

# Tennessee Sierran

SIERRA CLUB  
TENNESSEE CHAPTER

The Bimonthly Newspaper of the Tennessee Chapter of the Sierra Club

Volume 57, Number 1 - January / February 2024

## Winter Retreat is at Cedars of Lebanon State Park

January 19-21 ~ Details on page 4



**Focus on Climate Change:**  
Climate Scientist Presents in Knoxville - Page 5  
A Rational Basis for Hope, by Lou Gross - Page 6

**Conservation Education Day Is February 28**  
- Your Chance for Impact - Page 3



**An Eastern Screech Owl Sounds the Alarm**  
- See Cris Corley's column on Page 2

Cover Photo: Randy Hedgepath (far left) leads a hike at the 2019 Winter Retreat at Cedars of Lebanon. © Ron Shrieves  
Masthead Photo: Fish Camp Cascades, GSMNP, by Jeff G. Moore, CC BY-NC 2.0 Eastern Screech Owl Photo: © Ron Shrieves

Explore, Enjoy, and Protect!

## From Tennessee Chair Cris Corley

### Early Morning Thoughts: Sound the Alarm



When I opened the front door this morning around 4:15, a cold, misty fog hit me in the face. Being a warm weather fan, I always enjoy the midsummer predawn mornings, sitting on the front porch with Venus in the eastern sky. Of course, being a true-blue Southerner, my preferred attire is a pair of boxer briefs, and shoeless, relaxing in my high-backed wicker chair, sipping on a great cup of my favorite coffee, Royal Hawaiian. Usually my brain is operating in high gear shortly after awakening and often is at its most creative. My front porch provides the ideal setting for clear thought and strategic planning for the day. The quietness is often deafening, but I am not alone.

Living across the street, my next-door neighbor enjoys a similar predawn early riser schedule (absent the coffee). Also, he doesn't have a porch, but resides in a massive red oak tree with a magnificent view of open pasture land.

My buddy is an Eastern screech owl. His unexpected, sudden and surprising loud song frequently causes me to spill my hot Joe on my bare legs. I firmly believe Luther (yep, I named him years ago) watches me for days, then when I least expect it, calls out with a three-second trill, followed by the wavering whinny of a dying horse. No doubt the wise fellow is constantly watching my every move, waiting for the moment to frighten me. Screech owls are seldom seen, but they are often heard announcing their presence. I guess I have seen Luther only four or five times over the years, but what a beautiful small *Megascops asio* (length 8.5", wingspan 20", weight only six ounces) with feathered ear-tuffs and a call loud enough to wake the dead.

The Tennessee Chapter of the Sierra Club often utilizes a similar approach of keen, quiet observation, followed by a surprising loud report of presence. For five decades, our volunteers have been protecting our state from the horrors of industrial pollution. Often it is a solitary, longtime observer of their surroundings that notes an unusual activity, reporting the finding to our conservation personnel. We often owe much gratitude to a sole member that makes us aware with a loud call.

Recently, a longtime supporter of our Chapter alerted our Conservation Director Scott Banbury of odd activities at a long-abandoned phosphate mine near the Duck River. Survey crews were busy. It was definitely a sign of a possible development of hundreds of acres, near one of our last pristine rivers. Further investigation revealed an out-of-state company's plan to develop a massive landfill near one of Tennessee's last immaculate streams. With loud voices, a consortium of local individuals and environmental groups were able to stop this project. And the legislature pushed through protection of the Duck. Oftentimes a single member not seen, but loudly heard, has a lasting effect in protecting our fragile environment. I strongly encourage all members to get involved with your local group and to become the eyes and ears of the Chapter.

My early morning front porch outings will be curtailed for the next several months due to frigid temperatures. Luther is busy making a winter nest, stocking it with food, preparing it for his lifelong mate to raise next year's newborns. Hopefully you, too, will begin preparations for early spring. The Chapter needs all of us to be defenders of Tennessee's natural beauty.

Contact Cris at [chapter.chair@tennessee.sierraclub.org](mailto:chapter.chair@tennessee.sierraclub.org)



An eastern Screech owl. Photo © Ron Shrieves (edited)

## SC Creates Tennessee Director Position

by Bill Moll, Chapter Conservation Chair

The Tennessee Chapter is preparing to hire its first State Director. A committee composed of Chapter members will select the successful applicant. The position is expected to start in late Spring 2024.

The Tennessee Chapter is medium sized, with more than 8,000 members. Most chapters of the same size have two to four paid staff members. Currently, Tennessee's one employee — Conservation Program Director Scott Banbury — is overworked, and volunteer leaders are overloaded. The Chapter is not always able to address important environmental issues when needed in a timely way, carry out needed follow-up, and respond to members' concerns.

A major goal of the national Board is to achieve a minimum of four paid staff positions in each chapter. The Tennessee Chapter's current conservation program director position was originally part-time, but became full-time in 2019.

Assuming the Board's approval, the 2024 Tennessee Chapter budget will likely also add a full-time support staff position, to be filled in late summer 2024.

Adding two full-time staff members will greatly improve the ability of the Chapter to achieve its environmental goals, and bring big changes to how the Chapter operates. Details are still to be worked out.

