



SMOKIES GUIDE

The official newspaper of Great Smoky Mountains National Park • Spring 2018

In this issue

- Smokies trip planner • 2
- Great sights to see • 4
- National Park news • 5
- Things to do • 7
- Spring driving tours map • 8
- Cherokee clothing • 10
- In-sync: Fireflies • 11
- State of the park • 12
- How to help the Smokies • 14
- Park etiquette • 15
- Visitor information • 16



Ranger Ryan Williamson, wildlife technician

Painted trillium (*Trillium undulatum*) reaches the southern-most extent of its range in the southern Appalachians. It is a plant of cool woods, following spruce and fir trees all the way to Canada. Image by Bill Lea

Finding flowers

The Smokies is home to more than 1,500 kinds of flowering plants.

Few places in the world can rival the abundance and diversity of spring wildflowers in Great Smoky Mountains National Park. The reasons for this exuberance are legion, including plentiful rainfall, variety of elevations and slope exposures, long growing season, national park protection and the lack of glaciation during past ice ages.

There are as many ways to enjoy the park's flora as there are visitors drawn to the Smokies each spring. For those preferring to search for flowers from their vehicles, park roads like Roaring Fork Motor Nature Trail, Tremont Road, Little River Road and the Blue Ridge Parkway offer extraordinary opportunities. For those willing to walk

a ways on a park trail, consider Bradley Fork, Kanati Fork, Mingus Creek, Chestnut Top, Cucumber Gap, Cove Hardwood Nature Trail and many of the short Quiet Walkways.

Flowers will become seeds with a little luck and successful pollination. These seeds will grow into even more wildflowers—that is *if* we humans don't botch things up. That means not picking or trampling wildflowers. It is not OK for photographers to trample several flowers just to get a photo of a perfect specimen a little further from the trail. Each trampled flower represents seeds that will never mature and their unique genetic material that will never get passed on.

WILDFLOWER CALENDAR

March 15-April 1: Early wildflowers like bloodroot and hepatica bloom at the lower elevations. Redbud trees bloom.

April: The peak of woodland wildflowers at the low and mid-elevations. Dogwood trees bloom.

May: Mountain laurel blooms. Spring flowers bloom along the Appalachian Trail and other high-elevation sites.

June: Catawba (purple) rhododendron blooms early in the month. Rosebay (white) rhododendron blooms at the lower elevations.

Words with a Ranger

In the spring, we get lots of questions about bear cubs. The mother bear and her cubs generally emerge from their winter dens in late March or early April. The cubs were probably born in February, so they are tiny, weighing just a few pounds when they leave the winter den.

Female black bears give birth to an average of one to four cubs every two years.

This spring we expect to have...

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 6 months in advance. Reservations are *required* at Abrams Creek, Balsam Mountain, Big Creek and Cataloochee campgrounds.

Site occupancy is limited to 6 people and two vehicles (a trailer = 1 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. 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, camping fees and maximum RV lengths.

For current dates of operation, visit nps.gov/grsm.

- **Abrams Creek** 16 sites, elev. 1,125', opens April 27, \$17.50, 12' trailers
- **Balsam Mountain** 42 sites, elev. 5,310', opens May 18, \$17.50, 30' RVs
- **Big Creek** 12 sites, elev. 1,700', opens March 30, \$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 March 23, \$25, 31' RVs
- **Cosby** 157 sites, elev. 2,459', opens March 23, \$17.50, 25' RVs
- **Deep Creek** 92 sites, elev. 1,800', opens March 30, \$21, 26' RVs

- **Elkmont** 220 sites, elev. 2,150', opens March 9, \$21-\$27, 32'-35' RVs
- **Look Rock** Closed
- **Smokemont** 142 sites, elev. 2,198', open year-round, \$21-\$25, 35'-40' RVs.

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 in the park 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. 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 9-Sept. 26, 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

- **Le Conte 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

March 17, April 21, May 5 and 19

Back Porch Old-Time Music Jam:

Oconaluftee Visitor Center, 1-3 p.m.

April 24-28, 2018 Spring Wildflower

Pilgrimage: parkwide

May 8-12, 2018 Wilderness Wildlife

Week: parkwide

June 16 Womens' 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.



Image by Bill Lea

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: March 15

SUMMER: June 1
LATE SUMMER: mid-August
AUTUMN: Sept. 15
WINTER: Dec. 1

Editor
Frances Figart

Lead Writer
Steve Kemp

Lead Designer
Karen Key

NPS Coordinator
Nigel Fields

Editorial Board
Katie Corrigan
Lynda Doucette
Kristine Johnson
Julianne Geleynse

Laurel Rematore
Susan Sachs
Paul Super
Stephanie Sutton
♻️ Printed on recycled paper

Contributing Designers
Lisa Horstman
Joey Heath
Emma DuFort

© 2018 Great Smoky Mountains Association
P.O. Box 130
Gatlinburg, TN 37738



Picnic sites have a picnic table and a raised grill for cooking.
Image by Bill Lea

Visitor centers

Spring hours of operation are, Oconaluftee and Sugarlands: 8-5 in March; 8-6 in April and May. Cades Cove: 9-6:30 in March; 9-7 in April and May. Clingmans Dome (opens April 1): 10-6.

Picnic areas

Picnic areas open year-round are: Cades Cove, Deep Creek, Greenbrier and Metcalf Bottoms. All other picnic areas (except Heintooga) will open on March 30 or earlier. Heintooga opens May 26. 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.

• **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.

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 abrupt weather changes and the danger of hypothermia—the lowering of body temperature. The combination of rain, cold and wind (especially at the higher elevations) is extremely dangerous.

To prevent hypothermia, carry reliable rain gear at all times. Layer clothing that provides warmth when wet (not cotton). Be prepared for sudden and drastic weather changes. Stay dry.

Driving distances and estimated times

Cherokee, NC to:

Gatlinburg: 34 miles (1 hour)

Cades Cove: 57 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 (2 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 (2¼ hours)

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.

GREAT SIGHTS TO SEE

I. 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 (A.T.). 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 A.T. between Newfound Gap and the Road Prong Trail intersection.

