

Walker Valley REFLECTIONS

The newsletter of Great Smoky Mountains Institute at Tremont • Summer 2006

I round a bend in the trail and enter a passageway lined with an extraordinary display of mountain laurel in full bloom. The realization hits me that spring is behind us and summer is just around the next bend. Those early wildflowers that blossomed as the late winter sun warmed the forest floor have now fruited and accomplished their reproductive task. Evidence of their show rests beneath a thick undergrowth of vegetation and a canopy that blocks the sun from reaching the forest floor. The race for spring wildflowers to meet the sun, bloom, and grow is within a small window of opportunity. Spring in the Smokies is a glorious season, and like many precious things it passes by much too quickly.



My hike today is an effort to catch a glimpse of the passing season. It is also an attempt to slow things down, to capture a bit of what is here today and gone tomorrow—to slow down the pace of the busyness around me and experience the present. Over the past several months we have not only experienced the rapid progress of the springtime show but a crescendo of programming that moved in sync with those springtime changes. They were changes that came gradual at first and then built to a manic but exciting 24-7 continuum of activity, student involvement, exploration, discovery, and union with that springtime symphony. Slowing down to experience the present—to get in sync with the natural rhythms—is an important part of what the Tremont experience is about.

We live in a busy world. Busyness even seems to have become a status symbol. Does one's busyness really determine one's productivity or worth? It certainly doesn't seem to contribute to one's well-being. Time is one of our most precious commodities. How we spend

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Slowing Down

Capturing a bit of what is here today and gone tomorrow.

by Ken Voorhis

Slowing Down

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our time—how we manage to slow down and enjoy the present—may be key to maintaining our sanity.

My hike today is as much about experiencing the wonder of the present in Great Smoky Mountains National Park as it is about leaving the busyness behind and being renewed. It takes time to do that. It takes slowing down. Henry David Thoreau

wrote a wonderful paper titled “Walking.” He wrote about the art of walking and about those who do it well. He wrote about slowing down—*sauntering*, he prefers to call it—appreciating the present and being renewed by the natural rhythm of the woods. I can easily identify with his observation: “*I am alarmed when it happens that I walk a mile into the woods bodily without getting there in spirit.*” My hike today was a transition from spring to summer. It was also a transition from the busyness of

necessary duties at work and home to a peace that the mountains, rivers, and forests of the Smokies have provided me and other saunterers again and again.

Slowing down requires planning. It requires thought about when and where and how we can fit the time to slow down our busy schedules. At Tremont there will be many opportunities in the upcoming season for learning and living and slowing down in this special park. Come sauntering with us.

Diversity

...comes in many forms at Tremont

by Josh Davis

“Diversity” has become a word in vogue, a buzzword used in an amazing variety of situations. We speak of diversity in our country, our cities, and our neighborhoods. Employers strive for diversity in their offices, schools for diversity in their classrooms. Investors diversify their portfolios. You can even take online “diversity training” classes.

There’s a lot of talk about the diversity one can find in the Smoky Mountains. The park service heralds the remarkable biological diversity as the “hallmark” of the Park, stating (perhaps a bit clumsily) that “No other area of equal size in a temperate climate can match the park’s amazing diversity.” Translation: There’s a whole lot out there.

A bit catchier is the claim to be the “Salamander Capital of the World”—referring to the fact that 31 species of salamanders can be found inside the park boundaries. I also like “You can hike from Georgia to Maine in a single day”—alluding to the array of forest types between low and high elevations.

As many people know, there’s an ongoing effort to catalog this astounding variety of life—the All Taxa Biodiversity Inventory, or ATBI. 12,000 species have already been identified to date, and scientists believe there may be 100,000 different species in the park.

Pretty incredible stuff. And at first blush, it seems to have nothing to do with what I actually want to write about. There is a

connection though, I promise. I was recently reminded of a conversation I had some months ago with a class of 6th graders about the park’s biodiversity. Moments later, a student asked if another group was coming in after they left. The answer (as it always is in the fall and spring) was yes, a high school group from another state. The student was suitably impressed, and the conversation started me thinking about Tremont’s own diversity.

Tremont’s a pretty busy place. It’s busier in some months than others, but there is

always something going on. Much of the activity centers on our school programs, the core of our educational activities. Within these groups, there’s an amazing range of participants. The majority of schools are from Tennessee, but we have schools that come from all over the southeast and beyond, from the Florida Keys to Michigan.

Our schools bring a wide range of ages as well, from kindergarten to high school seniors. Colleges and universities bring classes to participate in consortia several times each year. We have schools that are public and private, religious and secular. We have schools from many different economic backgrounds as well. Recognizing this, Tremont is able to offer around \$33,000 per year in financial aid to students otherwise unable to come.

While our school groups are the heart of our programs, there’s a wonderful array of



Diversity

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other programs offered to the public. We have weekend workshops for adults, with topics ranging from wildflowers to geology, flyfishing to photography. We lead backpacking trips for adults as well, including women-only trips. There are entire weeks devoted to hiking or natural history. We host Elderhostels and offer programs devoted to families. Come summer, we have camps for many ages, from 9 to 17. And this list is by no means exhaustive.

This assortment of programs and participants accomplishes many fantastic things. For one, it gives a wide range of folks exposure to this amazing park I am privileged to call home. It also allows participants the opportunity to get to know people they wouldn't ordinarily encounter, whether it's a private school from the suburbs sharing the dorm with a public school from the inner city, or it's making new friends at a weekend workshop. And it keeps the staff on its toes. There's nothing quite like splashing in the Middle Prong with 5th graders in a stream ecology class one afternoon, and then leading an Elderhostel hike in the high country the next.

