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In the Smoky Mountains, the Census Never Ended; From Salamanders to Slime Molds, an Ambitious Accounting

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Derek Ratliff peers into a microscope searching for uncharted life in the Great Smoky Mountains.

Ratliff, 16, spends one day a week in a basement lab sorting tiny wasps, beetles and other bugs as part of the most ambitious plant and animal census ever attempted on the planet.

"Some things are so small you can't even see them with your eyes," said Ratliff, who is home-schooled. "But they play big roles. You just really don't know until you study them."

The budding taxonomist is among about 2,200 volunteers -- from schoolchildren to international scientists -- participating in the All-Taxa Biodiversity Inventory of the Great Smoky Mountains National Park.

Since it began in 1998, 1,480 species have been discovered in the half-million-acre preserve on the Tennessee-North Carolina border, adding to an original list of about 12,000.

Of those, 144 species are new to science.

"At the end of the day, when you say, 'What is important and what might one leave behind?' If you could accomplish something like this, I think that is something," said Frank Harris, associate director of the Oak Ridge National Laboratory and president of **Discover Life in America**, the organization overseeing the inventory.

"This is information to educate the next generation," he said.

The new species are not exactly what wildlife managers consider "charismatic mega-fauna" -- animals such as black bears, elk or trout.

These are the lesser life-forms -- salamanders, slime molds, worms, spiders, moths, flies and fleas.

"Everyone knows what an ant looks like. Does anyone care there are over 60 species of ants in the park? Well, we do," said Charles Parker, a biologist with the U.S. Geological Survey stationed in the Smokies.

"We are hoping through this work to help people develop a greater appreciation for the more obscure sorts of biodiversity that are really so important in the park."

The first inventory of this sort was attempted in the rain forests of Costa Rica in the early 1990s but was not completed.

Smokies officials borrowed the idea, believing the forest was a good candidate. The national park is the country's most visited. The location is convenient for researchers and it has a wealth of ecosystems -- from valley meadows to mountaintops.

But to some, the Smokies inventory already is behind schedule on the original goal of finding 100,000 species in 15 years.

"I don't want to trivialize what has been accomplished, but it is not going to be done in a generation at the rate we are going," said John Pickering, a University of Georgia entomologist and early advocate.

Pickering once estimated the survey would cost as much as \$ 100 million. So far, it has raised only about \$ 1 million -- mostly from the nonprofit Friends of the Great Smoky Mountains and the Great Smoky Mountains Natural History Association.

"My feeling is that the survey won't succeed or it will take 100 years-plus if we rely just on local resources," Pickering said.

Smokies biologist Becky Nichols concedes more money would attract more researchers but said until recently the project was proceeding with the funding it had.

"It is going to take a really concerted effort to get there, but hopefully we will do that," she said.

Two recent developments should help. Congress has authorized \$ 4.7 million for a new Smokies science lab for researchers, and two massive specimen roundups for beetles and butterflies proved particularly successful.

Meanwhile, Parker has won a three-year grant to write a manual on how to conduct an All-Taxa Biodiversity Inventory anywhere, not just in the Smokies. As part of that effort, he has established 11 plots around the park for collecting specimens. Each 2 1/2-acre plot has scores of traps on the ground and in the trees, and electric fencing to keep bears away.

"So little by little we are making headway, both scientifically and organizationally," Harris said. "This is one of those things where you have to demonstrate local support before you can attract regional and national foundation support, and we are doing that."