



SMOKIES GUIDE

The official newspaper of Great Smoky Mountains National Park • Summer 2021

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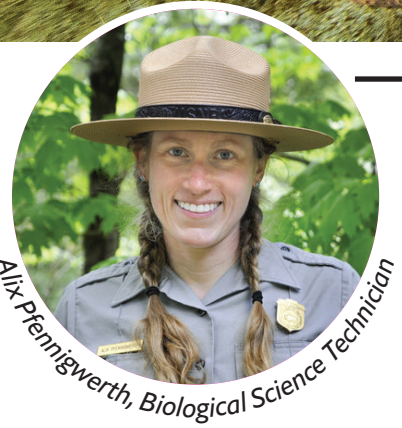
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The hellbender (*Cryptobranchus alleganiensis*) is a species of giant salamander endemic to eastern North America. Image courtesy of Freshwaters Illustrated by David Herasimtschuk.

Want to Save a Hellbender? Don't Move Rocks!

Biodiversity needs protection to thrive beneath the surface of Smokies streams

In the Salamander Capital of the World, one elusive amphibian captures imaginations more than most: the hellbender. Also nicknamed snot otters and lasagna lizards, hellbenders are a species of giant aquatic salamander and the largest of Great Smoky Mountains National Park's 30 salamander species. They can grow up to 29 inches in length and have an otherworldly flat, slimy body with beady little eyes. They're also getting harder and harder to find.

"Hellbenders are an exciting thing to see," said Education Park Ranger Julianne Geleynse. "It doesn't happen often, but it's really exciting when it does. They used to have a larger range, but they require incredibly clean, deep, fast-moving water. Dams and development have changed

water quality in many places and reduced their habitat. The Smokies are a hellbender stronghold."

Yet, even in the Smokies, these creatures face challenges. Hellbenders, as Geleynse explained, are excellent fathers. Males have the job of finding and building their nests, and they also guard the eggs until they hatch. They make their nests in rocks, a material some park visitors like to move around while exploring Smoky Mountain streams.

"Rocks for hellbenders are equivalent to birds building a nest in a tree. If someone were to shake or break off that branch, the nest gets destroyed," said Geleynse. "That's what happens when you move rocks. Even moving rocks nearby *continued on page 5*

Be #SmokiesSafe

- Delay your trip if you are sick
- Avoid crowded areas
- Maintain social distancing six feet away from others
- Wash your hands
- Wear a mask indoors if you are not yet fully vaccinated

Visit nps.gov/grsm/planyourvisit to plan your trip

OUR PARK ON SOCIAL MEDIA



GreatSmokyMountainsNPS



GreatSmokyNPS and SmokiesRoadsNPS



GreatSmokyNPS

Words with a Ranger

Growing up near Great Smoky Mountains National Park, I was a small, freckled tomboy with a shock of blonde curls and an intense curiosity for the natural world. I was in my element spending my days splashing through creeks, romping through the woods, and getting a plant's-eye view of the world on my hands and knees in the dirt. I have vivid memories of staring at wildflowers, fascinated by their intricate structures, colors, and textures.

As I grew up, I learned I had a knack
Words with a Ranger continued on page 5

COVID-19

The National Park Service is working with federal, state, and local health authorities to closely monitor the COVID-19 pandemic. **Check nps.gov/grsm for the latest updates on open facilities and access.** All openings are based on available staffing. Temporary closures may occur on short notice.

Road closures

- **Cades Cove Loop Road** is closed to vehicles on Wednesdays from May 5 through September 1 to allow for non-motorized recreation. The road is closed to all vehicles, pedestrians, and cyclists from September 7 through September 27 for paving work.
- **Forge Creek Road** is closed for bridge repair.

Camping in the national park

The National Park Service maintains developed campgrounds at nine locations in the park. Only Cades Cove and



MOVING ROCKS HARMS AQUATIC LIFE.

Smokemont are open in winter. There are no showers or hookups other than circuits for special medical uses at Cades Cove, Elkmont, and Smokemont.

Campsite reservations are *required* at all park campgrounds, including Abrams Creek, Balsam Mountain, Big Creek, Cades Cove, Cataloochee, Cosby, Deep Creek, Elkmont, and Smokemont. Sites may be reserved up to six months in advance. Make your reservation at recreation.gov or call 877.444.6777.

Site occupancy is limited to six people and two vehicles (a trailer = one vehicle). The maximum stay is 14 days.

Special campsites for large groups are available seasonally at Big Creek, Cades Cove, Cataloochee, Cosby, Deep Creek, Elkmont, and Smokemont. Group sites must be reserved and may be secured up to a year in advance.

The list below shows number of sites, elevations, nightly fees, and maximum RV lengths. For more information, visit nps.gov/grsm.

- **Abrams Creek** 16 sites, elev. 1,125', \$17.50, 12' trailers
- **Balsam Mountain** 42 sites, elev. 5,310', \$17.50, 30' RVs
- **Big Creek** 12 sites, elev. 1,700', \$17.50, tents only
- **Cades Cove** 159 sites, elev. 1,807', \$21-\$25, 35'-40' RVs
- **Cataloochee** 27 sites, elev. 2,610', \$25, 31' RVs
- **Cosby** 157 sites, elev. 2,459', \$17.50, 25' RVs
- **Deep Creek** 92 sites, elev. 1,800', \$25, 26' RVs
- **Elkmont** 220 sites, elev. 2,150', \$21-\$27, 32'-35' RVs
- **Smokemont** 142 sites, elev. 2,198', \$21-\$25, 35'-40' RVs
- **Look Rock** *closed in 2021*

Accommodations

- **LeConte Lodge** (accessible by trail only) provides the only lodging in the park. 865.429.5704 or lecontelodge.com
- **Bryson City** 800.867.9246 or greatsmokies.com
- **Cherokee** 800.438.1601 or visitcherokeenc.com
- **Fontana** 800.849.2258 or fontanavillage.com
- **Gatlinburg** 800.588.1817 or gatlinburg.com
- **Maggie Valley** 800.624.4431 or maggievalley.org
- **Pigeon Forge** 800.251.9100 or mypigeonforge.com
- **Sevierville** 888.766.5948 or visitsevierville.com
- **Townsend** 800.525.6834 or smokymountains.org

Firewood

To prevent the spread of destructive pests, the NPS has banned outside firewood from entering the park unless it is USDA- or state-certified heat-treated wood. Campers may gather dead and down wood in the park for campfires.

Visitor centers

Hours may be modified due to COVID. Oconaluftee, Sugarlands, and Cades Cove: 9-5 in June; 9-7 in July-August; 9-6 in September (Cades Cove open 9-6:30 in September). *Cades Cove will be closed September 7-27.* Clingmans Dome: 10-5 in June; 10-6:30 in July-August, 10-6 in September.

Other services

There are no gas stations, showers, or restaurants in the national park.

Picnic areas

Picnic areas are at Big Creek, Cades Cove, Chimneys, Collins Creek, Cosby, Deep Creek, Greenbrier, Heintooga, Look Rock, and Metcalf Bottoms. See map on page 16. Picnic pavilions may be reserved for \$12.50-\$60 at recreation.gov.

For rent

The Appalachian Clubhouse and Spence Cabin at Elkmont Campground can be rented for daytime events. Make a reservation at recreation.gov.

Horseback riding

Some 550 miles of park trails are open to horses. See park trail map for trails and rules. Horse camps are available at Anthony Creek, Big Creek, Cataloochee, Round Bottom, and Tow String. Visit recreation.gov for reservations.

