

# MOUNTAINS

## Volunteer preserves Smokies' plant diversity



**Word from the Smokies**  
Aaron Searcy  
Columnist

With the eye of an artist and the steady hand of a lab technician, Janie Bitner carefully preserves some of the rarest and most delicate plants found in Great Smoky Mountains National Park.

Taken together, the many species she collects and helps enter into the park's collections build a convincing case for a claim made by the park's first naturalist, Arthur Stupka: "Vegetation is to the Great Smoky Mountains National Park what granite domes are to Yosemite, geysers are to Yellowstone and sculptured pinnacles are to Bryce Canyon National Park."

A master gardener and longtime volunteer in the Smokies, Bitner has spent more than a decade tediously drying, mounting, and labeling select specimens of flora for the park's natural history collections housed within the Twin Creeks Science and Education Center just outside of Gatlinburg, Tennessee. In a climate-controlled chamber just beyond a preparation room dotted with computers and microscopes, Bitner works diligently among rows and rows of white cabinets housing plant specimens representing one of the most biodiverse landscapes in the world.

"When I first started volunteering in 2009, there was a backlog of 3,700 plant specimens and a need at Twin Creeks for someone who was familiar with the plant taxonomy," said Bitner. "I was challenged with learning not only how to mount specimens on herbarium paper but also data entry and a complex system."

She made slow-but-steady progress, working in batches, tracking down missing information, and spreading plants out on every available surface. "It took me exactly four years and one week to get it all caught up and into the collection," she said.

Now, Bitner works keeping up with the latest plant specimens coming in from the field and digitizing records to be shared digitally through a National Science Foundation-funded coalition of 233 herbaria called the Southeast Regional Network of Expertise and Collections.

"We have several research scientists who are actively collecting, mostly during the growing season," said Bitner. "They bring the plants to me pressed in cardboard, and I freeze the plants for two to three weeks to kill any insects that might be on them. Then I start with the mounting of the specimens."

The process of arranging plants of all shapes and sizes into flat folders with acid-free paper requires exceptional skill and patience, but the practice also yields tangible references for educators and scientists that can last for hundreds of years. The thousands of folders Bitner has filed away since she began volunteering at Twin Creeks serve as valuable records of plant species in the Smokies — species that are under threat from stressors ranging from invasive plants and insects to air pollution and climate change.

"If there are any seeds, I put them in a special seed packet. Hopefully this never happens, but if the plant



The facilities at Twin Creeks Science and Education Center in Tennessee include offices, a wet lab, natural history collections, and work spaces for visiting researchers. PROVIDED BY JOYE ARDYN DURHAM



Master gardener and volunteer Janie Bitner examines fragile plant specimens in the natural history collections at Twin Creeks Science and Education Center in Great Smoky Mountains National Park. PROVIDED BY NPS



Plant specimens in the park's natural history collections are dried, pressed, and arranged on acid-free herbarium paper to display as many aspects of the plant as possible. PROVIDED BY JOYE ARDYN DURHAM

becomes extinct, we can always germinate these seeds and plant these in the park," said Bitner. "I think it's paramount that we protect our rare plants."

Some 50,000 to 60,000 specimens of many different life-forms are currently housed in the Twin Creeks collections along with nearly three to four times that number in a backlog still waiting to be verified and catalogued. Environmental information from room sensors is monitored, dust is carefully vacuumed and removed, and traps are inspected and replaced regularly to protect specimens from pests like spiders, silverfish, millipedes, and dermestid beetles that would naturally break down organic materials.

Even after years of volunteering in the park, Bitner still cherishes the opportunity to help protect and preserve the unique plant life found in the Smokies.

"I've been hiking in these woods since I was in grade school," said Bitner. "And I do what I do because I love it."

Bitner will be sharing some of her first-hand experience as a volunteer protecting one increasingly threatened native plant of the Smokies — ginseng — on Friday, Oct. 15, as part of park partner Discover Life in America's Science at Sugarlands speaker series. Registration for the free online event is currently available at [dliia.org/sas](http://dliia.org/sas).

Aaron Searcy is a publications associate for the 29,000-member Great Smoky Mountains Association, an educational nonprofit partner of Great Smoky Mountains National Park. Learn more at [SmokiesInformation.org](http://SmokiesInformation.org). Reach the author at [aaron@gsmassoc.org](mailto:aaron@gsmassoc.org).

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### Postal information

Citizen Times, USPS #236-000, ISSN #0336-0000, is published Monday through Sunday at 14 O. Henry Ave., Asheville, NC 28802. Periodicals postage paid at Asheville, NC 28802.  
 Postmaster: Send address changes to Customer Service, PO Box 5830, Augusta, GA 30916