are an enormous benefit to agriculture and also help us to enjoy the great outdoors.

In 2009, a deadly bat disease called white-nose syndrome (WNS), arrived in West Virginia. White-nose syndrome is a disease affecting hibernating bats, named for the white fungus that appears on the muzzle and other parts of the bat. Bats with the fungus become active in winter, when they would normally be hibernating. The bats lose fat reserves and leave their hibernaculum in search of food, when none is present. Affected bats eventually die of starvation.

This winter, the West Virginia Division of Natural Resources (DNR) completed a biennial bat count in several caves in Randolph, Tucker, Pendleton, Grant, Monroe, Greenbrier, Mercer, and Pocahontas counties. The count revealed that five West Virginia bat species have been ravaged by White Nose Syndrome, while two species seem largely unaffected. A bat expert described the situation as "grim."

DNR biologist Craig Stihler supervised the bat count.

"Typically, we do our surveys every other winter," said Stihler. "We try to minimize disturbance to the bats. We know that when we go in a cave, we disturb them, they wake up and they use up fat that they would normally use for hibernation. So, we go in once every other year to minimize the disturbance."

Stihler said the DNR has conducted bat counts since the 1980s, when two species were listed as endangered.

"In West Virginia, we're fortunate to have a good history of bat surveys," he said. "We have some baseline information from before white-nose syndrome showed up, so we know what's going on."

White Nose Syndrome was first observed in the United States in the winter of 2006-2007 in New York state.

"At that point, nobody realized how bad it was," said Stihler. "The following year, they realized it was no fluke, it was there and it was back and it was devastating the bats."

Three years later, WNS was first observed in West Virginia in a Pendleton County cave. Since then, the effects of the disease have been catastrophic.

"We have 20 caves that we counted this past winter," said Stihler. "Little brown bats were probably our most common cave bat before white-nose. It was by far the most abundant bat we saw. In all of our caves combined, we've lost 97.4 percent of those."

WHITE NOSE SYNDROME IN WEST VIRGINIA

Bat Species	Population change from before WNS (%)*	Population change since 2013 (%)	Number of bats counted in 2015
Little brown	-97.4	-26.5	1732
Tri-colored	-95.4	-51.9	120
Indiana	-84.5	-26.0	2172
Northern long-eared	-55.9	+400	15
Big brown	-39.2	-28.4	79
Small-footed	+10.5	+10.5	21
Virginia big-eared	+92	+92	13,940

* This is based on comparing the 2015 numbers to the last count at each site before WNS arrived at that site, so the date varies from site to site.

Prior to the arrival of WNS, Stihler led a successful program to restore populations of the endangered Indiana bat. As a result of that program, the population of Indiana bats in Hell Hole Cave in Pendleton County had increased from 3,300 to more than 18,000.

"We've lost 84.5 percent of the Indiana bats," said Stihler. "Even though they were doing very well as a result of our protection efforts, up until that time, it was no match for the fungus that was coming in."

The tri-colored bat got its name from the distinct tri-coloration of each hair, which is black at the base, yellow in the middle and brown at the tips. One of the smallest bats in North America, the tri-colored is suffering greatly from the ravages of WNS.

"Another species that was hit hard is the tri-colored bat, that used to be known as the Eastern Pipistrel," said Stihler. "It's one of our smallest bats and it's really widespread. It's a bat that's probably found in more caves than any other species, although usually not in really large numbers. We've lost 94.5 percent of them."

Big brown bats are very hardy and can survive where other bats cannot. They have brown to copper-colored fur on their back with the belly fur being lighter. They are found in almost all habitats from deserts, meadows, cities, to forests, mountains and chaparral. The recent count shows that big browns have declined by 39 percent.

The northern long-eared bat is a small bat associated with mature, interior forest environments. Unlike most other bats, the northern long-eared forages along wooded hillsides and ridgelines. This winter's bat count showed a decline of 56 percent in the population of northern long-eared bats.

Two bat species – the Virginia big-eared and the Small-footed – seem to be resistant to WNS. The Virginia big-eared population has increased by 92 percent since 2005 and the Small-footed has increased by 10.5 percent. But those numbers do not come close to making up for losses of other species.

New York, the first location in North America to experience WNS, might have seen the worst of the bat disease. Recent surveys there showed slight increases in bat populations – that had been nearly annihilated by WNS.

Based on the reports from New York, Stihler was guardedly optimistic prior to this winter's bat count.