Four concession horseback riding stables offer rides from March through November.

- **Cades Cove** 865.448.9009 cadescovestables.com
- **Smokemont** 828.497.2373 smokemontridingstable.com
- **Smoky Mtn.** 865.436.5634 smokymountainridingstables.com
- **Sugarlands** 865.436.3535 sugarlandsridingstables.com

Bicycling

Most park roads are too narrow and heavily traveled by automobiles for safe or enjoyable bicycling. Bicycles are permitted on park roads but prohibited on trails except Gatlinburg, Oconaluftee River, and lower Deep Creek/Indian Creek trails. Helmets are required by law for persons age 16 and under and strongly recommended for all bicyclists.

On Wednesdays from May 5 to

♻️ Printed on recycled paper

SMOKIES GUIDE

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nps.gov/grsm
SmokiesInformation.org

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37738

September 1, 2021, only bicycles and pedestrians are allowed on Cades Cove Loop Road. Bicycles may be rented at the Cades Cove Campground store.

Pets in the park

Pets are allowed in frontcountry campgrounds and along roads as long as they are restrained at all times. Pets are not allowed on park trails, except for Gatlinburg and Oconaluftee River trails. Dogs on these trails must be kept in control on a leash no longer than six feet.

Fishing

Fishing is permitted year-round in the park. A Tennessee or North Carolina fishing license is required. Either state license is valid throughout the park. No trout stamp is required. Fishing with bait is prohibited in the park. A special permit is required for the Qualla Boundary

and Gatlinburg. Licenses are available in nearby towns. A free fishing map with a complete list of all park fishing regulations is available at visitor centers.

Special events

Check nps.gov/grsm or inquire at Sugarlands and Oconaluftee visitor centers and Cades Cove Orientation Shelter for information about ranger-led programs and cultural demonstrations.

Backcountry camping

Camping can be an exciting adventure for those who are properly equipped and informed. To facilitate this activity, the NPS maintains more than 800 miles of trails and more than 100 backcountry campsites and shelters throughout the park. One of the greatest challenges for backcountry campers is deciding where to go. Here are some

tools to help.

1. Get the map.

Go online to view the park's official trail map (nps.gov/grsm/planyourvisit/maps.htm), which shows all park trails, campsites, and shelters. Park rules and regulations are also listed here. You can purchase the printed version of the trail map for \$1 at any park visitor center or by calling 865.436.7318, ext. 226, or by shopping online at SmokiesInformation.org.

2. Plan your trip.

Call or stop by the park's backcountry office from 8 a.m. to 5 p.m. for trip planning help. The office is located in Sugarlands Visitor Center, two miles south of Gatlinburg on U.S. 441. 865.436.1297.

3. Get a permit.

Make your reservation and obtain your permit through the backcountry office at Sugarlands Visitor

Center (by phone or in person) or online at smokiespermits.nps.gov.

Reservations and permits are required for all overnight stays in the backcountry. The cost is \$4 per person per night. Reservations may be made up to 30 days in advance.

Summer hikers should be especially aware of the dangers of dehydration, heat exhaustion, and hyponatremia—the result of inadequate sodium and electrolyte levels. Always carry an ample supply of water, snacks, and sun protection. Know your limits.

Reduce the risk of hypothermia, a danger even in summer, with layered clothing and rain gear. Stay dry.

See page 12 for more trip essentials.

Park weather

In summer, heat, haze, and humidity are the norm by mid-June. Most precipitation occurs as afternoon thundershowers.

By mid-September, a pattern of warm, sunny days and crisp, clear nights often begins. However, cool, rainy days also occur. Snow may fall at the higher elevations beginning in November.

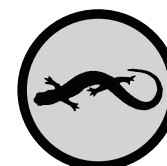
These temperature and precipitation averages are based on data for the last 20 years. Temperatures are in degrees Fahrenheit. An average of over 84" (7 feet) of precipitation falls on the higher elevations of the Smokies.

	Gatlinburg, TN elev. 1,462'			Mt. Le Conte elev. 6,593'		
	AVG. HIGH	LOW	PRECIP.	AVG. HIGH	LOW	PRECIP.
Jan.	49°	27°	4.0"	36°	18°	6.7"
Feb.	53°	28°	4.1"	37°	19°	5.6"
March	62°	35°	5.5"	44°	25°	7.0"
April	71°	42°	4.5"	52°	31°	6.7"
May	77°	50°	5.7"	58°	39°	8.0"
June	82°	58°	5.8"	64°	47°	8.7"
July	85°	62°	6.3"	67°	50°	9.0"
Aug.	84°	61°	5.3"	67°	49°	7.6"
Sept.	79°	55°	4.7"	62°	44°	7.2"
Oct.	70°	43°	2.9"	55°	35°	4.7"
Nov.	60°	34°	3.4"	46°	27°	6.8"
Dec.	51°	28°	4.6"	38°	20°	6.4"



GSMNP BY THE NUMBERS

12 million+ visitors
per year



30
species of
salamanders



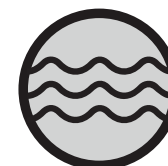
69
species
of mammals



9,800+
species of
insects



250+
species
of birds



2,900+
miles of
streams



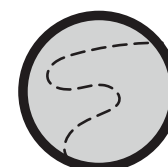
90+
historic
structures



135
species
of trees



500,000+
acres
of land



848
miles of
trails



16
mountains higher
than 5,000'



3,400+
species
of fungi



1,000+
species new to
science found in
the park

Park Expects Record-Setting Year for Visitation

Great Smoky Mountains National Park (GSMNP) is on track to record its busiest year ever, which may bring additional traffic and congestion to the park’s most popular destinations. GSMNP is already the most visited national park in the United States, and over the past decade, the park has experienced a more than 30 percent increase in visitation. Last year, despite closing briefly due to COVID-19, more than 12 million visitors came to the Smokies—the second-highest record in park history.

This year’s record-breaking numbers may be exceptional for several reasons, but growing public use is a trend found across the US park system as a whole. In the Smokies as in other parks, this means demand is exceeding the limits of existing facilities.

When much of the Smokies’ infrastructure was put into place, the park averaged fewer than 5 million visitors each year. Many of the park’s roadways, parking areas, campgrounds, and picnic areas simply were not designed to withstand current levels of tourism. As a result, popular locations in the park have been suffering from rising congestion, shoulder damage, and crowding on trails. All of these symptoms negatively impact visitor experience and at times lead to avoidable damage to vegetation.

