



Two Fall-Blooming Orchid Species on the Domain



Three-Birds Orchid

Excerpted from an article that first appeared in the Sewanee Mountain Messenger's weekly "Nature Notes" column, which Yolande Gottfried edits.

Lin Cameron reports a "tiny gem I found growing a few weeks ago on a deep, dark trail past Otey View." Sewanee Herbarium staff confirmed the identification as Three-Birds Orchid, *Triphora trianthophora*, and that it had not been officially documented yet on the Domain. It is called "three birds" because the flowers are often borne in threes and look like birds in flight. Lin "went back to try to find more but the squirrels or some such had totally tilled up the area where they were growing. So maybe next year ..."

This experience is typical for this orchid, considered infrequent in Tennessee. It grows only in rich and damp woodland humus, often under beech. It is rather tiny, only a few inches high, and the flowers last only a few days at the most. It blooms only under very specific conditions, in late summer, in the afternoon, perhaps after a cold night, and the flowers all open at once. It can persist as underground tubers, perhaps what the squirrels or whoever were after in digging up the patch of orchids.

—Yolande Gottfried

Nodding Ladies' Tresses

As we go to press, we're looking forward to an orchid foray of a different sort. Wildflower expert and orchid enthusiast Dennis Horn, along with Jim Allison (originally with the Georgia Department of Natural Resources), will be collecting flowers from one of our fall-blooming orchids, *Spiranthes cernua* (nodding ladies' tresses) for comparison with a similar species, *S. magnicamporum* (Great Plains ladies' tresses).

According to Horn, "There is a cedar glades taxon we think may be a new ancient hybrid species described by Dr. Matthew Pace in 2017. Jim and I looked at these *Spiranthes* in 1992, but the issue could not be resolved at that time. Jim was also looking at similar *Spiranthes* plants in Georgia and Alabama. It would be a hybrid between *S. cernua* and *S. magnicamporum*. In order to sort this out we need to collect plant specimens of each species for comparison and possibly perform DNA analysis."

You may recall that angiosperms, the flowering plants, are customarily divided into two groups: monocots and dicots. Orchids are a large and diverse family of monocots. What's a monocot? First, unlike peanuts and other dicots, their seeds have only one cotyledon (think: peanuts split in two; corn kernels don't). Monocots' flower parts are often in threes or multiples of three (think: lilies), and their leaves mostly have parallel veins (think: grasses). Of the monocots, orchids are most closely related to lilies, amaryllises, and irises.

Orchid flowers usually have a lip, which is a petal that is very much unlike the other two. The amazing variety exhibited by the lip is what makes orchids so special (think: the pouch of a lady's-slipper orchid or the lip of the yellow fringed orchid). Pollen is usually bound together in a few large masses called pollinia, and seeds are minute, requiring the germinating plant to establish a relationship (mycorrhizal) with fungi in the soil.

Orchids are an actively evolving group, and classification is still being worked out. The

genus *Spiranthes* is one of those that plant taxonomists are scratching their heads over. Formerly, *S. magnicamporum* and several other species were classified as varieties of *S. cernua*, but now each is considered a separate species. It is the very close relationship between these species—and the possible existence of hybrids—that has scientists, including Horn and Allison, wondering. We are happy to assist them in this way. The two will be collecting only the upper portion of the flowering stem, so the plants should continue to thrive unharmed.

Spiranthes cernua is the most common species of the genus *Spiranthes* in Tennessee. Look for its spikes of tiny white flowers in September and October in wet meadows and roadside ditches.

—Mary Priestley

Ref: Stanley L. Bentley, *Native Orchids of the Southern Appalachian Mountains*



News from Herbarium Fellows



Hypothesis on *Hypopithys*

During an outdoor lab session in September for the Plant Physiology class, students came upon a bright yellow and red tendril-looking sprout with bell-shaped flowers growing from a pile of dead leaves next to a tree in the forest. Upon closer study, the plant was identified as a *Monotropa hypopithys* (pinesap) plant, a chemoheterotroph that feeds off of rhizome nutrients under the ground.

This plant does not use photosynthesis at all and rather functions similar to a fungus. After the lab, some students dissected a sample of the plant and found fully functional reproductive structures of a flower, similar to those of its relatives in the Ericaceae family. How could this be? The *Monotropa hypopithys* is hypothesized to have de-evolved from its relatives to favor a parasitic consumption pattern in which it feeds off of rhizomes. Amazing!