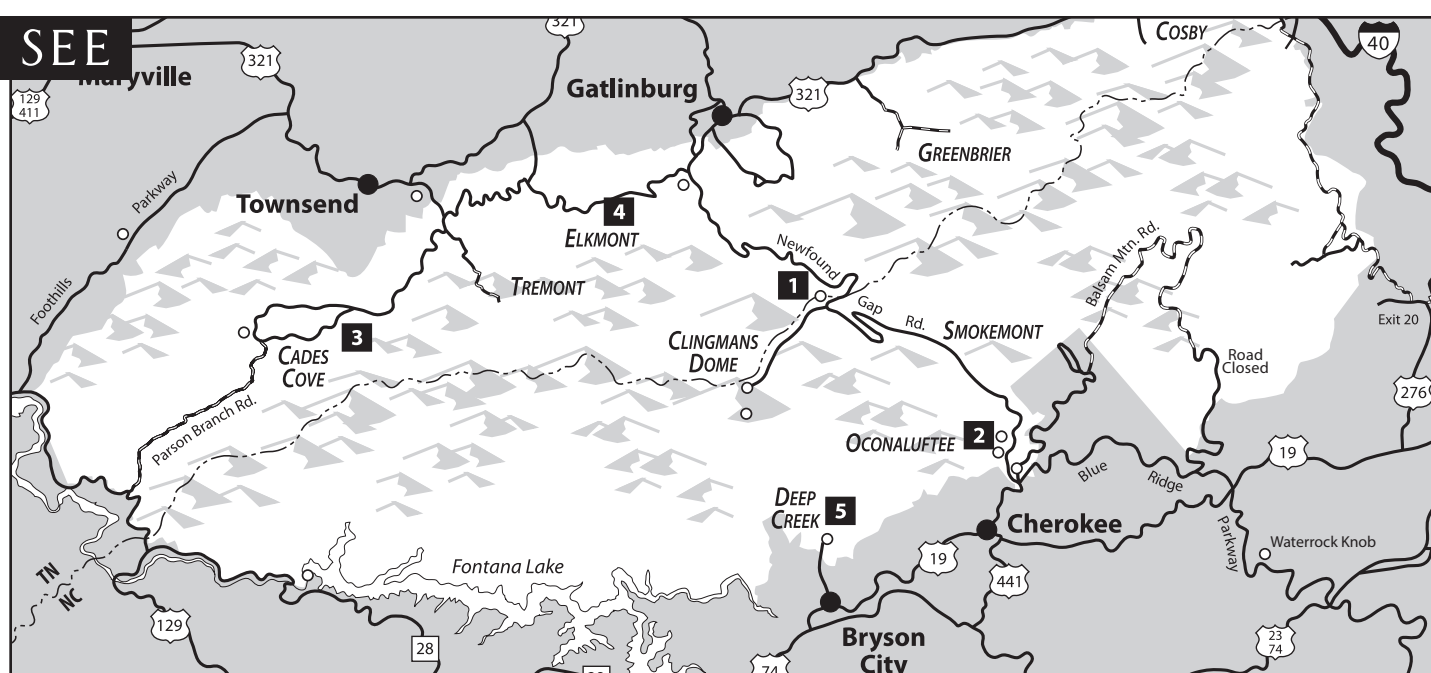
Mileage from Gatlinburg—16
from Cherokee—18
from Townsend—34

2. Oconaluftee Museums

Highlights: historic buildings, exhibits, nature trail

This history buff's paradise now offers free indoor and outdoor museums that depict the life of mountain families from the Cherokee to the creation of the national park. The outdoor farm museum also features old-time breeds of livestock (seasonally) and an heirloom garden and row crops. An audio tour of the museum is also available for a nominal fee.

The 2-mile Oconaluftee River Trail starts at the museum and follows the river to Cherokee, providing opportunities for viewing wildlife like elk and beaver. Colorful exhibits that highlight



Cherokee stories and lore are located along the trail.

The visitor center and mountain farm museum are located on U.S. 441, two miles north of Cherokee, NC. Open 8-5 (March), 8-6 (April-May).

Mileage from Gatlinburg—32
from Cherokee—2
from Townsend—50

3. 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

4. Old Elkmont Town

Highlights: historic buildings, walking trails

The Elkmont area was once a logging boomtown and a bustling enclave of summer vacation homes. Today, the National Park Service has restored the Appalachian Clubhouse, Spence cabin and four other historic buildings that offer a glimpse into the summer resort era.

Elkmont also has a variety of easy-to-moderate hiking trails, including the Cucumber Gap loop (5.5 miles), Elkmont Self-guiding Nature Trail (0.8 mile round-trip), Jakes Creek Falls (3.2 miles round-trip), and Huskey Branch Falls (4.3 miles round-trip). Little River Trail makes a pleasant streamside stroll.

Anglers have long frequented nearby Little River for its excellent trout fishing. Mileage from Gatlinburg—7

from Townsend—15
from Cherokee—39

5. 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

Words with a Ranger

continued from page 1

...more yearlings than cubs. They were born in February of 2017, but still spent this last winter in the den with their mother. These yearlings will be 20-40 pounds this spring.

The first weeks out of the den are the hardest. 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, tree buds, flowers, roots, or wild grapes leftover from the fall. And of course the strange looking wildflower bear corn, when it comes up.

A lot of people are surprised to learn how much mom and cubs vocalize. Mom has several commands she gives to her cubs, sounds that seem to mean 'climb the tree,' 'stay,' 'come down from the tree' and 'stay close.' Of course the cubs call for mom when they are hungry or feel threatened.

When people see cubs without mom, they shouldn't be too alarmed. Mother bears often leave their cubs to go forage. After all, mom is eating for herself and the cubs. Her offspring are likely to continue nursing through their first year.

With cubs and mother bears, it's more important than ever to maintain a minimum distance of 50 yards between you and the bears. They need their space. When people try to approach a bear for a closer look or to take a picture, it really stresses the bear.

If you care about bears and other wildlife, and your own safety, you'll set a good example to your friends, family and other park visitors by keeping your distance. Others will follow your lead.

PARK NEWS

Great Smoky Mountains National Park news briefs

Discover Life in America: The Hunt Is on for Smokies' 1,000th New Species

After 20 years of scouring the ridges and valleys of Great Smoky Mountains National Park in search of everything from birds to bryophytes to butterflies, Discover Life in America (DLIA) is closing in on three major species discovery milestones:

- The 1,000th park species new to the science books
- The 10,000th species added to park lists by DLIA
- The 20,000th species known to live in the park

"I think we have an excellent chance of hitting the 1,000th species new to science mark in 2018," said Todd Witcher, executive director of DLIA. "We have dozens of potential new species going through the vetting process as we speak."

DLIA was launched in 1998 as an effort to identify every variety of plant and animal in the park. The Smokies have long been renowned for their abundance and diversity of life, including some 1,600 species of flowering plants, 30 types of salamanders, and at least 1,862 butterflies and moths. Knowing what creatures reside in the park helps the National Park Service better protect the Smokies against threats like air pollution, wildfire, habitat fragmentation and climate change.