There's strength in biological diversity. This is a theme we work into virtually every lesson taught at Tremont. Diversity in ecosystems makes them stronger, able to adapt to an ever-changing environment, and deal better with the stresses the world places on them (both natural and those imposed by humans).

There's strength in human diversity. Our lives are continually improved by the many different people that we meet. Each individual has something special to offer to the community as a whole. By celebrating these differences, we lead richer, fuller lives, in a world that is stronger because of the differences among its inhabitants, not despite them.

There's strength in Tremont's diversity as well. Our programs are stronger because they're always changing. Each group that comes to Tremont has an experience that is unique and different from any other. Sure, much of the core remains the same, but no two visitors will ever have the exact same experience. And this diversity of experiences, in a place as diverse and singular as the Smoky Mountains, is just one of many characteristics that makes Tremont the extraordinary place that it is.



A hiker pauses for a peaceful high country view.

A Peaceful Side to the Smokies?

How is a vacation supposed to be relaxing with so many people around?

The temperature is rising, the humidity is increasing, and the skeeters are out... that means just one thing: it's summertime in the Smokies!

Summer is the peak visitation season here in Great Smoky Mountains National Park. School is out, and the gorgeous cool streams look even more appealing as the mercury climbs. However, traffic in the Smokies can be a problem during this time. Often it may take 3-4 hours to drive the 11 mile loop road around Cades Cove due to the bumper to bumper cars. Laurel Falls trailhead at Fighting Creek Gap looks like a mall parking lot. How is a vacation in America's most popular national park supposed to be relaxing with so many people around?

There is a solution. Great Smoky Mountains National Park has a plethora of trails, 900 miles to be exact. Many of these trails are rarely used, and have as wonderful destinations as the most popular trails. Unfortunately, most visitors do not set foot on any trail. They take the "windshield tour" and rarely leave their cars. But they are missing something crucial; they are missing what really makes the Smokies spectacular. It's the dusky salamander scurrying along the stream bed, the Pileated Woodpecker you hear in the tree tops, and the smell of a Fraser Fir tree. But most of all, it is the sound of peace.

There are numerous areas throughout this park where one can get away and experience solitude. Explore Roundtop Trail, which is near Metcalf Bottoms Picnic Area. We hiked this trail with our Spring Elderhostel group and didn't see a single soul the entire way. It

is the perfect trail for a leisurely walk through the woods. And if you hike the whole trail, you will enjoy a refreshing wade through the Little River at the end!

If you really want to see Cades Cove and your only opportunity is a summer weekend, then instead of experiencing the loop road through stop and go traffic, get out for a hike. Cooper Road trail was once a former Native American trail, dating back as early as 6,500 BC. In the 1830's Cove residents used this as the main passageway between Cades Cove and Maryville. Today it is an easy walk and has gorgeous forest vistas.

The temperature in the higher elevations of the park can be 15-20 degrees cooler than the lower elevations, which is quite appealing in July. Road Prong trail begins off Clingmans Dome Road. This hike is always within sight and sound of a stream, and actually crosses it several times. During our Spring Naturalist Weekend participants enjoyed the diversity of wildflowers, and in the summer this trail is a cool, refreshing break from the sounds of traffic.

When folks come to Tremont we want them to *feel* this special park, not sit in traffic. Our motto is to connect people and nature, and what better way to feel connected than to be immersed in the outdoors? It is such an amazing experience to hear the river rushing over million year-old boulders, or to discover a wildflower that you may not have ever noticed. There really *is* a peaceful side to the Smokies. Use this summer to get outside. Stroll through the woods. Sit by the river. You will not regret it. —*Jen Martin*

“Everything in this world is connected with everything else”

A 72-year-old mother speaks out

by Dixie Makwale

“Everything is connected with everything else.”

This statement quoted from a 72-year-old lady reminds me of what happened in Malawi a few years ago when we had several environmental problems due to some contributing factors caused by human activities. It is a proven fact that no man is an island, that no man can live in isolation without interacting with friends or nature in one way or another. Man needs water to drink, for cooking, washing, and for farm produce. He also needs plants for food, oxygen, medicinal purposes, construction, etc. Most of these are direct values. But how many people know that there are also indirect values from some of these natural resources around us? Let's take mountains as an example. How many people out there know that many mountains have ecological, economical, scientific, and historical values?

In Malawi most of our mountains were deforested more than 10 years ago. Trees were cut down for construction purposes and for fuel wood. The increased population growth put still more pressure on our limited natural resources. Little did people know that the mountains acted as the source for many rivers running across our cities and towns until they suffered the consequences. As mountains were laid bare, the mountain springs were exposed to direct sun, drying them up. Hence, no water supply to these urban and country communities. In the following years, deep gully erosions in the mountains caused by heavy rains carried and deposited soil into so-called potential water sources. Siltation took place. All the river water holes that stored water filled with sand. A water shortage disaster occurred in many parts of the country. The hydro-electric power station was not spared. Due to the siltation, the level and flow of water in our main rivers was interrupted. Frequent blackouts in the country were the talk of the day.

Nobody was able to explain why the country was sailing in problems of these kind until a group of environmentalists came to explain these environmental problems. People were reminded of their careless cutting of

trees in the mountains. As rehabilitation took its course, good results were noticed. People started to understand that humans are part of nature and therefore they can not live in isolation without these natural resources.

