



SMOKIES GUIDE

The Official Newspaper of Great Smoky Mountains National Park • Spring 2019

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Becky Nichols, Entomologist

The Blue Ridge spring salamander (*Gyrinophilus porphyriticus danielsi*) is found in the park's higher elevations.

Image by Kevin Hutcheson

Mountain Streams are Fountains of Life

Biodiversity thrives beneath the surface of Smokies streams

The Smokies' 2,900 miles of cold, clear mountain streams are fed by tens of thousands of rain-fed springs, constantly trickling water from crevices in the ancient mountain range. Because of the nature of the rock, water flowing from the springs is more acidic and contains fewer nutrients than limestone- or soil-lined streams.

Yet, what the waters here lack in natural nutrients, they more than make up for in age, quantity and biological variety. Residing beneath the waters' surface is everything from native brook trout to 11 species of crayfish to giant salamanders.

Remarkably, 77 species of fish have been documented in the park, a variety greater than the number of park mammal species and a diversity rivaling all other North American watersheds. Other than the game fish—trout, bass and perch—

there are spiny sculpins, miniature catfish, darters and bizarre looking eels called mountain brook lampreys.

Two species of large, completely aquatic salamanders—the hellbender and common mudpuppy—lurk in the park's larger streams and rivers. They grow to lengths of 29 inches and 16 inches respectively. Shovel-nosed salamanders also spend most of their time foraging underwater and dusky salamanders are usually found near springs.

Most fish and salamanders make their living preying on aquatic insects like mayflies, caddisflies and stoneflies. Fortunately for these predators, Smoky Mountain streams offer a cornucopia of bugs. If you include all aquatic groups, such as dragonflies, damselflies and water-loving flies and beetles, there are more than 900 species of aquatic insects that have been documented here.

Top level predators—those that feed primarily on fish—include river otter, water snake (non-venomous) and a plethora of birds from the Belted Kingfisher to the Great Blue Heron. Perhaps natural history writer Loren Eiseley was thinking of the Smokies when he stated, "If there is magic on this planet, it is contained in water."

**MOVING
ROCKS
harms aquatic
wildlife!**

See details on page 6.

Words with a Ranger

I work as an entomologist—a scientist who studies insects—with the National Park Service. I've worked in the Smokies for 21 years, and my main responsibilities include long-term monitoring of aquatic insects, working on the All Taxa Biodiversity Inventory (ATBI) in conjunction with our nonprofit partner Discover Life in America (DLIA), and coordinating insect-related projects like the synchronous firefly program (see page 5).

The best part of my job is being in
Words with a Ranger continued on page 5

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.

Campsites at Abrams Creek, Balsam Mountain, Big Creek, Cades Cove, Cataloochee, Elkmont and Smokemont may be reserved. For reservations call 877.444.6777 or contact recreation.gov. Sites may be reserved up to six months in advance. Reservations are *required* at Abrams Creek, Balsam Mountain, Big Creek and Cataloochee campgrounds.

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.



Spring can bring unpredictable weather with snow in the upper elevations. Image by Bill Lea

Group sites must be reserved. Call 877.444.6777 or contact recreation.gov. Group sites may be reserved up to a year in advance.

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

- **Abrams Creek** 16 sites, elev. 1,125', opens April 26, \$17.50, 12' trailers
- **Balsam Mountain** 42 sites, elev. 5,310', opens May 17, \$17.50, 30' RVs
- **Big Creek** 12 sites, elev. 1,700', opens April 19, \$17.50, tents only
- **Cades Cove** 159 sites, elev. 1,807', open year-round, \$21-\$25, 35'-40' RVs
- **Cataloochee** 27 sites, elev. 2,610', opens April 19, \$25, 31' RVs
- **Cosby** 157 sites, elev. 2,459', opens April 19, \$17.50, 25' RVs
- **Deep Creek** 92 sites, elev. 1,800', opens April 19, \$21, 26' RVs
- **Elkmont** 220 sites, elev. 2,150', opens March 8, \$21-\$27, 32'-35' RVs
- **Smokemont** 142 sites, elev. 2,198', open year-round, \$21-\$25, 35'-40' RVs.
- **Look Rock** *closed for repairs*

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. Visitors are allowed to collect dead and down wood for campfires while camping in the park. 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. However, Cades Cove Loop Road is an exception. This 11-mile, one-way, paved road provides bicyclists with excellent opportunities for wildlife viewing and touring historic homesites.

From May 8 to Sept. 25, on Wednesday and Saturday mornings from sunrise until 10 a.m., only bicycles and pedestrians are allowed on Cades Cove Loop Road. Bicycles may be rented at the Cades Cove Campground store.

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 24–27, 2019** Spring Wildflower Pilgrimage: parkwide
- May 7–11, 2019** Wilderness Wildlife Week: parkwide
- June 15, 2019** 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. All other picnic areas (except Heintooga) are **expected to open** on April 19. Heintooga is **expected to open** May 17. Please see the map on page 16 for locations. Picnic pavilions may be reserved for \$12.50-\$80 at recreation.gov.

SMOKIES GUIDE

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

Publication dates are roughly as follows:

Spring: mid-March
Summer: early June

Late Summer:
mid-August
Autumn: mid-Sept.
Winter: mid-Dec.

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P.O. Box 130
Gatlinburg, TN 37738
SmokiesInformation.org

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MOVING ROCKS HARMS AQUATIC LIFE.

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.

• **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.

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

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"

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.

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.

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. 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. 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. 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.

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)

GREAT SIGHTS TO SEE

1. Cades Cove

Highlights: historic buildings, wildlife viewing

Cades Cove is one of the most popular destinations in the Smokies because it offers an unusual blend of both natural and cultural resources.

Deer are often sighted in the fields, and their breeding season (or 'rut') continues through early winter. You might also see bear, coyote or wild turkey. Please use pullouts when viewing wildlife. Never approach or feed animals.

A wide array of historic buildings, some dating back to the mid-19th century, are preserved throughout the cove. These include a gristmill, a variety of barns, three churches, and a renowned collection of log homes.

An 11-mile one-way loop road takes you around the cove. A visitor center (open daily), restrooms, and the Cable Mill walking tour are located halfway around.

Numerous trails start in the cove, including the 5-mile round-trip trail to Abrams Falls and the 8.5-mile Rich Mountain loop hike.

Mileage from Townsend—9
from Gatlinburg—27
from Cherokee—58

2. Deep Creek

Highlights: walking trails, waterfalls, bicycling

The Deep Creek area is an off-the-beaten-path destination in the Great Smoky Mountains, celebrated for its rushing streams and waterfalls. Hikers enjoy the area because of the waterfalls and because there are several loop hikes to choose from. Bicyclists can take advantage of one of the few park trails where bicycles are permitted.

Deep Creek area loop hikes include Juney Whank Falls (0.6 mile), Three Waterfalls Loop (2.4 miles), and Deep Creek-Indian Creek Loop (4.4 miles). Longer loop hikes are also available.

Bicycles are allowed on Deep Creek and Indian Creek trails to the points where the old roadbeds end and the trail treads begin.

Deep Creek Picnic Area is open year-round. The picnic pavilion can be reserved at recreation.gov.