The planned Chapter reorganization will be discussed at the January Retreat scheduled for January 19-21 at Cedars of Lebanon State Park. Hope to see you there.

Contact Bill at [whmoll@aol.com](mailto:whmoll@aol.com)

## Tennes-Sierran

The bimonthly newsletter of the  
Tennessee Chapter of the Sierra Club  
Volume 57, Number 1 — January / February 2024  
Digital Edition

### Change of Address

Email: [address.changes@sierraclub.org](mailto:address.changes@sierraclub.org)

Online: [MyAccount.SierraClub.org](http://MyAccount.SierraClub.org)

Snail Mail: Mail new address AND the mailing label on page 1 to:  
Sierra Club, P.O. Box 421041, Palm Coast, FL 32142-1041

Request no paper copy here: [http://bit.ly/Stop\\_My\\_Paper\\_Copy](http://bit.ly/Stop_My_Paper_Copy)

### Submission Deadlines

February issue of the Chapter E-Newsletter by January 26

March Issue of the Chapter E-Newsletter by February 23

March/April Issue of The Tennes-Sierran by January 31

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Chickasaw Group—Memphis

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# Evolution's Moral Lesson

Continuing our Series

Living Sustainably: Personal Choice and Citizen Action



by John Nolt, Harvey Broome Group

Until the 19<sup>th</sup> century, most Western philosophers and theologians taught that species were timeless categories. Individuals of a species lived and died, of course, but since each of them shared in the same immutable nature, the species itself never changed. Each species was also thought to have a fixed place in the so-called Great Chain of Being, an exquisitely designed hierarchical structure in which all things had values and purposes. Inanimate substances, like air, water and soil, existed to serve the needs of plants, animals and humans. Plants

served as food and shelter for animals and as sources of food, shelter and clothing for humans. Animals served as food for other animals and also as food, clothing, and other goods for humans. The Great Chain also extended beyond humans, to supernatural beings: angels, archangels, and so on, up to the highest link: God.

Only in the 19<sup>th</sup> century did Charles Darwin and (independently) Alfred Wallace assemble conclusive evidence against this scheme. They showed that species are not eternal; they evolve at various times, and all eventually succumb to extinction. Species are, moreover, not entirely distinct; hybridization with closely related species is common. For microbes, species boundaries are fuzzy in the extreme. It's easy to see by comparing features, how similar species (squirrels and groundhogs, for example) could be the descendants of common ancestors. But astonishingly, all current evidence points to the conclusion that any two living things on Earth, no matter how different, have common ancestors. Evolutionary descent thus takes the form of a tree of extraordinary complexity that grows from a single trunk: the tree of life. Each living thing is a relative, though usually extremely distant, of every other. Life on Earth is one big family.

Given our current understanding of evolution, the idea that "lower" creatures are designed to serve "higher" is likewise no longer credible. Rather, some species have evolved ways of exploiting others, and the exploited ones (those that persist) have nevertheless evolved elaborate ways to survive and reproduce. Species that evolved naturally were obviously not designed for human use. Their lives and purposes have always been their own, and many flourished hundreds of millions of years before any human existed.

Evolution raises questions, too, about the traditional belief that of all living things, only humans have immortal souls. Assuming that we have souls, when did our ancestors acquire them? Was it several hundred thousand years ago, when Homo sapiens first appeared, or sometime later — perhaps with the beginnings of civilization? Or could it have been earlier — say with the appearance of the genus Homo? And why should it be just humans that have souls? Since all living things are our relatives, why not them too?

When I was a freshman at Ohio State, I lost many nights of sleep worrying about the implications of our kinship to animals. If we are so much like them, I thought, then the romantic love that I was beginning to experience must be nothing more than mating instinct. This idea depressed me for months, but eventually I learned to flip it around: instead of diminishing human emotions, our kinship with animals could enable us to appreciate the worth of theirs. The love we can experience is palpably wondrous, even if instinctive. Why wouldn't animals' feeling sometimes be wondrous as well?

Evolution's profound lesson is to undercut our sense of unique moral importance. But it is the uniqueness, not the importance, that is mistaken. We are important, but so are our relatives.

*John Nolt, a long-time member of the Harvey Broome Group, is Professor Emeritus in Philosophy at the University of Tennessee and a Research Fellow in the Energy and Environment Program at the UT Center for Energy, Transportation, and Environmental Policy.*

Contact John at [nolt@utk.edu](mailto:nolt@utk.edu)

## Holiday Party Gathers Middle Tennessee Members

by Rebecca Newton, Middle Tennessee Group

On Saturday, November 18, members of the Middle Tennessee Chapter of Sierra Club enjoyed an evening of great food and fellowship at their holiday party. The gathering was held at the beautiful Center for Sustainable Stewardship Lodge near Franklin and featured a delicious spread, including tasty, homemade potluck dishes provided by attendees, and shrimp and ham furnished by the Chapter.

MTG members Cindi and Joel Gearhardt created festive decor for the occasion, and cohosts Susan Lampley and Rebecca Newton assisted with food presentation and cleanup. Jonathan Oppenheimer and Lee Anne O'Brien, who are married and together lead the Center for Sustainable Stewardship, generously donated use of the CSS Lodge, organized parking, and assisted with cleanup.