I have been reminded of this phenomena through a conversation with a 72-year-old lady who happened to be among this year's Elderhostel program participants at Tremont. She was one of six who hiked up to Mount Le Conte and back within a day. Believe you me, I had heard about Mount Le Conte within a few days of my arrival at Tremont. Seeing the mountain from afar, it looked too challenging to reach the top—I therefore had no plans to hike up the mountain and come down the same day. I doubted my fitness. I felt challenged after I learned that there would be elderly people hiking to different peaks and falls, including Le Conte. *What? Elderly people hiking to Le Conte?* I asked myself. Tremont has had the Spring Hiking Elderhostel program for more than five years now. The participants for this program are ages 55 and over. In any case, I decided to be part and parcel of the group.

The Mount Le Conte hiking day came. We started at 8:08 a.m. and we were at the peak by 1:29 p.m. During the hike I could see one older lady looking composed and energetic. I did not hide my intentions to talk to her as soon as we got to Mount Le Conte:

D: You have finally made it! How do you feel?

A: I feel cool and great.

D: How old are you?

A: I am 72.

D: How many times have you been hiking up here?

A: This is my first time.

D: How did you know about this program?

A: A friend of mine told me about Tremont, and I checked out the Tremont website.

D: I could not believe that you could make it up here—what is the secret behind your success?

A: I like hiking. I have a passion for natural resources. Hiking is part of my life. I enjoy spring with its beautiful flowers.

After hearing more about Tremont and its programs in the gorgeous Great Smoky

Mountains National Park, I wanted to make sure that I could visit all the places of interest in this park and learn more about the animals and plants living here.

D: Why do you like hiking?

A: It is part of my life. Hiking makes me feel good. I enjoy fresh air from the mountain trees. I enjoy looking at flowers and scenery in our beautiful mountains. And hiking keeps me fit. To me, this is one of the purposes of having these mountains, besides their ecological values.

D: What is your advice to those people who haven't tried this program?

A: My advice is that these beautiful mountains, wildlife, and plants found here are waiting for them. These things are here for us, to use them sustainably, and we are here to take care of them.

Everything in this world is connected. Nothing can live in isolation. We depend on each other in one way or another for survival. I am thankful for Tremont for coming up with programs like these. They allow people to come together and share experiences. It allows us to be free from physical and psychological distractions as we gain and maintain our fitness.

From this woman I have learned many things. The world needs more people of this calibre—people who appreciate the existence of nature and take part in conserving the natural resources. More people like her would mean a big achievement in environmental conservation because conservation knowledge would be imparted to future generations. Malawi could use more people like her to serve as role models for the betterment of our environmental conservation.

To Great Smoky Mountains Institute at Tremont, I say *bravo!* Your activities have great conservation impacts towards the management of Great Smoky Mountains National Park, as well as Malawi's National Parks.

Dixie Makwale is interning at Tremont for six months. He is from Malawi, Africa, where he is a National Park Ranger and Environmental Educator.

Tremont Walks the Walk

Protection of the Smokies' ecosystem is more than just a line in the lesson plan

by Sheri Liles

Well, I've been here at Tremont for almost a year, and I can see an evolution in the daily lessons that I teach. Initially, I clutched the Tremont lesson plans like a non-swimmer in treacherous waters. Later, I found that I could teach a lesson without referring to my little cheat sheet, and now I'm even confident enough to tweak the lesson plan a bit, depending on the students' ages and the circumstances. Drawing on readings from the Tremont library and from my own life experiences, I can sometimes help students see the "bigger picture." The Geology Hike to the Falls, that mainstay of the fifth grade experience, is a good example.

We spend time talking about the geologic history of these ancient mountains, the geologic connection between the mountains' formation and their incredible diversity, the laying down of sedimentary rock and coal formation, and the effects of the ice age. Students examine samples of the three major rock types, and I often include a chunk of coal to get them thinking about the connection between Appalachian geology and modern-day methods of producing electricity from coal-fired steam plants. Students become aware of the hazards of coal mining, the detrimental effects of burning coal on air quality, the limited supply of fossil fuels as an energy source, and the related destruction of the environment, and I remind them that when they go in the dorm tonight and flip on the light switch, most of that energy will come from burning coal. Now they are primed to take it to the next level.

I then ask them to consider some alternatives to our current methods of heating, lighting and cooling our homes, powering our computers and running the hundreds of other gadgets upon which we have come to depend. But they are quick minded little monkeys, and in no time they offer solar and wind as alternative energy sources. I am proud to share with them a recent development at my own home in Maryville, where my husband has installed 14 solar panels to harvest the sun's energy, and we actually put green power back into the grid, running the meter backward. We end this part of our discussion by remind-

ing them that they will be the future scientists, architects, and inventors who will help America meet her energy needs in the twenty-first century. With this challenge in mind, we're ready to hit the trail.

Soon we will be able to further showcase our commitment to alternative energy sources here at Tremont. As plans develop for the renovation of some buildings here on campus, we have already employed experts from TVA Generation Partners and Big Frog Mountain in Chattanooga to do a site assessment for the use of solar power in the upcoming makeover of the River House. A free-standing system could easily generate 650 watts of clean electricity, even in the shady, mountainous location of Walker Valley, and students and adults would have another opportunity to see the real potential of divesting ourselves from dependence on fossil fuels. The hybrid vehicle that we drive, our food waste and composting program, discussions about turning off lights in the dorm and using compact fluorescent light bulbs—these are all ways that we try to demonstrate the principles of conservation through our day to day living at Tremont. This is an exciting time to be a part of the Tremont staff as GSMIT puts its integrity on the line and makes decisions that will have a real impact on the health of the environment. Protection of the Smokies' ecosystem is more than a line in the lesson plan, but a reality that students can see in operation.

Farewell!