Mileage from Cherokee—14
from Gatlinburg—48
from Townsend—65

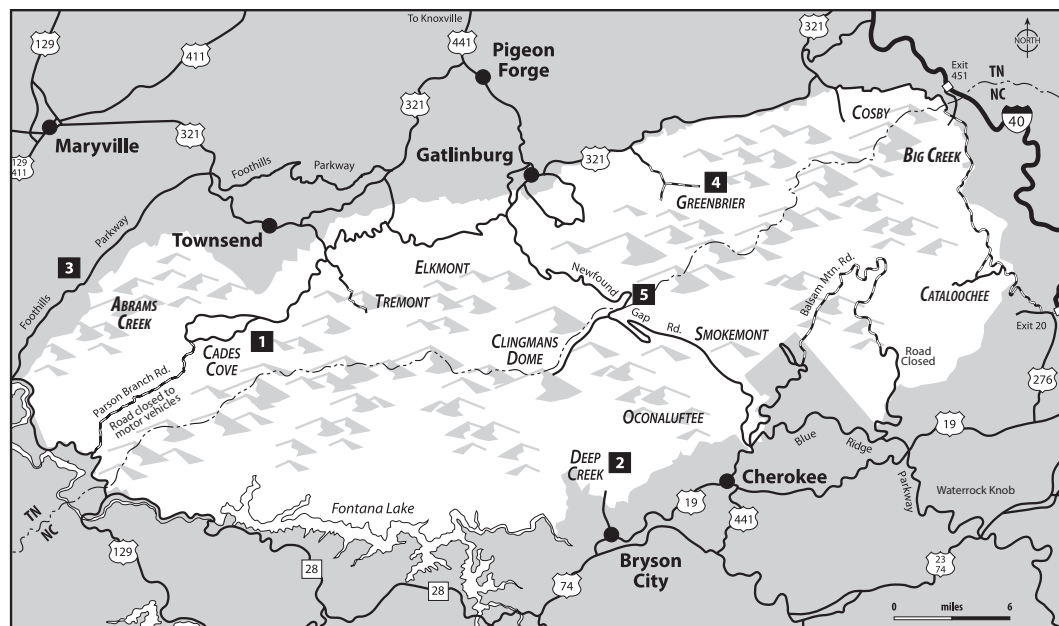
3. Foothills Parkway

Highlights: views, Look Rock Tower, newly opened parkway section

See the Smokies in a new light as you drive 32 miles of continuous parkway—without billboards, utility poles, or commercial traffic—offering stunning views of the park and the Tennessee Valley. Late in 2018, the Walland to Wears Valley section of the parkway opened to the public, connecting with the 17-mile segment between U.S. Highway 129 at Chilhowee Lake and U.S. Highway 321 in Walland that was opened in 1968.

This newest portion of Foothills Parkway features nine bridges, the longest of which spans 800 feet and follows a curvilinear path around the mountain terrain. Known as Bridge 2, it is comprised of 98 pre-cast concrete segments lowered into place by a large, specially built gantry crane and tensioned together in a cantilevered construction. The result is an engineering marvel, presenting spectacular views of the wide expanse of the Smokies to drivers on this new roadway.

Look Rock, named for a natural rock ledge nearby, is the highest point on the western portion of Foothills Parkway. A one-half-mile trail to the top of the ridge provides access to Look Rock Tower, with a 360-degree panoramic view of the Great Smokies and neighboring foothills. Thunderhead and Gregory Bald are among the



landmarks that can be viewed from this vantage point.

Mileage to the Wears Valley entrance to Foothills Parkway (newest section):

from Townsend—8
from Gatlinburg—16
from Cherokee—46

4. Greenbrier

Highlights: bicycling, walking trails

Greenbrier is a hiker's delight. Trails include Ramsey Cascades, Old Settlers, Grapeyard Ridge, Brushy Mountain and Porters Creek. Ramsey Cascades is a strenuous 8-mile round-trip hike to the tallest waterfall in the park. Moderate Porters Creek Trail leads 1.8 miles (one-way) past a historic cemetery to Fern Branch Falls. A short side trip takes you to the historic hiker club cabin and barn. Brushy Mountain Trail can be used for a 9.1-mile (one-way) trek to the summit of Mt. Le Conte.

The roads in Greenbrier are mostly gravel and motorists must travel at a slow pace. This makes the area appealing to some bicyclists, although bikes are permitted only on roads and not on any of the hiking trails.

Anglers have long frequented the West Prong. See Park Etiquette, page 15.

Mileage from Gatlinburg—4

from Townsend—24
from Cherokee—41

5. Newfound Gap

Highlights: mountain views, access to Appalachian Trail

In Southern Appalachian vernacular, a gap is a low point in a mountain ridge. New Englanders call such places 'notches,' while westerners refer to them as mountain 'passes.' From Newfound Gap, one can enjoy spectacular views into both North Carolina and Tennessee and take a short stroll along the famous Appalachian Trail (AT). There are also restrooms and the historic Rockefeller Memorial.

At nearly a mile high (5,046'), Newfound Gap is significantly cooler than the surrounding lowlands and receives much more precipitation. Snow is possible here in March and April.

A trip to Newfound Gap is a trip to the Canadian-zone spruce-fir forest. This fragrant evergreen woodland is similar to the boreal forests of New England and eastern Canada. There is excellent wildflower viewing along the AT between Newfound Gap and the Road Prong Trail intersection.

Mileage from Gatlinburg—16
from Cherokee—18
from Townsend—34

Words with a Ranger

continued from page 1

the park every day and working with people who have the same desire to better understand and protect it. When I'm doing field work, I frequently go to places I've been before, but it's always a new adventure and there are still areas of the park that I've yet to explore. I also enjoy meeting the many research scientists that come through the park.

I became interested in entomology while I was in college working on a wildlife biology degree. I took a course in entomology, and my college career took a sharp turn. In graduate school I studied fire ants in Texas, and aquatic insects in Missouri, which led me to my current position in the Smokies.

Stream life in the Smokies is diverse and we continue to learn more about it. This past year, we collected a stonefly and a mayfly that we had not seen in the park before, and an outside researcher recently published reports of stoneflies that were new to the science books. This diversity occurs because there is such a large variety of habitat here, from tiny high-elevation springs to the larger rivers at lower elevations.

Long-term monitoring programs are important for understanding the health of the park. I monitor stream quality by looking at the diversity of aquatic insects over time. There can be a lot of variation from year to year, but over the longer term, we can determine if the variation is normal or if something is happening in a particular watershed. The field data we collect will provide an early warning if something is impacting water quality and the animal life that depends on it.

I'm proud of the fact that our many years of monitoring data provide a continuous record of aquatic life that will help ensure the long-term health of park streams. Also, last year marked the 20th year of the ATBI, and we reached a major milestone with the discoveries of more than 1,000 species new to science. That's a good example of how important the Smokies are as a refuge for an incredible variety of plant and animal life.

PARK NEWS

Great Smoky Mountains National Park news briefs

Predicting the Annual Firefly Light Show

When visitors from around the globe swarm to the Great Smoky Mountains to observe the synchronized firefly light show, their viewing success depends heavily on one park ranger/insect specialist: Dr. Becky Nichols (see page 1). Like many other seasonal events in the natural world, the precise dates of the peak of synchronized firefly activity vary from year to year. And predicting the peak is definitely a science. "In order to allow enough time for lottery and shuttle system planning, we have to predict the fireflies' flashing period five to six weeks in advance," Nichols said.

Nichols worked with premier firefly expert Lynn Faust of Knoxville to utilize her degree-day method for predicting the peak flashing time period. Faust has spent nearly three decades doing firefly research in the Appalachians and authored *Fireflies, Glow-worms and Lightning Bugs*—covering species both close to home and across the globe. She was inspired by summers in her youth spent at Elkmont observing synchronous fireflies.

"Starting in March, we monitor the air and soil temperatures at Elkmont,"

Nichols said. "We then tabulate the high and low temperatures for each day and plug them into a formula which will tell us what stage of development the insects are in." The park has been using this method since 2013, and so far the predictions have been accurate. Biologists like Faust and Nichols have documented 19 species of firefly (or lightning bug) beetles in the park. While most types of fireflies have a way to 'light up the night,' fewer than one percent assemble in groups that synchronize their flashes.