The organization functions by using mini grants and other funding sources to persuade leading biologists from around the globe to spend a little time in the park collecting specimens and, later, complete the more tedious process of identifying what they found. New information is then logged into a massive

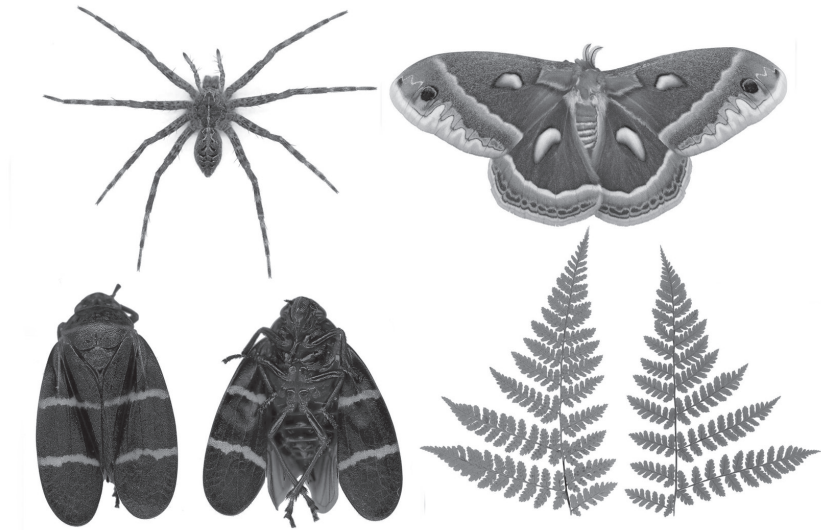
database that not only shows what's here, but also reveals where in the park it has been reported and what other creatures are associated with it. Few if any of the world's other natural areas can now boast such in-depth knowledge of their resident flora and fauna.

Going forward, DLIA will not only continue researching the Smokies, it will take the lessons it learned here and share them with other parks and sites worldwide. "We just signed a memorandum of understanding with the Xishuangbanna Tropical Botanical Garden in China to help them with their species inventory," Witcher said. In addition, DLIA is working with several sites in the U.S. like Big Thicket National Preserve, Oak Ridge reservation, and Crane Hollow Nature Reserve to help them succeed with similar projects. In fact, the Smokies species inventory has

helped spark a nationwide movement of sites, ranging from tiny nature centers to national forests to take stock of their biological assets. The procedures and software pioneered by DLIA are serving as models for programs from Texas to Maine and have even led to a cooperative agreement with the E.O. Wilson Foundation's 'Half Earth' project.

As part of its educational mission, DLIA recruits legions of volunteers and interns to become 'citizen scientists' who help with the work. These participants gain not only an insider's look at the parks and preserves, but also firsthand knowledge of biology, field science and laboratory practices.

Funding for DLIA comes mostly from donations from individuals and institutions as well as facility support provided by the national park. To learn more, please visit DLIA.org.



Clockwise from top left: dark fishing spider, cecropia moth, mountain wood fern and two-lined spittlebug and. Images courtesy DLIA

Need help identifying a bird or flower?

Springtime in the Smokies is a season when every day unfolds with a dizzying array of migrating birds, blooming wildflowers, crawling salamanders and fluttering butterflies. Help identifying all this 'wondrous diversity of life' is as

close as your cell phone. Just download the free app from inaturalist.org and join a worldwide community of casual and serious naturalists who can help you discern a bluet from a bluebell. Just photograph the plant or animal you've

discovered and upload to the app. Not only will you get assistance with i.d., you'll be participating in a network that helps scientists and land managers know what lives where. App works even without live cell reception.

Park Camping Fees Rise, but Remain a Relative Bargain

For the first time in 12 years*, the cost to camp or reserve a picnic pavilion in Great Smoky Mountains National Park has gone up. The rate increases range from 10 to 25 percent.

The park operates nine campgrounds, seven group campgrounds, six picnic pavilions, and five horse camps. The bump up is necessary to meet the rising costs of operations, reduce a backlog of maintenance requirements on park facilities, and initiate needed improvements.

“Our visitors have long enjoyed camping and picnicking across the park in spectacular settings,” said Superintendent Cassius Cash. “Maintaining and

servicing these facilities in the mountains presents a unique set of challenges and, with increasing costs, these fee increases are necessary to ensure the continual care and operation of these special places.”

In addition to fee increases, the park is adding Abrams Creek, Balsam Mountain and Big Creek campgrounds to the National Recreation Reservation System to improve operational efficiency. Beginning in early March of 2018, all sites will require advanced reservation and payment prior to arrival in the park through Recreation.gov, either online or by phone. The reservation system provides a more efficient process for visitors to secure an overnight stay without

traveling many miles to remote locations only to find them full.

By law, the park retains 100 percent of the camping and pavilion fees. The fees are used primarily to operate these facilities. This includes maintaining buildings, grounds, and utilities, providing visitor services, and funding rehabilitation projects, such as road resurfacing and replacing picnic tables and grills. Over the years, the park has had to compensate for rising costs from inflation by reducing visitor services, delaying maintenance and improvements, and, at many sites, shortening the length of the season.

The park completed a 2016 comparability study with campgrounds in

the surrounding communities and found that, while park camping fees have remained mostly constant since 2006, campgrounds in the surrounding communities have continued to rise. Even with the fee increase, park campgrounds will remain among the least expensive in the area.

For more information about campground facilities in the park, please visit the park website at nps.gov/grsm/plan-yourvisit/carcamping.htm.

*The current fees have not been increased since 2006 at any facility aside from Cataloochee Campground, which had an increase in 2011 when it was added to the reservation system.

Welcome to the New, Improved Solar-powered Cades Cove

Starting this spring, most of the energy to power Cades Cove Visitor Center and the restroom facility next door will come from the sun. The National Park Service is using funds it received from a competitive federal environmental grant to install approximately 2,000 square feet of solar panels behind Cades Cove Visitor Center.

Since the 11-mile Cades Cove Loop Road is open only from sunrise to sunset, the site is a perfect fit for solar power. “We estimate a savings of over \$14,000 per year in fuel costs,” said Brian Bergsma, deputy chief of facilities management for the Park Service, “and an annual reduction of 23 metric tons in greenhouse gas emissions.”

The newly installed solar array includes 80 panels that provide a silent energy source to serve the facilities in the Cable Mill Historic Area. The panels are located behind the restroom in an area that receives maximum exposure from both morning and afternoon sun. A low berm planted with native vegetation was created around the array to minimize the visual intrusion on the historic landscape and the area’s natural beauty.

“The panels should produce 20

percent more electricity than the generator system can,” Bergsma stated. “The batteries will help provide power on cloudy days.”

“I think our regular cove visitors will notice that the frogs and birds sound a little louder and clearer this spring,” said Resource Education Ranger Beth Bramhall. “Without the competing ‘hum’ from the old generators, the Cable Mill area will feel more natural. It is getting harder and harder to find respite from human-generated noise such as cars, motorcycles, cell-phones, aircraft and power generation. So any reductions will be good not only for people, but for the birds and other animals of the cove,” Bramhall continued.