In August I am moving to Georgia. My wife and I have accepted positions at St. George's Episcopal School in the tiny town of Milner, about an hour south of Atlanta. So I have less than 3 months to say goodbye to the students, the teachers, the Louisiana Waterthrushes, Black-throated Green Warblers and Dusky Salamanders. I will miss the bird banding station I've run for 5 years and the budding ornithologists who have shared the early mornings and rainy afternoons with me, as well as 92 species of Dragonflies and Damselflies, elder hostellers who could out-hike me, the millionth time answering black bear questions in the gift shop, and even being hit by an elderly woman's cane at a public meeting. It's just about impossible to sum up all that has been meaningful to me and all that I have learned in six years here. From remedies that include moonshine, to seeing a salamander draw blood on a grown man, and synchronous fireflies, I've experienced a lot.

I have learned a lot, too. We at Tremont are fortunate enough to rub elbows on a regular basis with experts from the park, the University of Tennessee, and around the world. I have been lucky enough to spend days on the trail with a Russian mycologist, a nationally-known photographer, and the man who made most of the geology maps of the Smokies. I have helped park staff on search and rescue missions, and gone along on their training. I've helped black bear researchers track female bears in their winter dens.

But now it is time to make room for someone else. Maybe she won't take the wrong turn on Spruce Flats Trail as I did with Old Trail School in 2000 (my best all day hike ever!) Maybe he won't have a scary swim out of his kayak on the Middle Prong. Maybe she won't feel the bite of a Northern Cardinal. But I know whoever succeeds me has many adventures ahead, good times to look forward to, and good people to meet.

I'd like to thank all the people who have shared these experiences with me—students, teachers, researchers, birders, park staff, and of course my co-workers at Tremont. How many times can we play ultimate Frisbee and jump in the river this summer?—*Charlie Muise*

Below, Charlie banding birds with students.



Feels Like Home

Tremont welcomes a new Citizen Science Director

by Jason Love

I first visited Tremont at the urging of my girlfriend (now wife) in 1998 as a participant in one of their Naturalist Weekends. I had just finished college, receiving a bachelor's degree in Forest Resources from the University of Georgia, where I majored in wildlife. I was no stranger to the mountains; both my parents grew up in the North Georgia mountains and I spent a lot of time hiking in the woods with my dad, wading in the creeks with my fishing rod, and building forts with my cousins. During my undergraduate years, I spent the summers in Montana working with and later supervising a trail crew in Helena National Forest. In 1997 I spent a season at Great Smoky Mountains National Park as a wildlife assistant, helping biologists manage nuisance black bears. Being fresh out of school and having a summer of intensive field experience in the Smokies and elsewhere, I thought I couldn't learn anything new from some environmental education center, especially about the ecology of the southern Appalachians. I didn't really want to go, but at my girlfriend's urging, I finally agreed—I figured I could at least sneak away and do some fishing in the Middle Prong.

Well, I was wrong about Tremont. I didn't even get my line wet. I was having such a good time learning that I forgot all about fishing, except maybe during the stream ecology lesson. My girlfriend and I came back to another Naturalist Weekend a few months later, and I visited again as a chaperone

for my wife's 4th, 5th, and 6th grade science class. Each time I visited, I was always impressed with the knowledge of the staff, the good food and accommodations, and the genuine warmth that was extended by the Tremont family. The scenery wasn't too bad either.

Since those initial visits to Tremont, I have worked as a forestry technician for the Highlands Ranger District (Nantahala National Forest) in western North Carolina, a couple of years as a biological research assistant at Coweeta Hydrologic Laboratory, a U.S. Forest Service research station located in western North Carolina, volunteered for the Land Trust for the Little Tennessee and Southeastern Climbers Coalition, and then moved back to Athens, Georgia, where I worked as an outdoor educator at Athens Montessori Middle School.

In 2004 I went back to school to pursue a Master's of Science in Wildlife and Fisheries Resources at West Virginia University. My field site was at Fort Necessity National Battlefield in southwestern Pennsylvania, an area set aside to commemorate the battle where a 21 year-old officer named George Washington led his British troops in a clash that sparked the beginning of the French-Indian War in 1754. Since that time, the battleground has undergone a variety of transformations, including the establishment and subsequent domination of an exotic shrub, Morrow's honeysuckle (*Lonicera morrowii*). The park service wanted to restore the site to its former historic and ecologic

condition, but first it had to figure out a way to eradicate the exotic shrub.

My thesis research focused on determining the most efficient and cost-effective method in controlling the shrub (which reached densities of up to 175,000 stems/ha at our site), and the impact of these methods on the herbaceous layer. The second focus of my thesis (and to me the most interesting) was assessing the impact of the shrub on invertebrate richness, abundance, and biomass. We found that the shrub impacts invertebrate communities found in the understory and shade-out native herbs, which in turn decreases invertebrate richness and biomass. The impact of the shrub on invertebrates may have consequences further up the food chain, especially for songbirds that are lured to the shrubs because of the dense cover it provides for nesting. The birds nest in the shrub, only to find out later that the shrub supplies few invertebrates from which to feed their nestlings.

At last I've returned to the mountains from which I have deep family and personal roots. I am excited to continue the wonderful research activities that former Citizen Science Directors Paul Super and Michelle Prysby have shaped, while adding my own research initiatives that will hopefully not only continue to connect people to nature through science, but also continue to provide valuable information to park managers and scientists. Like my first visit, I have already learned much from the staff at Tremont, shared wonderful meals prepared by Tremont cooks, and have been warmly welcomed by the Tremont family. And I still haven't felt the urge to sneak away from all these activities to fish in the Middle Prong.

Waste not, want not

When students arrive at their first meal at Tremont, one of the many things they must take in is how we eat. We eat family-style—a large platter of food is brought to each table, and students have a choice of how much food they think they can finish. If they don't finish what they decided to put on their plate, it is collected at the end of the meal and weighed on a scale in the dining hall. The amount is then plotted on a chart to see if progress

has been made. This program teaches students how much time, money and energy is wasted when food is not eaten.