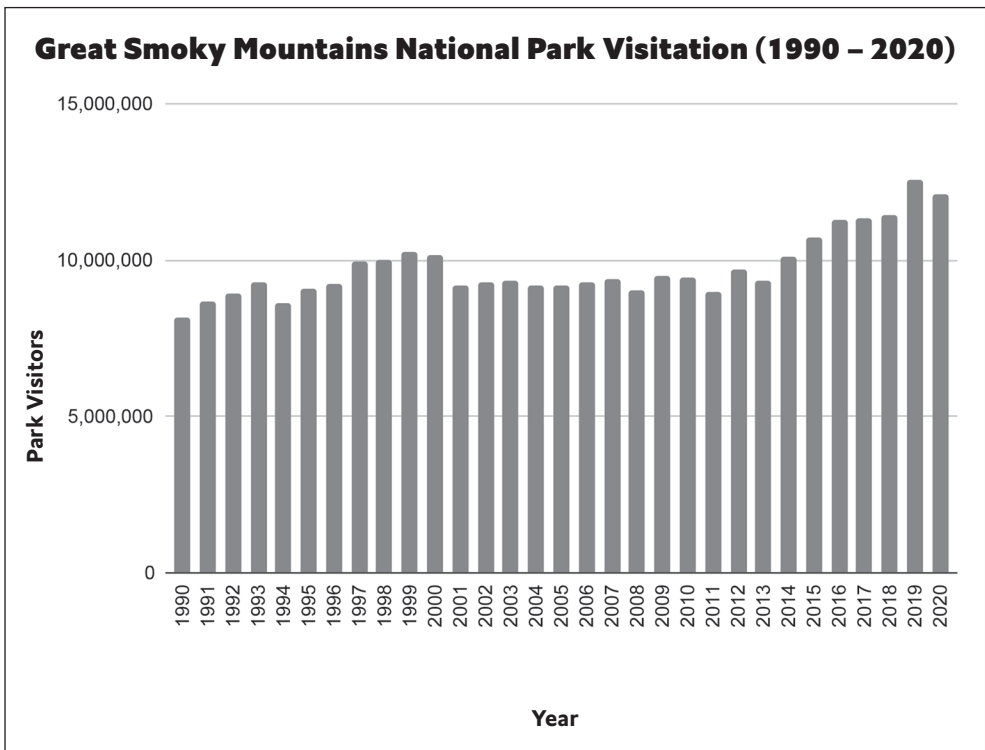
To address these concerns, the park service held a series of meetings in 2020 that allowed park staff and the public to discuss ideas for mitigation. This year, GSMNP will launch pilot programs in select areas of the park to determine the feasibility and effectiveness of reducing

congestion. Park managers plan to implement a pilot project in August that will require parking reservations for Laurel Falls Trail. Make sure to check the park website for the latest trip-planning guidance for this busy location.

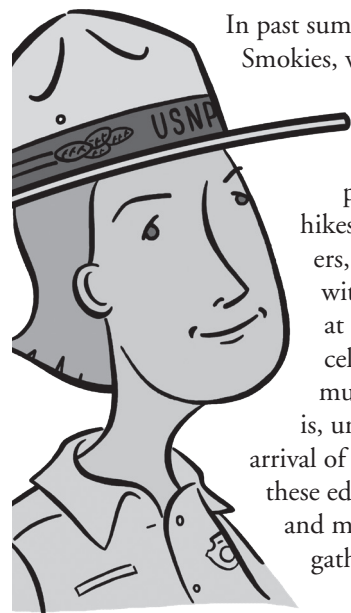
There are also several steps visitors can take to avoid crowding. Think twice before visiting the most popular destinations in the park, such as Laurel Falls, Cades Cove, Alum Cave Trail, and the Deep Creek area. You can find wildlife, historic structures, waterfalls, and hiking trails throughout the park, so consider venturing to less-frequented places for a less-crowded experience in the Smokies.

Be flexible with your plans and remember to park only in appropriate areas such as paved lots. Roadside

parking is not permitted unless the area is paved or graveled. Have backup plans ready in case you discover there is no parking available at your intended destination. Changing your plans will likely improve your experience and help preserve the Smokies for many busy summers to come.



Select Ranger-Led Experiences Resume in 2021



In past summer seasons in the Smokies, visitors could attend evening presentations at packed amphitheaters, participate in guided hikes with dozens of strangers, or bump shoulders with thousands of others at all-day park festivals celebrating Appalachian music and culture. That is, until last year, when the arrival of a global pandemic put these educational programs and most other large, public gatherings on hold. Now, in a transitional

2021 summer, Resource Education rangers are once again returning to the field to connect with visitors in person—just in shorter, more informal contexts.

To find one of these educational ranger-led experiences this summer, Deputy Chief of Resource Education Stephanie Kyriazis recommends doing some homework ahead of time. “Before leaving home, peruse the park’s website and social media platforms for trip planning information,” said Kyriazis. “When you arrive in the park, check in at either the Sugarlands or Oconaluftee visitor centers or the Cades Cove Orientation Shelter to find out what activities are taking place during your visit.”

Rangers will be available to host educational experiences at contact stations, busy overlooks, and on bustling trails. “Sometimes rangers will offer short programs of 10 to 15 minutes tied to a site,” said Kyriazis. “Other times they may simply be available for one-on-

one conversations based on visitor interests.”

Rangers, volunteers, and artisans will also be offering physically distant cultural demonstrations like black-smithing, sorghum-making, broom-weaving, and storytelling at various times and in various locations throughout the park. Self-guided “discovery trails” may be set up so visitors can learn more about nature or culture as they explore the park. Visitors may even encounter rangers “roving” in further-flung park districts such as Cataloochee, Cosby, or Deep Creek. These activities will be scheduled week-by-week, in response to staff availability and pandemic conditions.

“Please do your part to keep everyone in your party, other visitors, and our rangers safe by following the public health guidelines that prevail at the time of your visit,” said Kyriazis. “Smokies rangers are looking forward to seeing you out in the park!”

Words with a Ranger

continued from page 1

for studying the natural world. I completed a bachelor's degree in biology and a master's degree in ecology. And in 2012, I discovered the National Park Service. After a summer of studying and managing forests in Big South Fork National River and Recreation Area, I felt a rush of excitement and relief knowing I had found my niche.

Today, I work as a wetland ecologist in Great Smoky Mountains National Park. Wetlands are extremely important stores of biodiversity. They provide us critical services, including clean water, flood protection, and carbon storage. The park has over 600 wetlands, and it is my job to study, map, and preserve them. Spend a day with me at work, and I'll have you splashing through creeks, getting your hands and knees dirty, and peering at plants. I guess you could say not much has changed.

I work within the park's Inventory and Monitoring Division—a small group of scientists working to keep tabs on the park's ecological health. The National Park Service has committed to managing parks based on the best possible science, and that's where we come in! By collecting data on the park's vegetation, soils, water, and air, we help park managers understand the natural resources we have and how to conserve them.

The next time you hike through the Smokies, keep your eyes and ears open for wetlands. Look for low-lying, wet areas lush with vegetation. Listen for frogs chirping, birds singing, a soft trickling of water. If you're lucky enough to find a wetland, stop and let your senses take it in. But remember not to disturb it—it's hard at work.

Want to Save a Hellbender? Don't Move Rocks!

continued from page 1

can make hellbenders think it's not safe anymore, and they'll abandon the nest."

The park was gaining momentum on this issue through its public education campaign aptly named Don't Move Rocks. However, with increased visitation in 2020, the Smokies started seeing groups of visitors who were new to outdoor recreation in a protected area.

"Their actions weren't malicious; people just didn't know," said Geleynse. "People see rock cairns on social media or one along a stream that someone else made, and it becomes monkey see, monkey do."

This copycat behavior becomes particularly problematic in the summer. Since water levels are low, visitors build rock dams to create deeper channels for tubing and other activities. This drains water from hellbender habitat and lowers oxygen levels by reducing water flow speed.

Luckily, there's an easy solution to this problem—don't move rocks.

"Leave the stream as you found it if not better," said Geleynse. "If you do, the next person to come along might be lucky enough to see a hellbender—and future generations, too."



In Our Waterways PLEASE DON'T



channel streams



stack rocks



create rock dams

Leaving No Trace Protects Our Wildlife



HOW CAN YOU ENCOURAGE OTHERS TO PREVENT MOVING ROCKS?