Cades Cove receives approximately 2 million visitors per year. Many of these visitors stop at the Cable Mill area to visit the exhibit of historic structures assembled there. Given its remote location at the west end of Cades Cove, the Cable Mill area is off the commercial power grid and all power must be generated on site.

“It’s also a great way for park visitors to see clean energy in action,” said Herb Kupfer, the project’s manager. “They’ll



The solar panels will directly power the visitor center and restrooms, as well as charge a bank of batteries. Image by NPS

be able to have a look at the panels and experience the benefits in the heated and well-lit visitor center.”

The Southeast Region of the National Park Service provided the funding for this project. “Solar Power Integrators, the company that installed the system, is owned and operated by military veterans in California,” Bram-

hall said. “The Park Service is proud to help provide jobs to our nation’s servicemen and women while simultaneously protecting park resources. It’s a win-win.”

For more information on sustainable projects across the National Park system, please visit nps.gov/subjects/sustainability/be-energy-smart.htm.

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.

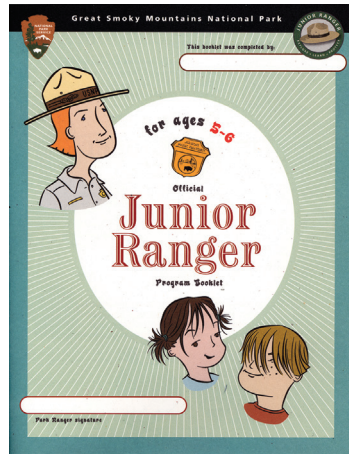
Cable Mill is located near Cades Cove Visitor Center, halfway around the Cades Cove Loop Road. Opens March 11.

Mingus Mill is 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

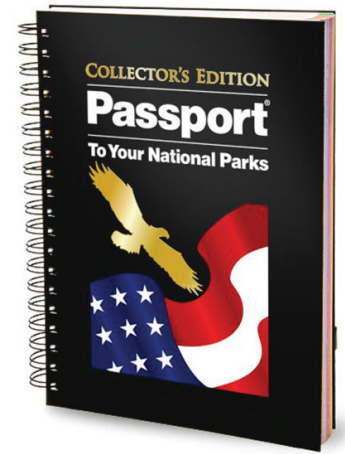
These peaceful pathways are scattered around the park offering visitors an opportunity to step outside their vehicles and soak in the Smokies' lush and intricate beauty. Parking is limited to 3 or 4 vehicles to keep the walkways quiet. A few of the trails are short loops, but most are linear trails inviting 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. You might even get your Blue Ridge Parkway and Trail of Tears stamps, too!



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

wildflower Wonderland

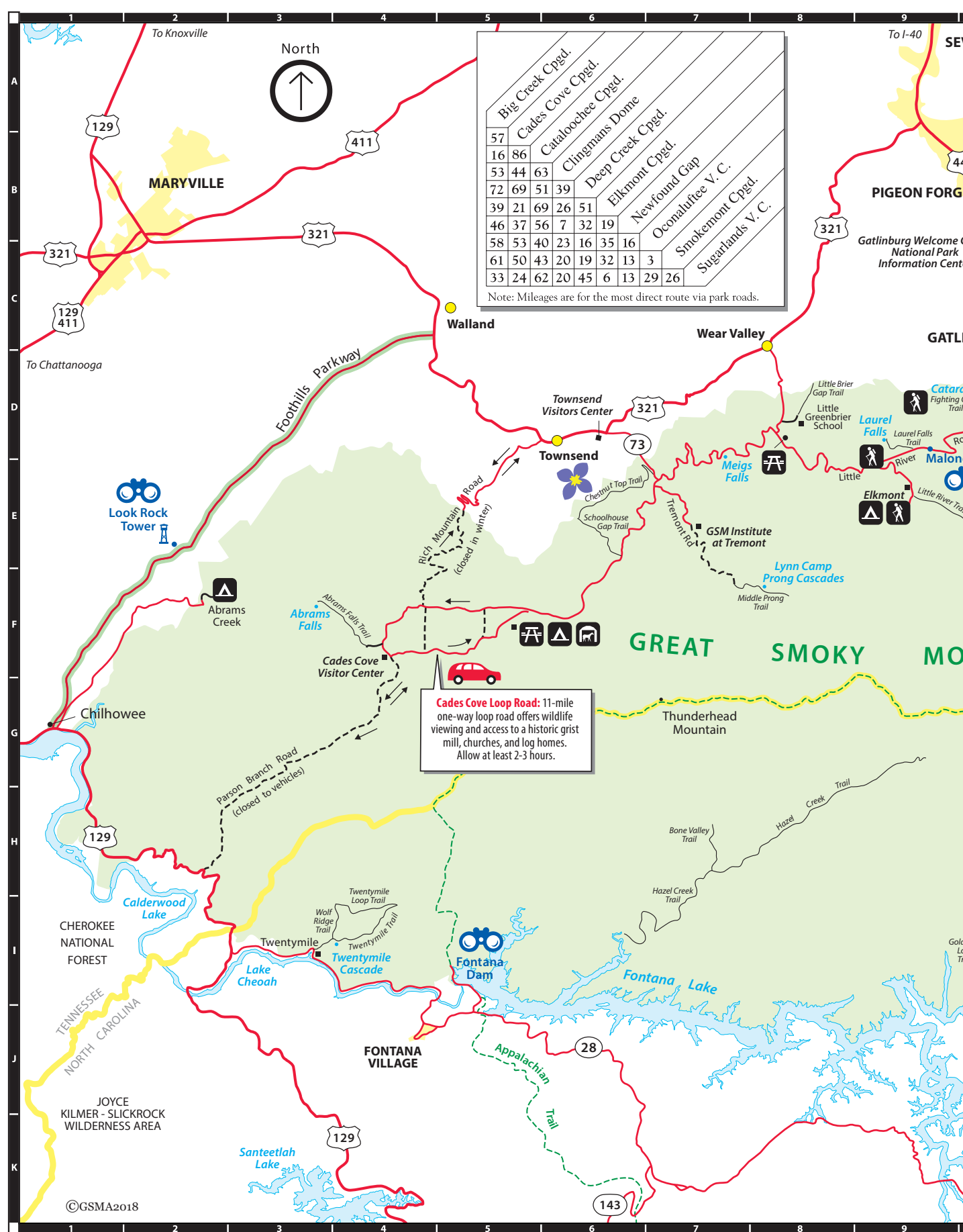
During spring, the best wildflower displays start at the low elevations and creep uphill as the days warm and lengthen. For example, spring beauty might be found along Little River Road in late March and near Clingmans Dome Road in early May. Geographers calculate that 1,000 feet of elevation gain is equal to traveling 330 miles north or ten days backward on the spring calendar.