The school year is nearing its end, and it is time to give recognition to the school groups who worked very hard to leave as little food waste as possible. We have three categories for our zero food waste program. First is the Hall of Fame, for the school groups who had zero food waste for their

entire stay at Tremont. Secondly is the Top Five, which is for school groups who waste very little during their stay. Lastly is the Most Improved category, which is for school groups who may have a large food waste amount at first, but improve to having zero food waste for at least one meal.

Thanks to all the school groups who visited Tremont this past year, and for taking on the challenge of our zero food waste program.

MOST IMPROVED
Poplar Grove

TOP FIVE

*Hendricks Middle School
McFadden Elementary
Friendsville Elementary
Radcliff Middle School
Webb School of Knoxville*

HALL OF FAME

*Immaculate Conception
Randolph Elementary
Cherokee Bend Elementary
Brentwood Middle School
Norris Middle School
Austin East High School (2)
Smoky Mountain Elementary
Christ Presbyterian Academy
Robertsville Middle School (2)
Saint Mary of the Lake
Saint Luke Episcopal School*

*Lanier Elementary
Middle Settlements
Nature's Way Montessori
Rockford Elementary
Woodland Middle School
Westville High School
Sewanee Elementary
Camp Quest
Intown Home Schoolers
New Horizon Montessori
McAuley High School
Oak Hill Elementary
Townsend Elementary
Berrien County Math & Science Ctr.
Episcopal School of Knoxville
Garden Montessori
Grace Academy*

—Michael Matzko

The Forest Primeval

A Smoky Mountain habitat profile

by Amber Parker

You know when you enter a cove hardwood forest. The moist, fecund smell of growing plants and rich earth combined with the trickle of small streams, the beer-beer-beer-beeee of the black-throated blue warbler and a profound feeling that this must be forest primeval are indicators that you have arrived in a very special place. You see before you a forest that has survived ice ages, climate shifts, and logging, and still it can be counted among the most beautiful forests in the world. The open, gallery-like appearance of a cove hardwood forest, with its high leafy canopy that soars over a rich carpet of herbaceous plants is the forest of our dreams.

Cove hardwood forests are found in protected valleys and on northern facing slopes from the lowest elevations of the park to around 4,500 feet elevation. The deep, moist soils found in these areas support a luxuriant carpet of herbaceous plants and trees of prodigious size. The shrub layer is rather poorly developed, emphasizing tree height and the splendor of the green ground cover. Trunks of the canopy trees reach three to four feet in diameter, with old growth trees reaching six or more feet in diameter. Most tree canopies do not begin until they reach 75-100 feet above the forest floor with the tops of trees reaching 100-150 feet. The herbaceous layer is the richest of all forest types in the Southern Appalachians. Over 100 species can be found in the dense layer that, in some sites, covers as much as 80% of the forest floor with an amazing green blanket of herbs and ferns.

Cove hardwood forests are found only in the Southern Appalachian Mountains and support many rare and/or endemic species. A quick look will often turn up a Jordan's salamander, a large red-cheeked salamander that is endemic to Great Smoky Mountains National Park. Ginseng, yellowwood, and other uncommon plants may be glimpsed as you walk through the forest and, if quiet, you may hear the song of the cerulean warbler.

To really appreciate the grandeur of a

cove hardwood forest you must visit one that has reached the status of "old growth." There, tulip trees and yellow buckeye reach tremendous girth and height. The many micro-climates created by the pit and mound topography give the forest floor vegetative diversity and the herbaceous layer is completely developed. Here you will find a forest in change as you view light gaps created by fallen trees and the new trees striving to take their places. Nurse logs nourish wildflowers and trees alike and tall snags stand like sentinels. Here is truly "forest primeval."

Dominant Tree Species

Eastern hemlock (*Tsuga canadensis*), silverbell (*Halesia tetraptera*), yellow buckeye (*Aesculus flava*), basswood (*Tilia Americana* var. *heterophylla*), sugar maple (*Acer saccharum*), yellow birch (*Betula alleghaniensis*) are most common while tuliptree (*Liriodendron tulipifera*) and American beech (*Fagus grandifolia*) are important in some stands. Together, these eight trees make up 80-90% of the canopy of cove hardwood forests.

Associate Vegetation

Cove hardwood forests contain a great diversity of plant species, both woody and herbaceous. Many other woody plants occur amongst the eight dominant species. These include red maple (*Acer rubrum*), black cherry (*Prunus serotina*), Fraser magnolia (*Magnolia fraseri*), white ash (*Fraxinus americana* var. *americana*), and shagbark hickory (*Carya ovata*). Sub-canopy species include striped maple (*Acer pensylvanicum*), Fraser magnolia (*Magnolia fraseri*), and ironwood (*Carpinus caroliniana*). The shrub layer is poorly developed but may contain rosebay rhododendron (*Rhododendron maximum*), doghobble (*Leucothoe editorum*), straw-

berry bush (*Euonymus americanus*), and wild hydrangea (*Hydrangea arborescens*).

Some of the most abundant herbaceous species are white snakeroot (*Eupatorium rugosum*), black cohosh (*Cimicifuga racemosa*), jewelweed (*Impatiens pallida*), Canadian violet (*Viola canadensis*), southern lady fern (*Athyrium filix-femina* var. *asplenoides*), plantain-leaved sedge (*Carex plantaginea*) and intermediate wood fern (*Dryopteris intermedia*). This short list does not do justice to the magnificent diversity of herbaceous plants and the splendid wildflower display they produce each spring. The herbaceous layer is itself stratified with prostrate plants growing under spreading ferns and herbs. Throughout the year, the dominant species change as early spring ephemerals go dormant, allowing summer species to dominate the herb layer.