Contact Rebecca at [rebeccanewton8@icloud.com](mailto:rebeccanewton8@icloud.com)

## Your Chance for Impact!

# Conservation Education Day

by Bill Moll, Chapter Conservation Chair

Conservation Education Day (CED) is your chance to join other environmentalists in promoting, to state legislators in Nashville, the passage of bills which protect Tennessee's water, air and land, and in blocking those bills which would do harm. CED, a joint effort of the Tennessee Environmental Council, the Tennessee Sierra Club, Harpeth Conservancy, Tennessee Interfaith Power and Light and the Tennessee Conservation Voters, is scheduled for Wednesday, February 28.

Advance preparation will begin on Zoom calls and Sierra Club listservs as soon as the legislature convenes with information and discussion, including updates on what bills are pending. The final list of issues won't be known until the week before CED. February 28 has been chosen for CED because it is after the key bills are known, but before crucial votes are taken.

Participants will get lobbying training and "ask" education on Tuesday, February 27, 6:00 - 8:00 pm, both in-person in Nashville (with pizza), and on Zoom for those who can't be onsite, which worked well last year. (However, we will not be sending pizza to those who are attending via Zoom.)

Participants should gather in Conference Room 8B (eighth floor) of the Cordell Hull building, 425 5th Ave N, Nashville, the location of the state legislative offices. The appointments, usually made by one of the coordinators to fit your travel schedule, are between 8 am and 4 pm CST.

The meetings with legislators are each about 10-15 minutes long, with three people at each meeting, one as lead and one taking notes. The members of many of the key committees for our bills of interest are dominated by legislators from rural districts. Since we can't make an appointment unless a constituent is in the meeting, we especially need more Sierra Club volunteers from non-urban areas.

Last year, 50 or so of us met with about 50 of the 132 total legislators. Unlike the hostile political climate in D.C., Tennessee legislators are friendly and engage in real conversations. They don't always agree; but there is an exchange of ideas, and that is the purpose of our day in Nashville. Please schedule some time on February 27 and 28 so that we can increase the number of legislators with whom we meet in 2024. One goal is to establish a relationship with your legislator, if you don't already have one. That is the best way to ensure that your representative will listen to you when an important issue arises.

We will be contacting members across the state, so please don't hang up or ghost us. This is an important event and it is very satisfying. Here's an effective way to ACT LOCALLY!

Register to participate here: <https://bit.ly/TNSC-CED-2024>. Have questions or suggestions, or want to volunteer to help organize CED? Contact me, Bill Moll: [whmoll@aol.com](mailto:whmoll@aol.com) 404-401-7899.

## TVA Gets an Earful in Tupelo

By Emily Sherwood, Beyond Coal Campaign Organizer

On Wednesday, November 8th, folks from the Sierra Club, the Clean Up TVA coalition, and concerned community members gathered at the Tennessee Valley Authority (TVA) Board Meeting in Tupelo, Mississippi. Together they encouraged board members to stop the methane gas buildout and get TVA to work with communities to implement a just transition to renewable energy that is in alignment with the unique cultural, economic, and environmental needs of local communities.

TVA has the largest planned methane gas buildout in the country with generation sites proposed in Kingston, Cumberland City, Ashland City, and now Memphis. And that's just in Tennessee! Not only is this gas buildout bad for the environment, it's extremely expensive — with at least \$5 billion allocated to it for just the next fiscal year. In response to this, TVA passed a rate increase for their customers at their August board meeting. In contrast, at this most recent board meeting, they approved significant bonuses for their highest paid executives except Jeff Lyash, sending a clear message that they plan to pass the cost of this unnecessary gas buildout on to their customers while their executives make millions.

Climate justice leaders like Marquita Bradshaw of Sowing Justice, Paul Klein of Climate Reality, and youth activist Adrienne Gott spoke before the TVA listening session at a rally organized by the Clean Up TVA Coalition. While each of their stories are unique, a clear thread tying them together was a demand for climate justice. Low income communities and people of color have long borne a disproportionate share of the devastating effects of our reliance on dirty energy. Activists are saying, "No More! We demand a just transition away from fossil fuels."

This most recent TVA Listening Session concludes a year of activists and community leaders showing up in droves to hold TVA accountable to the communities they are charged to serve. It would not be possible without Sierra Club volunteers, Sierra Club staff, the Clean Up TVA Coalition, and community leaders. Look forward to another year of united action in 2024.

Contact Emily at [emily.sherwood@sierraclub.org](mailto:emily.sherwood@sierraclub.org)

# Tennessee Chapter Winter Retreat January 19 - 21 Cedars of Lebanon State Park

Join fellow members of the Tennessee Chapter the weekend of January 19-21 for the Chapter Winter Retreat at Cedars of Lebanon State Park, just south of Lebanon, Tennessee. Activities include hiking, election of ExCom officers and committee chairs, planning for the year, live music, and eating, of course. Come for hiking, relaxing close to nature, and the company of good friends, old and new. Be a part of the fellowship, hikes, fireside chats, and meetings.