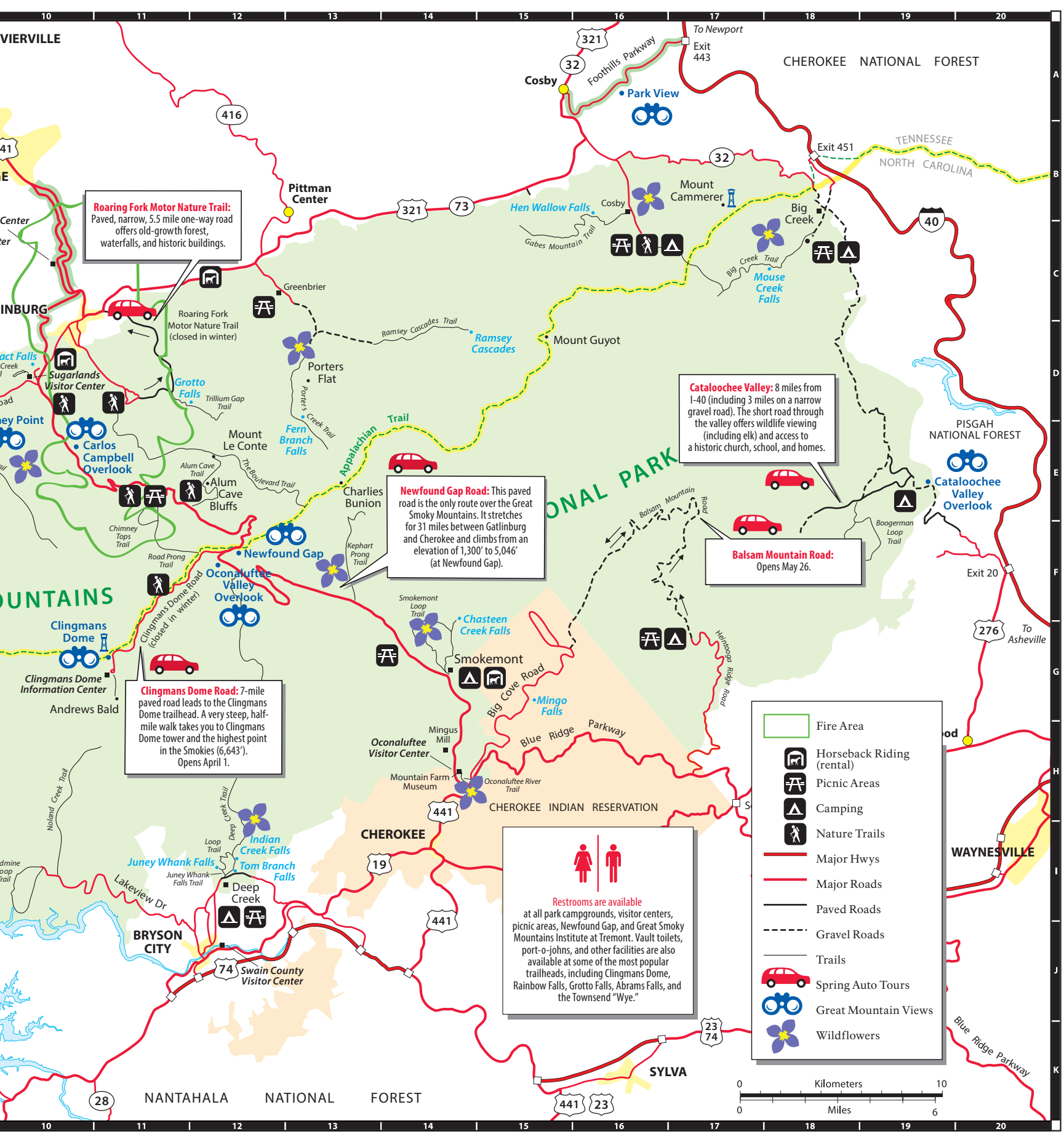
Of course, not all wildflowers found at the lower elevations are guaranteed to eventually show up at the higher ones. Many types of plants and animals living in the park's high elevation spruce-fir forest are Northern species at the southern fringe of their range. Likewise, many lower elevation flora and fauna are southern species that can also be found in Georgia and South Carolina.

The park's secondary and high elevation roads will open this spring on the following dates:

- Forge Creek Road: March 10
- Round Bottom Road: March 31
- Straight Fork Road: March 31
- Clingmans Dome: April 1
- Roaring Fork Motor Nature Trail: April 7
- Rich Mountain Road: April 7
- Little Greenbrier Road (to the school-house): April 7
- Heintooga Ridge Road: May 26
- Balsam Mountain Road: May 26

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





19th Century Cherokee Clothing

Practical yet beautiful styles of dress blend time-tested tradition with new influences

In the early 1800s, when European-American settlers began trickling in to the most fertile valleys of the Great Smoky Mountains, the Cherokee men and women they encountered dressed quite differently from the newcomers. The Cherokee were noted for their love of beauty in all things, and this passion was attractively reflected in the quality and ornamentation of their clothing.

Of course members of the far-flung Cherokee nation had been in close contact with European-Americans for more than two centuries by the early 1800s, especially in densely populated areas like coastal South Carolina. Consequently, there had already been a good deal of exchange of clothing styles and other customs between the peoples. For example, Davy Crockett's apparel undoubtedly reflected Cherokee influence, and the Cherokee adopted new materials like linen for shirts and wool for breechcloths in their wardrobe.

The early 19th century was therefore a time when the Cherokee were adapting to various Old World influences while maintaining traditions from their storied past. According to Barbara Duncan, education director of the Museum of the Cherokee Indian, "The Cherokee who lived in the mountains held onto their traditional clothing and other customs longer than the Cherokee living elsewhere."

Turban: A length of printed or solid cloth wrapped around the head. This style evolved from an earlier custom of wearing a headscarf 'pirate style.' Turbans might be decorated with large feathers from egrets, ostriches or other birds.

Garters and belts: Often finger woven of dyed wool and beads. These accessories might also include plant fibers and hair from buffalo, bear or opossum.

POUCHES: Men's pouches carried shot, powder and other materials for firing black powder weapons. They might also contain some medicinal herbs and parched corn.

MOCCASINS: Made from brain-tanned or smoke-tanned deerskin, Cherokee moccasins were distinguished by long flaps on their sides. They could be decorated with beads, ribbons, bells and porcupine quills.

