



SMOKIES GUIDE

The official newspaper of Great Smoky Mountains National Park • Spring 2020

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The Blue Ridge two-lined salamander's (*Eurycea wilderae*) larvae are aquatic, living in streams and under rocks. Image courtesy of John P. Clare



Julienne Geleynse, Education Park Ranger

Moving Rocks Harms Aquatic Wildlife!

Biodiversity thrives beneath the surface of Smokies streams

Spring is finally here! And as temperatures and humidity rise, visitors are tempted to dip their toes—and more—in the cool waters of the park's 2,900 miles of clear mountain streams.

The Smokies' streams are fed by tens of thousands of rain-fed springs, constantly trickling water from crevices in the ancient mountain range. Residing beneath the surface is everything from native brook trout to 11 species of crayfish to 15 species of salamanders. These creatures currently face a huge threat—from some of the visitors who come to enjoy the park!

"This time of year, people begin to stack rocks and create 'cairns,' channels, and rock dams in the park's streams and creeks," said Park Ranger Julienne Geleynse. "Many salamander and fish species lay their eggs under rocks of various sizes. The movement

or removal of these rocks disrupts breeding behavior and can completely destroy the nest and eggs of both salamanders and fish."

People visit the Smokies to escape the modern world—yet rock cairns, dams, and channels are evidence of human disturbance, changing the park's wilderness character that now draws 12.5 million visitors each year.

"When rocks are moved, the water temperature, flow, and dissolved oxygen are altered, completely changing the habitat and disrupting the aquatic life," Geleynse said. "Some species of aquatic insects are immobile and die once removed from the stream."

Moving rocks poses a great threat in particular to aquatic wildlife like eastern hellbenders, endangered Smoky Madtoms, and Citico Darters.



HOW CAN YOU ENCOURAGE OTHERS TO PREVENT MOVING ROCKS?

Share positive messaging on how to protect aquatic life through your social media outlets. Parents and children can encourage each other to respect park streams and leave no trace.

OUR PARK
ON SOCIAL MEDIA



GreatSmoky
MountainsNPS



GreatSmokyNPS
and SmokiesRoadsNPS



GreatSmokyNPS

Camping in the national park

The National Park Service maintains developed campgrounds at nine locations in the park. Only Cades Cove and 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 Abrams Creek, Balsam Mountain, Big Creek, and Cataloochee campgrounds. Reservations also may be made at Cades Cove, Cosby, 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 camping sites 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.



MOVING ROCKS HARMS AQUATIC LIFE.

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

- **Abrams Creek** 16 sites, elev. 1,125', opens April 24, \$17.50, 12' trailers
- **Balsam Mountain** 42 sites, elev. 5,310', opens May 15, \$17.50, 30' RVs
- **Big Creek** 12 sites, elev. 1,700', opens April 3, \$17.50, tents only
- **Cades Cove** 159 sites, elev. 1,807', opens March 6 after tunnel repairs this winter, \$21-\$25, 35'-40' RVs
- **Cataloochee** 27 sites, elev. 2,610', opens June 11, \$25, 31' RVs
- **Cosby** 157 sites, elev. 2,459', opens April 3, \$17.50, 25' RVs
- **Deep Creek** 92 sites, elev. 1,800', opens May 21, \$21, 26' RVs
- **Elkmont** 220 sites, elev. 2,150', open, \$21-\$27, 32'-35' RVs
- **Smokemont** 142 sites, elev. 2,198', open year-round, \$21-\$25, 35'-40' RVs.
- **Look Rock** *closed in 2020*

Firewood

To prevent the spread of destructive insect 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 for campfires. Certified wood may be purchased in and around the park.

Bicycling

Most park roads are too narrow and heavily traveled by automobiles for safe or enjoyable bicycling.

Helmets are required by law for persons age 16 and under. However, helmets are strongly recommended for all bicyclists.

Bicycles are permitted on park roads but prohibited on trails except Gatlinburg, Oconaluftee River, and lower Deep Creek/Indian Creek.

Accommodations

• **LeConte Lodge** (accessible by trail only) provides the only lodging in the park. 865.429.5704 or lecontelodge.com

For information on lodging outside the park:

- **Bryson City** 800.867.9246 or greatsmokies.com
- **Cherokee** 828.788.0034 or cherokeesmokies.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

Pets in the park

Pets are allowed in front-country campgrounds and beside roads as long as they are restrained at all times. Pets are not allowed on park trails, except for the Gatlinburg and Oconaluftee River Trails. Dogs on these trails must be leashed.

Special events

April 22–25, 2020 Spring Wildflower Pilgrimage: parkwide

May 5–9, 2020 Wilderness Wildlife Week: parkwide

June 20, 2020 Women's Work Mountain Farm Museum

For rent

The Appalachian Clubhouse and Spence Cabin at Elkmont can be rented for daytime events starting April 1. Contact recreation.gov.

Visitor centers

Spring hours of operation are Oconaluftee and Sugarlands: 8-5 in March; 8-6 in April and May. Cades Cove: 9-6 in March; 9-6:30 in April; 9-7 in May. Clingmans Dome (opens March 30): 10-6.

Picnic areas

Picnic areas open year-round are: Cades Cove, Deep Creek, Greenbrier, and Metcalf Bottoms. Chimneys Picnic Area opens March 13. Picnic areas opening April 3 include Big Creek, Collins Creek, and Cosby. Look Rock Picnic Area opens May 1 and Heintooga Picnic Area opens May 15. Please see the map on page 16 for locations. Picnic pavilions may be reserved for \$12.50-\$80 at recreation.gov.

Other services

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

Park weather

• **Spring** - March has the most changeable weather; snow can fall on any day, especially at the higher elevations. Backpackers are often caught off guard when a sunny day in the 70s°F is followed by a wet, bitterly cold one. By mid- to late April, the weather is milder.

• **Summer** - By mid-June, heat, haze and humidity are the norm. Most precipitation occurs as afternoon thundershowers.