## ACCOMMODATIONS

We'll be at the Group Lodge, where you get bunkhouse lodging (women's and men's dorms,) Bring a sleeping bag or linens/blankets, towels and personal items. If you don't wish to stay in the group lodge dorms, camping spaces and two-bedroom cabins are available to rent at the Park (remember you will get a 10% Tennessee resident discount). Hotels in nearby Lebanon, which is about 10 miles north of the Park are convenient. Venue information and directions are available at Cedars of Lebanon State Park website here: <https://goo.gl/LCKLM3>.

## CEDARS OF LEBANON STATE PARK

The Park, established in 1955, is named for Eastern Red Cedar trees found throughout the area. The trees reminded early American settlers of the famed Biblical cedar forests that thrived across Mount Lebanon in what is now the Mediterranean area. In the 1940s, botanists noticed unique natural ecosystems found in and around Cedars of Lebanon State Park and Forest. These areas of natural rock gardens are called cedar glades and are caused by limestone rock coming so close to the surface of the ground that the soil is thin or absent. Water and surface temperatures vary so much throughout the year that a harsh, desert-like, inhospitable habitat is created with its own unique plant community. Nineteen rare and endangered species of plants grow profusely here and nowhere else in the world.

## HIKES

Hikes are planned for Saturday and Sunday (see schedule to the right). Be sure to prepare for muddy trail conditions (unless it is frozen) and winter weather that is likely in late January. Winter hiking can be a great experience if you are properly attired! It's a good idea to have a daypack for water, snacks, and warm clothing.

## SATURDAY EVENING PROGRAMS

Join **Karissa Hampton, Sustainable Households Manager at Urban Green Lab (UGL)**, for a discussion of key topics of sustainability (the Food Waste Initiative and the Environmental Justice Initiative) in Nashville, and beyond. Learn also about opportunities to engage in sustainable UGL volunteer work within your own community of friends, family, and neighbors.

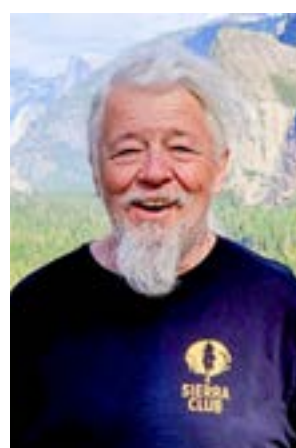
**Special musical guest Gordon Ellis**, powered by a three-octave range, will treat us to his passionate and catchy original songs, songs about real people, real feelings, real life. Numerous artists have recorded his songs and Gordon has received airplay on many radio stations in the United States and overseas.



Karissa Hampton with Nashville's Urban Green Lab, will key topics of sustainability in Nashville.



Beyond Coal Campaign's Amy Kelly will discuss the TVA



Charlie High will lead Saturday hikes

## RETREAT SCHEDULE

Begins: 4:00 pm Friday, January 19  
Ends: 11:00 am Sunday, January 21

### Friday

#### 4:00 pm Registration is open

Dinner on your own or meet at the lodge to carpool to no-host dinner at a local Mexican restaurant or enjoy dinner on your own

### Saturday

#### 6:30 to 8:00 am Breakfast

#### 9:00 am to 7:00 pm Silent Auction

#### 9:00 am Hike with Charlie High

Meet at the Group Lodge and walk to the trailhead of the Cedar Forest Trail, a two-mile walk through one of the largest red cedar forests in the USA. The trail is rated easy, but has rocks and roots and is often muddy, so proper footwear is necessary (not sneakers or sandals). Features amazing rock formations and sinkholes. Dress for the weather.

#### 9:00 am to Noon Morning Programs

9:00 am Conservation Education Day — Bill Moll

9:30 am Legislative Issues — Scott Banbury & David Bordenkircher

10:00 am Land Management — Virginia Dale

10:45-11:00 am — take a break

11:00 am Tennessee Waste Recycling and Reduction Act (TWRRA) — Dan Firth

11:30 am Forests — Davis Mounger

#### 12:00 pm Solar Panel Demo — Bill Moll

in the parking lot (assuming some sunshine)

#### 1:00 pm Hike with Charlie High

Meet at the Group Lodge parking lot to carpool to Hidden Springs Loop Trail. This moderate trail is rocky with exposed tree roots and often muddy. We may need to ford some streams. Proper footwear is necessary (not sneakers or sandals). The trail is 4.2 miles — the sign says five miles and it may seem that long. Look forward to cedar glades and some dramatic features of karst geography.

#### 1:00 pm to 5:00 pm Afternoon Programs

1:00 pm Inflation Reduction Act — JoAnn McIntosh, Tim Weeks & Bill Moll

1:30 pm Electric Vehicles and Chargers — Kent Minault

2:00 to 2:15 pm Take a break

2:15 pm Memphis Groundwater — Carl Richards

2:45 pm TVA — Amy Kelly, BCC Representative

3:15 to 3:30 pm Take a break

3:30 pm Working with Coal Communities — Bonnie Swinford

4:00 pm Tabling, Handouts, Membership Committees

4:30 pm Sierra Club Reorganization, Chapter Director and more — Bill Moll & Cris Corley

#### 6:00 to 7:30 pm Dinner

7:30 to 9:00 pm Evening Programs (see left column)

### Sunday

#### Breakfast 6:30 to 7:30 am

#### 8:00 to 11:00 am — ExCom meeting

#### 9:00 am Hike with Randy Hedgepath

The Cedar Forest Trail is a 2-mile walk through an upland forest with some beautiful rock formations and interesting sinkholes. Meet Randy at the first parking lot located where you turn into the recreation area.