Linen shirt: Mid-thigh in length with long, full sleeves. The Cherokee often received these items as gifts, purchased them, or eventually made their own.

Wampum belt: Worn as a sash and comprised of beads made from quahog clamshells. The woven belts were used to send messages of war and peace and to preserve sacred knowledge and stories kept by the clans. Wampum could also serve as a form of currency.

Leggings: Made from deer, elk or groundhog skin, these practical items reached from mid-thigh to the foot and made it possible for the wearer to run through thick briars and underbrush. Modern Cherokee profess they are warm in winter and cool in summer. General George Washington was so impressed by the functionality of leggings that he ordered hundreds of pairs for his troops. Leggings were attached to a belt with strings and could be decorated with lace, beads, copper and silver bells.

We will cover adult female dress in a future issue. For more information on Cherokee clothing, visit the Museum of the Cherokee Indian in Cherokee, NC, and pick up a copy of Barbara Duncan's book Cherokee Clothing in the 1700s.



In Sync:

Fireflies choreograph an amazing light show

A bioluminescence display in the Smokies you don't want to miss

Biologists have documented 19 species of firefly (or lightning bug) beetles in Great Smoky Mountains National Park. While most types of fireflies have a way to 'light up the night' through a chemical reaction called bioluminescence, less than 1 percent of fireflies assemble in groups that synchronize their flashes.

In the Smokies, a firefly species called *Photinus carolinus* has attracted worldwide attention and mesmerized tens of thousands of viewers with its synchronized flashing. Several groups of *P. carolinus* annually choreograph a routine that features six quick synchronized flashes followed by six to nine seconds of darkness. Some nearby firefly troupes perform a bioluminescent 'wave' that begins with flashing at the top of a hill and spills downward in a cascade of yellowish-green lights.

It is the males, flying low above the ground, that create the most notable flashes. The females, stationary on the ground, respond with a subtle signal if a male's flashing strikes their fancy.

Several teams of scientists have studied firefly synchronicity over the years. Most conclude that by flashing in sync, males improve their odds of attracting the attention of a female. If a male goes rogue and chooses to flash out of rhythm from the group, its solitary beacon may be overlooked by the females and even attract the unwanted attention of predators.

The peak of the firefly performance in the Smokies occurs in late May and/or early June and the entire flash period lasts for ten to 12 days.

For a time, synchronized fireflies were only well known in southeast Asia and the Great Smoky Mountains.



When visiting Elkmont, be sure to visit the homes recently restored by the national park's historic preservation crew. Image by Don McGowan/EarthSong Photography

Recently, however, other cooperative groups of fireflies (not all of them *P. carolinus*) have been recorded in Congaree National Park in South Carolina, Allegheny National Forest in

Pennsylvania, at Tennessee's newest state park, Rocky Fork (about two hours from the Smokies) as well as at various sites in Ohio, West Virginia and the Philippines.

Forecasting the light show

As the Smokies firefly light show increased in popularity, the National Park Service began offering a shuttle service to one of the park's prime viewing sites near Elkmont Campground. In order to effectively schedule the shuttle, park managers had to develop a system for predicting when the peak of the show was most likely to occur. Working with firefly expert Lynn Faust, the Park Service implemented a system of monitoring air and soil temperatures at Elkmont. They can now accurately predict the peak activity at least a month in advance.

Visit SmokiesInformation.org to purchase a variety of synchronous fireflies merchandise produced by Great Smoky Mountains Association. Image by Karen Key



WINNING 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 for a parking pass and shuttle ride, visit Recreation.gov – 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 \$3.75 fee. For additional information on fireflies and the lottery schedule, visit nps.gov/grsm.



State of the Park Report 2018

Protecting Great Smoky Mountains National Park's 800 square miles of mountains and forests requires solving problems like air pollution, non-native forest pests, wild hogs, and visitor behaviors that scar this special place. Fortunately, scientists and rangers at the Smokies continue to make progress against these threats.

Air quality

Good News: Thanks to reductions in coal-burning power plants and motor vehicle emissions, air quality in the Smokies is improving. Ozone pollution, acid rain, particulate matter, and regional haze levels at the park have all improved dramatically since the late 1990s. Cleaner power plants and cleaner motor vehicles are the reasons.

For the first time in over 20 years, the entire park and nearby cities (Knoxville and Asheville) are meeting all federal air quality standards for public health and welfare. Visibility (as in visual range) on the haziest days has improved from 9 miles in the late 1990s to 35 miles in 2015.

Bad News: Sulfates from power plants and factories have been decreased, but are still reducing mountain views from 80 miles (historically) to 39 miles today. Because of the sulfur and nitrogen pollution, park rainfall is five times more acidic than natural rainfall, causing streams to become too acidic for Clean Water Act standards.

On some summer days, ground level ozone pollution can make air in the park unhealthy to breathe for park visitors and staff.

Historic preservation

Good news: The newly rehabilitated Clingmans Dome observation tower should be open to the public sometime this spring. The project includes repairs to concrete columns and walls, stabilization of support walls, and repointing of stone masonry. The work was made possible by a competitive \$250,000 Partners in Preservation grant. The park's historic preservation crew completed work on four Elkmont area cabins in 2017: Creekmore, Mayo, Mayo Servant Quarters and Levi Trentham. These reminders of the pre-park summer cottage era are now open for the public to visit. The Spence Cabin and Appalachian Club House,

which are now available for day use, were rehabilitated earlier. The remaining Elkmont cabins remain closed to the public until preservation work can be completed.

Bad news: The park's cabins, churches, barns and historic rock walls are being permanently damaged by vandals carving or writing their names on them. If you witness vandalism occurring, please call 865.436.1230 to report it.



Plant life

Good news: A recent Nature Conservancy survey indicates that most visitors to park campgrounds understand the need to use only heat-treated firewood in order to prevent introduction of invasive forest pests. Table mountain pine and other fire-adapted plants have grown vigorously in areas affected by the November 2016 wildfires. Short-eared owls and northern harriers are overwintering in restored native meadows at Cades Cove. Park Service crews have helped make this possible by cultivating native grasses and wildflowers at these meadow restoration sites for more than a decade.

Bad news: While park vegetation management staff were able to treat more than 300 ash trees for the non-native emerald ash borer, many ash trees have still died. More than 3,500 invasive, non-native princess trees have been removed from areas affected by the 2016 wildfires. Because gravel from local quarries is often contaminated with coltsfoot seeds, invasive non-native coltsfoot plants continue to spread into the park from gravel roads beyond park boundaries.



