



Hart's-tongue Fern

The American hart's-tongue fern (*Asplenium scolopendrium* var. *americanum*) is a variety of a more widespread European entity that is unique to North America. The common name derives from a medieval term for a fully mature stag or deer and references the shape of the fern's leaves, which apparently resemble a deer's tongue. These tongue-like leaves emerge from the central base of the plant in a bird's nest appearance, not easily confused with other more common Southeastern fern species. Its habitat is unique as well. In the Southeast, it lies hidden in deep, often vertical caves (sometimes called pits) on a superfine substrate with a steady source of moisture.

In 1807, Frederick Traugott Pursh, a German American botanist who described plant species collected by the Lewis and Clark expedition, discovered the first U.S. population of American hart's-tongue fern near Syracuse, New York. The species had been described at that time from European specimens by Carl Linnaeus in his 1753 *Species Plantarum*, a publication that became the foundation of modern botanical nomenclature and the source for many contemporary plant species names. Pursh's American hart's-tongue ferns were later found in multiple locations within New York, Ontario, Canada, Tennessee, Michigan, Alabama, Mexico, and, most recently, New Mexico. In 1935, American botanist Merritt Lyndon Fernald described the North American plants as a separate species from the European plants using herbarium specimens from the Gray Herbarium at Harvard University. In Fernald's publication, he describes multiple known Northern localities for the species and, in the end, adds "... and a limestone sinkhole in Marion County, Tennessee." This limestone sinkhole in Marion County is located near Sewanee and has had a long connection with residents in the area.

Although there were only a handful of documented historical locations of this fern in Tennessee and Alabama, even fewer contemporary populations remain. One is in South Pittsburg, Tennessee, just "down the mountain" from Sewanee. This location was discovered through surveys for coal and iron

deposits along the Cumberland Plateau in the 19th century. For reasons unknown, one of these coal prospectors investigated a 90-foot vertical cave, finding more than 200 thriving and robust individuals in the dark recesses of the pit. The site became a bellwether for understanding the fern's distribution and



habitat preferences in Southeastern karst areas. During the 1800s these plants were mentioned in letters between botanists and the Lodge family, early local naturalists also of cast iron fame. Joseph Lodge took it upon himself to promote the conservation of the plants through botanical forays with botanists and fern enthusiasts, including some from the Smithsonian Institution.

This population of hart's-tongue fern continues to be of interest to botanists to this day. These contemporary adventurous botanists include Sewanee's very own Dr. George Ramseur and Mary Priestley. They would venture into this deep cavern on a ladder Ramseur had fashioned out of heavy 100-foot lengths of World War II rope and wooden rungs and with no additional bodily tether except for another free rope hanging alongside. Ramseur had taken on the duties of the Lodges before him and became an intrepid keeper of the ferns, documenting their numbers through time and, at one point caging the ferns to protect them from herbivory damage. Priestley shared her feelings from the time of her first adventure into the cave with Ramseur, saying that if that were what she died doing it would be just fine—an appropriate attitude to have given the circumstances of entry. These two contemporary botanists also visited an Alabama population with the rope ladder setup.

Conservation of the hart's-tongue fern began with what were—somewhat radical for the time—early protection efforts by the New York State Park Board to preserve the unique geological features that included the fern's preferred habitat. Homer D. House writes in the 1934 *American Fern Journal* article entitled "Saving the Scolopendrium Fern," that "it soon became apparent that the public at large, certainly many of those who frequented the park for recreational purposes, had little conception of the value and importance of the conservation and preservation of those elements of wild life, both plant and animal, which form such an important element of beauty of the great out-of-doors, and without which such areas soon lose their recreational value to the many who place a somewhat higher value upon natural beauty than upon the number of beer and ice cream stands. It is not, however, a hopeless cause, and there is every reason to believe that with adequate protection this reservation may become the safe abiding place of the many rare plants which are native to the region."

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Herbarium News—from the Director

Lots of exciting Herbarium news to report this spring! First, we just received word that Oliver Hutchens, our senior Block Fellow and student greenhouse manager, has been awarded a Keller Scholarship in conservation horticulture from the Garden Club of America. This competitive award will fund Oliver to work in my lab this coming fall and provide him an opportunity to receive additional training at the Atlanta Botanical Garden. Congrats to Oliver!

On March 31, the Herbarium will be hosting the annual meeting of the Tennessee Plant Conservation Alliance. This all-day conference brings together botanists from around the state to confer on the status of rare plant protection in Tennessee. During the meeting, the Block Fellows will be presenting posters on their plant research at Sewanee and will help lead an afternoon hike into Shakerag Hollow. At the end of April, we are hosting an in-person and virtual roundtable discussion at Sewanee about the importance of old-growth forest protection in the Southeast. It will connect forest advocates with scientists and shine a spotlight on the importance of old-growth for biodiversity protection and for sequestering carbon to mitigate climate change. My Advanced Conservation Biology students are helping to coordinate the event and will be presenting work that they have completed highlighting the value of old-growth forests on the Cumberland Plateau.

I recently published a study in the journal *Plants* examining the ability of a clonal dune plant to ameliorate the effects of feral horse grazing. Shelby Meckstroth, C'17, was a co-author on the paper and had worked with me on this project for her honors research in biology and as an Herbarium Post-Baccalaureate Fellow. Shelby is currently in medical school at Louisiana State University.