Related Animal Species

The high productivity of cove hardwood forests offers much to many. Certainly our largest omnivore, the black bear, finds a great deal of food in the form of grubs, roots, and fruit in this forest. The moist conditions and plenty of cover provide habitat for many species of salamanders, including Jordan's, southern Appalachian, imitator, and blue ridge two-lined. The whistle of eastern chipmunks and chirr of red squirrels are constant companions in the cove hardwood forest as is the song of the black-throated green warbler, black-throated blue warbler, veery, ovenbird, junco, and many other species of birds.

Status

Found in the rich, moist soils of protected valleys and slopes, cove hardwood forests are found only in the Southern Appalachian Mountains. Although relatively secure, many remaining forests have been affected by logging and will take centuries to regain their previous glory. Today, a significant threat to the cove hardwood forest comes from the effects of the hemlock woolly adelgid on Eastern hemlock trees, which are prominent in these systems. Loss of hemlocks will change the forest composition in a way that we can not easily anticipate.

Cove Hardwood Forest

Distribution: Park-wide in protected valleys and northern facing slopes

Elevation: 1,000 - 4,500'

Places to see a cove hardwood forest

• Cove Hardwood Nature Trail

This lovely loop trail in the Chimneys Picnic area leads you through a magnificent cove hardwood forest that includes a bit of old growth at the top.

• Albright Grove

A beautiful old growth cove hardwood forest. It is worth the 7-mile round-trip hike.

• Quiet Walkways along Newfound Gap Road

Many of the quiet walkways and pull-offs midway to Newfound Gap from both the North Carolina and Tennessee sides are in cove hardwood forests.

Summer Reading

Check out these recent releases

by Jeremy Lloyd

Grab a cold glass of iced tea, find a comfortable chair, and take some time this summer to catch up on your reading about your favorite place—the Smokies. You'll find some new offerings here that were published over the past year, plus another lesser-known classic.



Last Child In the Woods by Richard Louv

Nature-Deficit Disorder is the term coined by the author of this timely and important new book about a troubling

trend among children. It's not a medical condition but a description of the human costs of alienation from nature. One of the more telling quotes in the book is by a fourth grader who illustrates Louv's point: "I like to play indoors better 'cause that's where all the electrical outlets are."

But our increasingly technology-driven culture isn't the only culprit. So is a hyper-concern about safety. Louv states that the radius around the home where children are allowed to roam has shrunk to a ninth of what it was in 1970. Worse still, in the last five years the rate at which doctors prescribe antidepressants to children has doubled.

It's no surprise to us at Tremont that environment-based education dramatically improves standardized test scores, grade point averages and stimulates creativity. Our motto is "connecting people and nature," and yet we still face a sobering question: If people save only what they love, and if future generations continue in the downward trend of Nature-Deficit Disorder, just how secure is the future of the Smokies and wild places like it?

Ferns of the Smokies by Murray Evans

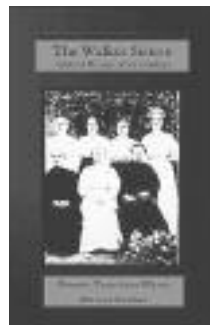
Shore up your naturalist skills in an area where few people are experts. At last, an authoritative and picture-perfect guide exists for ferns! Here one can learn about common species like Appalachian Rock Polypody (*Polypodium appalachianum*) as

well as lesser known ferns like Appalachian Quillwort (*Isoetes appalachiana*). Discover, too, new terms such as lamina, which is the "flattened, expanded part or parts of a leaf blade." (Interestingly, lamina spells animal backwards. Whether this means anything at all is perhaps the *only* fern-related item this book doesn't cover.) This is the latest of the guides published by Great Smoky Mountains Association and, as usual, includes fantastic natural history background on fern life cycles, fern "allies" such as lycopodium, and the best seasons to enjoy ferns and locations inside the Park to find them.



The Walker Sisters: Spirited Women of the Smokies by Bonnie Trentahm Myers

A concise and very readable account of the Smokies' most famous bunch of sisters.



The Walker sisters fought to keep their farm and home when the Park was established and afterward became a tourist attraction. They were renowned for their work as spinners, weavers, quilters and

cooks and craftswomen. Much has been written about the Walker sisters in the past, yet one generally has to hunt in multiple sources for it. Here, at last, a more generous account is provided in a single, albeit slim, volume.

Much interesting local lore is contained within these pages, such as superstitions and herbal remedies, and tensions between political parties in the decades following the Civil War. This of course manages to enliven the period and place in which the sisters lived giving us a better lens through which to view them as humans. We learn as well what each sister did during brief periods when they left the mountains. The

book contains new photos and a few recipes. The author, whose mother was a close neighbor of the Walker Sisters, was herself born inside the park.

Sadly, we'll never hear from the Walker sisters themselves what it was like living traditionally in the modern era. To do that one must visit the Walker sister's homeplace in Little Greenbrier and get a little taste of it oneself. We do though have a piece of their wisdom, which applies to our age of wanton waste and consumption more than ever: "Use it up, wear it out. Make do, or do without."

I Am One of You Forever by Fred Chappell

Fiction is my favorite kind of reading, and Fred Chappell is a fiction master. Much has been written about the Appalachian past but not the Appalachian present. Here's a good place to begin.