Wildlife



Good news: The food storage cables at backcountry campsites and shelters have proven to be very successful at keeping bears and people-food apart. Funding has been secured to repair some damaged systems. The non-native wild hog population appears to be relatively low. The drop is likely due to low reproduction and consistent control efforts by park staff. Since 1959, more than 12,000 destructive wild hogs have been removed

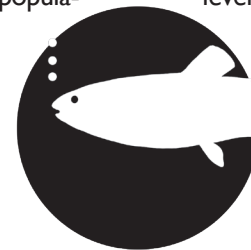
from the park. A new program allows researchers to track radio-collared bears to areas inside and outside the park where they may be obtaining garbage or other human-related food. Wildlife staff can now pinpoint the trouble spots and take action to clean them up.

Bad news: Wild hogs in the park continue to test positive for pseudorabies, a significant disease for the domestic swine industry. White-nose Syndrome has killed 98 percent of the Eastern pipistrelle bats and 95 percent of the little brown bats in the park. The fungal disease usually affects bats while they are hibernating in caves.

Stream life

Good news: Recent water quality monitoring data indicate slight improvements in stream acidity in mid-elevation streams. These improvements are attributed to reductions in acid rain (from power plants and factories) in the last decade. Trout populations in the park are healthy, despite the significant drought of 2016. All park streams are now open to fishing and harvest for the first time since the park was established in 1934. Monitoring of three species of endangered and threatened fish indicates there are now viable reproducing populations in the park. In addition, banded sculpin and greenside darters were recently introduced into lower Abrams Creek and should help

native mussel reproduction over time. Aquatic insect populations, also good indicators of stream health, generally remain diverse and abundant. Sampling in watersheds from around the park in 2017 found healthy levels of mayflies, stoneflies and caddisflies.



Bad news: Twelve park streams (41 miles) remain officially listed as impaired by acid deposition. Water quality improvements are occurring very slowly in high-elevation streams because soils there are saturated with decades of residue from airborne pollutants. Research indicates it will take more than 50 years for most of the park's sensitive streams to recover.

Visitor experience

Good news: Final paving is occurring along the 16-mile section of the Foothills Parkway between Wears Valley and Walland. Park officials hope to open this breathtaking section of the Foothills Parkway to the public by the end of 2018. Restoration work on the enormously popular Rainbow Falls Trail to Mt. Le Conte is underway and slated to be completed by the end of 2018. The park's Trails Forever

crew and many volunteers are behind the successful project.

Bad news: While hikers and backpackers continue to explore and enjoy the park's vast 848-mile trail system, some are leaving their mark behind by defacing trail signs and shelters with graffiti and not carrying out their trash, food and gear. The park hauled out more than 1,500 pounds of garbage from backcountry campsites and shelters in 2017.

IF YOU LOVE THE SMOKIES

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

Great Smoky Mountain 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 2018 alone, the association will have provided more than \$2 million in assistance that includes saving hemlock trees, living history demonstrations, environmental education programs, salaries for wildlife personnel, and historic preservation.



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 our web store
- Special GSMA "Hiking 101" outings to Twentymile Loop, Porters Creek, Gregory Bald, Boogerman Trail, Charlies Bunion, cemeteries, and more. All hikes are led by knowledgeable staff who love to share the park with others. Groups are limited to 20 people. Also this year, ask us about Gear Fest programs and special gear discounts.

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.



Smoky Mountain Field School

An exciting variety of adventures await

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 provides 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. GSMTI at Tremont also offers a variety of summer youth camps in the national park lasting from 6-11 days and starting at \$589. Fees include meals, lodging and most equipment. Upcoming 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 DLIA formed 20 years ago to identify every variety of plant and animal in the park. The organization involves leading biologists from around the globe in collecting



specimens in the park and identifying what they found. The information is then logged into a database that shows what's here, where in the park it has been reported and what other creatures are associated with it.

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 parks and preserves, as well as firsthand knowledge of biology, field science and laboratory practices. Funding for DLIA comes mostly from donations from individuals and institutions as well as facility support provided by the national park. To learn more, visit DLIA.org.

Friends of the Smokies

Friends of Great Smoky Mountains National Park is a nonprofit organization that assists the National Park Service by raising funds and public awareness and providing volunteers for park projects.

Since 1993, Friends has raised more than \$50 million for park projects and programs.

These donations help:

- protect elk, bear, brook trout and other wildlife
- improve trails, campsites and backcountry shelters
- support educational programs for school children
- improve visitor facilities

- fund special educational services like the park movie
- preserve log cabins and other historic structures

Your donation can help make these projects a reality. Put a few coins or a few dollars in one of the donation boxes located at visitor centers, roadsides and other locations around the park. Buy the Smokies license plate for your car (available in Tennessee and North Carolina).

However you choose to give, your donation will really help protect the Great Smoky Mountains for many years to come! Call Friends of the Smokies at 865.932.4794 or 800.845.5665, or visit friendsofthesmokies.org.



Dogwoods blooming at Carter Shields cabin. Image by Bill Lea

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

Trash and Wildlife—a Deadly Combination?

Tips from the insiders on how to treat the park

PARK

Etiquette

Bill Stiver, NPS wildlife biologist, has lived and worked closely with bears, river otters, wild hogs and other park wildlife for more than 20 years. *Smokies Guide* asked him about the best ways we can help wildlife in our park.

Q: It's spring and bears are out of

their winter dens and lots of humans are headed this way to enjoy the national park. What's on your mind?

A: Can we focus on Cades Cove? Because two million people just like you visit Cades Cove every year. Cades Cove Loop Road gets so busy, we have problems with people littering, which attracts bears to the roadside.

It might be just an accident, like a potato chip bag blowing out of the bed of a truck or a child tossing an apple core. But it can lead to bears and other animals becoming food-conditioned.

Q: It sounds like trash is sort of a 'gateway drug' for bears; is that what you're saying?

A: Similar I guess. It leads to bears looking for more of that easy people-food; the bear may begin foraging in picnic areas or hanging out beside the road. In some cases, he or she may even approach people, hoping for a handout.

In either case, the bear eventually becomes a threat to people and property. We've had several recent incidents of bears breaking into vehicles looking for food and completely destroying the vehicle's interior.

Q: I wonder if my insurance covers vandalism by bears?

A: One bear even tore the truck's dashboard off. Although it's rare, we have had people mauled by bears.

Q: Ouch! I bet those claws and teeth don't feel real good when you're on the receiving end.

