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News Items

2024 ABLS Field Trip Report: Bryological and Lichenological Diversity in Southwestern Ohio

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Abstract. **The American Bryological and Lichenological Society (ABLS) held its annual conference in West Portsmouth, Ohio, USA in July, 2024. At the meeting, members of the bryological and lichenological communities socialized and shared their research from the past year. Four morning field trips took place during the conference - two on Friday, July 12th and two on Saturday, July 13th. Attendees searched for, collected, and learned about bryophytes and lichens of southern Ohio during these trips.**

Ecology, Biodiversity, and Biogeography of Southern Ohio

Southern Ohio is a region of remarkable diversity, primarily due to its location at the crossroads of multiple ecological zones. This area is heavily influenced by the Appalachian foothills, which stretch into Ohio from the southeast, creating a varied landscape of rugged hills, dense woodlands, open prairies, and rich riparian habitats. The biogeography of southern Ohio is shaped by the region's historic and climatic factors. Glacial advances during the Pleistocene epoch left behind a landscape of diverse topography and soil types, which in turn created numerous niches for plant, animal, and fungal species (Cincinnati Museum Center, 2023; Nature Conservancy, 2023). Forests in the region are a mix of conifers and deciduous trees, which provide varied habitats that support a range of species (Fig. 1).

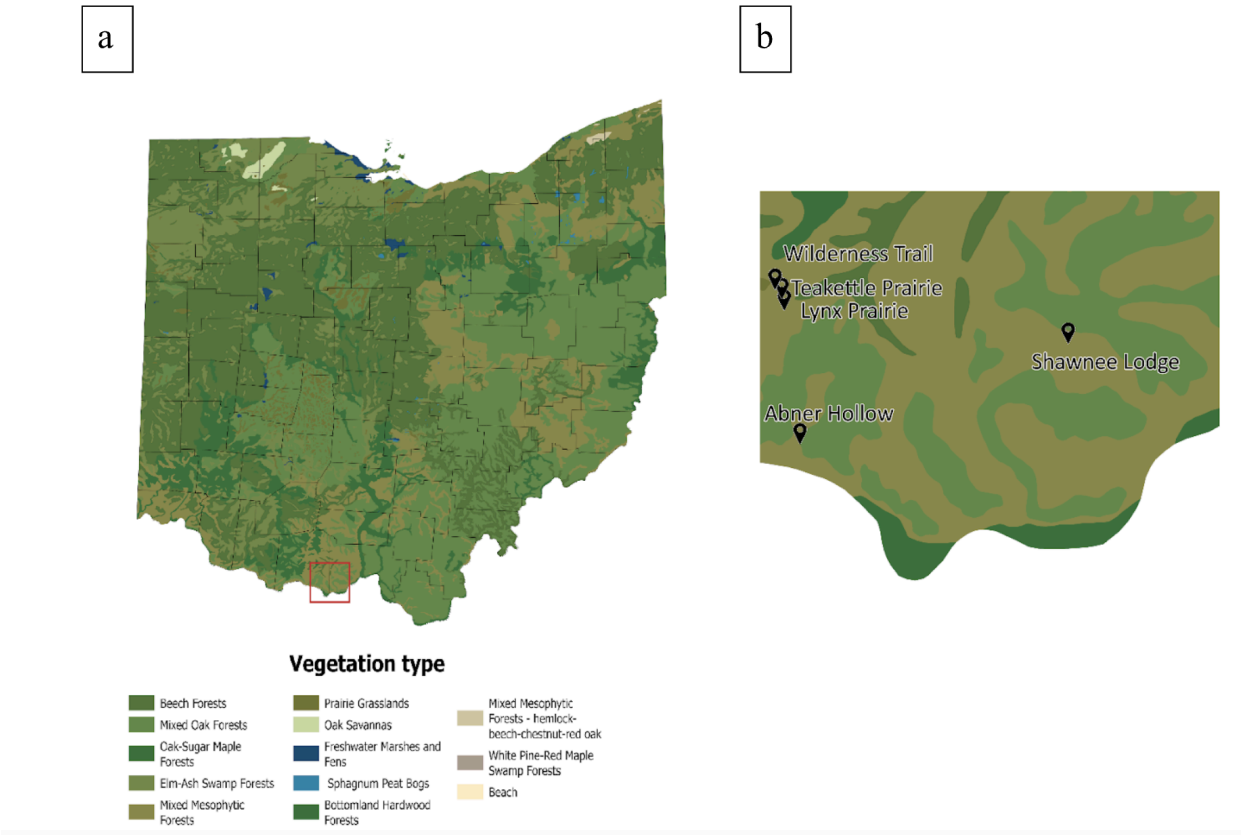

Figure 1. Map of Ohio with vegetation type indicated (a). Scioto County, Ohio, where the field trips occurred (b).