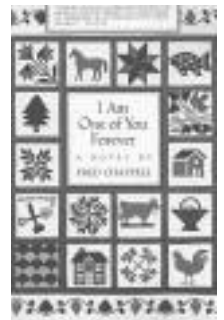
What *The Adventures of Huckleberry Finn* is to the Mississippi River, *I Am One Of You*

Forever is to the Appalachian mountains and has been called a modern classic. It conveys wonderfully a sense of family mountain life from the vantage point of Jess, a young boy coming of age during the middle part of the 20th century. A sense of wonder exudes each page as a wide array of characters makes an entry, be it a national park bear, Uncle Zeno the storyteller, a horse named Satan, or Uncle Runkin who prefers sleeping in a coffin.

Here's Jess reflecting on the power of storytelling.

"That puts me in mind of... These six flat monosyllables will be spoken at break of Judgment Day; they are the leisurely herald notes which signal that time has stopped, that human activity must suspend and every attention be bent toward discovering the other leisurely country words which follow. This is the power that beginnings have over us; we must find out what comes next and cannot pursue even the most urgent of personal interests with any feeling of satisfaction until we do find out. The speaker of these words holds easy dominion."

Though it ought to be, the novel is not carried in park stores. You'll have no problem finding it on Alibris.com or Amazon.com. It's well worth the effort! Happy Reading!



Tennessee Environmental Summit

A Volunteer State Voice for Environmental Education

by Jennifer Webster

During the last week of April a group of dedicated people came together in Murfreesboro, TN for two days in an attempt to raise the voice for environmental education in Tennessee. Through a grant from the US EPA, and sponsored by Tennessee Environmental Education Association (TEEA), the first Tennessee Environmental Education Summit was held and it was a grand success! Representatives of many different state agencies, nature centers, environmental education programs and state parks were on hand for two solid days of generating new ideas and getting re-energized about old ideas.

The summit began with a look back to the history of EE in Tennessee. Padgett Kelly of the MTSU Center for Environmental Education shared the story of the journey many took to establish the first state office of Environmental Education and its subsequent rebirth as the Project CENTS (Conservation Education Now for Tennessee Students) office. Project CENTS has recently been reborn again Tami Coleman as the new director. Tami shared her current work in supporting more and more teachers in using national EE curriculum projects such as Project Wild, Project Wet and Project Learning Tree to enhance their teaching across the curriculum. Her other plans involve supporting environmental education in classrooms by correlating these national curricula to our state standards making it much easier to plan appropriate lessons.

We proceeded through learning about the positive outcomes from environmental education. Programs from across the country that use a residential learning environment, such as Tremont, have shown significant positive gains for their students in areas as diverse as science scores, relationships to peers, and motivation to learn. Other studies looking at schools using the environment as an integrating context for learning (EIC) have shown students involved in learning in and

about the outdoors have higher scores in reading, writing, math and science as well as increased knowledge and understanding of science content, concepts, processes and principles. For a complete listing of these

more paperwork for the teachers to justify these outside experiences. Fortunately many teachers and environmental educators see the great benefits of EE experiences and are willing to take those extra

Environmental Education in the Southeastern States linked via the Web

The eight states that are contained within the EPA southeastern region (AL, FL, GA, KY, MS, NC, SC, TN) will soon be linked electronically through a southeastern environmental education website network. Georgia began this drive with their site www.EEInGeorgia.org and have continued their hard work in developing this wonderful interactive website by sharing this with other southeastern states. Through an EPA grant, each of the other states will be able to link and create our own sites for disseminating information regarding EE in our state, complete with lesson plans, calendars and a databases of EE providers. Look for announcements of the upcoming Tennessee site, which will be in the developmental stage this summer and fall. In the meantime, check out the Georgia site, where you can enter events and information so we can begin to share across state lines. Once the Tennessee site is online, it will only be as good as those using and posting, so get ready to really use this wonderful venue for furthering the efforts of EE in Tennessee and the whole southeast!

particular studies along with many more visit www.aeoe.org/resources/research/

Another very interesting discussion for all involved was how to best integrate the requirements of No Child Left Behind with environmental education. Linda Jordan, the TN State Science Coordinator led this discussion and helped everyone to see that these two entities, which we so often think are in conflict, really can work together. No Child Left

Behind should be able to fit together with a quality environmental education program including out of classroom time with the qualification that those EE experiences meet the state teaching standards. These experiences simply need to be shown to support the state teaching standards for the appropriate age and subject to further student learning. While this seems simple enough, it does mean more correlating of programs with state standards than many of us have been accustomed to in the past along with

steps needed.

The remainder of our time spent together was focused on coming together to set priorities for advancing the role of environmental education in the lives of Tennessee students. Ideas ranging from supporting a call for state mandated environmental education to public education campaigns were on the table for discussion. There were lively debates and cohesions of ideas that kept everyone energized to continue the tough discussions. This energy for more group decisions and a better state-wide effort has just begun. Stay tuned for follow up meetings and more debates as we bring together a wide ranging group of concerned and passionate people who are united in the goal of strong environmental education for all Tennessee students. If you would like to become an involved member of this continuing effort, consider joining TEEA and join in the decisions for Tennessee students. More information on joining can be found at www.teea.info.



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From 1/1/06 to 5/15/06

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Arts & the Environment Moving to April

Songwriter Bill Staines Featured Presenter

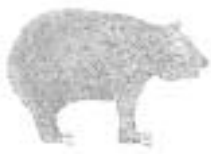
Our annual workshop exploring the relationship between arts and the environment, perennially set in wintertime, has moved to April 27-29. We look forward to this time together as spring wildflowers and tree buds begin to appear.