SMOKIES GUIDE

Smokies Guide is produced five times per year by Great Smoky Mountains Association and Great Smoky Mountains National Park.

nps.gov/grsm
SmokiesInformation.org

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Spring: mid-March
Summer: early June
Late Summer: mid-August

Autumn: mid-Sept.
Winter: mid-Dec.

Editor
Frances Figart

Writers
Valerie Polk
Aaron Searcy

Lead Designer
Karen Key

Design Assistants
Lisa Horstman
Emma DuFort

NPS Coordinator
Susan Sachs

Planning Committee
PT Lathrop
Lisa Nagurny
Becky Nichols
Bill Stiver
Paul Super

Stephanie Sutton
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• **Autumn** - In 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 in November.

• **Winter** - Days during this fickle season can be sunny and 65°F or

snowy with highs in the 20s. At the low elevations, snows of 1" or more occur 3-5 times per year. At Newfound Gap, 69" fall on average. Lows of -20°F are possible at the higher elevations.

A free fishing map with a complete list of all park fishing regulations is available at visitor centers.

Camping in the backcountry

Springtime camping can be an exciting adventure for persons properly equipped and informed. To facilitate this activity, the National Park Service 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. If you wish, you can purchase the printed version of the trail map for \$1 by stopping at any park visitor center or calling 865.436.7318 x226 or shopping online at SmokiesInformation.org.

2. Plan your trip. Call or stop by the park's backcountry office, which is open daily 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.

Spring hikers should be especially aware of the danger of hypothermia—the lowering of body temperature. The combination of rain, cold, and wind is especially dangerous. At the park's higher elevations, hypothermia can be a threat even during summer.

To prevent hypothermia, carry reliable rain gear at all times. Layer clothing that provides warmth when

wet (not cotton). Be prepared for sudden weather changes, especially at the higher elevations. Stay dry.

Road Closures

Many secondary and higher elevation roads are closed in winter and open later into spring. Please refer to the map on pages 8 and 9 for opening dates for Clingmans Dome and other seasonally closed roads.

Road access to the Cataloochee area is closed through May 20 for NC Dept. of Transportation road repairs.

Driving distances and estimated times

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)

In Our Waterways PLEASE DON'T



channel streams



stack rocks



create rock dams

Leaving No Trace Protects Our Wildlife



Fishing

Fishing is permitted year-round in the park, and a Tennessee or North Carolina fishing license is required. Either state license is valid throughout the park, and no trout stamp is required. Fishing with bait is prohibited in the park. A special permit is required for the Cherokee Reservation and Gatlinburg. Licenses are available in nearby towns.

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. On Mt. Le Conte, an average of 82.8" of snow falls per year.

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"

Smokies Glow with the Return of Fireflies

Photinus carolinus lights up the Smokies' night skies

The Smokies are world famous for their fireflies, and one species in particular, *Photinus carolinus*, puts on a particularly spectacular display. Of the 19 species of fireflies known to light up the night in the Smokies, *P. carolinus* is the only one with a synchronized light show.

Fewer than 1 percent of some 2,000+ distinct firefly species are known to flash synchronously as part of their mating display. The bioluminescence common to fireflies helps males and females recognize each other at dusk.

As word of the Smokies' synchronous fireflies has spread, the Elkmont area has implemented a lottery and shuttle system to ensure resources are protected and viewers have a safe and enjoyable experience. The timing of viewing events relies on a firefly prediction system carefully managed by park entomologist Becky Nichols.

Firefly habitats include tall grasses and open-cove forests, both of which have been dramatically reduced by human development. Fireflies also need darkness free of light pollution. Even flashlights and headlights can cause fireflies to stop flashing completely for several minutes at a time.

You can help protect fireflies and enjoy the show too with the viewing tips below:

- Let fireflies shine as they are and do not catch or collect them.
- Keep light to a minimum—use a red-tinted light and keep it pointed toward the ground to reduce light pollution. Firefly-safe lights are available at park visitor centers.
- Pack out all garbage and stay on trails at all times—firefly larvae and vegetation can be crushed by even the most well-intentioned footsteps.

THE FIREFLY LOTTERY

The Elkmont area is open only to campers and shuttle-bus riders during the peak of the synchronous firefly display. To enter the lottery, visit recreation.gov and search "firefly event lottery." Winners will receive a firefly-safe light and a one-night park-and-ride pass for a \$25 fee. For additional information, visit nps.gov/grsm.

Park partner Discover Life in America is also offering exclusive guided viewing opportunities at a location outside of the park on May 29, 30, and 31. Tickets are \$225 per person, and all proceeds support DLiA's work to discover and conserve Smokies biodiversity. For details, see dliia.org/event/fireflies-2020.

Words with a Ranger

continued from page 1

In recent years, visitors have moved rocks to create dams, channels, and cairns to such an extent that it has changed the aquatic habitat, leading to the death of thousands of aquatic animals. Salamanders, fish, and dragonfly larvae are just a few of the creatures that make their homes and nests under the rocks in the streams. Species like the eastern hellbender are so rare that the streams in the park are some of the last places they can be found. To an aquatic animal, moving rocks is like cutting down a tree that supports a bird's nest. It harms the adults, eggs, and young.

What can you do? Leave no trace, so future generations are able to enjoy the park and all the species that call it home. Share with others how they can help to protect the park. Thank you for not moving rocks and sharing this message with your friends and family.



Cades Cove Access Update

The Cades Cove area is now open to all visitors via Laurel Creek Road from the Townsend Wye entrance to Great Smoky Mountains National Park.

Visitors to the popular Cades Cove Loop Road this spring can expect greening fields, emerging wildlife, blooming wildflowers, and flowering trees. Camping and picnic areas are also available in the area known for its historic structures and hikes to nearby destinations including Abrams Falls and Gregory Bald.

Cades Cove was closed to visitor traffic over the winter due to scheduled repairs to the Bote Mountain Tunnel in January and February 2020. The decision to close this area of the park completely to accommodate the repair was reached through NPS assessment and with the input of community leaders in favor of avoiding prolonged lane closures throughout 2020. The necessary

Two gravel roads, Sparks Lane and Hyatt Lane, connect the north and south sides of the 11-mile, one-way Cades Cove Loop Road. Allow at least two to four hours to tour Cades Cove, longer if you walk some of the area's trails. *Image courtesy of Diego Ferron*

updates to the 72-year-old Bote Mountain Tunnel include repaired cracks in the concrete liner and replaced drainage features.