At the end of this semester, I will be on sabbatical for a year. I have two large research projects that I will be working on, each with a former student of mine, both of whom are now highly successful professors: Ashley Morris, C'97, at Furman University and Sarah McCarthy Neuman, C'99, at Tennessee State University. I plan to report more on these exciting projects in the next issue of the *Plant Press*. For now, I just want to say that one of the great joys of teaching at Sewanee has been my continued collaboration with former students such as Sarah and Ashley!

—Jon Evans

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Welcome Back, Jonathan!

I am pleased to announce Jonathan Ertelt as our newest herbarium associate. From the time that Jonathan graduated and initially left Sewanee in 1978, he has held various titles from botanist and horticulturist through greenhouse manager, supervisor, and lecturer. Jonathan has spent more than 45 years growing, teaching, and sharing plants and plant information while working at several academic institutions as well as botanical gardens and the National Aquarium in Baltimore.

Now a freelance consultant, he continues to write and speak about plants as well as still growing well over 400 species and hybrids at home, inside and out. As of this past

November, his home is now here in Sewanee, after facilitating the transfer of many of the plants in the Webb Greenhouse from his last job as the greenhouse manager at Vanderbilt University. He and his wife Bonnie had already purchased their house here, and after having renovations completed, made the move this past fall. You will likely be hearing more from him before long, including articles in the *Plant Press* as well as other outreach endeavors involving the greenhouse.

You may follow him on social media at Instagram @jonathansschoolofcoolplants or contact him at through email at erteltjb715@gmail.com.

Spring Calendar of Events

Springtime is busy for wildflower lovers! Herbarium staffers will be teaching classes and leading hikes for Trails and Trilliums and the Spring Wildflower Pilgrimage in the Smokies. We are offering two hikes of our own:

Shakerag Hollow, Saturday, April 8, 9:30 a.m., Mary Priestley

A walk among the abundant and diverse spring wildflowers of this partly old-growth forest area. Meet at the Green's View parking lot (past the golf course). 2 miles, moderate to strenuous, with one fairly challenging incline.

Turkey Hollow Trail at St. Mary's-Sewanee Retreat Center, Sunday, April 16, 1:30 p.m., Yolande Gottfried

Meet in the parking lot in front of the main building for a moderate one-hour walk below a north-facing bluff with a number of spring wildflowers.

The Herbarium sponsors a **nature journaling group** that meets Thursdays, 9–11 a.m. All are welcome. Email Mary Priestley at mpriestley0150@gmail.com for more information.

Times are CDT. Wear appropriate shoes on these walks. Risks involved in hiking include physical exertion, rough terrain, forces of nature, and other hazards not present in everyday life. Picking flowers and digging plants are prohibited in the above-mentioned natural areas.

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Hart's-tongue Fern, continued from page 1

Other areas where the fern had been initially discovered were acquired by the Solvay Process Company whose intention was to acquire commercial limestone for soda ash production and thus clear the natural vegetation. The Solvay Company sanctioned the relocation of the ferns from the intended quarry area by "...what is doubtless one of the most ambitious attempts ever made to save from destruction a rare plant." Local biologists removed and planted elsewhere a total of nearly 700 plants of the hart's-tongue fern "...with what labor and physical difficulties the reader is left to imagine" and those plants survived into 1934. Subsequently, botanists gathered hart's-tongue ferns from the relocation and other populations within the quarry, and they "...distributed the live plants to fern lovers all over the country who would undertake to set them in suitable surroundings." Propagation experiments using the hart's-tongue fern spores began at Brooklyn Botanic Garden at that time to preserve the population and possibly introduce the fern elsewhere.

Although sending live rare plants to new locales is not used as a contemporary conservation measure, these early efforts protected the fern well enough that, when the U.S. Fish and Wildlife Service added the American hart's-tongue fern to the Endangered Species List in 1989, northeastern populations were sufficient for collecting spores and established New York State Parks as the authority on propagation and introduction practices for this species. Federal and state conservation efforts resulted in a recent status assessment of the American hart's, tongue fern, finding that this species has 144 populations consisting of over 122,000 plants, 32 in the United States (12 in Michigan, 18 in

New York, one in Tennessee, and one in Alabama) and 112 in Canada. The Southeastern populations benefited from the New York propagation efforts as well, and the Alabama population, which had dwindled from hundreds to a handful of plants, was recently augmented with plants grown from Alabama spores at the New York center in 2022 at Wheeler National Wildlife Refuge. The Marion County population has not fared so well. What was first described as a population of hundreds of robust individuals has dwindled to a few, small, non-reproductive plants.

In 1996, caves documented by the Tennessee Cave Survey were evaluated by Alan Cressler for suitable hart's-tongue fern habitat. Of the 1,000 or so cave entrances he studied, 55 of which were evaluated specifically for the fern's preferences, only a few met the suitable characteristics for an introduction. Hopefully, the spores of the Marion County plants can be collected and propagated in the future, and conservation horticulturists can establish Tennessee and Alabama

plants in more protected locations. Until then, in a deep limestone pit in South Pittsburg, the only known location of this rare fern in Tennessee remains tucked away under a small waterfall, where botanists have taken an interest for over a century, and the thoughtful landowners of this site continue their stewardship alongside the botanists who have ventured within to protect it.



—Caitlin Elam, C'03
Botanist, Tennessee Division
of Natural Areas