—Article and illustration by Izzie Berthelot C'24

The Herbarium's Botanical Movie Night

To kick off Advent Semester 2022, the Herbarium hosted a movie night event on Sept. 8 to bring together folks in the community who were interested in learning more about botanical wonders. The experience began outside the doors of Blackman Auditorium, where the Herbarium Fellows gathered behind a popcorn machine and a plethora of plants to distribute snacks and give away houseplants such as the Mother Of Thousands (*Kalanchoe daigremontiana*) and *Aloe vera*, propagated from our Webb Greenhouse.

The showgoers then took their seats in the auditorium to watch two segments of the BBC's new beloved series *Green Planet*, narrated by the one and only David Attenborough. The first segment, titled "Tropical Worlds," brought us into the rainforest's intense environment, where new time-lapse technology is able to depict the yearly patterns of growth and competition of these well-adapted plants in just minutes. Many plant-animal interactions are highlighted in this segment, seen in how the Balsa tree (*Ochroma pyramidale*) attracts an unusual pollinator, the kinkajou, a tropical arboreal mammal, to drink the overflowing sweet nectar from the tree's flower cup.

The second segment, "Water Worlds", proved to be just as captivating. The diversity of botanical organisms in water spans a large range. One peculiar plant we saw was Marimo, which takes a journey starting in glaciers to form perfectly spherical algae clusters (*Aegagropila linnaei*) that roll around in Lake Akan in Japan. The documentary also dives into the minuscule aquatic ecosystem found within the cups of bromeliad leaves on mountainsides in Venezuela, gathering all of the water and nutrients they need from their modified leaves, rather than their root systems.

The fascinating diversity of plant life found in these environments, coupled with David Attenborough's narrations, made this event extremely enjoyable, and those who attended left with new botanical knowledge ... and a new plant. We plan to continue these screening events of the BBC's *Green Planet*, and hope to continue spreading plant awareness through these entertaining Herbarium movie nights.



—J.T. Michel C'24



Greenhouse Goodies

Howdy howdy all you beautiful plant people! I'm here writing to you from a greenhouse absolutely bursting with life! Amazingly enough, not just plant life: there are people here too!

Thanks to the Plant Friday and Plant Saturday events from last year, we have built quite a following; people actually know that we have a greenhouse on campus now! Before we even planned our first event we had people popping up, asking how they could get involved. Pretty soon we'll have more volunteers watering the greenhouse than Herbarium Fellows!

With this community engagement we're able to go all out with events. I'm currently preparing dozens upon dozens of plants for giveaways. If there's one thing people love, it's free plants! We will also be having plenty of plant care events and a propagation workshop, which several proctors have already shown interest in collaborating on. Finally, greenhouse tours should be back in full swing soon! If you have friends or family passing through Sewanee, remember: Get them in the greenhouse!

All in all, I'm happy to say that the greenhouse is busier than ever before. It feels a little cramped these days, with all the people showing up, showing interest, and getting involved. All I can say to that is: What a great problem to have!

I hope to see y'all in the greenhouse soon too!

—Oliver Hutchens, Herbarium fellow and greenhouse manager, C'23

Fern Fiasco

The South Cumberland Plateau is rich in fern diversity, and many native species are sold in nurseries as they are popular for ornamental purposes. However, it is illegal for individuals to remove ferns from private or state land without permission.

Just a few weeks ago, as Domain Ranger Sandy Gilliam was conducting his routine patrols, he observed a vehicle parked near a locale abundant with a coveted fern species. Privy to the attraction by means of his experience (and the local fern hunters'), Gilliam wasted no time in trailing the vehicle out of the area until they had entered Monteagle and he was convinced it would not return.

The following week, however, Gilliam encountered the vehicle and its owner once again; this time at another of the Domain's fern honey holes. Noting that the vehicle was left unattended with a stuffed 55-gallon trash bag in the passenger seat and clippers and hoes strewn about, Gilliam took it upon himself to phone the Sewanee Police Department and run the vehicle's tags. Shortly thereafter, a man emerged from the greenery with trash bags full of fern roots and sprouting crowns in each hand.

Upon questioning, he revealed that the week prior (when Gilliam had interrupted him), he had successfully obtained at least 1,000 ferns. While they may not be correlated, Gilliam established that a nearby greenhouse had recently placed a substantial order for 50,000 ferns of the very species that had been confiscated.

University Farm volunteers helped plant the ferns back onto the Domain, but unfortunately they are forever lost from the original locations in which they had been established naturally. The perpetrator is not currently in custody, as the terms of the charge are still being deliberated.