Such repairs are a necessary part of maintaining aging facilities in the Smokies and across the national park system, much of which is currently impacted by the estimated \$12 billion in deferred maintenance to national park infrastructure as a result of increasing demand and limited resources.

As visitation continues to break records in the Smokies, projects like the Bote Mountain Tunnel repair will help make sure the Smokies continue to be safe and accessible for years to come.

Cherokee Sochan Agreement Enters First Full Season

This spring marks the first full harvesting season since the Eastern Band of Cherokee Indians (EBCI) and the National Park Service finalized a landmark agreement to allow a limited number of permitted EBCI members to harvest sochan for traditional food purposes within Great Smoky Mountains National Park (GSMNP).

Sochan, or green-headed coneflower (*Rudbeckia laciniata*), is a culturally significant food of the Cherokee, and going to the mountains to gather its young leaves is a family tradition considered by some to be sacred. The tall, late-summer-blooming wildflower is common along streams and wet areas throughout the park.

“It was a great opportunity to collaborate with the EBCI on this project,” said Josh Albritton, a park bio-science technician. “Maintaining long-standing cultural values and traditions is

important for all of us, and this is certainly an opportunity to do just that.”

Despite a delayed start last year, the first harvest “went very smoothly,” said Albritton. “All sochan harvesting and reporting by EBCI permittees went according to the guidelines.”

This year, park staff will continue to monitor designated sochan populations and assess other plants EBCI members may wish to harvest. “I think everyone involved is looking forward to the coming season,” said Albritton.

With the exception of such permits, federal law protects almost everything in national parks, including wildlife, plants, historic objects, and even rocks. Exceptions include game fish (with catch limits) and berries, nuts, and edible mushrooms (for personal consumption only).



Green-headed coneflower, or sochan, is known for its showy late-summer blooms, but it is the young spring leaves, emerging well before the flowers, which are sought by the Cherokee as a favorite spring green. *Image courtesy of GSMA.*

Setting Out for the Mountains...Safely

It is your responsibility to be safe and to know and obey park rules. You can find information and rules at visitor centers, trailhead bulletin boards, and the park website at nps.gov/grsm.

BASIC PACK LIST

- Water, a water filter, tablets, or the ability to boil water
- Food and plenty of snacks will sustain you
- Extra layers (base layer, jacket, socks) for changing conditions
- Sun protection with sunscreen, sunglasses, and/or a hat
- Rain gear
- Pack cover to keep what you are carrying dry (ziplocs inside your pack can do this too)
- 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 for a variety of uses
- First aid kit with all the essentials to care for common accidents
- Permit for camping overnight (provide itinerary so the NPS knows where to begin looking for you in an emergency)

Spring is a great time to get out and explore Great Smoky Mountains National Park. As you plan, it's important to remember that the season also brings with it some of the most unpredictable weather and rapidly changing conditions of the year.

Be sure to make responsible planning and safety a priority, whether you're setting out on a day hike, packing for an overnight camping trip or taking in the sights on a drive through the mountains.

"You might start out your hike on a clear-blue-sky day and end up contending with cold wind, rain, sleet, or snow," said Backcountry Management Specialist Christine Hoyer. "Even an experienced hiker, park employee, or iPhone can't predict what Mother Nature has in store."

After years of experience working in the backcountry and with Appalachian Trail thru-hikers, Hoyer has arrived at a few basics for preventing the worst. "What you carry and what kinds of conditions you prepare for has nothing to do with how far you plan to walk. I pack the same essentials in my backpack no matter what," said Hoyer. "Quality rain gear and appropriate warm layers are a must—and not just wearing them but carrying extras with you, too."

Beyond bringing layers, Hoyer urges visitors to pack ample water and food, sources of light and fire, and a reliable means of navigation, since much of the park is without cellular service.

Hikers and motorists should factor wind advisories into their visits, too. As National Weather Service reporting shows, extreme winds are becoming more frequent in the Smokies. This means the risk of injury from motor vehicle accidents and downed trees is only growing—particularly in burn-affected areas and in both high and low elevations.

"During an extended wind event, mountain wave winds can have devastating impacts on lower elevation areas as they make their way down northern, leeward slopes," said Jim Renfro, the park's air resource specialist. "That's where you see more trees coming down in areas like Cades Cove, Sugarland Valley, or Greenbrier Cove."

From planning ahead to being mindful of emerging wildlife and seasonal hazards, the most important part of any trip in the great outdoors is coming back safely.

"The best thing you can do is have a solid plan and the willingness to adjust your plan if you need to," said Hoyer. "Take it slow—think before you act."

BE MINDFUL OF:



- Lightning
- High winds
- Rapid changes in weather
- Emerging wildlife and black bears
- Poison ivy and brambles
- Slippery logs, rocks, and leaves
- Water-crossings (Water can rise quickly, and rocks and logs near water are often very slippery; closely supervise children around all water)
- Drones are banned on all National Park Service property, including the Smokies.
- Campfires are permitted only within fire rings. Use only firewood purchased from campgrounds; imported wood contains dangerous and invasive pests. Do not leave food or trash in fire rings.
- Pets are prohibited on all trails (except Gatlinburg and Oconaluftee River trails) to protect wildlife. Pets may be kept on a leash at all times in campgrounds, picnic areas, and along roads. Service animals that have been individually trained to perform specific tasks for the benefit of persons with disabilities are allowed in all visitor use areas.
- Metal detector use is prohibited.
- Take only pictures. It is illegal to take any natural features including flowers, seeds, rocks, antlers, or historical artifacts or to disturb soils, rocks, or vegetation. Limited collection of some fish, berries, nuts, and mushrooms is permitted.
- Pack out all trash and Leave No Trace to help protect the Smokies.

Things to Do

There are so many ways to explore and learn about the Smokies



Historic Grist Mills

Two water-powered grist mills operate in the park seven days per week from spring through fall, demonstrating the historic necessity of grinding corn into cornmeal.