## REGISTRATION

### Follow Link or scan QR Code:

<https://bit.ly/TNSC-winter2023-retreat>

**QUESTIONS?** Ask Carl Richards [crich555@gmail.com](mailto:crich555@gmail.com)



## RETREAT COSTS

- Early Bird Discount by January 10 (lodging, 2 breakfasts, Saturday dinner) — Adult \$60
- First Chapter Retreat? Receive a special price (lodging, 2 breakfasts, Sat dinner) — Adult \$40
- Student (lodging, 2 breakfasts, Saturday dinner) — \$30
- Late registration (after January 10) — \$70
- Child under 16 — No Charge
- Sunday Executive Committee meeting only (registration, breakfast, no lodging) — \$10

# I ask a Prominent Climate Scientist, “So, Are We Doomed?”

by Todd Waterman, Assistant Editor

At its October 10th Program Meeting, the Harvey Broome Group hosted an exceptionally informative, yet lay-friendly slideshow, “Measurements and Models: The Science of Climate Change,” by Distinguished Scientist Dr. Peter Thornton, Director of the Climate Change Science Institute (CCSI) at Oak Ridge National Laboratory (ORNL). Peter’s retired fellow ORNL climate researcher, HBG Programs Chair Mac Post, summed it up: “In his presentation, Dr. Thornton explained observations underlying Earth system changes, how we know the causes, and what computer models can or cannot tell us about future climate change. Dr. Thornton made it clear that we are headed for many changes in weather extremes, freshwater availability, river flow and temperature, insect and disease distributions, wildfire, agricultural productivity, natural vegetation cover, biodiversity, ocean chemistry, and regional climate patterns. To mitigate these serious changes we must immediately reduce or eliminate all greenhouse gas emissions.” You can see Peter presenting his slides, using graphics that instantly convey his data-based message, along with commentary on his presentation and the lively Q&A that ensued, in an album I shared on the Harvey Broome Group of the Sierra Club Facebook page on November 7th.

Peter had seemed confident that if we reached net zero emissions, global warming would cease. But I’d been reading a lot about positive (self-reinforcing) climate warming feedback loops, both of which are caused by warming and then produce more warming – this causing them to produce even more warming and causing yet more warming, and so on and so on. I’d become especially concerned about the vast Arctic tundra, where thousands of years’ worth of dead, frozen organic matter, containing twice the carbon that’s in the atmosphere already, is now melting. That thawing allows microbes to metabolize all that carbon into CO<sub>2</sub>, which persists in the atmosphere for at least hundreds of years, and worse, at depth, it allows microbes to metabolize it into methane, which over its brief 20-year lifespan causes 85 times more warming than CO<sub>2</sub>. Many dreaded that process would kick warming into high gear (methane has already produced 30% of climate warming to date). And of course, all that additional warming should cause ever more thawing and warming.

So in the Q&A I asked Peter, did he share my concern that warming feedback loops would mutually accelerate each other, spiraling warming beyond our control? What about the thawing of the Arctic tundra, where I knew he had done research? I couldn’t imagine those warming feedbacks would ever stop until there was no ice unmelted, no forests or tundra unburned, no coastal cities undrowned, a million species wiped out, and millions of us sweltering and starving and thirsting and killing each other – unless all the excess greenhouse gasses that had turned on those feedback loops were somehow removed. (Peter had said that one day we’d likely have to remove carbon from the atmosphere by direct air capture.) He responded, reassuringly, that there were both positive and negative warming feedback loops, and that there also appeared to be a natural tendency towards equilibrium. (Could it be, I mused, that my news feeds had been showing me only science they knew I’d find agreeable, lest I take my ad revenue elsewhere?)

Peter then addressed my worst feedback nightmare, the melting Arctic tundra. He cited his CCSI colleague Scott Painter’s recent paper finding that as the tundra melted it would also dry, shutting down its conversion by microbes into CO<sub>2</sub> and methane. I tracked down what Painter had said, in a Phys.org article on his paper “Drying of tundra landscapes will limit subsidence-induced acceleration of permafrost thaw” – that “Improved drainage