In the Smokies, a firefly called *Photinus carolinus* is the star attraction. Several groups of *P. carolinus* annually choreograph a routine that features six quick synchronized flashes followed by six to nine seconds of darkness. It is the males, flying low above the ground, that create the most notable flashes. The females, stationary or walking on the ground, respond with a subtle signal if a male's flashing strikes their fancy.

Photinus carolinus is known to occur throughout the southern Appalachians in areas where the habitat is undisturbed. Additionally, a different species

of synchronous firefly can be found in the southern US, and yet another species lives in parts of southeast Asia.



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 park lottery for a parking pass and shuttle ride, visit recreation.gov and search for 'firefly event.'

The free lottery is open for three days in late April. If you are among the 1,800 winners, you will receive a one-night park-and-ride pass for a fee of approximately \$20-\$25. The firefly display usually occurs in late May or early June.

In case you don't win the lottery, park partner Discover Life in America also offers synchronous firefly viewing opportunities. Visit dlia.org.

Trails Forever Celebrates Ten Years, Embarks on Park-wide Projects

After two years of rehabilitation as part of the Trails Forever partnership, the popular Rainbow Falls Trail reopened last November. Now hikers can enjoy improved trail conditions as they trek this popular route featuring a 75-foot waterfall and access to Mount Le Conte.

The ribbon-cutting event was a celebration of ten years for Trails Forever, a partnership between Great Smoky Mountains National Park and Friends of the Smokies that has resulted in the reconstruction and

rehabilitation of Rainbow Falls, Alum Cave, Chimney Tops and Forney Ridge trails. Many park trails experience heavy foot traffic and erosion. Crews work to enhance visitor safety and build a more sustainable trail by improving drainage and reducing impact on the trailside landscape.

As Trails Forever embarks on the next ten years, the crew will apply their expert skills to multiple projects throughout the park. In addition to a signature rehabilitation of Trillium Gap Trail, crews will perform major rehab

work on other trails, including Deep Creek Trail, Rough Fork Trail and Noah Bud Ogle Nature Trail.

Trillium Gap Trail will be closed Monday–Thursday (excluding holidays) beginning May 13 due to the construction process. Hikers to Mount Le Conte may choose alternate routes via Rainbow Falls, The Boulevard, Bull Head or Alum Cave trails. The trail closure will last through November 14, 2019, and resume in May 2020 for a second work season.

Moving Rocks Harms Aquatic Wildlife!

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 Smokies' streams and other waterways.

This time of year, people also begin to stack rocks and create "cairns," channels and rock dams in the park's streams and creeks. Park Ranger Julianne

Geleynse says these aquatic areas are home to a myriad of wild animals and it is of utmost importance to keep their habitats undisturbed.

"Social media is a driver of rock cairns," she says. "People see photos of these creations online or see them in the stream and want to build their own."

Rock cairns are connected to the

concepts of balance and Zen and are considered a challenge requiring skill; building them gives people something to do to pass the time. When building a rock channel or rock dam becomes a family affair with children collecting small rocks and adults moving huge boulders, aquatic wildlife are disturbed and driven away or may be injured or killed in the process.

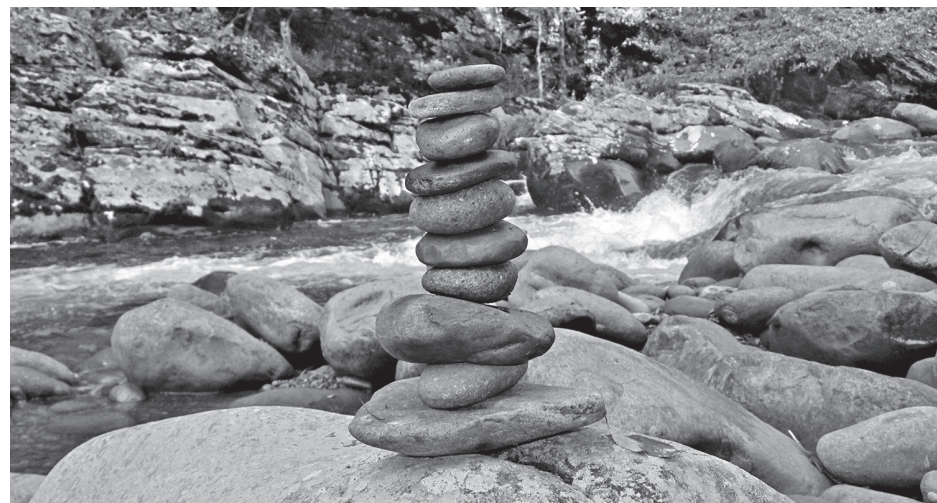
Besides detracting from wilderness character, rock cairns, dams and channels impact aquatic life such as eastern hellbenders, endangered Smoky Mountain madtoms and Citico darters. Many salamander and fish species lay their eggs under rocks of various sizes. The removal or movement of these rocks can disrupt breeding behavior and can completely destroy the nest and eggs of both salamanders and fish.



Eastern hellbenders, also known as snot otters, are fully aquatic salamanders which use rocks for protection. Their tails help them position safely under rocks without poking out to give themselves away. Completely aquatic, they also have a lateral line similar to those of fish, with which they can detect vibrations in the water. Image by Brian Gratwicke

"The temperature, flow and dissolved oxygen is altered, completely changing the habitat and the aquatic life," Geleynse says. "Some species of aquatic insects are immobile and die once removed from the stream."

What can you do if you see someone moving rocks in the park? "Share positive messaging on how to protect aquatic life through your social media outlets," says Geleynse. "Parents can encourage their children to respect our streams and leave no trace."



Stacking river rocks is doing serious damage to the delicate river ecosystem. And it's not just cairns; the same goes for moving rocks and creating dams to make chutes or pools in a stream for tubing. Image courtesy of NPS

Mountain Streams are Deceptively Dangerous

According to the book *Into the Mist* by David Brill, drowning is one of the leading causes of death in Great Smoky Mountains National Park. Water-based activities that have ended tragically include swimming, 'tubing' and fording rain-swollen streams. The fact that Smoky Mountain waterways can be deadly comes as no surprise for those who are familiar with their unexpected depth and swiftness.

All hikers need to be prepared to safely ford streams. While some crossings are bridged, many are not. Existing footbridges may have recently been destroyed by floods or fallen trees. A list of some of the more challenging stream crossings is included in the \$1 official park trail map.

Especially during winter and spring, heavy mountain rains can make streams unsafe to cross. Never attempt to cross a stream unless you are sure you can make it. Changing your route or turning around and retracing your steps are safer than attempting to cross high water. It is important to keep your hiking shoes and socks dry. Changing into a pair of water shoes will make crossings safer and more comfortable. A stout hiking staff or hiking poles can also be useful. Loosen your backpack so you can quickly discard it if necessary. If you lose your footing and are swept away, float with your feet downstream to protect your head.

If you become stranded on the wrong side of a stream because of rapidly rising water, be patient. Flooded streams will

recede steadily after rains cease.

There are no life-guarded swimming areas in the national park. Swimming is at your own risk and not advised by the National Park Service. Those who decide to try tubing often find themselves stranded by rising waters, requiring arduous swift-water rescues. Some 'tubers' have been severely injured or drowned. Visitors need to seriously consider these risks for themselves and their children before venturing into park waters.



The Sinks has numerous signs posted advising visitors of strong currents and hidden hazards. Image by Bill Lea

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 15.

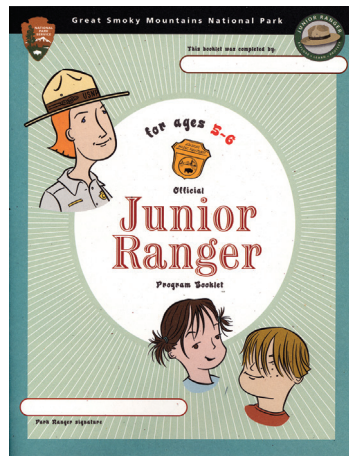
Mingus Mill, located 2 miles north of Cherokee, NC, near the Mountain Farm Museum, opens April 1.