Cable Mill, located near Cades Cove Visitor Center, halfway around the Cades Cove Loop Road, opens March 7.

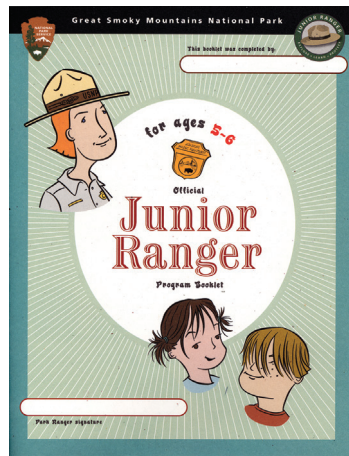
Mingus Mill, located 2 miles north of Cherokee, NC, near the Mountain Farm Museum, opens April 1.

Image of Mingus Mill by Jackie Novak



Field to Fork Audio Tour

The National Park Service and Great Smoky Mountains Association have partnered with Antenna Audio to create a compelling tour of the Mountain Farm Museum at Oconaluftee (2 miles north of Cherokee, NC). You'll learn how hard-working farm families scratched a living from the steep, rocky soils of the Smoky Mountains and lived a rich and happy life while doing so. *Image by GSMA*



Junior Rangers

Kids 5-12—earn your Great Smoky Mountains National Park Junior Ranger badge today! Just stop by any park visitor center and purchase the Junior Ranger booklet (\$2.50) appropriate for your age. Complete the activities described in the booklet and you're on your way to Junior Ranger glory.



Quiet Walkways

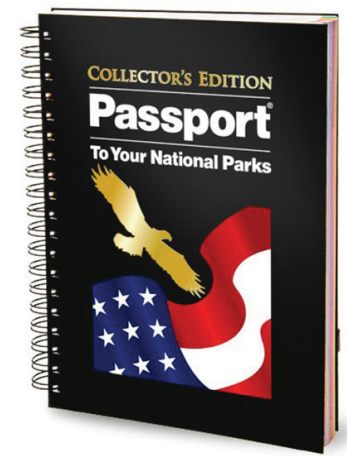
These peaceful pathways are scattered around the park offering visitors an opportunity to step outside their vehicles and soak in the Smokies' lush and intricate beauty. Parking is limited to three or four vehicles to keep the walkways quiet. A few of the trails are short loops, but most are linear trails inviting walkers to go as far as they wish and then return the way they came. Look for the Quiet Walkways signs along many park roads.

Image by Bill Lea

Self-guiding Tours

Want to know a little about the sights you are seeing? Nonprofit park partner Great Smoky Mountains Association has published a series of colorful, inexpensive booklets keyed to numbered posts along park roads. You'll learn about park history as well as some of the plants and wildlife you'll encounter along the route. Self-guiding tour booklets are available at park visitor centers as well as dispensers beside the roads. Tours include: Cades Cove driving and walking, Roaring Fork Motor Nature Trail, the Mountain Farm Museum, Newfound Gap Road, Tremont Logging History, and

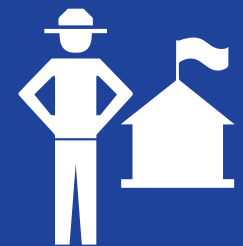
Mingus Mill. *Image of Cades Cove (left) by Bill Lea*



Passport Stamps

Ready to have your official Passport to Your National Parks® stamped? You'll find free site-specific stampers at all park visitor centers and some campgrounds.

If you don't have one, pick up this collector's edition book in one of the park's visitor centers!



**In addition,
stop in at any
visitor center and
get information
about current ranger
programs happening
in the park!**

In Spring, Timing is Everything

Did you know that, in the past 50 years, spring in the Smoky Mountains has become significantly earlier and warmer? At Sugarlands Visitor Center, since 1970, Aprils have warmed by an average of 4.1°F, Mays by 5°F, and Junes by 4°F.

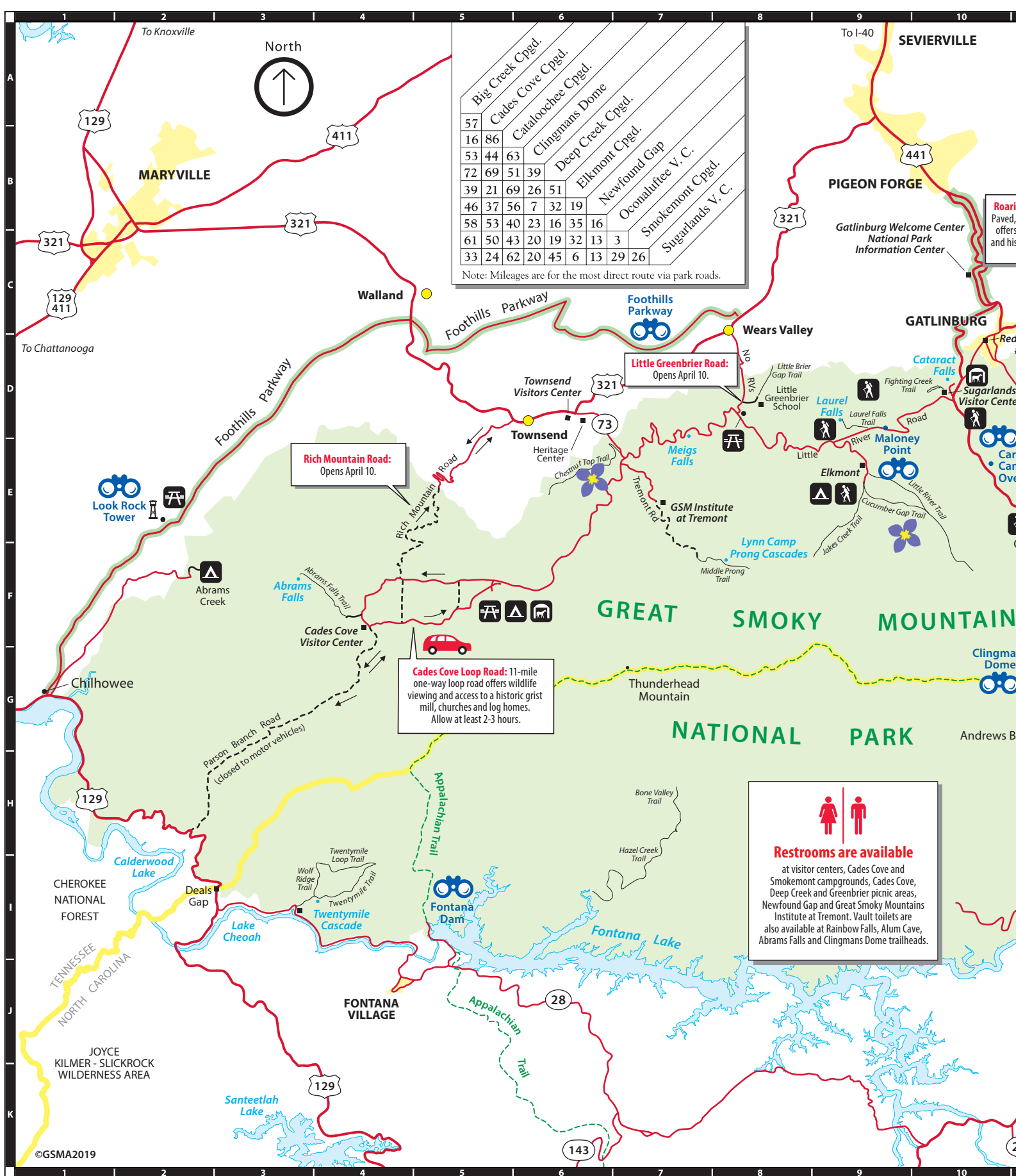
Most of the rise is reflected in the morning lows. “We’re not getting as cold at night,” said Jim Renfro, the park’s air quality specialist and the person in charge of collecting and managing the park’s weather data.