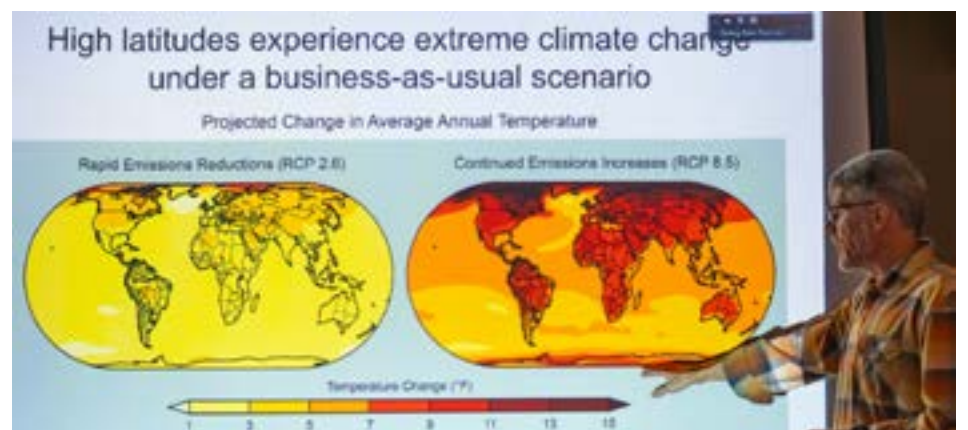


Dr. Peter Thornton, with the Climate Change Science Institute at Oak Ridge National Laboratory, chats with Deb O’Dell after his presentation at the Harvey Broome Group’s monthly meeting on October 10.

results in a drier landscape over a decadal timescale, and the process then becomes self-limiting.” And former soil scientist Mac Post explained to me that microbes produce methane only in waterlogged, and thus oxygen-poor, soil.

Peter’s next-to-last slide listed very worrisome changes for eleven natural systems predicted by his and his fellow climate scientists’ models. His final slide asked, “What can we do . . . and what will we do?” He’d listed several answers for “What can we do” – but none for “and what will we do?” That answer he left to all of us who, like him, know enough, and care enough, to show up.

Contact Todd at [jtoddw@gmail.com](mailto:jtoddw@gmail.com)



Dr. Peter Thornton, with the Climate Change Science Institute at Oak Ridge National Laboratory, discusses what we can expect from climate change at his presentation at the Harvey Broome Group’s monthly meeting October 10.



## CareNET Donates Environmental Books

by Eileen Queener, CareNET Regional Conservation Committee

CareNET Regional Conservation Committee recently donated \$200 to the Hawkins County Library System to purchase environmentally-themed books. Titles now available to readers in Hawkins County include: *The Parrot and the Igloo: Climate and the Science of Denial* by David Lipsky; *A Kid's Guide To Saving The Planet: It's Not Hopeless and We're Not Helpless* by Paul Douglas and Chelen Écija; and *The Heat Will Kill You First: Life And Death On A Scorched Planet* by Jeff Godell. CareNET presented Surgoinsville Library Manager Rachel Franklin with a check and a list of suggested titles for adults and children. Franklin was able to purchase all the suggested books. Each book has a plate inside that reads, “A gift to the Hawkins County Library System from CareNET, a Regional Conservation Committee of the Sierra Club based in Hawkins County.” Although housed at the Surgoinsville Library, the books are available through interlibrary loan not only to all Hawkins County residents, but also to everyone throughout Tennessee. This relatively small donation can inform and influence many.

Contact Eileen at [ehqueener@gmail.com](mailto:ehqueener@gmail.com)

# A Rational Basis for Hope Regarding Climate Change

by Louis J. Gross, Harvey Broome Group

Given the regular and discouraging news about climate-related disasters, the impacts on us and our communities, and the ongoing challenges of constraining greenhouse gas emissions related to human activity, it is easy to lose hope. An interdisciplinary research group has considered whether it is possible that the increases in temperature projected from global climate models could be ameliorated when these models are modified to account for human behavior. The "rational basis" in the title of this article refers to the use of current natural, physical and social science to address this, and "hope" refers to the possibility that inclusion of the feedbacks between climate and human behavior could lead to climate projections that are potentially not as dire as the current ones. I summarize our results on this and see my webpage for references: <http://lgross.utk.edu>

Global climate models (GCMs) use physics principles to account for the impacts of greenhouse gas (GHG) emissions on global temperature. These look into the future using scenarios which each assume a projection of future GHG, typically called "representative carbon pathways" or RCPs. These scenarios include the "business as usual" trajectory, which assumes continued expanding use of fossil fuels and little in the way of mitigation of GHG emissions, and others with assumptions about GHG reductions from mitigation efforts. These scenarios for GHG emissions are unaffected by the physical feedbacks in the GCM, though some models consider economic and demographic factors. These models are not designed to "predict" the future, but rather to "project" the impacts on global climate from the RCP. So they do not say what will happen but rather what the science implies future climate would be like for a particular RCP.

Our collaboration of climate modelers, data scientists, mathematicians, ecologists, economists, psychologists, sociologists and geographers accounts directly for human behavior and social systems responses to climate — and integrates this with a GCM. There are many theories for human behavior, but they provide little guidance on human responses to climate, or how such responses would feedback to modify GHG emissions. We chose a particular social psychology approach called the "theory of planned behavior." This accounts for how social norms (what you perceive others are doing) and behavioral control (perception as to how much your actions matter to impact the processes of concern) affect attitudes which then modify behavior. While highly stylized and clearly limited (e.g. our simple formulation did not account for "influencers" or celebrity factors), we did build a reasonable model for behavioral responses to extreme climate events that fed back to modify GHG emissions.