Share positive messaging on how to protect aquatic life through your social media outlets. Encourage others on the trail to respect park streams and leave no trace.

Great Smoky Mountains National Park depends on four primary nonprofit partners as well as 2,800 park volunteers to help its staff meet the needs of 12.5 million visitors and manage 522,000 acres of resources.

Great Smoky Mountains Association

Since 1953, the nonprofit Great Smoky Mountains Association has supported the educational, scientific, and historical preservation efforts of the park by operating the park's official bookstores, publishing books and other media about the park's natural and cultural resources, and supporting park programs. Over the years, GSMA has contributed more than \$46 million to assist with living history demonstrations, save hemlock trees, fund natural resource education internships, construct visitor centers and the Collections Preservation Center, and much more.



Association members receive a number of benefits to keep them informed about special events in the park and issues affecting the Smokies:

- Subscription to the biannual full-color magazine *Smokies Life*
- Digital access to this award-winning park newspaper and Smokies LIVE e-newsletter
- 15–20% discount on books, music, gifts, and products at park visitor centers and at GSMA's web store
- 10% (or more) discount at 500+ additional nonprofit public lands partner stores
- Access to member-exclusive group hikes, backpacking excursions, and educational sessions
- Invitation to GSMA's Members Weekend

Join today by visiting SmokiesInformation.org or call us at 888.898.9102, ext. 257.

Friends of the Smokies

Friends of the Smokies assists the National Park Service in its mission to preserve and protect Great Smoky Mountains National Park by raising funds and public awareness and providing volunteers for needed projects.

Since it was founded in 1993, supporters of Friends have contributed more than \$70 million to meet park needs. Examples of programs and projects include:

- Rehabilitation of the most impacted trails through Trails Forever
- Forest conservation and wildlife management
- Real-time webcams and air quality monitoring
- Facility improvements and visitor amenities
- Historic structures rehabilitation
- Cultural experiences and special events
- Search and rescue program support and equipment
- K–12 educational programs



Programs like Parks as Classrooms, which serves approximately 20,000 students every year, provide educational experiences that help foster a love for nature and inform the next generation of park supporters. A new digital learning space at Smokieees.org invites students to explore nature-related activities, be entertained through music, art, and stories, and escape through observation of the natural world.

Friends' commitment to preservation includes support for restoring and maintaining historic log homes, barns, outbuildings, churches, schools, and gristmills. Become a Friend by visiting FriendsOfTheSmokies.org. For information about memberships and planned giving, email info@friendsofthesmokies.org or call 800.845.5665.

Discover Life in America

The Smokies have long been renowned for their rich variety of life. Knowing what creatures reside here helps the National Park Service better protect the Smokies against threats like air pollution, wildfire, habitat fragmentation, invasive species, and climate change.



Discover Life in America is a nonprofit partner that was launched in 1998 to manage the All Taxa Biodiversity Inventory (ATBI), an effort to identify and learn about every variety of plant and animal in the park. The organization works with leading biologists from around the globe to conduct this massive inventory.

Volunteers and interns become 'community scientists' who help with DLiA's work. These participants get an insider's look at the park, as well as firsthand knowledge of biology, field science, and laboratory practices. Funding comes from donations by individuals and institutions.

To date, DLiA has helped add more than 10,000 species to the inventory of life in the park, including more than 1,000 species completely new to science! Today there are more than 21,000 different kinds of organisms known to

the park with new discoveries happening every day. You can support DLiA by purchasing the Smokies Species-a-Day perpetual calendar. Learn more at DLiA.org or by calling 865.430.4757.

Tremont

Born out of a need for residential education programs in the park, Great Smoky Mountains Institute at Tremont has offered student and adult programs that promote a connection to nature for more than 50 years. Up to 6,000 students and adults annually attend workshops, camps, and school programs at the institute that are designed to promote curiosity and inspire learning.

Adult workshops include hiking, backpacking, community science, professional and teacher development, photography, and the Southern Appalachian Naturalist Certification program. Summer camps provide youth and their families opportunities to spend six to 11 days exploring the national park and its wonders. Fees include meals, lodging, and most equipment.

Call 865.448.6709 or visit GSMIT.org for program dates and information and to learn how you can support life-changing learning experiences in the Smokies!

GREAT SMOKY MOUNTAINS INSTITUTE AT TREMONT

GSMA MEMBERSHIPS

Get Rooted in the Smokies!

GSMA memberships are available in both individual and family-level packages.

- Acorn (youth) \$15
- Buckeye \$35/\$50 family
- Chestnut \$100/ \$125 family
- Dogwood \$200/ \$300 family
- Hemlock (lifetime) \$1,000/\$1,500 family
- Lookout League Business Memberships \$250–\$1,000

SIGN ME UP!

Name(s) _____

Address _____

Email (for e-newsletter) _____

Phone # _____

Please include your check with this form.

Mail to: GSMA, P.O. Box 130,
Gatlinburg, TN 37738

Family Team Finds New Category of Life in the Smokies

Gastrotricha is a phylum never before documented in the park

A new aquatic organism has been documented in Great Smoky Mountains National Park in a wetland near the Oconaluftee Visitor Center. The organism, *Lepidodermella squamata*, is a microscopic worm-like creature that feeds on algae and bacteria. It is common in North America, but its discovery is significant to the Smokies—it represents a phylum (a category of living organisms) never before documented in the park.

The organism was discovered by Paul E. Super, science coordinator for Appalachian Highlands Science Learning Center at The Purchase, and his daughter, Sarah Elizabeth Super. Although the two set out in search of a different organism altogether—a fungus that feeds on aquatic organisms—the trip was certainly worthwhile.

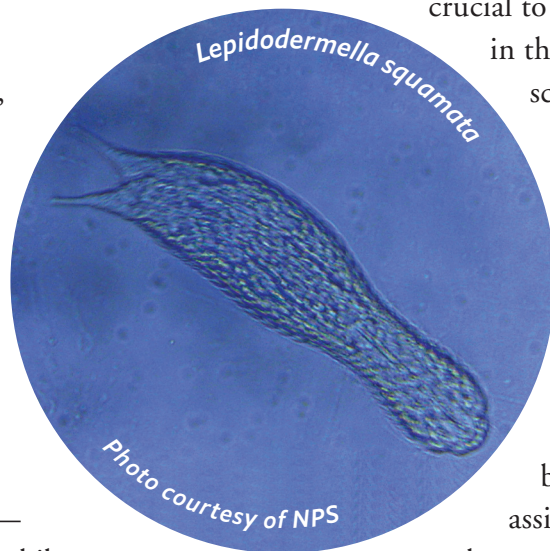
“We started getting interested in all the other critters that were showing up in the pond water samples we were collecting,” said Paul. “While checking the samples, I noticed an unusual critter gliding along, about the same size as our rotifers. I called Sarah Elizabeth’s attention to it. After a little book research, we discovered that it was of the phylum Gastrotricha, which is an obscure group not uncommon on submerged vegetation in fresh water.”

After researching water samples from nine other park locations, the two have discovered a second species belonging to the same phylum, of the genus *Chaetonotus*. It is smaller than *Lepidodermella*

squamata and is more widespread throughout the park. “Ponds and wetlands are relatively rare habitats in the Smokies, and most studies of aquatic diversity have focused on the stream life,” said Paul. “I expect we have a lot of species in our ponds to add to our species tally if we can find the right taxonomists to spend a little time with them.”