The warm, humid summers and cold winters combined with the region's topographical diversity have resulted in a rich assortment of bryophytes and lichens (Ohio Moss and Lichen Association, 2024). Scioto County, where the conference

was held, has 127 moss and 94 lichen species (Ohio Moss and Lichen Association, 2024). The cool, moist microclimates found in the region's ravines and along streams provide ideal conditions for these taxa, which are often sensitive to environmental changes (Cincinnati Magazine, 2023). High species diversity along with a convergence of ecosystems make southern Ohio an ecologically significant region in the Midwest.

The Richard and Lucile Durrell Edge of Appalachia Preserve System, known as "The Edge," is one of the largest privately owned nature preserves in Ohio, covering over 20,000 acres of land in Adams County. The Edge is home to over 100 rare species of plants and animals, some of which are found nowhere else in Ohio (Cincinnati Museum Center, 2023; Adams County Travel & Visitors Bureau, 2023). ABLS field excursions included visits to the preserve's woodlands, where members observed bryophyte and lichen communities thriving in their natural habitats. Bryologists and lichenologists shared their expertise, making the hikes not only scientifically rewarding but also a vibrant exchange of knowledge (Fig. 2).

Figure 2. The group poses for a photo at Abner Hollow after searching for bryophytes and lichen. From left to right: Danielle Ward, Madison Biesinger, Alejandrina Barcenas, Julianna Paulsen, Zoe Ryan, John Atwood, Angelica Casanova Katny, Jessica Budke, Isabel Hildesheim, Scot Schuette, Eric Shershen, Todd Widhelm, Vishal Nandha Kennedy.

Abner Hollow, Friday, July 12th, 2024

Abner Hollow Preserve trail is a lesser-known, 2-mile trail tucked within a mesic hollow. During the hike, participants experienced a striking ecological transition from the dolostone-derived soils of the mixed-mesophytic woodland to the acidic soils of the oak/hickory forests. Shortly into the hike, the bryologists and lichenologists split into two groups. The bryologists ascended from the stream's edge to the steep hills and ridge tops. During their trek, they encountered ample bryophyte diversity, including dense cushions of *Fissidens sp*. (pocket moss), *Leucobryum sp*. (pincushion moss), and *Pogonatum sp*. (spike moss). The trail's cliff-lined hollow and fern-covered slump blocks offered both scenic beauty and a rich environment.

Most lichenologists spent their time centered under a break in the extensive canopy. Here, there was a wooden boardwalk full of inconspicuous and cryptic crustose lichens (Fig. 3). The sunlight supported a greater diversity of lichens than the thick and rugged forest that surrounded the small open area. However, the dense canopy cover did not mean lichens were absent from the trees. Many trees within the forest were dotted with lichens, including hanging pale green strands of a tiny *Ramalina sp.* (strap lichen) and larger *Usnea sp*. (beard lichen). The group joined in on Dr. Todd Windhelm's mission to search for the ruffled foliose *Parmotrema perforata* (perforated ruffle lichen). They looked high and low, but unfortunately, only the closely resembling, and locally common, *Parmotrema hypotropum* was found. An exciting

lichenological find were several lush shrubby *Cladonia* mats of varying species that densely carpeted the ground throughout multiple areas of the preserve (Fig. 4).

Figure 3. ABLS members examining the lichenological diversity on and around an exposed boardwalk during the Abner Hollow field trip. From left to right: Alejandrina Barcenas, Madison Biesinger, Danielle Ward, Juliana Paulsen, Frank Bungartz, Algelica Casanova Katny.

Figure 4. *Cladonia spp*. (reindeer moss) carpeting the ground at Abner Hollow Preserve.

Lynx Prairie, Friday, July 12th, 2024

Lynx Prairie consists of many grassland openings scattered throughout the otherwise forested region. Bryologists and lichenologists started down an old road bed trail, excited to make their way through the forest and to an open prairie. Once at the prairie, the group split up to explore the many unique niches of the prairie and surrounding forest. Those who decided to bushwack into the woods found a small stream that eventually led out into the prairie. Within this streambed, bryologists found *Bryoandersonia illebra* (worm moss), *Fissidens sp.,* and *Pogonatum pensilvanicum*. They followed the stream into the prairie where it eventually ended at limestone outcrops, creating a wet, seepy area. Here, they found *Drepanocladus aduncus* (variable hook moss) and *Thuidium delicatulum* (delicate fern moss) growing on organic soils. Pottiaceae species were also found growing on the limestone outcrops within crevasses.