"We were hoping that we had hit bottom and our populations would not decline further," he said. "Folks in New York are saying that their populations stabilized at a really low level, but they did stabilize and now they're seeing a slow increase in species like Little Brown bats. We were hoping to see an increase in bats."

But the West Virginia bat count showed continuing losses.

"This past winter, the sites we looked at, compared to the last survey in 2013,

(More on the next page

More About Bats (Continued from previous page)

we're still seeing a 26 percent decline in little browns, a 26 percent decline in Indiana bats and a 52 percent decline in tri-colored bats," said Stihler. "So, the decline is slowing down, but we're not at the bottom yet. I'm optimistic that in 2017, the numbers might be the same or better. But at this point, we can't say we're at the bottom. We just don't know. It's a pretty grim situation out there."

Amid the devastation, there is a glimmer of hope that vulnerable bat species can survive and overcome the WNS plague. Some signs indicate that surviving bats might have or be developing resistance to the disease.

"When we first saw white nose in the first couple of years it hit, we would go in a cave and see a lot of bats that were clustered near the entrance of the cave, which is where they normally should not be," said Stihler. "They were basically staging to leave the cave because they were starving and going out to look for food. The bats had a lot of fungus on them. In some cases, their whole muzzle was covered with fungus and it would also be on their body and wings.

"The bats we're seeing now tend to be in the spots where they had normally hibernated in the past and you see very little sign of fungus on them. We assisted some researchers by swabbing the body of the bats and sending it off for DNA testing. The bats still had fungus on them, but we're not seeing the visible fungus like we used to. To the naked eye, they seem to be in better shape, but only time will tell. The question is – is the bat more resistant? It seems to be. It's encouraging because we don't see the fungus like we used to see it."

Since its appearance in the U.S. in 2006, WNS has spread to 25 U.S. states and five eastern Canadian provinces. White Nose Syndrome is not a danger to humans.

Current decontamination protocols for cavers to prevent the spread of WNS can be found at: https://www.whitenosesyndrome.org/topics/decontamination.

Note: A slightly longer version of this article originally appeared in *The Pocahontas Times.*

HIGHLANDS CONSERVANCY BOUTIQUE

►The baby shirts are certified organic cotton and are offered in one infant and several toddler sizes and an infant onesie. Slogan is "I ♥ Mountains Save One for Me!" Onesie [18 mo.]---$17, Infant tee [18 mo.]---$15, Toddler tee, 2T,3T,4T, 5/6---$18

► Soft pima cotton adult polo shirts are a handsome earthtone light brown and feature the spruce tree logo. Sizes S-XXL [Shirts run large for stated size.] $18.50

►Order now from the website!

Or, by mail [WV residents add 6 % sales tax] make check payable to West Virginia Highlands Conservancy and send to West Virginia Highlands Conservancy, Online Store, PO Box 306, Charleston, WV 25321-0306

T- SHIRTS

White, heavy cotton T-shirts with the ***I ♥ Mountains*** slogan on the front. The lettering is blue and the heart is red. "West Virginia Highlands Conservancy" in smaller blue letters is included below the slogan. Short sleeve in sizes: S, M, L, XL, and XXL. Long sleeve in sizes S, M, L, and XL. **Short sleeve** model is $15 by mail; **long sleeve** is $18. West Virginia residents add 6% sales tax. Send sizes wanted and check payable to West Virginia Highlands Conservancy ATTEN: Online Store, WVHC, P.O. Box 306, Charleston, WV 25321-0306.

HATS FOR SALE

We have West Virginia Highlands Conservancy baseball style caps for sale as well as I ♥ Mountains caps.

The WVHC cap is beige with green woven into the twill and the pre-curved visor is light green. The front of the cap has West Virginia Highlands Conservancy logo and the words West Virginia Highlands Conservancy on the front and I (heart) Mountains on the back. It is soft twill, unstructured, low profile, sewn eyelets, cloth strap with tri-glide buckle closure.

The I ♥ Mountains The colors are stone, black and red.. The front of the cap has ♥ MOUNTAINS. The heart is red. The red and black hats are soft twill, unstructured, low profile, sewn eyelets, cloth strap with tri-glide buckle closure. The stone has a stiff front crown with a velcro strap on the back. All hats have West Virginia Highlands Conservancy printed on the back. Cost is $15 by mail. West Virginia residents add 6% tax. Make check payable to West Virginia Highlands Conservancy and send to West Virginia HIghlands Conservancy, Atten: Online Store, P.O. Box 306, Charleston, WV 25321-0306