By the way, in one of the sites the ferns were planted in an 'EQB' formation. Do tell if you happen to come across it, but please leave them be!

—Nneka Okolo, C'24



Friends of the Sewanee Herbarium

The Friends of the Sewanee Herbarium support the work of the Herbarium: education, research, and conservation. A \$10 annual contribution would be very much appreciated. The date of your most recent contribution is printed on your address label.

Name and address (if different from that on the mailing label on the back):

Amount enclosed: \$10 Other: \$ _____

Please mail checks (made payable to the University of the South) to:

Attn: Gift Records
The University of the South
735 University Avenue
Sewanee, TN 37383



Others who might like to receive *The Sewanee Plant Press*: _____



Capturing the Beauty of Autumn: a Botanical Art Workshop



Join Sewanee Herbarium associates and members of the Herbarium's nature journaling group for a morning of botanical art, capturing the beauty of fall. Paper, pens, and pencils will be supplied, along with plenty of botanical items to draw, but bring additional art supplies if you wish. Flowers, foliage, fruits, and other natural things will be available for you to draw.

We'll be getting ready for the Herbarium's annual post-holiday "All Things Bright and Beautiful" exhibit in Stirling's Coffee House, and we would like to include works from this event in the show. All skill levels are invited, and children are welcome if accompanied by an adult. Meet in Spencer room 173 on Saturday, Oct. 22, at 9 a.m. for a morning of creativity and enjoyment of the beauty of the season. Reservations are not required. Contact mpriestley0150@gmail.com for more information.

THE SEWANEE PLANT PRESS

The Sewanee Herbarium
Dr. Jon Evans, Director
Department of Biology
The University of the South
735 University Avenue
Sewanee, TN 37383

WEBSITE

sewanee.edu/offices/herbarium

EDITOR

Mary Priestley
mpriestley0150@gmail.com

CONTRIBUTORS

Izzie Berthelot
berthim0@sewanee.edu

Jon Evans
jevans@sewanee.edu

Yolande Gottfried
ygottfri@sewanee.edu

Oliver Hutchens
hutchob0@sewanee.edu

J.T. Michel
michejt0@sewanee.edu

Nneka Okolo
okolonj0@sewanee.edu

COMPOSITOR

Tammy Elliott

*Illustrations, unless otherwise noted,
are by Mary Priestley.*

HERBARIUM PUBLICATIONS

Fiery Gizzard: Voices from the Wilderness
What If Trees Could Walk?
Trail Guide to Shakerag Hollow
Sewanee Wildflowers in Watercolor

JOIN US ON INSTAGRAM:

[@sewanee_herbarium](https://www.instagram.com/sewanee_herbarium)

SEWANEE

THE UNIVERSITY OF THE SOUTH

Sewanee Herbarium
Department of Biology
735 University Avenue
Sewanee, TN 37383-1000

ADDRESS SERVICE REQUESTED



From the Director

For the past year I have served as co-chair of the University's strategic planning subcommittee on Domain optimization. My fellow co-chair, Vice President for Economic Development and Community Relations David Shipps, and I have been charged with evaluating how to utilize our land base more effectively for the purpose of enhancing our core educational mission. The strategic planning process is intended to generate a foundational document that will provide guidance to the incoming administration next year.

In this process, we have heard from many faculty, staff, students, and alumni about the challenges of integrating the Domain into Sewanee's education programs. There is a need for the University to establish a new Domain planning and management decision-making process and new leadership structure that promotes, supports, and enhances faculty-student research, departmental curricular planning and other associated student opportunities going into the future. The Domain should

serve as a place where students can actively learn about the contemporary challenges of land stewardship and fully participate in the ecological assessments of proposed land-use decisions with faculty.

We also identify a number of exciting new opportunities associated with the expansion of South Cumberland State Park in the Lost Cove area adjacent to Sewanee. There is potential for cooperative management regarding species protection, deer population control, and poaching prevention. There can be new collaborative research established with state conservation professionals as well as the creation of new internships and employment opportunities for students. We also believe that this expanded park could generate economic benefits to the town of Sewanee through new joint programs promoting recreational opportunities.

It is incredible that faculty and students may be able to engage in the birth of a state park in our own backyard and enjoy the benefits to our community! This is particularly exciting for the Herbarium, given the spectacular botanical diversity being protected by these new state conservation lands.

—Jon Evans, Herbarium Director