This was the first effort by anyone to consider feedbacks from a GCM to human behavior, which in turn led to changes in attitudes and associated modifications of GHG emissions. We did not know whether it was even possible this would lead to potential futures with reduced global temperatures, or if this outcome was likely. Rather than having a fixed RCP scenario, our model produces future GHG emissions that vary due to the behavioral feed-

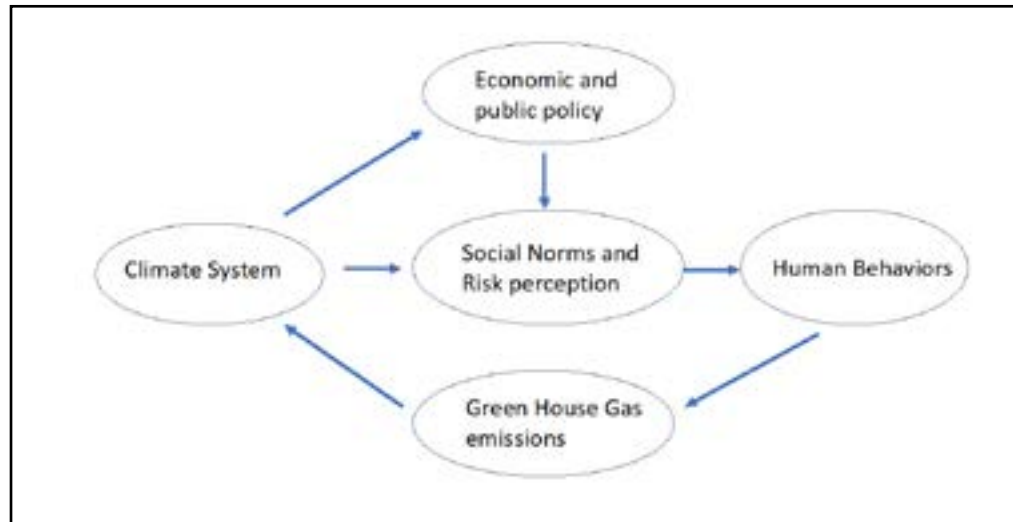
backs. From this, we calculate future paths for global temperature. We did not bias the model to only lead to behaviors that could mitigate GHG emissions. There were model outcomes that produced higher global temperatures than projected by the business-as-usual RCP, arising from social norms that reinforce activities that lead to higher GHG emissions (e.g., everyone I interact with has a big non-electric SUV so I will have one too) that reinforce activities that lead to higher GHG emissions. The integrated human behavior and climate model resulted in a range in global temperature change from pre-industrial temperature (3.4–6.2 °C) by 2100 compared with 4.9 °C for the GCM model alone. So including human behavior can lead to significant reductions in global temperature compared to models which ignore this. Cumulative, infrastructural change (e.g., wind, solar, geothermal) significantly reduced future global temperature. Non-cumulative, short-term behaviors (adjusting thermostats, limiting mileage driven) had much smaller impacts on future temperature. The model indicates that people's attribution of extreme events (e.g., hurricane, drought, wildfire) to climate change and the associated behavioral response may most reduce climate change.

As a next step we considered economics and policy that impact behavior. Still relying upon aspects of the theory of planned behavior, we modeled the formation of climate policy as the outcome of fundamental social, political, and technical processes. We identified tipping points, and interactions that could lead to enhanced GHG mitigation. We obtained strong evidence that there are distinct clusters (story-lines) of the associated interactions with

different emissions pathways and associated global temperature projections. None of the policy-emissions clusters identified represent a pure business-as-usual world. Even the highest-emission cluster produces warming in 2100 that is lower than the business-as-usual baseline of 3.9 °C, and the vast majority of model simulations (98%) lead to warming over half a degree lower than this baseline. Even with aggressive action though, none of the projected futures met the more ambitious Paris Agreement target of limiting warming to 1.5 °C above pre-industrial levels. However, we did estimate a substantial probability of meeting the 2 °C Paris Agreement target by 2100.

In sum, there is some rational basis for hope. This hope is based upon results from multiple models. Climate models have had a huge impact on the ability to project future global temperature, and assess the potential impacts of policies. Next steps will require us to not fear the linkage to social dynamics and work to overcome the barriers to incorporating human behavior into climate models.

Louis J. Gross is Professor Emeritus of Ecology and Evolutionary Biology and Mathematics, University of Tennessee, Knoxville, and has been a member of the Sierra Club since 1977. Contact Lou at <http://lgross.utk.edu>



Main components of models linking human behavior and climate

## Poems by William Carlos Williams

### Winter Trees

All the complicated details  
of the attiring and  
the disattiring are completed!  
A liquid moon  
moves gently among  
the long branches.  
Thus having prepared their buds  
against a sure winter  
the wise trees  
stand sleeping in the cold.

### The Desolate Field

Vast and gray, the sky  
is a simulacrum  
to all but him whose days  
are vast and gray, and—  
In the tall, dried grasses  
a goat stirs  
with nozzle searching the ground.  
—my head is in the air  
but who am I . . . ?  
And amazed my heart leaps  
at the thought of love  
vast and gray  
yearning silently over me.