Figure 5. *Pyxine sorediata* (mustard lichen) glowing under UV light.

Many lichenologists decided to hike down the trail where they were excited to find several notable lichens. When they reached their turn-around point, there was a grove of small short-leaf pines that provided habitat for pale-green, bark-dwelling foliose *Pyxine sorediata* (mustard lichen), easily spotted as it glowed a marvelous neon yellow under the UV light (Fig. 5). *Imshaugia placorodia* (starburst lichen) was also found growing on the short-leaf pines. This spotting was particularly exciting because of its wide distribution across the United States. People were excited to recognize its familiar gray-green lobes and abundant brown fruiting bodies. The group also observed tiny, black foliose *Scytinium* species with fruiting bodies and lobules blending into the bark substrate. Similar to the Abner Hollow hike, lichenologists at Lynx Prairie found *Cladonia subtenuis*, a shrubby reindeer lichen, growing on the soil. While the lichens and bryophytes of Lynx Prairie captured the ABLS members' attention, they also took time to appreciate the rich diversity of wildflowers in the prairie including pink and purple flowered *Sabatia angularis* (rosepink), *Ruellia humilis* (wild petunia), and *Allium sp*.

Teakettle Prairie, Saturday, July 13th, 2024

The Teakettle Prairie field trip began at an old homesite not typically open to the public. However, since the area contains diverse habitats, including prairies, forests, and an old quarry, ABLS members were allowed access to explore the area. Members crossed an old gate marked with red tape and started their hike up an overgrown logging road. Initially, the

trail was forested and went uphill before reaching a stream. Within this stream, bryologists found *Fissidens sp*. growing on wet rocks. After passing by the stream, the forest opened to expose Teakettle Prairie. This prairie was less than an acre in size and was broken into two parts by an encroaching forest with a floor dusted with tufts of *Cladonia sp*. Shortly after entering the prairie, the trail along the logging road ended and was replaced by red flagging, which marked a loop through the prairie, deciduous forest, and old quarry site.

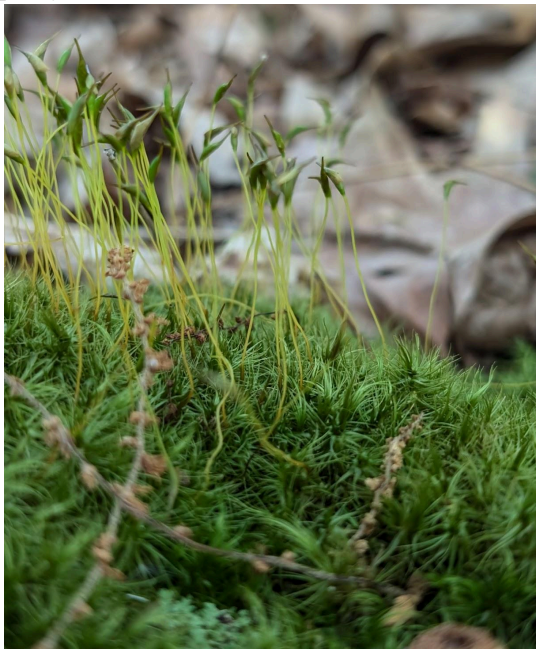

Figure 6. *Dicranum sp.* (wind-swept moss) with sporophytes found within the forest area of Teakettle Prairie.

After exploring the prairie and forest edge, members then followed the flagging into the woods where they found a large patch of *Dicranum sp*. (wind-swept moss) with sporophytes (Fig. 6). They also spotted several minute brown and reddish *Frullania sp*. (scalewort) species growing on tree bark throughout the forested section of the hike. Eventually, the flagging led members out into the old quarry site. Bryologists noted that the quarry was home to the almost black and frequently dry *Grimmia pilifera* (dry rock moss), while lichenologists rejoiced after identifying two previously undocumented lichens for the area, *Placidiopsis minor* and *Psora pseudorussellii* (Fig. 7). These lichens were growing as an intertwined series of discs on the same exposed rock. Everyone spent time here enjoying the sun and working on their field identifications. After leaving the quarry, members hiked through more deciduous forest on a small ridge where there were several exposed rocks. *Thuidium delicatulum* and *Leucobryum glaucum* were found in large carpets as members made the trek back to the trailhead.