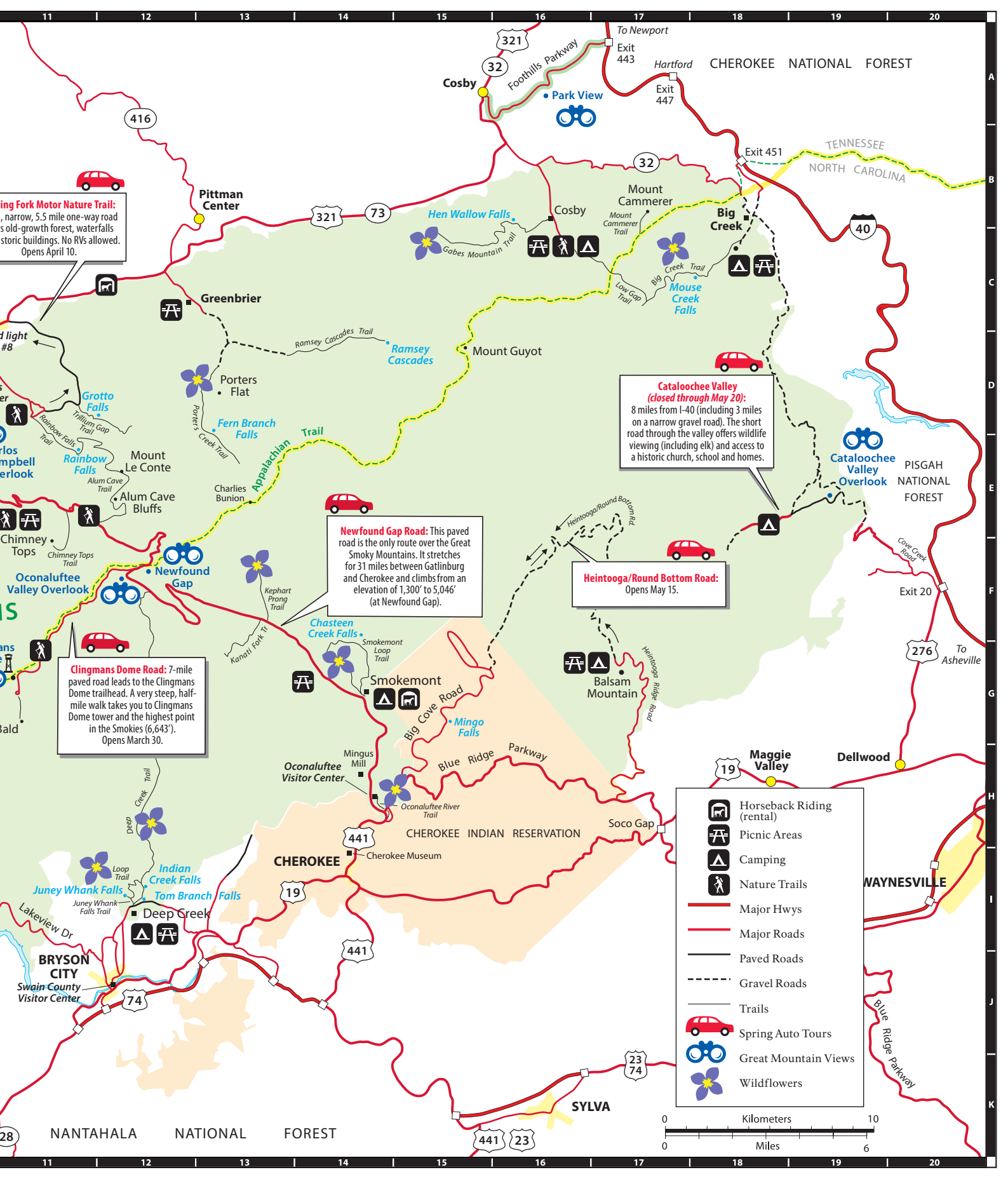
Spring wildflowers have adapted over millions of years to rely on soil temperature and moisture as their primary gauges for timing blooms. Since their sole objective in creating a beautiful flower is to attract pollinators and make viable seeds, timing is everything. Blooms generally only last a few days, so flowering before the pollinators—butterflies, bumblebees, moths, ants, beetles, hummingbirds—show up can be disastrous.