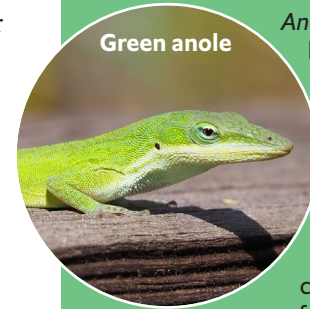
New discoveries are important, but it is also crucial to keep track of the known species in the park. Will Kuhn, director of science and research with Discover Life in America (DLiA), encourages park visitors to assist in documenting plant and animal species by using the iNaturalist app. You don’t have to be an expert on identifying wildlife—anyone who uses the app, including biologists and scientists, can assist in identifying the species you document. “Take multiple photos from different angles and attach these to your iNaturalist observation to make identification easier,” said Kuhn.

The app also keeps track of where you observed each species. This is particularly helpful for researchers who use these observations to track population growth and movement. “There are lots of observations around visitor centers and popular trails in the park, especially on the Tennessee side, but fewer elsewhere,” said Kuhn. “Try visiting a new trail and see what you can find.”



3 SPECIES TO LOOK FOR THIS SUMMER

Snap a photo and upload it using the iNaturalist app to help document the amazing biodiversity of the Smokies!



Anolis carolinensis: This small lizard can change its skin color from a leafy green to earthy brown. Males have an expandable red flap under their chins called a *dewlap* that they use for courtship and territorial displays. They can be found in open areas on fences, trees, and shrubs.



Angelica venenosa: Found in dry, sunny patches at low to mid elevations in the park, this perennial can grow several feet tall. It has clusters of white flowers and blooms throughout the summer.



Campsis radicans: This woody deciduous vine can be found climbing the sides of trees. Its orange trumpet-shaped flowers are hard to miss and are especially attractive to hummingbirds. All photos courtesy of iNaturalist

Driving distances and estimated times

All driving times may vary due to traffic conditions.

Cherokee, NC to:

- Gatlinburg: 34 miles (1 hour)
- Cades Cove: 58 miles (2 hours)
- Newfound Gap: 18 miles (½ hour)
- Clingmans Dome: 25 miles (¾ hour)
- Cataloochee: 39 miles (1½ hours)
- Deep Creek: 14 miles (½ hour)


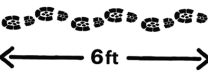





Gatlinburg, TN to:

- Cherokee: 34 miles (1 hour)
- Cades Cove: 27 miles (1 hour)
- Newfound Gap: 16 miles (½ hour)
- Clingmans Dome: 23 miles (¾ hour)
- Cataloochee: 65 miles (2½ hours)
- Greenbrier Cove: 6 miles (¼ hour)
- Deep Creek: 48 miles (1½ hours)

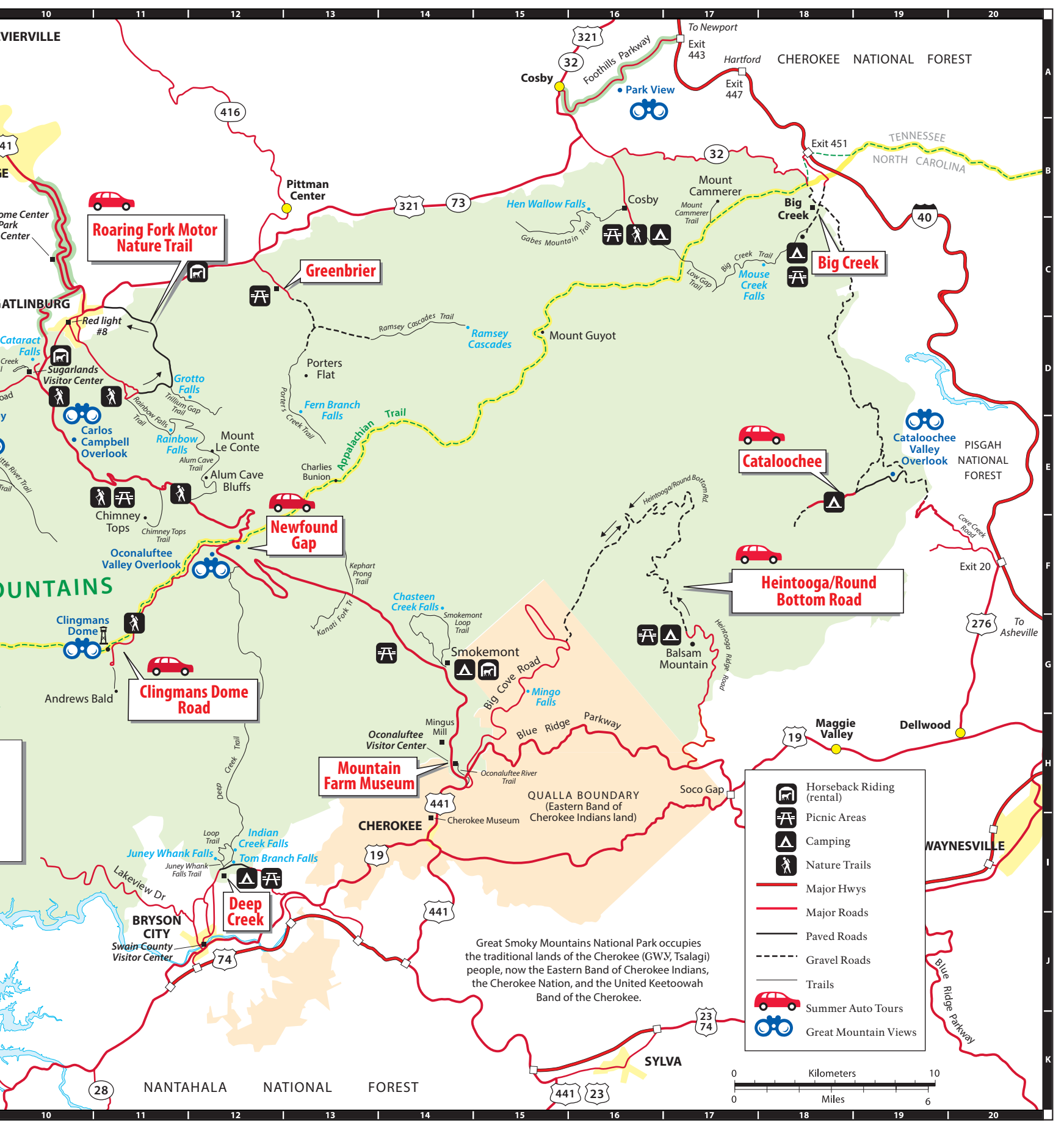
Townsend, TN to:

- Cades Cove: 9 miles (¼ hour)
- Newfound Gap: 34 miles (1¼ hours)
- Gatlinburg: 22 miles (¾ hour)
- Cherokee: 52 miles (1½ hours)
- Look Rock: 18 miles (½ hour)
- Cataloochee: 87 miles (3 hours)

#RecreateResponsibly

<p>KNOW BEFORE YOU GO</p> 	<p>PRACTICE PHYSICAL DISTANCING</p> 
<p>PLAN AHEAD</p> 	<p>PLAY IT SAFE</p> 
<p>EXPLORE LOCALLY</p> 	<p>LEAVE NO TRACE</p> 
<p>BUILD AN INCLUSIVE OUTDOORS</p> 	<p>Graphic courtesy of recreateresponsibly.org</p>





Roaring Fork Motor Nature Trail

Greenbrier

Big Creek

Newfound Gap

Cataloochee

Heintooga/Round Bottom Road

Clingmans Dome Road

Mountain Farm Museum

Deep Creek

Great Smoky Mountains National Park occupies the traditional lands of the Cherokee (Gw'y, Tsalagi) people, now the Eastern Band of Cherokee Indians, the Cherokee Nation, and the United Keetoowah Band of the Cherokee.