Figure 7. *Psora pseudorussellii* growing on rock at the quarry during the Teakettle Prairie field trip.

Wilderness Preserve Trail, Saturday July 13th, 2024

Members who attended this field trip enjoyed hiking through eastern deciduous forests, crossing several streams, and exploring boulders off trail. Some members of the group opted to hike the entire 2.5-mile loop, while others made it only a third of the way around the loop in classic cryptogamic style. Regardless of distance walked, everyone was rewarded with a diversity of lichens and bryophytes along the trail. Those who decided not to hike the whole trail were lucky enough to be given a lesson on the common lichens of the area by Dr. Jessi Allen, including the delicate scripted *Graphis scripta,* the pale dusty *Lecanora thysanophora,* and the green warty *Viridothelium virens* (Figs. 8 and 9). Those who went further down the trail descended to the first stream crossing, where some members went off trail to explore the stream bed. Some fun finds for the bryologists included *Fissidens sp*. and sprawling thalli of *Conocephalum sp.* (snakeskin liverwort, Fig. 10). The stream bed also had several downed, rotting logs without bark that hosted intertwining yellow strands of the diminutive liverwort *Nowellia curvifolia.* Lichenologists enjoyed their time by the stream gathered around a *Pertusaria pustulata* to watch it glow under a UV light.

Figure 8 (left). Dr. Jessi Allen and Stephen Sharrett examining lichen during the Wilderness Preserve Trail field trip.
Figure 9 (right). *Viridothelium virens* found growing on a tree during the Wilderness Preserve Trail field trip.

Back on the trail, participants continued hiking and then explored a slope with a number of exposed rocks up the hillside. Along this outcrop of rocks, bryologists found a patch of *Rhodobryum sp.* (rose moss) which resembled a tuft of small green rosettes. There were even some vascular plants that caught their eye such as *Pellaea sp.* (cliffbrake), a small fern with dark brown stipes that was found nestled in the crevices of the exposed rocks, and terrestrial orchids including *Goodyera pubescens* (downy rattlesnake plantain) and *Tipularia discolor* (crane-fly orchid). Another highlight from the rock outcrop were fertile patches of squamulose green *Psora pseudorussellii*, which lichenologists excitedly spotted. Not far from the rock outcrop, there was a tiny lacewing larva that had adorned itself with lichen fragments - maybe fooling predators, but not the lichenologists! As the hike came to a close, some members of the group spotted the iconic red fruiting bodies on top of a *Cladonia*'s podetia on a decomposing log, which they agreed was a delightful way to end that day's field trip (Fig. 11).

Figure 10 (left). *Conocephalum sp.* (snakeskin liverwort) found growing on a rock in a wet streambed during the Wilderness Preserve Trail field trip.
Figure 11 (right). *Cladonia sp*. with red fruiting bodies on a decomposing log found during the Wilderness Preserve Trail field trip.

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Literature Cited

Adams County Travel & Visitors Bureau. (2023). *Nature preserves & hiking - Edge of Appalachia*. Retrieved from https://www.adamscountytravel.org *[accessed 17 August, 2024]*

Cincinnati Magazine. (2023). *The Edge of Appalachia Preserve Is Fighting For The Little Guys*. Retrieved from https://www.cincinnatimagazine.com *[accessed 15 August, 2024]*

Cincinnati Museum Center. (2023). *Richard and Lucile Durrell Edge of Appalachia Preserve System*. Retrieved from https://www.cincymuseum.org *[accessed 17 August, 2024]*

Nature Conservancy. (2023). *Edge of Appalachia Preserve System*. Retrieved from https://www.nature.org *[accessed 17 August, 2024]*

Ohio Moss and Lichen Association. (2024). *2024 species report on mosses and lichens in Scioto County*. Retrieved from https://ohiomosslichen.org/ *[accessed 16 October, 2024]*

Map (Fig 1) was made using ESRI ArcGIS Pro Desktop: Release 10.8.2.

Land cover data are from the Ohio Department of Natural Resources. *Original Natural Vegetation of Ohio, at the Time of the Earliest Land Surveys* by Robert B. Gordon, Ohio Biological Survey, 1966. ODNR GIS Services, 2003. Accessed on 3 September 2024.