### January

Again I reply to the triple winds  
running chromatic fifths of derision  
outside my window:  
Play louder.  
You will not succeed. I am  
bound more to my sentences  
the more you batter at me  
to follow you.  
And the wind,  
as before, fingers perfectly  
its derisive music.

*These poems are in the public domain.*

# Defending the Environment: We're More than Half Way There!



The Defenders support the work of our full-time lobbyist and Conservation Program Coordinator, Scott Banbury. We have not yet met our goal for our annual fundraising campaign, but are hopeful that we will with your help. Scott works full time to further passage of bills that protect our air, water, land, wildlife, and the people of Tennessee. Because the Defenders Fund is a volunteer effort, there are no administrative expenses and 100% of your donation goes to supporting the program.

Please help put us over the top! To donate, use your credit card on our secure Defenders webpage: <https://www.sierraclub.org/tennessee/give> and scroll down to the third button.

Or mail checks payable to **TN Chapter Sierra Club** with "Defenders" in the memo line to:

TN Chapter Sierra Club  
P.O. Box 113  
Powell TN 37849

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[ ] I do not need an acknowledgment letter. Please save the Defenders' funds for program purposes.

**Mail to: Susan Johnston, Sierra Club Defenders, P O Box 113 Powell TN 37849. Thank you!**

## Thanks to these members who are defending the environment with their contributions.

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Todd Waterman  
Glen and Martha Wilson  
Adelle Wood and Bill Terry  
Caryn Wunderlich  
6 Anonymous contributors



## Stay Informed!

Scott Banbury is the Tennessee Chapter's Conservation Program Coordinator. He keeps his finger on the legislative pulse in Nashville. If you'd like to receive Scott's regular legislative updates, scan the QR code or follow the link to sign up.

<https://www.sierraclub.org/tennessee/newsletter-signup>



# In Memoriam: Bull Run Fossil Plant



The Tennessee Valley Authority has retired the Bull Run Fossil Plant, the latest in a spate of coal-fired plants, as the agency aims to retire all coal plants by 2035. After more than 50 years in operation, the TVA board of directors approved the retirement of the only single-generator coal-fired plant in the TVA system, located in the Claxton community of Anderson County, in 2019. The closure was announced Dec. 1<sup>st</sup>. The bad news is, TVA wants to cap and abandon millions of tons of Bull Run's toxic, radioactive coal ash, though it's already contaminating groundwater and the reservoir from which much of Anderson and Knox Counties drink. Stay tuned for Action Alerts.

RETREAT SCHEDULE		
	LOCATION	DATES
Winter 2024	Cedars of Lebanon State Park	January 19-21
Spring 2024	Fall Creek Falls State Park	May 3-5
Fall 2024	Fall Creek Falls State Park	October 18-20
Winter 2025	Cedars of Lebanon State Park	January 17-19
Spring 2025	Fall Creek Falls State Park	May 2 - 4
Fall 2025	Natchez Trace State Park	October 24 - 26

## UPCOMING MEETINGS

**COVID-19 NOTICE**  
**There is always a risk of acquiring a communicable disease in any group setting. Please contact your local department of health for guidance in protection and prevention.**

Group Program Meetings		
Group	Date	Time
Cherokee (Chattanooga)	Mon 1/22, 2/26, 3/25	6:00 PM
Chickasaw (Memphis)	Thu 1/18, 2/15, 3/21	6:00 PM
Harvey Broome (Knoxville)	Tue 1/9, 2/13, 3/12	7:00 PM
Middle TN (Nashville)	Thu No Jan, 2/8, 3/14	7:00 PM

Group Business Meetings		
Group	Date	Time
Cherokee (Chattanooga)	Sun 1/7, Mon 2/5, 3/4	7:00 PM
Chickasaw (Memphis)	Wed 1/3, 2/7, 3/6	6:30 PM
Harvey Broome (Knoxville)	Tue 1/23, 2/27, 3/26	7:00 PM
Middle TN (Nashville)	Mon 1/15, 2/19, 3/18	6:30 PM

Regional Conservation Committee Business Meetings		
Committee	Date	Time
CareNET (Rogersville)	Thu 1/25, 2/22, 3/28	6:00 PM
Clarksville	Tue 1/9, 2/13, 3/12	6:30 PM
Holston Valley	Tue 1/16, 2/20, 3/19	6:00 PM
Watauga (Mountain City)	Sun 1/14, 2/11, 3/10	2:00 PM



**Be a champion for the environment. Join today for \$15.**

From TVA's planned methane gas plants to species extinction to climate change to coal ash to drilling for dirty tar sands, the threats to our environment have never been greater. Your support is absolutely essential to preserving our most precious natural resources - join the nation's largest and most effective grassroots movement today.

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Contributing	<input type="checkbox"/> \$150	<input type="checkbox"/> \$175
Life	<input type="checkbox"/> \$1000	<input type="checkbox"/> \$1250
Senior	<input type="checkbox"/> \$25	<input type="checkbox"/> \$35
Student/Limited Income	<input type="checkbox"/> \$25	<input type="checkbox"/> \$35

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