- Horseback Riding (rental)
- Picnic Areas
- Camping
- Nature Trails
- Major Hwys
- Major Roads
- Paved Roads
- Gravel Roads
- Trails
- Summer Auto Tours
- Great Mountain Views



What's that sound?

Listen!



A **soundscape** is an environment made up of different sounds. In the Smokies, a soundscape could include critters, streams, wind, and much more!

- 1 Find a place to focus on your soundscape.
- 2 Close your eyes and listen to the sounds around you.
- 3 The dot in the middle of the circle represents **you**.
- 4 Draw the sounds where you hear them around you to record your own visual soundscape!



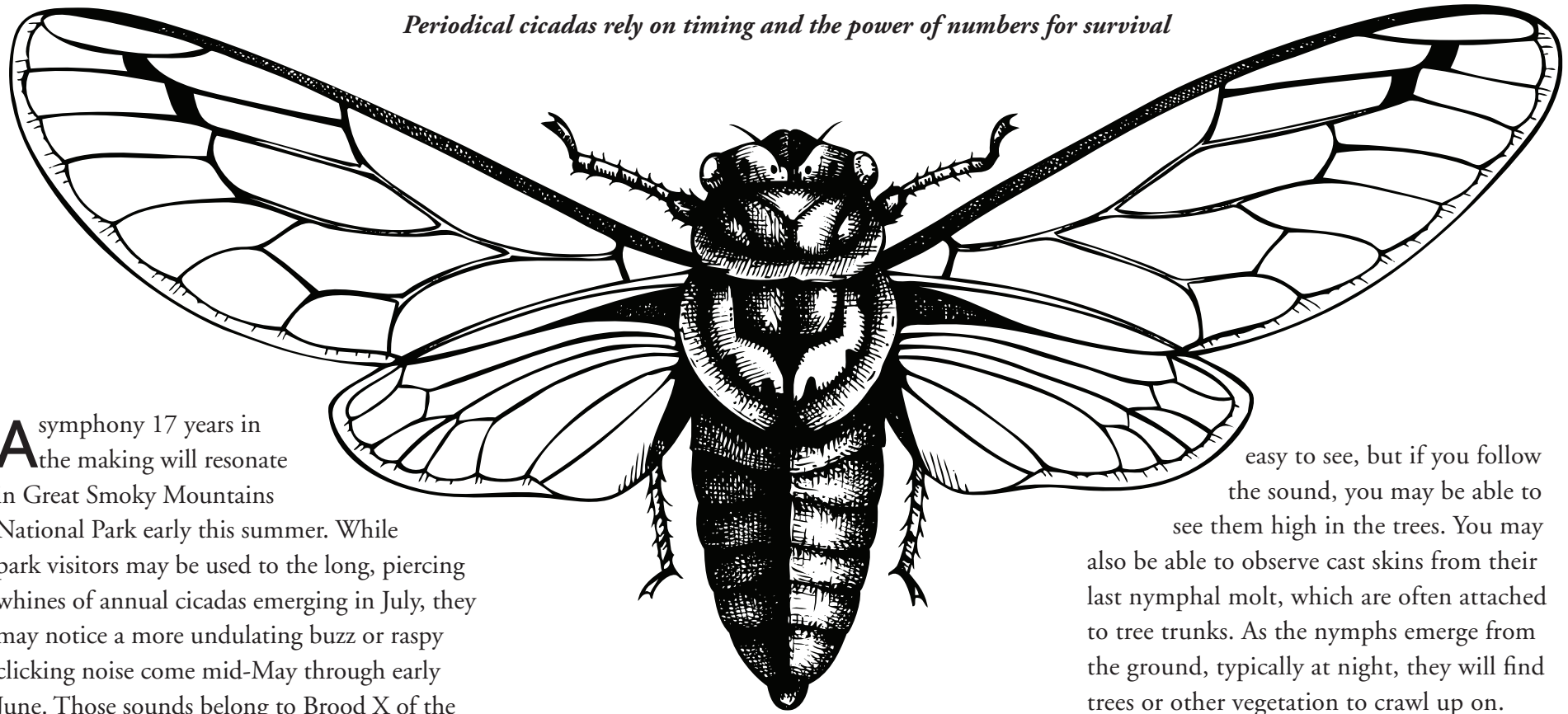
Explore more sounds of the Smokies at nps.gov/grsm/learn/nature/soundscapes.htm or google "Great Smoky Mountains Park soundscape."



Illustrations by
Lisa Horstman

Experience the Emergence of Periodical Cicada Brood X This Summer

Periodical cicadas rely on timing and the power of numbers for survival



A symphony 17 years in the making will resonate in Great Smoky Mountains National Park early this summer. While park visitors may be used to the long, piercing whines of annual cicadas emerging in July, they may notice a more undulating buzz or raspy clicking noise come mid-May through early June. Those sounds belong to Brood X of the periodical cicadas.

Annual cicadas have life cycles between two to eight years. Since they're not synchronized, some emerge every year. Periodical cicadas, however, have long life cycles and are synchronized. The adult female lays eggs in tree branches. After the eggs hatch, the young nymphs drop to the ground, burrow into the soil to find a tree root, and feed for either 13 or 17 years, depending on the species, before emerging together into the world as adults. Brood X, a periodical cicada group that shares the same emergence year, was first documented in 1715.

"All individuals within a brood will emerge within a few weeks of each other," park

entomologist Becky Nichols explained. "There are theories as to how and why periodical cicadas have developed this life cycle, but it still isn't fully understood."

In addition to having a different sound than annual cicadas, periodical cicadas can also be distinguished by their appearance. Nichols shared that they are smaller, about one and a half inches in length. Their bodies are black, and they have red eyes and clear wings with orange and black veins.

"We are expecting the main emergence area in the park to be on the western edge, including Foothills Parkway West and Cades Cove," said Nichols. "They're not always

easy to see, but if you follow the sound, you may be able to see them high in the trees. You may also be able to observe cast skins from their last nymphal molt, which are often attached to tree trunks. As the nymphs emerge from the ground, typically at night, they will find trees or other vegetation to crawl up on. The winged adult will emerge and continue crawling up the tree."

Nervous about these creatures emerging from the dirt? Don't be!

"All species of cicadas are completely harmless to humans," Nichols confirmed. "They cannot sting or bite. Periodical cicadas are also an important and abundant food source for all sorts of wildlife. Their strategy of emerging in large numbers makes them relatively resilient to predation, as many more will survive to reproduce than those that are preyed upon."

Enjoy this concert while it lasts. Brood X's next performance isn't scheduled until 2038.

Image courtesy of Nothing Too Fancy



Setting Out for the Mountains...Safely

It is your responsibility to be safe and to know and obey park guidance. You can find information and rules at visitor centers, trailhead bulletin boards, and the park website at [nps.gov/grsm](https://www.nps.gov/grsm).