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 NPS*



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

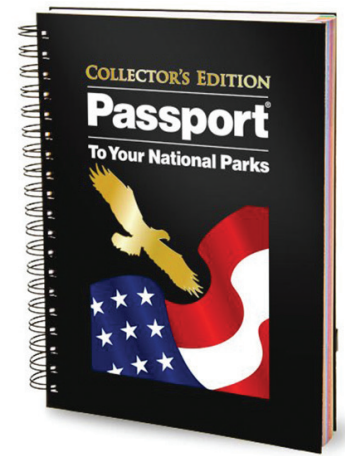
These peaceful pathways are scattered around the park offering visitors an opportunity to step outside their vehicles and soak in the Smokies' lush and intricate beauty. Parking is limited to 3 or 4 vehicles to keep the walkways quiet. A few of the trails are short loops, but most are linear trails inviting 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, Cataloochee, Newfound Gap Road, Tremont Logging History and

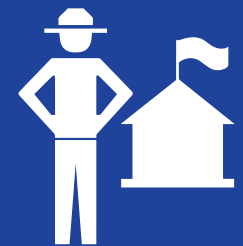
Mingus Mill. *Image of Cades Cove (left) by Bill Lea*



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!**

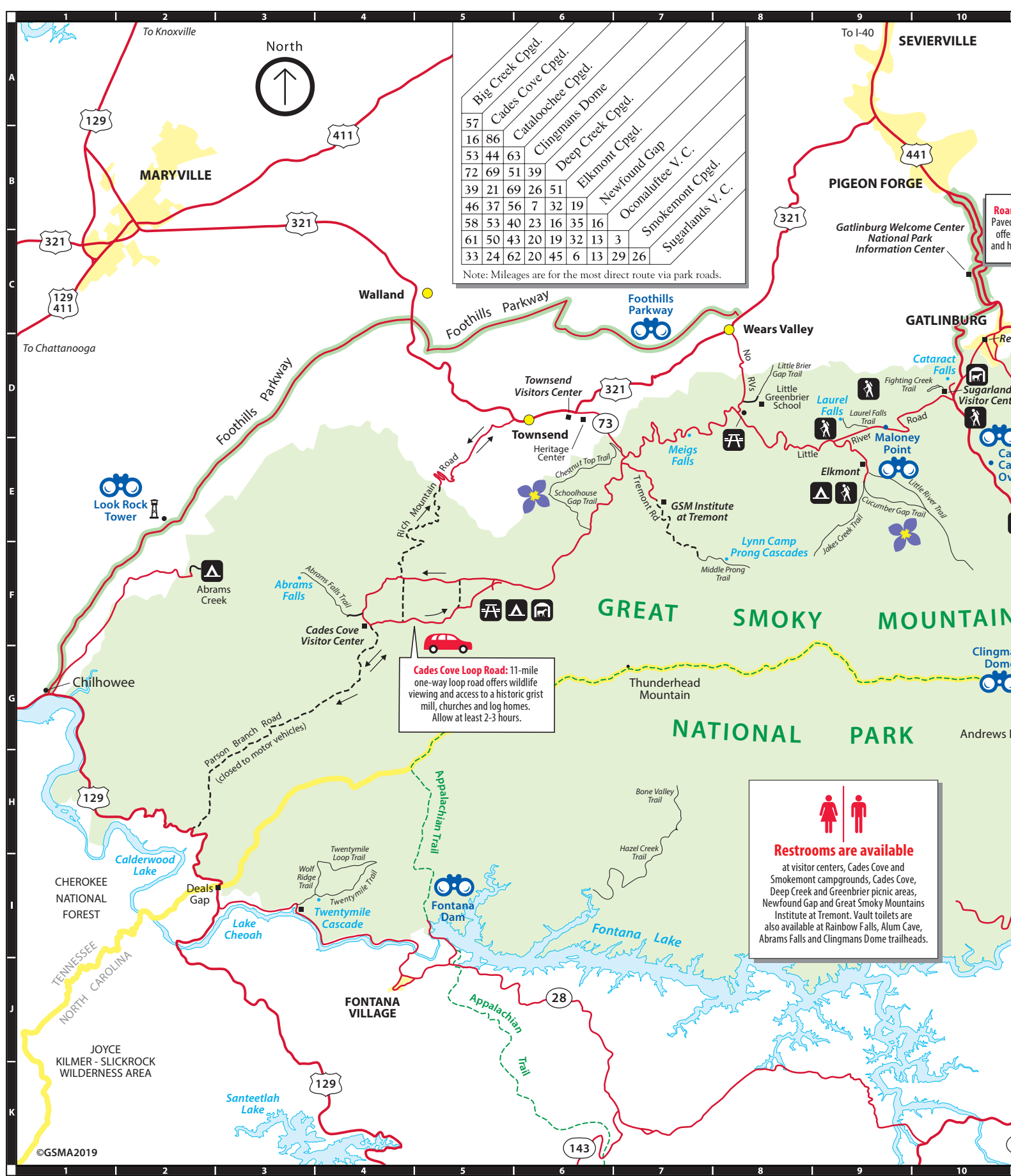
Chasing wildflowers Through spring

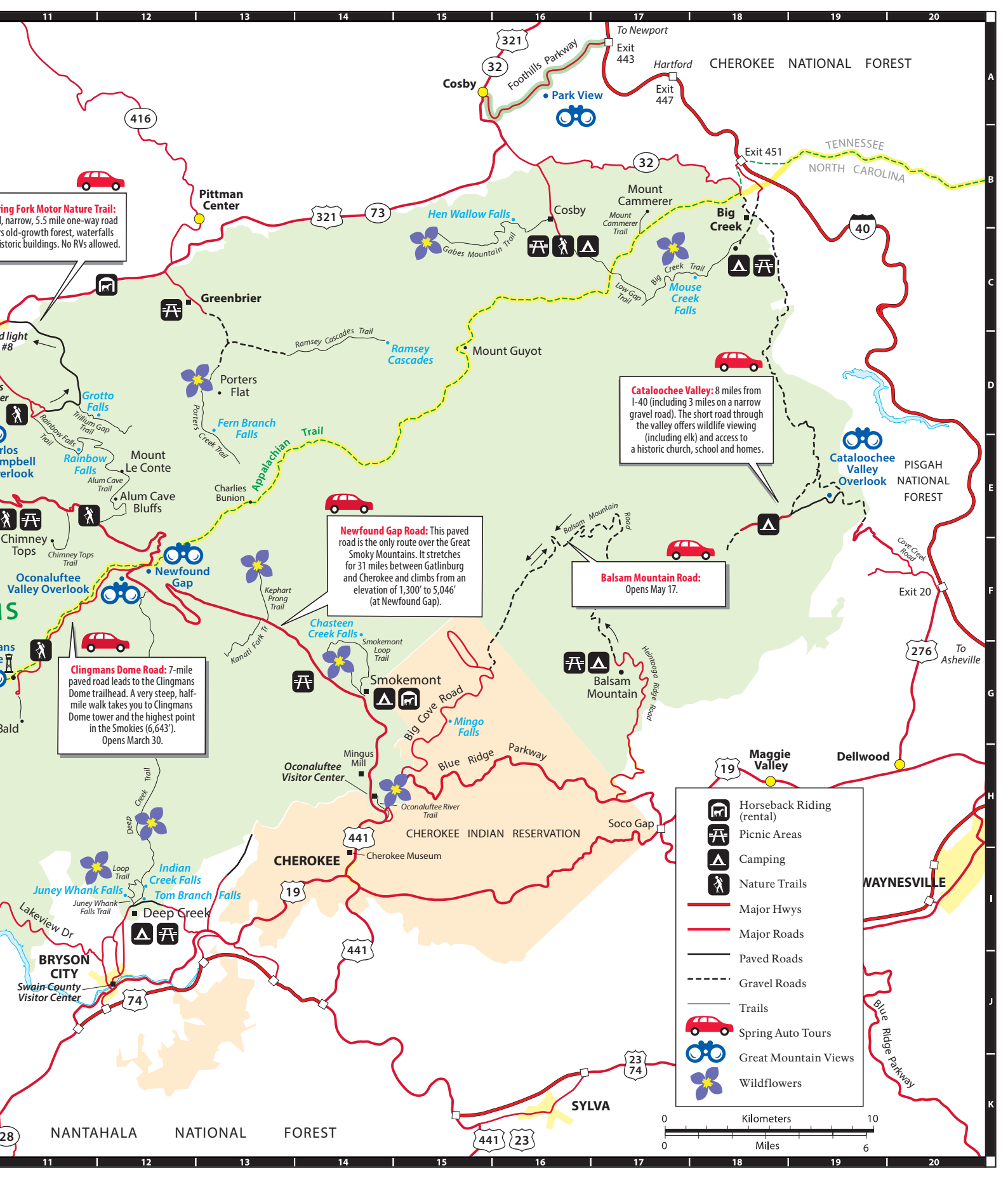
Spring is an excellent time to appreciate the diversity of plant life harbored in the Great Smoky Mountains. Spring wildflowers make their showiest displays on the moist slopes and coves of lower-elevation deciduous forests. The forest floor may be blanketed with tiny blossoms contrasted against lush, green leaves. Ants, bees and other insects eagerly attend to their work of dispersing seeds and pollinating plants. As the weeks pass, temperatures warm and days lengthen, and the best displays creep toward higher elevations by mid-May.

