

MOUNTAINS

WORD FROM THE SMOKIES

Data monitoring protects species for long haul



Word from the Smokies
Frances Figart
Columnist

Most of the scientists on staff at Great Smoky Mountains National Park contribute in some way to the All Taxa Biodiversity Inventory, an ongoing catalog of all Smokies life forms. Managed by nonprofit park partner Discover Life in America in cooperation with park service staff, students, community scientists, and researchers from around the world, the ATBI requires a lot of data crunching and monitoring of species.

“We are generally the most researched park in the National Park Service,” said Kendra Straub, who is responsible for all of the data, databases and data applications in the Smokies. “I work with a lot of permitted researchers to make sure we receive and understand their data.”



Straub



Evans



Albritton

As data manager, Straub is responsible for building and maintaining databases for all the park’s natural resource protocols — such as bear management, fisheries monitoring, and long-term vegetation monitoring. She builds field data collection applications, writes sections of protocols, and develops automated annual reports and visualizations to help NPS staff first understand their data, then share it with others.

Straub also provides the quality control for all that data.

“It is a challenge, but also one of the benefits — the technology is constantly changing so people in my field need to be lifelong learners,” she said.

When Straub is asked for data to support a management decision, she is able to quickly access and summarize the information because of the ongoing work of obtaining, processing, and maintaining it. A good example is providing data on when and where monarch butterflies are in Cades Cove to help determine when controlled burns should occur so that butterflies are not affected.

She also works with data collected by the Vegetation Monitoring team, which is concerned with how ecosystems react to environmental stressors. This information provides a way to understand the impacts of climate change — and how to mitigate those impacts in the future.

A small but efficient crew including Ecologist Troy Evans and Biological Science Technician Josh Albritton, Vegetation Monitoring works to measure and identify trees, shrubs, seedlings, and herbaceous plants to look at long-term change in our forests. Their goal is to provide data to drive management decisions to keep the park’s forests as healthy as possible.

Through a blend of field work and data analysis, Albritton and Evans establish permanent plots throughout the park to determine what plants exist in each location, revisiting those plots to monitor changes in population conditions. Because their work is focused on measuring changes, they are often the first to spot impending issues within the park’s ecosystem. They’ve seen the rate of forest change increase as new stressors such as extreme weather and new forest pests are added to the equation.

“The challenge is producing high-



Data collected by Great Smoky Mountains National Park’s Vegetation Monitoring team is concerned with how ecosystems react to environmental stressors such as the 2016 Chimney Tops 2 fires. PROVIDED BY JOYE ARDYN DURHAM

quality scientific data fast enough to get out in front of the change and help inform management decisions now,” says Evans. “Good science takes time, and time is not always something we have a lot of.”

A “caretaker of sorts” for the park’s rare plant monitoring program, Albritton oversees implementation of GSMNP’s agreement with the Eastern Band of Cherokee Indians, a program to monitor their gathering of sochan, or yellow cut-leaf coneflower, for traditional purposes.

“To my knowledge, we’re one of the first parks in the east to come into an agreement like this with a federally recognized Indian tribe. It’s a relatively new park service regulation that permits a bordering tribal unit to request something from a bordering park service unit — to harvest a specific plant for food, for medicinal use, or for other traditional purposes.”

Albritton monitors Cherokee gathering activity in the park to learn about its sustainability. His other work ranges from tracking compliance related to trail operations to management of the park’s ginseng and rare plant monitoring programs.

Though the work can be difficult and sometimes tedious, those in Vegetation Monitoring are dedicated to preserving the rich variety of native plant life in the Smokies by monitoring, mapping, and reporting nuanced data. According to Evans, this work can also bring immense satisfaction, especially in a place like GSMNP.

“As a plant ecologist, it is hard to beat the Smokies for diversity,” he says. “Not only diversity in the number of plant species out there, but also diversity in elevation, rainfall, and exposure. You can be in a boreal rainforest on top of the mountains one day, then be in a very dry pine forest at less than 1,000 feet elevation the next. There is a lifetime of exploring that can happen out there.”

The park is home to a remarkable diversity of species, and the goals of those working on the ATBI are to document and better understand this diversity, which will in turn lead to more informed management of the park’s natural resources.

“To protect the amazing biodiversity in the Smokies — and in the world really



Data on when and where monarch butterflies appear in Cades Cove is used to support management decisions about when controlled burns should occur so that butterflies are not affected. PROVIDED BY JOHN FLANNERY



Sochan, or yellow cut-leaf coneflower, at its peak. PROVIDED BY GREAT SMOKY MOUNTAINS ASSOCIATION

— we have to know more about it,” Straub said. “We have to know what we have in order to know how to preserve it.”

This story is an edited excerpt of a much longer article by Frances Figart, Aaron Searcy, and Elise Anderson that appeared in the spring 2021 issue of “Smokies Life” magazine. Since it was

written, Kendra Straub has moved to another position. Frances Figart is the Creative Services Director for the 29,000-member Great Smoky Mountains Association, an educational nonprofit partner of Great Smoky Mountains National Park. Learn more at SmokiesInformation.org and reach the author at frances@gsmassoc.org.

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