“According to the National Phenology Network, trees in our region are greening up 15 to 20 days earlier,” said Paul Super, the park’s research coordinator. Caterpillars, which dine voraciously on tree leaves, appear to be likewise emerging earlier.

Unfortunately, the migratory songbirds that feed on the caterpillars are flitting about in the tropics during March and April and have no idea how warm it is in the Southern Appalachian Mountains. “They rely on changing day length to trigger their migration,” Super said. Consequently, the synchronization of trees, bugs, and birds is being disrupted.

Earlier springs also mean trees are flowering earlier, making them vulnerable to ‘late’ frosts. Such miscues can greatly diminish the harvests of cherries, nuts, and acorns on which wildlife—and humans—rely for food.





Cling Fork Motor Nature Trail: A narrow, 5.5 mile one-way road through an old-growth forest, waterfalls and historic buildings. No RVs allowed. Opens April 10.

Cataloochee Valley (closed through May 20): 8 miles from I-40 (including 3 miles on a narrow gravel road). The short road through the valley offers wildlife viewing (including elk) and access to a historic church, school and homes.

Newfound Gap Road: This paved road is the only route over the Great Smoky Mountains. It stretches for 31 miles between Gatlinburg and Cherokee and climbs from an elevation of 1,300' to 5,046' (at Newfound Gap).

Heintooga/Round Bottom Road: Opens May 15.

Clingmans Dome Road: 7-mile paved road leads to the Clingmans Dome trailhead. A very steep, half-mile walk takes you to Clingmans Dome tower and the highest point in the Smokies (6,643'). Opens March 30.

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





MUD IS EXCELLENT
FOR MY GLORIOUS
COMPLEXION.

Common Mudpuppy

These hefty salamanders grow up to 16 inches long. Because they spend all of their time in Smokies streams, they have bushy external gills that allow them to breathe underwater. During the day they hide in submerged burrows; at night they come out to feed on fish, crayfish, snails, frogs, and other salamanders.



Dung Beetle

If you happen upon two small shiny beetles rolling a ball of dung, be assured it's really nothing out of the ordinary. Dung beetles routinely gather dung from deer and other animals into a ball, roll it around to get it nice and packed down, then bury it and lay eggs in it. This way the young have plenty to eat when they hatch.



IT CAME FROM
THE
SMOKIES!

Eastern
Slender Glass
Lizard



These weird animals look like snakes but are actually lizards with no legs. They have extremely long tails that break off very easily (hence the name "glass lizard"). It's rare to see them because they spend most of their time in rodent burrows. When they come out, they hunt spiders, snails, bird eggs, snakes, and more.

Slugs



Slugs are simply snails without shells. They secrete a generous amount of slime, which helps them ooze along the forest floor. Their favorite foods are leaves, roots, flowers, fruits, and fungi. Look for mushrooms with slime trails and bites eaten from them. Some birds eat slugs, but most think they're just too slimy.

They're out there—slimy, wiggly, spooky creatures that seem like your worst nightmare. But these seemingly-unfriendly organisms all play a role in the great diversity of the Smokies. Learn about a few here...after you recover from the heebie-jeebies.

Illustrations by Lisa Horstman



IF YOU LOVE THE SMOKIES

Join the park's partners in helping to protect this place for ourselves and future generations

For eons, the Great Smoky Mountains have stood watch over the Southern Appalachian region. The park depends on the four primary nonprofit partners described here, as well as on 2,800 park volunteers who help its staff meet the needs of 12.5 million visitors and 522,000 acres of unexploited resources. In addition to these partners, the park fosters collaborative relationships with its gateway communities, universities, and other service and learning groups.

Great Smoky Mountains Association

Since 1953, the nonprofit Great Smoky Mountains Association has supported the educational, scientific, and historical preservation efforts of the NPS by operating the park's educational bookstores, publishing books and other media about the park's natural and cultural resources, and contributing cash donations to support park programs. Over the years, GSMA has contributed over \$44 million to assist with living history demonstrations, saving hemlock trees, wildlife and resource education internships, construction of 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 semi-annual full-color magazine *Smokies Life*
- Digital access to the award-winning quarterly park newspaper, *Smokies Guide*, and the association's *Cub Report* e-newsletter
- A 15-20% discount on books, music, gifts, and other products sold at park visitor centers and at GSMA's web store
- Special GSMA group hikes, backpacking excursions, and

educational sessions led by experts invite you to immerse yourself in the sights, sounds, and smells of the outdoors and learn more about nature and history in Great Smoky Mountains National Park. Check out GSMA's Branch Out events at SmokiesInformation.org/events.

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 \$68 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
- 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. Management and research programs are critical in maintaining a healthy environment for the park's abundant wildlife—bears, elk, native brook trout, and much more.

Friends' commitment to preserva-



tion includes support for restoring and maintaining historic log homes, barns, outbuildings, churches, schools, and gristmills. Become a Friend by visiting FriendsOfTheSmokies.org or calling 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 the 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 'citizen 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.



DLiA celebrated the 20th year of the ATBI in 2018 with the announcement of a major milestone—the 1,000th new species to science! To date, DLiA has helped add more than 10,000 species to the inventory of life in the park. 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 birding, backpacking, community science, professional and teacher development, photography, and a naturalist certification program. Summer camps provide youth and their families opportunities to spend six to 11 days exploring the national park and all of its wonders. Fees include meals, lodging, and most equipment. Contact 865.448.6709 or visit GSMIT.org to learn more!

GREAT SMOKY MOUNTAINS INSTITUTE AT TREMONT

GSMA MEMBERS

Get Rooted in the Smokies!

- Acorn (youth) Membership \$15
- Buckeye Annual Membership \$35
- Chestnut Annual Membership \$100
- Dogwood Membership \$200
- Hemlock Lifetime Membership \$1,000 payable in 5 installments
- Lookout League Business Memberships \$250-\$10,000

SIGN ME UP!