Enjoying wildflowers is as simple as taking a drive along park roads with a watchful eye, strolling along one of the Quiet Walkways found on Newfound Gap and Little River roads, or hiking a trail like Chestnut Top, Deep Creek, Oconaluftee River Trail, Cove Hardwood Nature Trail or Porters Creek. Among the favorite spring wildflowers to look for are hepatica, bloodroot, spring-beauty, phacelia, violets, lady's slippers and some of the many species of trillium that grow in the park.

Due to the partial government shutdown this winter, delays in the spring opening of park facilities—including secondary and high-elevation roads—are anticipated because of the reduced timeline for seasonal staff hiring and project planning. For the most up-to-date information about road closures, go to nps.gov/grsm.

All roads are subject to temporary closures due to snow, ice or flooding.





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

Light #8

Chimney Tops

Oconaluftee Valley Overlook

Chimney Tops

Chimney Tops

Chimney Tops

Chimney Tops

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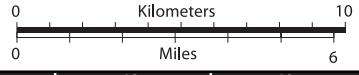
Newfound Gap Road: This paved road is the only route over the Great Smoky Mountains. It stretches for 31 miles between Gatlinburg and Cherokee and climbs from an elevation of 1,300' to 5,046' (at Newfound Gap).

Cataloochee Valley: 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.

Balsam Mountain Road: Opens May 17.

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



Spring's Return is a Celebrated Time

Great Smoky Mountains National Park is a world-renowned preserve of wildflower diversity

Wildflowers arrive each spring in the Great Smoky Mountains with a parade of delicate colors and curious forms. Along with the sweet sounds of songbirds, the cheery faces of hepatica, bloodroot, spring-beauty and a myriad of others signal that the forest is waking up from a brief winter's rest.

Great Smoky Mountains National Park is world-renowned for its biodiversity and boasts more than 1,600 different kinds of flowering plants. Wildflowers bloom every month of the year, but the peak of spring blooming is usually early to mid-April, with flowers in the higher elevations beginning later and persisting into May.

The incredible variety and intriguing beauty of wildflowers make this one of the most celebrated times of the year in the Smokies. This spring extravaganza can be enjoyed from the road or along a trail, and visitors literally flock to this area to witness the spectacle.

The 69th annual Spring Wildflower Pilgrimage will take place in Gatlinburg April 24-27. Winner of the 2018 Public Lands Alliance award for Outstanding

Public Engagement, the event includes hikes, rambles, workshops and lectures that connect attendees with the Smokies' wondrous biodiversity. Those interested should register at WildflowerPilgrimage.org.

Even as we anticipate the joys of spring today, people living in these mountains before the establishment of Great Smoky Mountains National Park also welcomed this time and its new growing season, for it brought many of the necessities of life. The people living here had an intimate understanding of the forest and its plant resources—knowledge that sustained them long before they had access to modern doctors, grocery stores and other conveniences. The forest provided food, medicine and the materials they needed to build their homes, and even offered clues for when they should plant their crops or herd their livestock. The first bunches of tender, wild, edible greens were a welcome change to the palate after a winter of dried, cured, sulfured or otherwise preserved foods, and a lifetime of living close to the land meant folks

knew exactly which plants were food and which were not.

The Cherokee have long known the virtues of many plants in this region. When this land became a national park in the 1930s, its rich biodiversity was protected from harvesting by federal law, but a proposed rule could soon allow for a limited number of Cherokee tribal members, who must have permits, to collect a favorite edible spring green called sochan.

Known to many as green-headed cone-flower (*Rudbeckia laciniata*), sochan is an abundant, late-summer-blooming perennial with tall stalks and large, yellow flowers. The Cherokee seek its young spring leaves, which emerge well before the flowers. These leaves are rich in vitamins and minerals, including Vitamin A, iron, calcium and potassium, and the spring harvest is considered a sacred family tradition—a time to pass on knowledge of wild plants to the next generation. Under the guidance of the proposed agreement between the Eastern Band of Cherokee Indians and the National Park Service,

it is possible that the Cherokee will soon continue this culturally significant spring tradition on lands within the park where their ancestors once trod.



Top: Mountain families considered toothwort a favorite spring herb. The fresh, green leaves were prepared with bacon grease or soaked in vinegar, and the peppery root was similar to horseradish. *Image by Charles Wilder.* **Middle:** Green-headed cone-flower, 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.* **Bottom left:** Spring Wildflower Pilgrimage leader points out ferns and wildflowers along Porters Creek. The event features professionally-guided walks, exhibits and other learning opportunities to explore the region's rich natural and cultural resources. *Image courtesy of Spring Wildflower Pilgrimage*





Climate Changes Affect the Smokies—its Visitors and its Staff

Image by Bill Lea

Spring is a notoriously fickle season, reliably unfolding ‘early’ or ‘late’ each year. Now there is considerable science to support that, since 1970, Smoky Mountain springs are significantly earlier and warmer.

“In May 2018 we had our warmest average low temperature on record (going back to 1922 from the National Weather Service monitoring site near Park Headquarters),” says Jim Renfro, the park’s air quality specialist and the person in charge of collecting and managing the park’s weather data. “The average low temperature was 56.6° F last May, seven degrees above the norm.”

At Sugarlands Visitor Center, since 1970, Aprils have warmed by an average of 4.1° F, Mays by 5° F, and June by 4° F. Most of the rise is reflected in the morning lows. “We’re not getting as cold at night,” Renfro says.

Over their millions of years of existence, spring wildflowers have adapted to rely on soil temperature and moisture as their primary gauges for timing blooms. Since the sole objective of putting all that plant energy into creating a big beautiful flower is to attract pollinators and make viable seeds, they don’t want their timing to be off. Blooms generally only last a few days, so flowering before the pollinators—butterflies, bumblebees, moths, ants, beetles, hummingbirds—show up can be disastrous.

If the current 48-year-long trend continues, park visitors hoping to catch the peak of spring wildflowers should plan their trip for early rather than late April. In 2012, when March was a whopping 10° F above average, many spring wildflowers had lost their shine by April 1.