A variety of hands-on workshops and concurrent sessions make this weekend a highlight for all who attend. Past sessions have included garden art, recycled art, nature writing, storytelling, naturalist skills, and many more. The weekend also includes Open Mic Nite, a relaxed performance event and a real favorite among all who participate.

Bill Staines is our featured presenter. This legendary songwriter has penned numerous songs over his career spanning four decades. He's been on "A Prairie Home Companion" and his songs have been recorded by the likes of Nanci Griffith, Grandpa Jones, and Peter, Paul & Mary. You may know him best for "All God's Critters Got a Place in the Choir." Mark your calendar now and join us next spring for this spectacular arts weekend!

Dates for
other 2007 pro-
grams have been set.
Watch our website and
e-news for details!

www.gsmiit.org



Looking Ahead

Upcoming events

Summer is always hopping here at Tremont! Check out some of the great events coming your way....

Smoky Mountains Family Adventure Camp

July 3-8

This fun-filled week is dedicated to giving families a better appreciation of the wonders of Great Smoky Mountains National Park through hikes, hands-on explorations, and family oriented activities. Families may choose to remain together for activities or to take advantage of several different choices that meet your individual interests. Not only do we have many activity choices during the day, we also have fun group programs each evening. Campfires, hayrides, outdoor movies, night hikes; all are fun ways to end a busy day. Of course, we haven't forgotten the Fourth of July! We have planned many special games and activities for that day, including a trip to Townsend for the annual fireworks show.

We hope you will join us for a family vacation that will give you memories to last a lifetime! Cost: \$950 for a family of four (\$200/each additional person). Cost includes all meals, lodging, activities, and materials.

Naturalist and Educator Week

July 10-15

Spend the week increasing your knowledge through educational workshops, field studies, hikes, and participation in research that will benefit the All Taxa Biodiversity Inventory. It's a time to slow down, to focus on natural history, science, and the vast biological riches that exist in Great Smoky Mountains National Park. Expect to be inspired and to return home loaded with new knowledge and ideas for connecting people of all ages with nature! Program lasts from Monday supper to Saturday lunch.

Cost: \$340. Three hours of graduate credit are available for an additional fee.

Naturalist Hiking Week

July 10-15

Each day of Naturalist Hiking Week features three hike choices led by experienced educa-

tors who offer insight into the wonders of the National Park. Participants must be in good physical condition and be able to hike 6-14 miles a day in rugged mountainous terrain. Participants also have the opportunity to take a "day off" and choose from Naturalist Week activities. Share the evenings with Naturalist Week participants, and enjoy special speakers, night hikes, and more! Program lasts from Monday supper to Saturday lunch. Cost: \$340.

SUMMER CAMPS

Join us for one of our many summer camps!

Discovery Camp

June 19-24, June 26-July 1

Discovery Camp is full of firsts for many kids. Each one is an exciting discovery—that's why we gave it that name. It's a place to explore science and nature while getting down and dirty with the forests, rivers, and critters that make these mountains home. Search for salamanders, collect insects, experience the awesome power of a waterfall, hike through wilderness, cool off in the swimming hole and laugh with your new friends around the campfire. Camp lasts Monday afternoon to Saturday morning. Cost: \$395. Ages 9-12.

Wilderness Adventure Camp

June 19-24, June 26-July 1

Learn the skills necessary for planning and enjoying a safe, successful backpacking trip. A three-night backpack gives participants the chance to put these skills into practice, experience a true wilderness and make friends to last a lifetime.

Camp lasts from Monday afternoon to Saturday morning. Cost: \$420. Ages 13-17.

Smoky Mountain Naturalist Expeditions

July 17-27

Designed for middle school-aged students, Smoky Mountain Naturalist Expeditions is a cut above the traditional summer camp. Participants spend each day exploring Great Smoky Mountains National Park with experts

and assisting scientists with actual ongoing research. Campers search for salamanders, investigate old growth forests, track black bears, and encounter the occasional timber rattlesnake! We cap off each day with a dip in the river, great dinner, and fun evening activities. It's a fascinating experience for the budding scientist or nature enthusiast, and a whole lot of fun for everyone. Program lasts from Monday mid-afternoon through the second Thursday morning. Cost: \$795. Ages 11-13.

Teen High Adventure

July 17-27

Slip into the swirling mists of the "place of blue smoke" for a 10-day program that includes a 7 day/6 night backpacking adventure, whitewater rafting, and the chance to learn outdoor living skills. Wildlife, good friends, spectacular views, and great backpack leaders will accompany your journey. Program lasts from Monday mid-afternoon through the second Thursday morning. Cost: \$795. Ages 13-17.

Field Ecology Adventure Camp

June 19-24, July 17-27

Our Field Ecology Adventures are an opportunity for you to learn more about the natural world and the methods scientists use to study it by participating in science projects in the park. Hands-on studies of everything from bugs to bears will be interspersed with swimming, hiking, and games. The longer camp includes a camping trip and time for team projects developed by the campers. Both camps include plenty of fun along with science—swimming, hiking, stories around the campfire—but, of course science is fun too when it happens in the Great Smoky Mountains!

Cost: 5-day camp/\$420 (Monday afternoon to Saturday morning); 10-day camp/\$795 (Monday afternoon to the second Thursday). Ages 13-17. Space is limited. To apply please send a letter with your registration form that explains why this camp is right for you and a letter of reference from a teacher or other adult.

Great Smoky Mountains Institute at Tremont is operated in cooperation with Great Smoky Mountains National Park.

STAFF

teachers/naturalists

*Josh Davis
Sheri Liles
Jen Martin
Mike Matzko
Jaquie Stiver*

part-time naturalists

*Betsy Booth
Jaimie Matzko
Carole Olson
Corey Shubert*

international intern

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sr. teacher naturalists

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