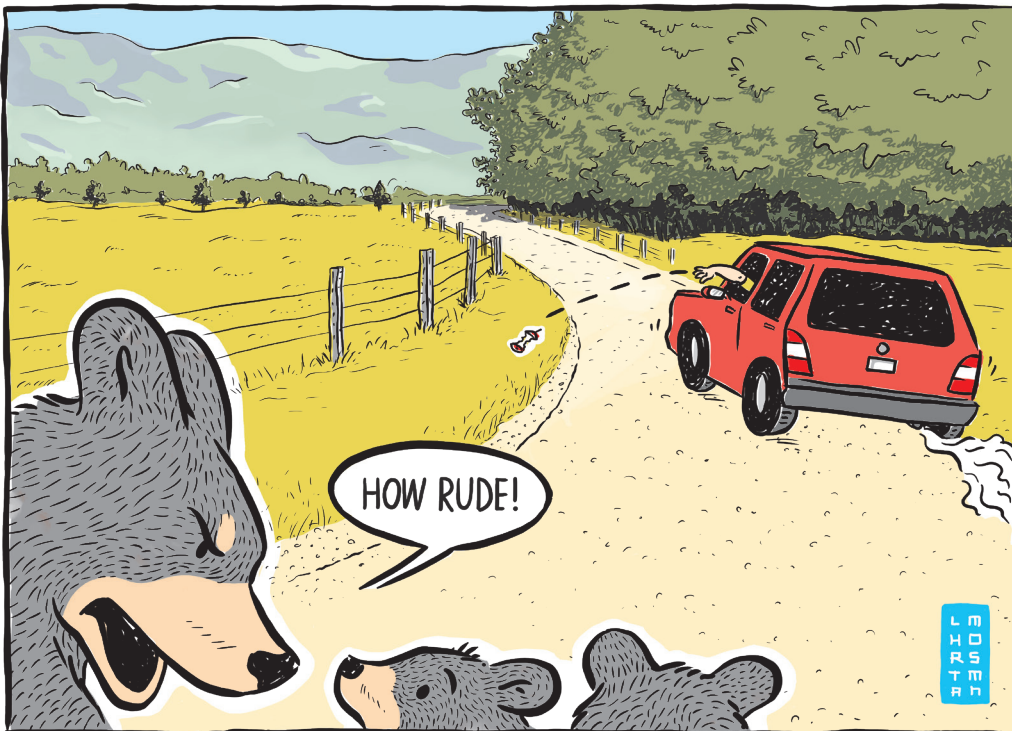
A: There have been some serious maulings, including one fatal one in the park. So when bears get peoples' food or garbage, rangers have to do things we don't like to do. Depending on the severity of the incident, we might chase the bears away with small explosives, trap the bear and relocate it, or, in extreme cases, euthanize the animal. Which-ever way it goes, rangers take no pleasure implementing these aggressive management measures.

Q: I can see your point. What's the good news?



Bill Stiver (right) managing a sedated bear, which will be relocated in the bear trap behind him. Image by NPS. Illustration by Lisa Horstman and bear-proof dumpster image below by Bill Lea

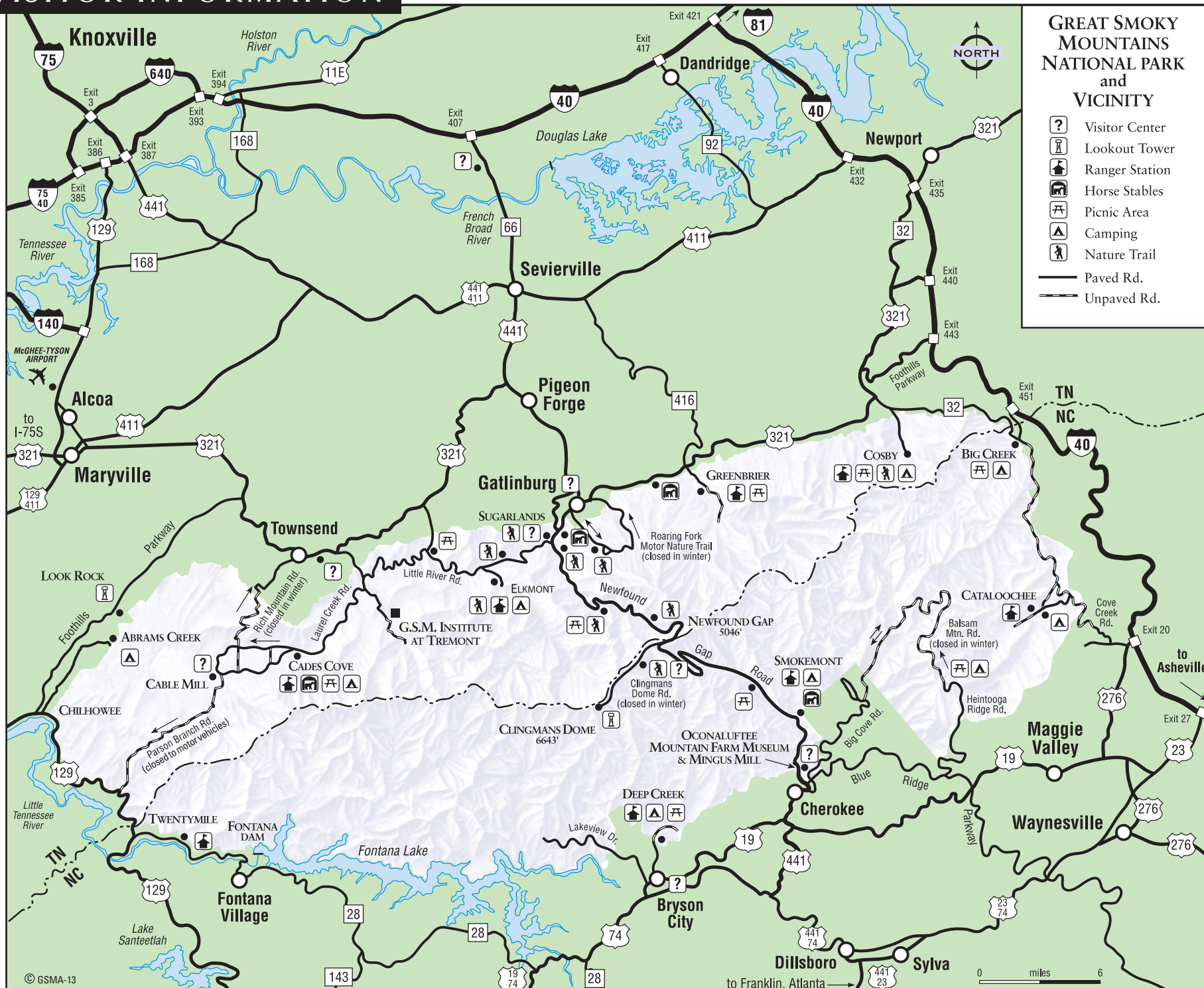
A: The good news is, it's a problem that can be solved. We just need to educate people to be more careful with their trash and food scraps. People need to treat these items like they are poison to bears. Because they really are!



Whether you're in the park or staying at a cabin outside the park, please dispose of all trash and food scraps only in bear-proof trashcans and dumpsters.

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.