Name(s) _____

Address _____

Email (for *Cub Report*) _____

Phone # _____

Please include your check with this form.
Mail to: GSMA, P.O. Box 130,
Gatlinburg, TN 37738

Black Bears Emerge at a Sensitive Time

Bears struggle in the search for the first new foods of the season, despite the trend of warmer, earlier springs



Photos by Bill Lea

Spring is a time of awakening in the Smokies. The earliest ephemeral wildflowers begin to break through a soggy carpet of leaf litter. Bright new blooms fill the branches of red maples, serviceberries, and redbuds. Insects, bats, and songbirds follow soon after, and with them emerges the black bear—hungry after weathering a long winter of dormancy.

“The first weeks out of the den are the hardest,” said NPS Supervisory Wildlife Biologist Bill Stiver. “It’s too early in the year for most of the bears’ favorite foods like berries and acorns to be available, so the bears just eat whatever they can find. That might be grasses, seeds, tree buds, roots, or flowers.”



Cubs and mother bears need their space. When people try to approach a bear family for a closer look or to take a picture, it really stresses the bears.

Although springs have been trending warmer and arriving significantly earlier in recent years, the desperate need to find the first new foods of the season remains a serious one for black bears.

“Female black bears give birth to an average of one to four cubs every two years, and cubs generally emerge in late March or early April,” said Stiver. “Brand new cubs born in February can be tiny, weighing just a few pounds when they leave the den.”

After burning their precious fat reserves over the winter, along with the added energy expenses that come with bearing young, female black bears have good reason to be hungry, and many

may be actively foraging along roads and trails in the park.

“Cubs and mother bears need their space,” said Stiver. “When people try to approach a bear family for a closer look or to take a picture, it really stresses the bears.”

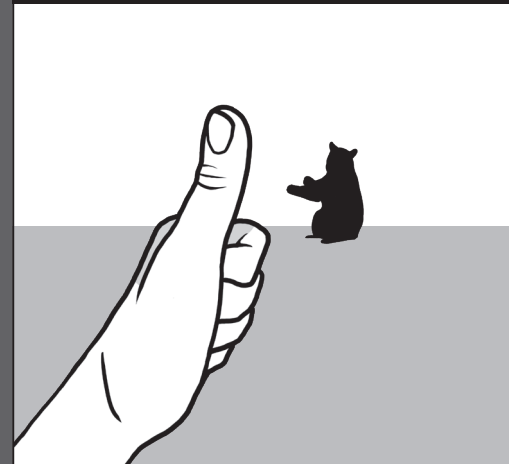
In some instances, bear cubs may appear to be abandoned, but visitors should still keep their distance—for the bears’ sake and their own. “Though some people may find it alarming, mother bears often leave their cubs to go forage,” Stiver said. “Mom is eating for herself and the cubs. Her offspring are likely to continue nursing through their first year.”



Ways you can help reduce the potential for human–bear conflict and make sure the park is a safe place for people and bears too:

- Maintain a minimum 50-yard distance from all black bears and elk in the park.
- Do not feed a bear or any wild animal in the park. Doing so is a federal offense.
- Practice Leave No Trace principles by packing out any food or waste brought into the park.
- If a bear approaches you or your party, do not run—back away slowly and make plenty of noise.

RULE OF THUMB FOR WILDLIFE VIEWING



When viewing wildlife, hold your arm out straight and, if you can't cover the animal in your line of sight with your thumb, you're too close!

Graphic by Emma Dufort

In the Park? Pack it Out

Littering puts strain on park services and wildlife



Supervisory Wildlife Biologist Bill Stiver has worked in Great Smoky Mountains National Park managing black bears, elk, hogs, river otters, and more for nearly 30 years. But over the last decade of his tenure, Stiver 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. We need everybody.”

A bear of a problem

Litter along roads and trails disrupts the natural foraging behavior of a wide variety of wildlife—including red squirrels, raccoons, and coyotes. For black bears in particular, the consequences can be dire. Food-conditioned behavior effectively halves black bears’ average life expectancy.

“We’ve had issues particularly with bears getting into people-food and becoming a danger to people and property,” said Stiver. “The bear may begin foraging in picnic areas or hanging out beside the road. In some cases, bears may even approach people hoping for a

handout. It doesn’t take too many food items to get that process started.”

When this pattern begins to emerge, Stiver and other 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, euthanize 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 of black bears and people, too.

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 litter left behind at dusk. Still, with the park already generating nearly 600 tons of waste per year, a sustainable solution will have to include greater public awareness of Leave No Trace ethics.

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 at work across the park. “This is my ninth year doing it, and I feel personally responsible for the condition of that trail when I leave. When those bears roam, we want them to find nothing. If they find food, they’re coming back.”

While biodegradable food waste like apple cores, banana peels, or cookie

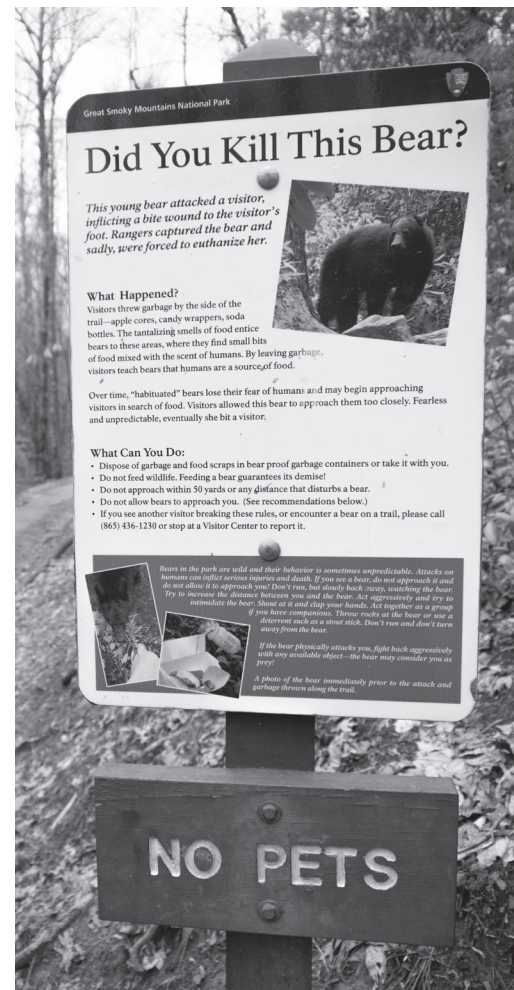


Above: Volunteer Bill Gober can talk trash, and he has seen it all after nine years of picking up trash along trails with the park’s Litter Patrol. You can help protect wildlife by packing out all trash and food waste and by using the park’s bear-proof dumpsters. Right: Signage at popular trailheads educates visitors on the dangers of littering food waste, but it doesn’t completely stem the epidemic. Photos by Valerie Polk

crumbs may seem harmless, it is often these very items that are the most problematic when it comes to attracting wildlife to dangerous roadways and trails.