BASIC PACK LIST

- **Water**, a water filter, tablets, or the ability to boil water
- **Food**, including plenty of snacks
- **Extra layers** (base layer, jacket, socks) for changing conditions
- **Sun protection** with sunscreen, sunglasses, and/or a hat
- **Rain gear** and pack cover to keep what you are carrying dry (zippered plastic bags inside your pack can do this too)
- **Traction support**, like hiking poles or microspikes
- **Navigation**—Map and compass and the knowledge of how to use them
- **Shelter** in the form of a tent or tarp
- **Flashlight** or headlamp and batteries
- **Fire starter** with a lighter, strike stick, and something to light
- **Knife** or multi-tool
- **Emergency whistle**
- **First aid kit** with all the essentials to care for common accidents
- **Permit** for camping overnight

Mountain streams can be a tempting place to beat the heat, but beware of slippery rocks and water hazards. Plan ahead, know your limitations, and be sure to pack the essentials.



IN AN EMERGENCY:

- Never hike alone or split up from your party. Remain on established trails.
- If you can acquire a signal, call emergency dispatch (865.436.9171) or dial 911.
- Remain with any injured party until help arrives.
- Use what basic first-aid techniques you know, but do not attempt invasive intervention unless you are medically trained.
- Issue a series of three spaced blasts on an emergency whistle every few minutes to alert the rescue crew of your location.
- If you are in an open area visible from the air, display brightly colored clothing or gear.

Plan ahead: Inform the NPS back-country office of your itinerary before you hit the trail so the emergency response crews will know where to begin looking. Let the NPS help you plan a hike and prepare for what you may experience along the way (865.436.1297, 8 a.m. – 5 p.m.).

Vehicle-Free Wednesdays Return to Cades Cove

The weekly closure offers a unique recreation experience at one of the park's most popular destinations

Cades Cove will be the best cycling destination for miles around this summer as Great Smoky Mountains National Park once again hosts vehicle-free Wednesdays on Cades Cove Loop Road.

On Wednesdays this year from May 5 to September 1, the 11-mile Cades Cove Loop Road will be closed to all motorized vehicles in order to give cyclists and other visitors a fresh way to enjoy the park's scenic valley. The road will remain open as usual to vehicles from 7 a.m. to sunset for all other days of the week from May through August.

“With vehicle-free days, one thing I’ve seen that I love is the number of people who are out here to get a different experience,” said Supervisory Park Ranger Lisa Nagurny. “It feels like a very different place when there aren’t vehicles on the loop road.”

Cyclists aren’t the only ones who can take part in vehicle-free days. Visitors who come prepared for the journey often opt to run, walk, or bring strollers. Those who use electric bikes or disability-mitigating mobility devices are also welcome to join in the fun.

Though vehicle-free days have been around since the 1980s, the park is only in its second year of testing the full-day program. In previous years, summer visitors had until mid-morning, Law Enforcement Ranger Dylan Jones explained. But some struggled to finish the loop before it opened to cars. Now, folks can take their time and experience Cades Cove without its usual vehicle traffic. “It’s been enjoyable to see some people come here who haven’t always had the opportunity,” said Jones.

For anyone planning a vehicle-free visit to Cades Cove, Nagurny and Jones have a few tips. All cyclists need to heed road signage and wear a helmet. The road is steep and sharply curving in some places, and the journey can involve small water crossings depending on weather. Wearing a helmet is one of the best ways to stay safe. Nagurny and Jones also suggest coming in the afternoon, when there can be less loop traffic and better parking. Finally, visitors should pack plenty of water, snacks, sun protection, and anything else they might need for the 11-mile journey.

- **The 11-mile loop will be closed to vehicular traffic every Wednesday through September 1.**

- **Helmets are recommended for adults, required for children ages 16 and under.**

- **Walkers, runners, cyclists, and mobility device users are welcome.**

- **Plan on the afternoon for less traffic and better parking.**



Vehicle-free Wednesdays will provide an opportunity for walkers, runners, cyclists, and mobility device users to explore Cades Cove Loop Road without motor vehicle traffic this summer. *Photo by Bill Lea.*

In the Park? Pack It Out

Littering puts strain on park services and wildlife

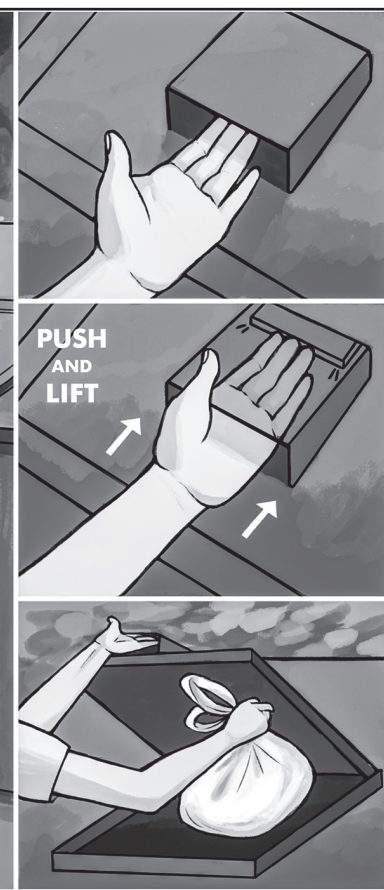
PARK Etiquette

Supervisory Wildlife Biologist Bill Stiver has worked in Great Smoky Mountains National Park managing black bears, elk, hogs, and more for nearly 30 years. But over the last decade of his tenure, he has been forced to respond to one issue affecting Smokies wildlife with alarming regularity: trash on trails.

“Around Cades Cove, Alum Cave, Grotto Falls, Laurel Falls, Abrams Falls, Ramsey Cascades—on a lot of these shorter destination hikes, trash keeps ending up on those trails,” said Stiver. “We’re not pointing the finger at anyone so much as asking people to help us with this.”

A bear of a problem

Litter along roads and trails disrupts the natural foraging behavior of a wide variety of wildlife, but for black bears in particular, the consequences can be dire. Food-conditioned behavior cuts black bears’ life expectancy in half. “The bear may begin foraging in picnic areas or hanging out beside the road,” said Stiver. “In some cases, bears may even approach people hoping for a handout.” When this pattern begins to emerge, park service employees are forced to intervene. “Depending on the severity of the incident, we might chase a bear away with small explosives, trap the bear and relocate it, or, in extreme cases, eutha-



nize the animal,” said Stiver. “Whichever way it goes, rangers take no pleasure implementing these aggressive management measures.”

Black bears have a remarkably keen sense of smell and the ability to topple heavy receptacles for the promise of food. Since mother bears pass on knowledge of reliable food sources to their cubs, a single source of unsecured food waste can create a cascade of negative consequences for generations. The park service has made a concerted effort to reduce the potential for conflict by repairing existing food storage cables, installing more secure dumpsters where appropriate, and regularly clearing picnic areas of trash left behind at dusk. Still, with the national park generating nearly 600 tons of waste per year, a long-term solution will have to include greater public awareness of Leave No Trace principles.

Above: You can help protect wildlife by packing out all trash and food waste and by using bear-proof dumpsters when disposing of trash in the park. When closed properly, these dumpsters keep trash where it belongs—secure and away from wildlife. Illustration by Emma DuFort. Right: Signage at popular trailheads educates visitors on the dangers of littering food waste, but it doesn’t completely stem the epidemic. Photo by Valerie Polk.