“According to the National Phenology Network, trees in our region are greening up 15-20 days earlier,” says Paul Super, the park’s research coordinator. Caterpillars, which dine voraciously on tree leaves, appear to be likewise emerging earlier. Unfortunately, migratory songbirds that are flitting about in the tropics during March and April, contemplating heading north for the summer breeding season, have no idea how warm it is in the southern Appalachian Mountains. “They rely on changing day length to trigger their migration,” Super says. 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.

The higher temperatures also affect human migrations. Over the past 40 years, visitation to the park in March has more than doubled. Conversely, due to budget constraints, the number of park staff has decreased, and seasonal employees and those subject to furlough generally don’t start their stints until late April or May. Due to the number of days the government was shut down during the first part of this year, there may be even more hiring delays in 2019. As a result, the 2.5 million or more visitors who flood the park this spring may be frustrated by closed roads, campgrounds, picnic areas, restrooms and other facilities that the park service lacks the staff to maintain. Park employees appreciate your patience during this period of low staffing.

Smokies Bats Hang in the Balance

White-nose syndrome takes its toll on bat populations in the park

Story by Aaron Searcy • Illustration by Emma DuFort

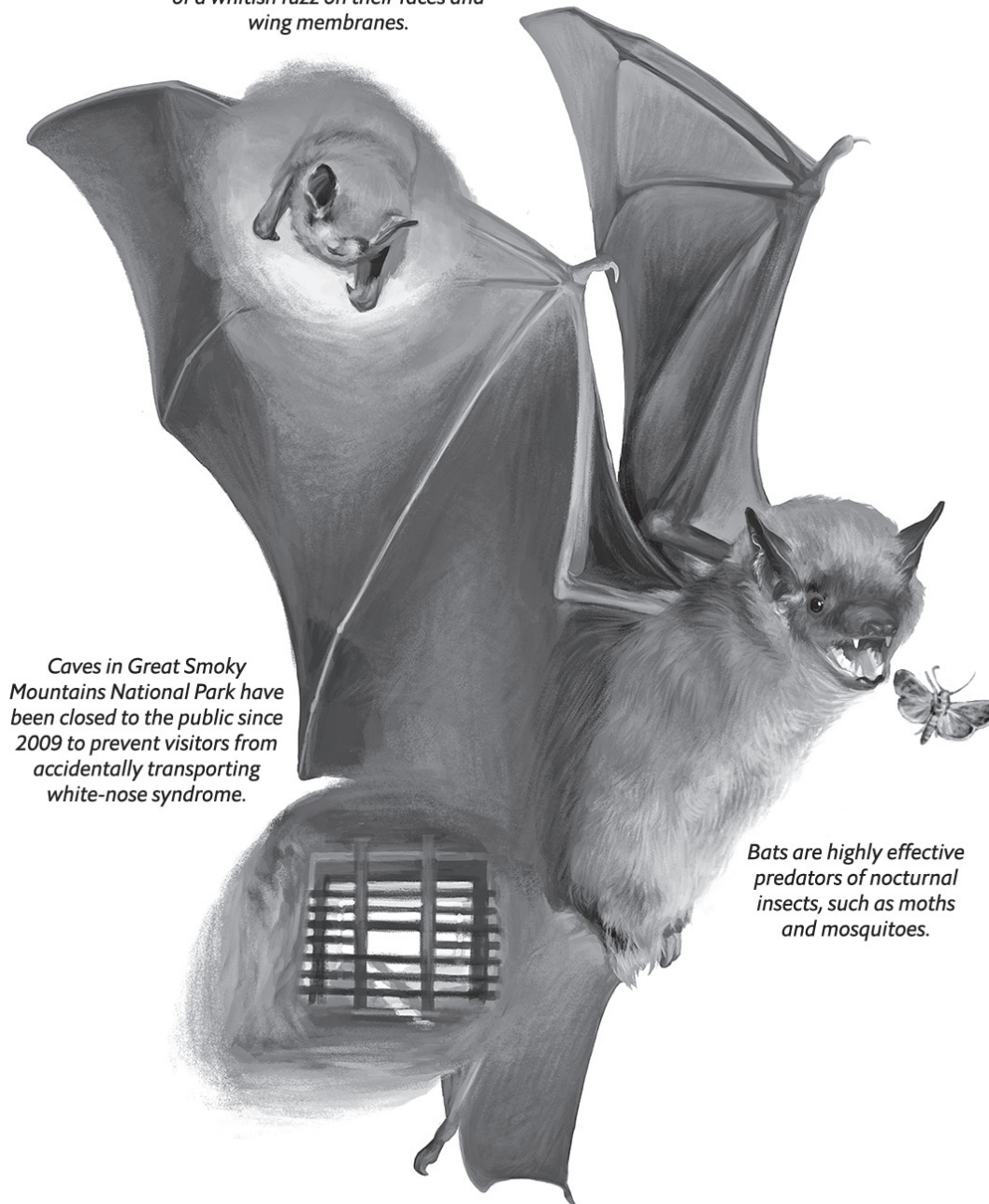
As spring brings warmer weather to the Smokies, park bats emerge from a long winter hibernation under threat from the deadly white-nose-syndrome. Some endangered park bat species have seen population declines as sharp as 97 percent.

This year marks a decade since GSMNP closed all park caves and mining complexes to the public in an attempt to limit the spread of the lethal disease known as white-nose syndrome (WNS). At that time, the disease was primarily limited to caves and mines throughout the Northeast, where it had already brought about precipitous declines for the endangered Indiana bat and killed more than 90 percent of the bats in some hibernacula.

Despite mitigation efforts by park rangers, biologists and researchers, the following year (2010), white-nose syndrome made its way to the Smokies. The first evidence of the disease was discovered in a park cave when a little brown bat collected from the site tested positive for *Pseudogymnascus destructans*—the cold-loving fungus responsible for white-nose syndrome. Since then, the disease has spread far beyond its original boundaries to as far west as the state of Washington, leaving in its wake more than six million dead bats across North America and one of the fastest declines of wild mammal populations to date.

Monitoring shows that GSMNP bat species have proven no exception to the rule, suffering devastating population losses over much of the last decade. While emerging research from elsewhere may offer possible

White-nose syndrome can typically be identified in bats by the presence of a whitish fuzz on their faces and wing membranes.



Caves in Great Smoky Mountains National Park have been closed to the public since 2009 to prevent visitors from accidentally transporting white-nose syndrome.

Bats are highly effective predators of nocturnal insects, such as moths and mosquitoes.

short-term treatments for bats affected by the disease, park staff and researchers continue to study the ecology, habitat requirements and behavior of bats in the presence of WNS. The hope is to better support survivors of the disease and enhance reproduction for the species that seek refuge in the Smokies.

What is White-nose Syndrome?

White-nose syndrome takes its name from the appearance of a white fungal growth on the muzzle and wings of bats infected with the disease. The fungus thrives in dark, cool environments and spreads among cave-dwelling bats when they reduce their metabolic rate and lower their body temperature to enter winter hibernation. It can be transmitted through physical contact with bats infected with the disease or the surfaces of caves or mines where they hibernate. While humans cannot contract WNS themselves given the cooler body temperatures it requires to thrive, they can spread the disease from one cave to another by unintentionally carrying it on clothing, shoes or gear.

Although not necessarily lethal by itself, the fungus induces far more frequent arousals from torpor throughout bats' five- to six-month hibernation, causing them to expend their valuable stores of fat and energy before they can replenish them in the spring. Researchers also believe that, in addition to forcing bats to burn much more energy than usual, WNS may disrupt other critical physiological functions such as water balance by causing dehydra-



tion through physical damage to wing skin membranes.