After years of walking the trails, Gober has become intimately familiar with the problem. His regular beat at Laurel Falls is one of the most popular trails in the park, and unfortunately this has also helped make the area 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. “It



THE BREAK DOWN ↓

Sources:

"Hikers: Eat Bananas – but Take Your Skins Home." *theguardian.com* "How Long Does Your Litter Live?" *slocounty.ca.gov*
"Organic' Litter is Not Copacetic." *hcn.org* "Recycling Mysteries: Candy Wrappers." *earth911.com*

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.



Citrus contains a natural insecticide, which means that ants won't touch discarded orange peels. They can take **6 months or longer** to break down.



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**.

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

also tends to change with the season, but cigarette butts, juice boxes, water bottles, and candy wrappers are always there. I've actually seen one of our female bears eat an entire McDonald's bag right in front of me before I could get to it."

As disturbing as that experience was, Gober does see hope for a sea change in attitudes through his contact with other 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."

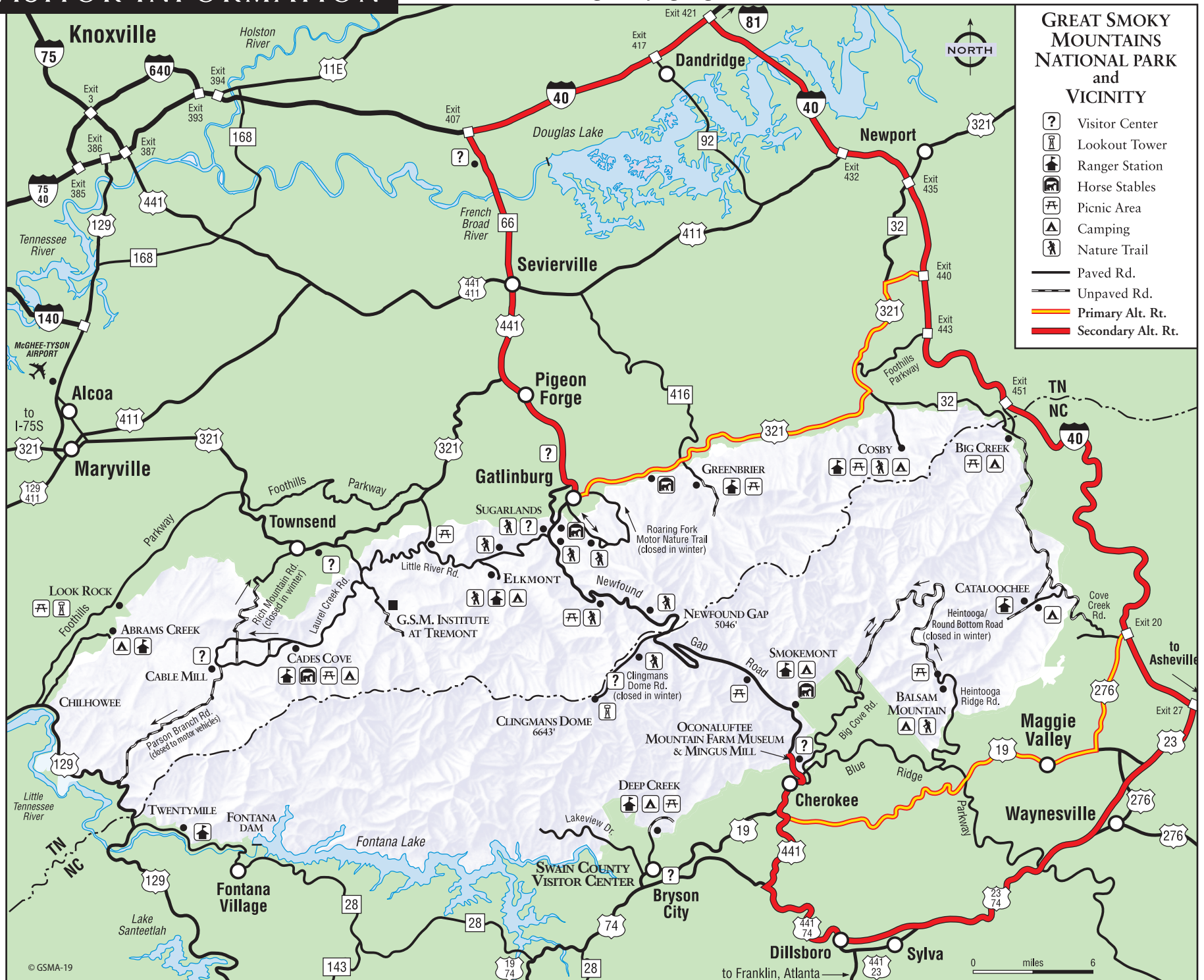
"Litter Patrol is a great volunteer program, whether you're here for a week or just for a day or two," said Sheridan Roberts, volunteer coordinator at GSMNP. "Particularly if you have kids, or if you'd just like to get out and do something, it's a good opportunity to give back to the park, and it's easy to jump in and do."

You can help protect wildlife by packing out all trash and food waste while in the park. To lend a hand with other volunteers or enroll in opportunities like the Litter Patrol program, see nps.gov/grsm/getinvolved for details.

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

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 x226
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 park visitor centers (Cades Cove, Oconaluftee and Sugarlands) 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.