On litter patrol

“At some point you just take ownership, and it becomes personal,” said Bill Gober, a weekly volunteer and ‘rover’ on Laurel Falls Trail who picks up trash along with a small army of Litter Patrol volunteers. “When those bears roam, we want them to find nothing. If they



THE BREAK DOWN ↓

Sources:

"Hikers: Eat Bananas—but Take Your Skins Home," [theguardian.com](https://www.theguardian.com); "How Long Does Your Litter Live?" [slocounty.ca.gov](https://www.slocounty.ca.gov);
"Organic Litter is Not Copacetic," [hcn.org](https://www.hcn.org); "Recycling Mysteries: Candy Wrappers," [earth911.com](https://www.earth911.com);
"Disposable Face Masks Are Damaging the Environment," [independent.co.uk](https://www.independent.co.uk).

Packed it in? Pack it out.

What you may not know about the life of commonly littered items



Even a soft, mushy apple core can linger on the landscape for as long as **2 months**. That's more than enough time to draw wildlife to places they shouldn't be.



Banana peels can take around **2 years** to completely rot—the thick skin protects the inner fruit from the cold and resists decomposing quickly.



Cigarette filters contain cellulose acetate, a form of plastic. These abundantly littered items remain intact for **5 to 10 years** on average.



Most candy wrappers (and granola bar wrappers) are made of a plastic and aluminum combo that won't break down for **10 to 20 years**.



Disposable face masks can take **450 years** to biodegrade and are a hazard to wildlife and the volunteer litter patrols who must retrieve them.

Thank you for leaving no trace and taking these items (and all litter) with you when visiting the park!

find food, they're coming back." While biodegradable food waste like apple cores, banana peels, or cookie crumbs may seem harmless, these are often the very items that are the biggest offenders when it comes to attracting wildlife to trails and dangerous roadways.

Gober's regular beat is Laurel Falls, one of the most popular trails in the park and a hotspot for human–bear conflict. "The litter is increasing with visitation—that's to be expected—and it tends to be within the first mile of most trails," said Gober. Even so, Gober does see hope for a change in attitudes

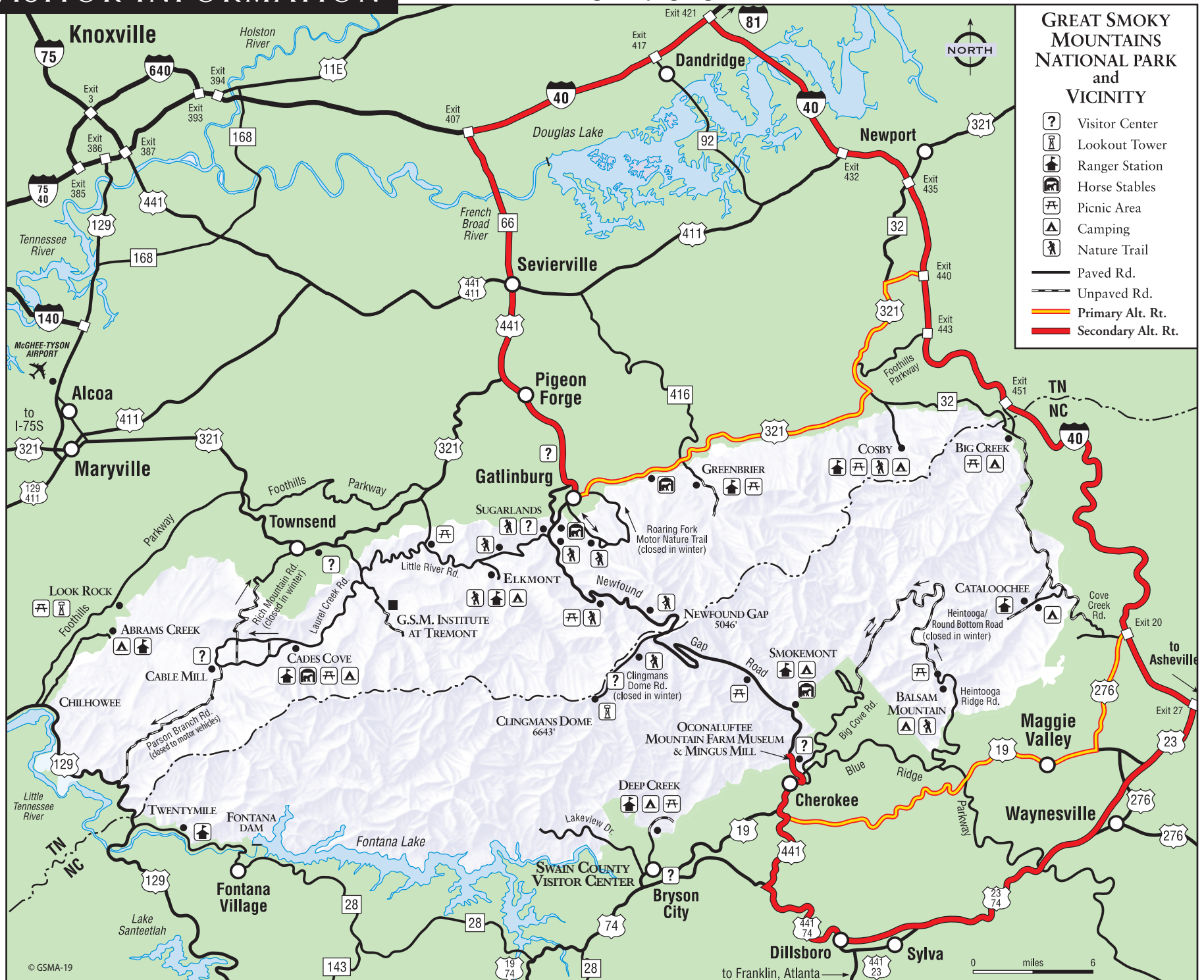
through his contact with visitors and volunteers on the trail. "I would just encourage others to bring a bag or two with them when they go," said Gober. "It always helps if we can keep it minimal, and maybe more folks will think twice next time."

You can help protect wildlife by packing out all trash and food waste while in the park. Check out the Bear-Wise® basics at [bearwise.org](https://www.bearwise.org) or go to [nps.gov/grsm/getinvolved](https://www.nps.gov/grsm/getinvolved) to lend a hand with other volunteers in the Litter Patrol program.

While biodegradable food waste like apple cores, banana peels, or cookie crumbs may seem harmless, these are often the very items that are the biggest offenders when it comes to attracting wildlife to trails and dangerous roadways.

VISITOR INFORMATION

For more information, go to nps.gov/grsm



Information

General park info:
865.436.1200 • nps.gov/grsm
Backcountry information:
865.436.1297
smokiespermits.nps.gov
To order maps and guides:
865.436.7318, ext. 226
SmokiesInformation.org

Emergencies

For emergencies after hours:
Park Headquarters
865.436.9171
Cherokee Police
828.497.4131
Gatlinburg Police
865.436.5181

Hospitals

Le Conte/Sevier County
865.446.7000
Middle Creek Rd.,
Sevierville, TN
Blount Memorial
865.983.7211
U.S. 321, Maryville, TN

Haywood County

828.456.7311
Waynesville, NC
Swain County
828.488.2155
Bryson City, NC

All-access

Restrooms at Cades Cove, Oconaluftee, and Sugarlands visitor centers are fully accessible. Sugarlands Valley all-access nature trail is on Newfound Gap Road just south of Sugarlands Visitor Center.

Avoid the fine

Picking or digging plants is prohibited in the park. Persons feeding wildlife are subject to a \$5,000 fine. Pets are only permitted on the Gatlinburg and Oconaluftee River trails, which allow dogs on a leash.