Bats affected by WNS may fly erratically or congregate near the entrances of caves. It is important to avoid disturbing them. Posted area closures in the park refer not just to the cave itself but also to the areas around cave mouths in order to give space to weakened bats, says NPS biologist Paul E. Super. "The bats are in such a rough state they need not to be disturbed when they are roosting or flying."

Decontaminate your shoes or gear if you've been in any cave outside of the park, as it might have been infected. If you happen to see a dead or sick bat, please report your sighting to a park ranger. Do not attempt to touch or handle any bat and do not enter any closed areas.

Monitoring Bats in the Smokies

One bit of good news is that not all of the park's bat species have been

equally affected by WNS. Of the 13 bat species found in the park, ten stay over the winter, and only six hibernate in caves and mines. Others, such as Hoary and Seminole bats, usually migrate to warmer areas. For those that do hibernate in the park, monitoring suggests significant but varied WNS impacts.

Winter cave surveys in 2016 found decreases in the overall number of bats and a 94.4 percent decrease in the Indiana bat population in a cave that historically housed more than 2,400 bats. The most recent winter counts show that Indiana bats have suffered an overall loss of 91.8 percent, tri-colored bats a loss of 97.6 percent and little brown bats a loss of 94.6. On the national level to date, little brown bat populations have decreased by about 90 percent, while tri-colored and northern long-eared bats have suffered losses of roughly 97 percent.

Capture rates, however, actually appeared to have increased since the previous pre-WNS survey for some other bats such as eastern small-footed and big brown bats according to a 2016 park survey. This squares with the findings of some researchers that suggest big brown bats have fared better than other species and either have natural resistances to WNS or have adapted a means of evading its deadly side effects.

A Refuge in the Park

The Smokies provide a valuable haven for endangered and regional bat species through access to mature forests, water sources, safe hibernacula and freedom from excess light and noise pollution.

Bats perform ecologically significant roles as the primary predators of nocturnal insects. One little brown bat can eat as many as 1,000 mosquito-sized insects in an hour, and a nursing female can consume her body weight in insects

in a single night. Bats' suppression of forest and agricultural pests accounts for nearly \$3.7 billion worth of insect control for US farmers every year. They also pollinate night-flowering plants, provide valuable nutrients to cave ecosystems through their guano, and serve as prey for other animals including owls, hawks, falcons, weasels and ringtail cats.

While in GSMNP, remember to heed all cave closures, refrain from touching or moving bats or other wildlife, and report visibly sick bats to a ranger. You can also contribute to healthy bat populations near your home by reducing outdoor lighting wherever possible, minimizing tree clearing and protecting local waterways and wetlands.

GSMNP biologist Paul E. Super, wildlife biologist Bill Stiver and University of Tennessee biologist Dr. Emma V. Willcox contributed helpful advice and insights for this piece from their invaluable work with bats in the Smokies.



IF YOU LOVE THE SMOKIES

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

Great Smoky Mountains Association

Since 1953, Great Smoky Mountains Association has supported the educational, scientific and historical efforts of the National Park Service through cash donations and in-kind services. By the end of 2019 alone, the association will have provided more than \$2 million in assistance that includes saving hemlock trees, living history demonstrations, environmental education programs, historic preservation, and salaries for wildlife personnel.

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 newsletter, *The Bearpaw*
- 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 members to immerse themselves 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 using the coupon to the right, visit SmokiesInformation.org, or call us at 888.898.9102 x349. Memberships start at just \$35 per year.



adults who long to get out and explore the park accompanied by expert guides. Programs are offered by the Smoky Mountain Field School and include Mt. Le Conte overnights and workshops on wildlife, edible plants, wildflower photography, animal tracking, bird watching, salamanders and mountain cooking. One-day programs start at as little as \$79. Contact: 865.974.0150 or visit smfs.utk.edu.

Great Smoky Mountains Institute at Tremont

Great Smoky Mountains Institute at Tremont turns 50 this year and continues its long tradition of providing residential environmental education programs in Great Smoky Mountains National Park. Up to 5,000 students and adults annually attend workshops and school programs at the Institute. Tremont's adult workshops include birding, backpacking, environmental education, teacher escapes, naturalist weekends and photography. GSMI at Tremont also offers a variety of summer youth camps in the national park lasting from six to 11 days and starting at \$589. Fees include meals, lodging and most equipment. Offerings include Discovery Camp (ages 9-12), Wilderness Adventure Trek, Girls in Science (ages 12-15), and Teen High Adventure (ages 13-17). Contact 865.448.6709 or visit gsmit.org.

GREAT SMOKY MOUNTAINS INSTITUTE AT TREMONT

Discover Life in America

The Smokies are known for their biodiversity and Discover Life in America recently celebrated the 20th year of the All Taxa Biodiversity Inventory with the announcement of a major

milestone of the project—the 1,000th new species to science! DLIA formed 20 years ago to carry out the ATBI, the goal of which is to identify every variety of plant and animal in the park. The organization works with leading biologists from around the globe to conduct the inventory and identify species that are observed.

DLIA recruits legions of volunteers and interns to become 'citizen scientists' who help with the work. These participants get an insider's look at the park, as well as firsthand knowledge of biology, field science and laboratory practices. Funding for DLIA comes from donations from individuals and institutions and also from the national park.

Learn more at dlia.org or by calling 865.430.4756.

Friends of the Smokies

Friends of the Smokies is an official nonprofit partner of the National Park Service and Great Smoky Mountains National Park that helps to raise funds and public awareness and provide volunteers for park projects.

Since 1993, Friends of the Smokies has raised \$65 million to support critical park projects and programs including:

- Management and research of bears,

elk, native brook trout and other wildlife

- Intensive rehabilitation projects on the park's most impacted hiking trails like Alum Cave, Chimney Tops and Rainbow Falls

- Hands-on, curriculum-based environmental education for school children in Western North Carolina and East Tennessee

- Facilities and improvements to maintain a world-class visitor experience

- Historic preservation of cabins, churches and mills in Cades Cove and Cataloochee Valley

Your support of Friends of the Smokies makes these projects and much more possible.

Make a donation and become a member today at FriendsOfTheSmokies.org, purchase a specialty license plate at BearPlate.org, or join FOTS for one of its special events like the Evergreen Ball or Smokies Stomp Barn Party. Your donations help preserve and protect Great Smoky Mountains National Park for generations to come. For more information, visit FriendsOfTheSmokies.org or call toll-free 800.845.5665.



Smoky Mountain Field School

An exciting variety of adventures awaits





Going Fishing?

Healthy Streams Means Cleaning Your Gear

Smokies' aquatic life vulnerable to accidentally transferred pests

Illustration by Emma DuFort

Whirling Disease—spread by the European parasite *Myxobolus cerebralis*—lethally disables and deforms young trout species, causing them to ‘whirl’ in place. The disease has been detected

in the South Holston, Lower Watauga and Doe rivers and, like gill lice, is more prevalent in fish raised in hatcheries.

So far neither gill lice nor Whirling Disease have been discovered in the

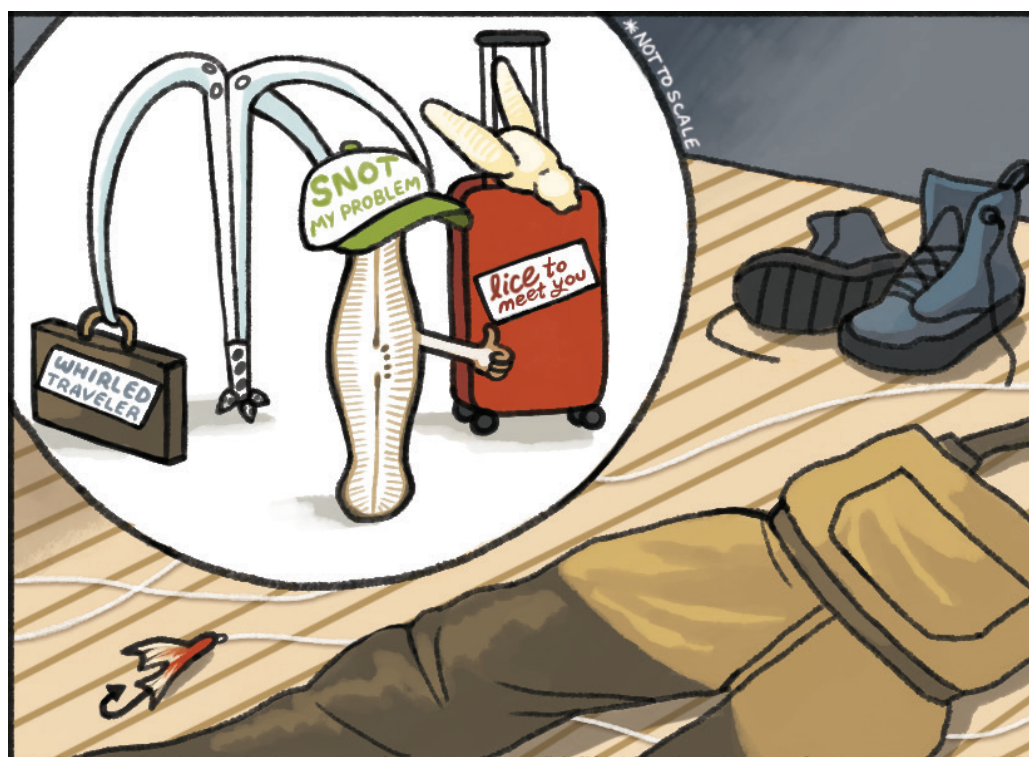
Smokies. Nevertheless, NPS fisheries technician Caleb Abramson says park staff are staying vigilant through regular sampling and monitoring efforts.

“What’s concerning is that stocked (non-wild, hatchery reared) trout can travel significant distances from where they are originally distributed by the state agencies,” he says. As long as these stocked fish and the diseases they carry remain downstream, the Smokies’ wild, self-sustaining fish populations will remain a popular draw for anglers in search of a challenge.

In addition to never transporting fish alive or dead from one body of water to another, you can significantly contribute to maintaining healthy fisheries and ecosystems in the park through these responsible cleaning practices:

- **Clean** all clothing and equipment on site before leaving water access
- **Drain** all water from equipment such as live wells, bilges, motors or buckets
- **Dry** equipment thoroughly between use in tailwaters for a minimum of 48 hours

You can also reduce the chances of introducing harmful species to the park by designating a pair of wading boots specifically for use in GSMNP. Take advantage of wash and treatment stations where possible.



Fishing is permitted year-round in the park, and a TN or NC fishing license is required. Either state license is valid throughout the park, and no trout stamp is required. Fishing with bait is prohibited. A special permit is required for the Cherokee reservation and Gatlinburg. A free fishing map with a complete list of all park fishing regulations is available at visitor centers.

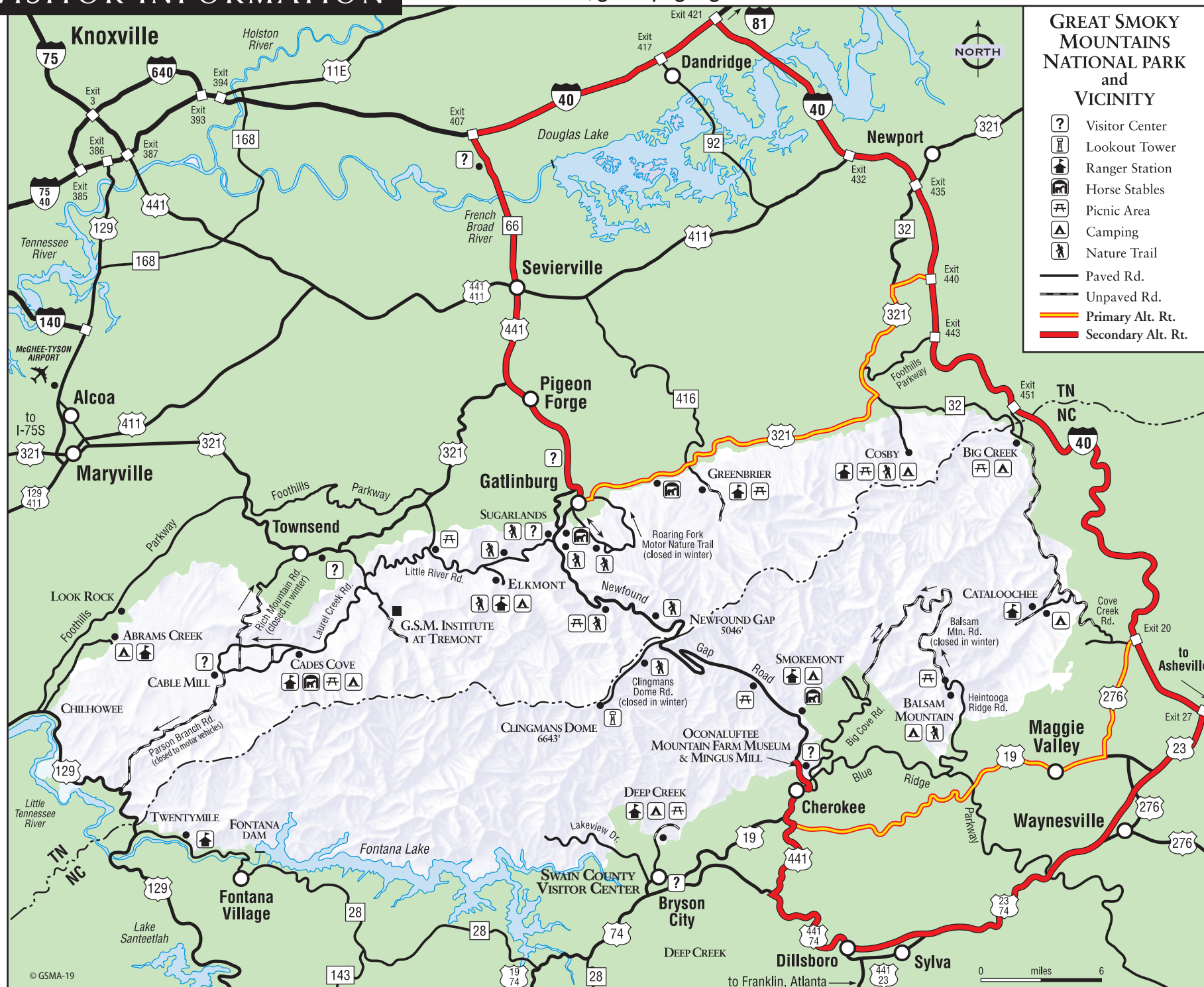
As the weather warms, you may be planning a trip to one or several of the park’s mountain streams. But maintaining healthy waterways for the 77 species of fish that call the park home relies on keeping these waters free of invasive parasites and disease. Make sure your clothing and equipment are clean and free of mud before entering park waterways to stop destructive aquatic nuisance species and disease from spreading into the Smokies.

Park fisheries biologists are on alert after the discovery of *Didymosphenia geminata*, often called “Didymo” or “rock snot,” in regional rivers like the Clinch, Holston, South Holston and Lower Watauga. While these rivers remain popular destinations for many anglers who may also frequent the park, the algae Didymo can ‘hitchhike’ on clothing or gear and quickly spread in cold water to blanket the substrate of streams with a thick, felt-like carpet, dramatically reducing the insect and food availability for trout and other fish species.

Other downstream threats detected in Western North Carolina include non-native gill lice and Whirling Disease. Gill lice, which can inhibit fish’s ability to breathe, have been found spreading among native brook trout and may impact the trout’s ability to compete with non-native fish species.

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.